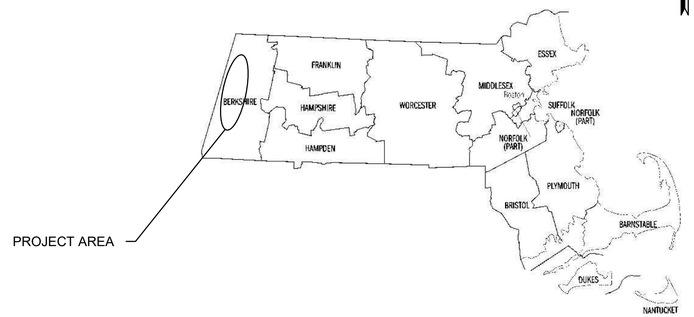
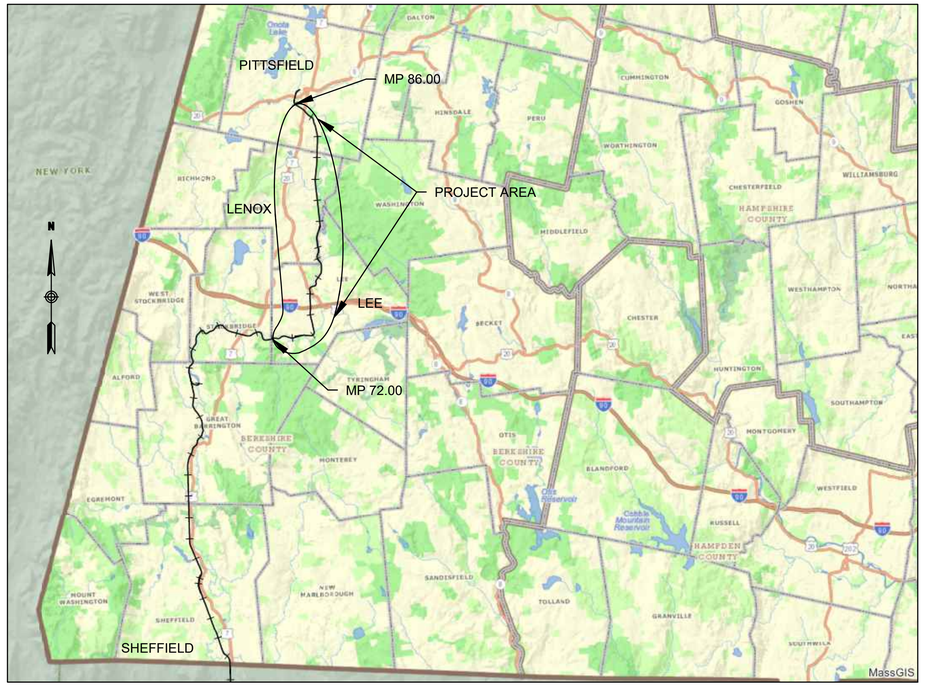
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
RAIL & TRANSIT DIVISION

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS

PROJECT LOCATION: LEE, LENOX AND PITTSFIELD, MA



LOCUS MAP



LOCATION MAP

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MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TITLE SHEET AND INDEX

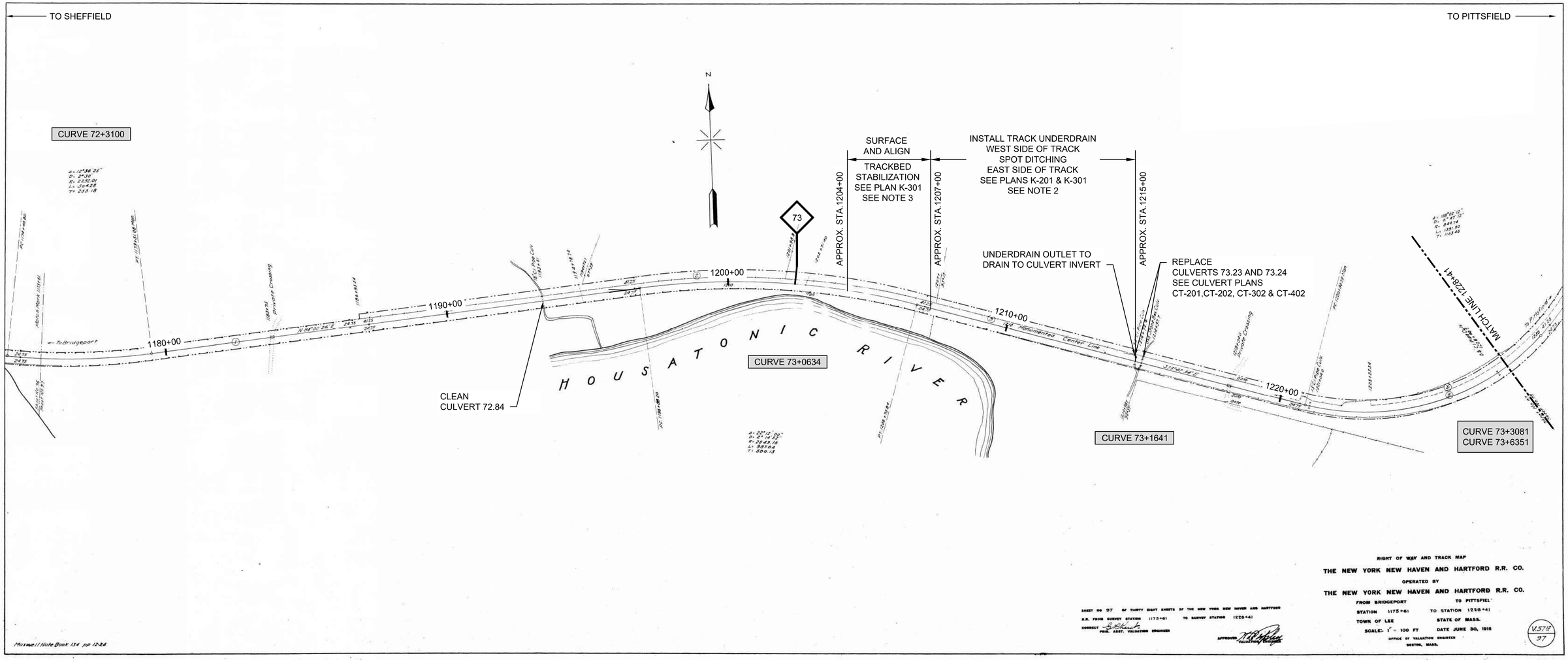
ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	JQW	SHEET: G-001	

LEE



TRACK GENERAL NOTES

1. ALL STATION CALLOUTS, MILEPOSTS, WORK LIMITS AND GENERAL INFORMATION SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON THE VALUATION MAPS SHOWN. VALUATION MAPS HAVE NOT BEEN UPDATED, DO NOT REFLECT ALL CURRENT CONDITIONS, AND ARE INTENDED TO BE USED FOR GENERAL INFORMATION ONLY.
2. EXACT LOCATIONS OF WORKING LIMITS SHOWN ON THE PLANS SHALL BE DETERMINED IN THE FIELD AS DIRECTED BY THE ENGINEER.
3. SEE SPECIAL PROVISIONS AND MASSDOT MW-1 FOR MORE DETAILS ON WORK OUTLINED HEREIN.
4. FINAL BALLAST SHOULDER WIDTHS IN AREAS TO BE SURFACED AND ALIGNED SHALL BE A MIN. OF 12" IN TANGENT TRACK AND 16" IN CURVES PER MASSDOT MW-1. MAXIMUM BALLAST SLOPE SHALL BE 2:1.
5. PROFILE RUNOFFS AT THE ENDS OF TRACK RAISES SHALL NOT EXCEED 1.5 INCHES IN 31 FEET PER MASSDOT MW-1 FOR CLASS 3 TRACK.
6. BALLAST SHOULDER AND SLOPE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS ALSO APPLY TO THE ENTIRE LIMITS OF POTENTIAL DITCHING AREAS.
7. SHEFFIELD (SOUTH) AND PITTSFIELD (NORTH). OVERALL TRACK RUNS NORTH TO SOUTH.
8. CONTRACTOR SHALL NOT DISTURB THE EXISTING TRACK STRUCTURE DURING SPOT DITCHING AND OR UNDERDRAIN INSTALLATION.
9. UNDERDRAIN IS TO BE AT A DEPTH TO MAINTAIN A GRADE TO DRAIN AND OUTLET MUST DRAIN TO CULVERT INVERT. MINIMUM SLOPE OF 2% OR OTHERWISE DIRECTED BY THE ENGINEER.
10. SEE SHEET K-301 AND SPECIAL PROVISION ITEM 492.15 TRACK BED STABILIZATION FOR DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 1 OF 14
STA. 1175+61 TO STA. 1228+41

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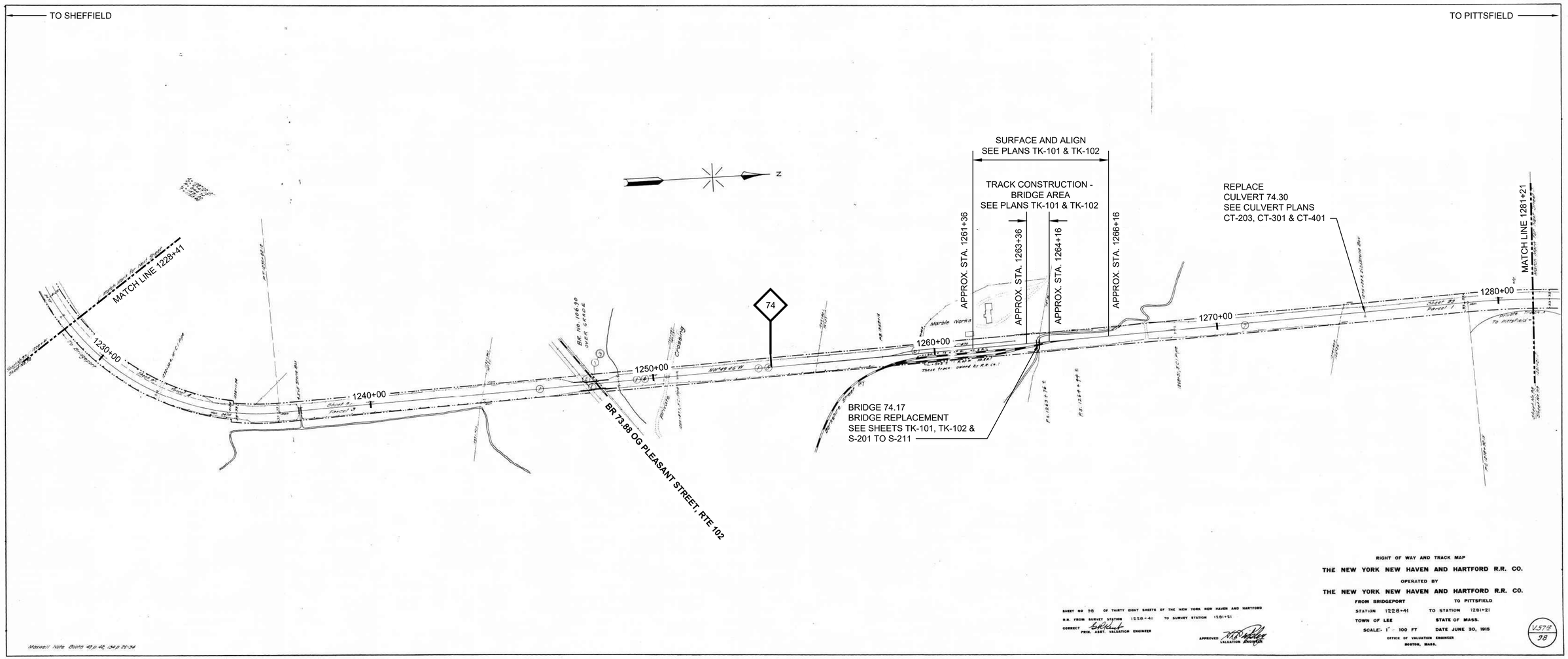
LEE



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

ISSUE	DATE	DESCRIPTION	BY	CH'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 2 OF 14
STA. 1228+41 TO STA. 1281+21

HDR, INC.
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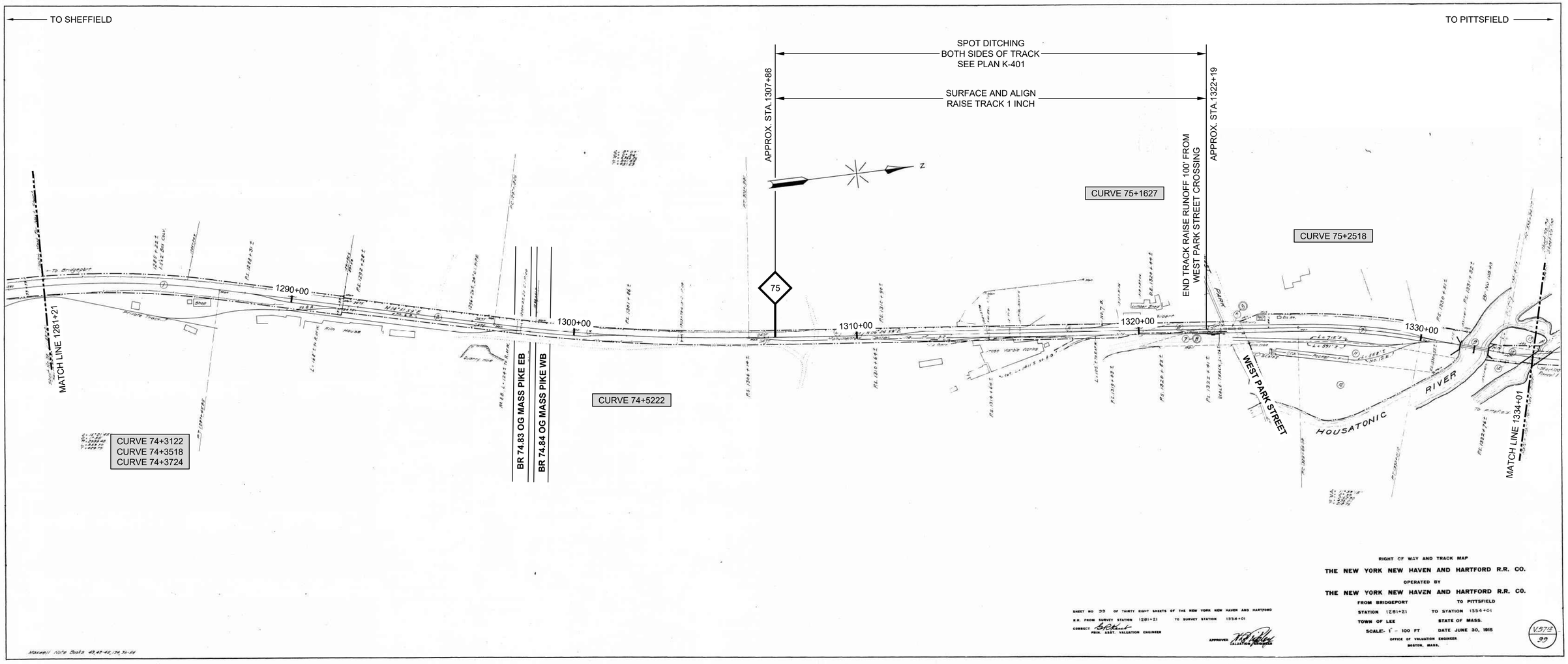
LEE



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 3 OF 14
STA. 1281+21 TO STA. 1334+01

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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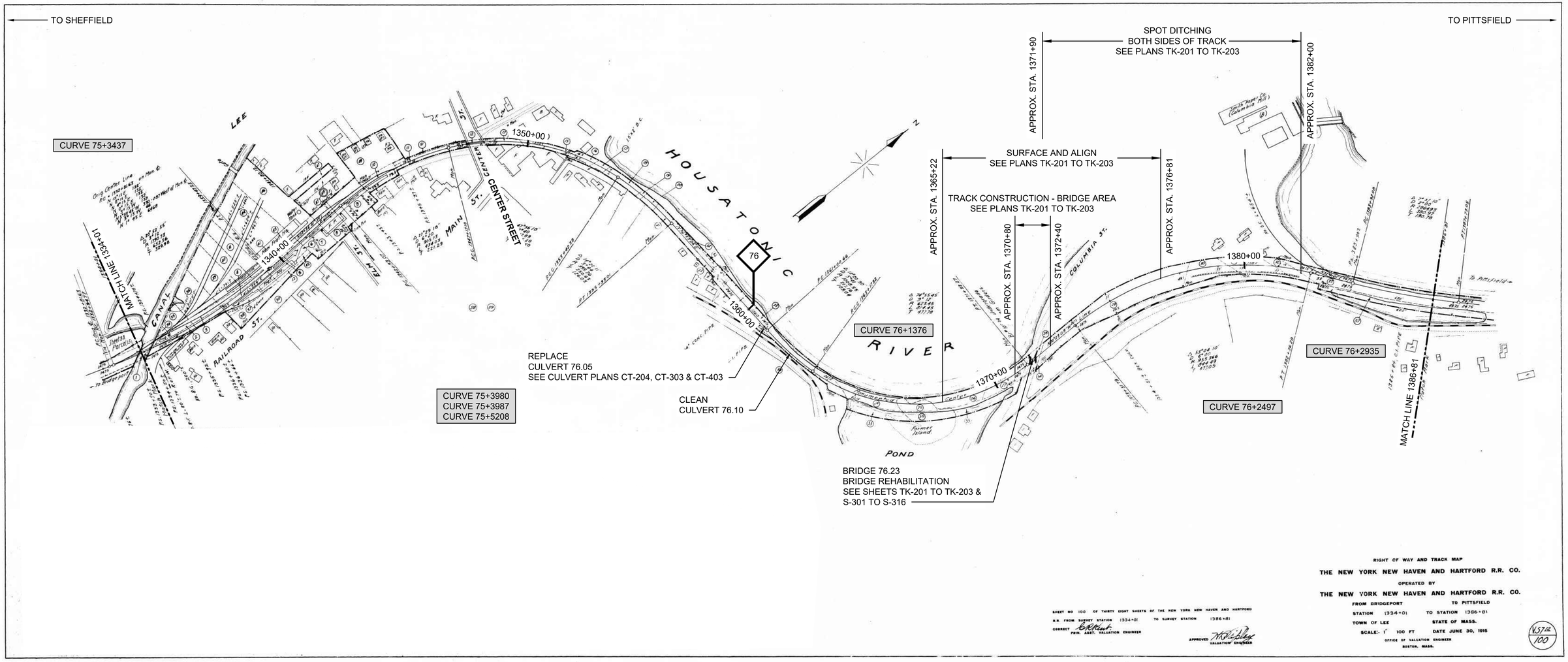
LEE



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 4 OF 14
STA. 1334+01 TO STA. 1386+81

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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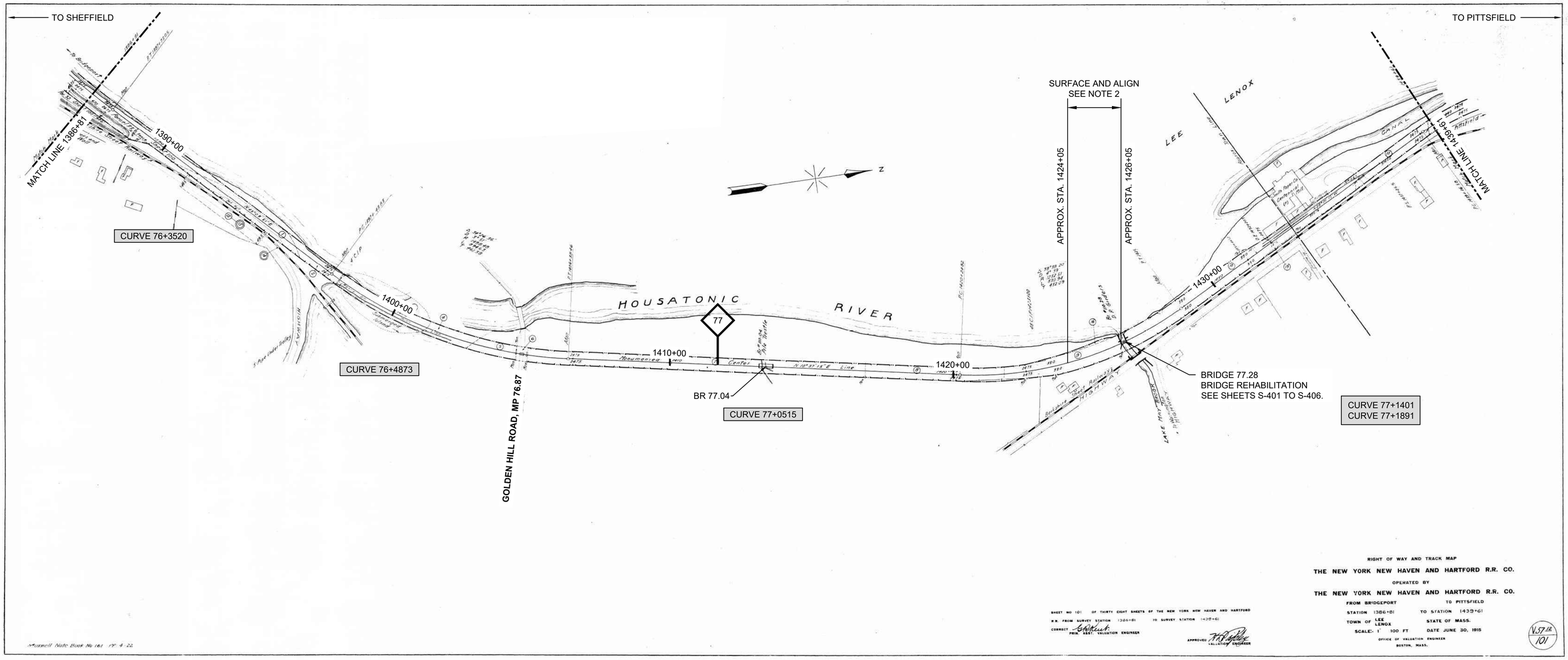
LEE

LENOX



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.
2. ADJUST PROFILE AND SURFACE OF APPROACH AS REQUIRED TO SMOOTHLY TRANSITION TO NEW BRIDGE DECK PROFILE AND SURFACE.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 5 OF 14
STA. 1386+81 TO STA. 1439+61

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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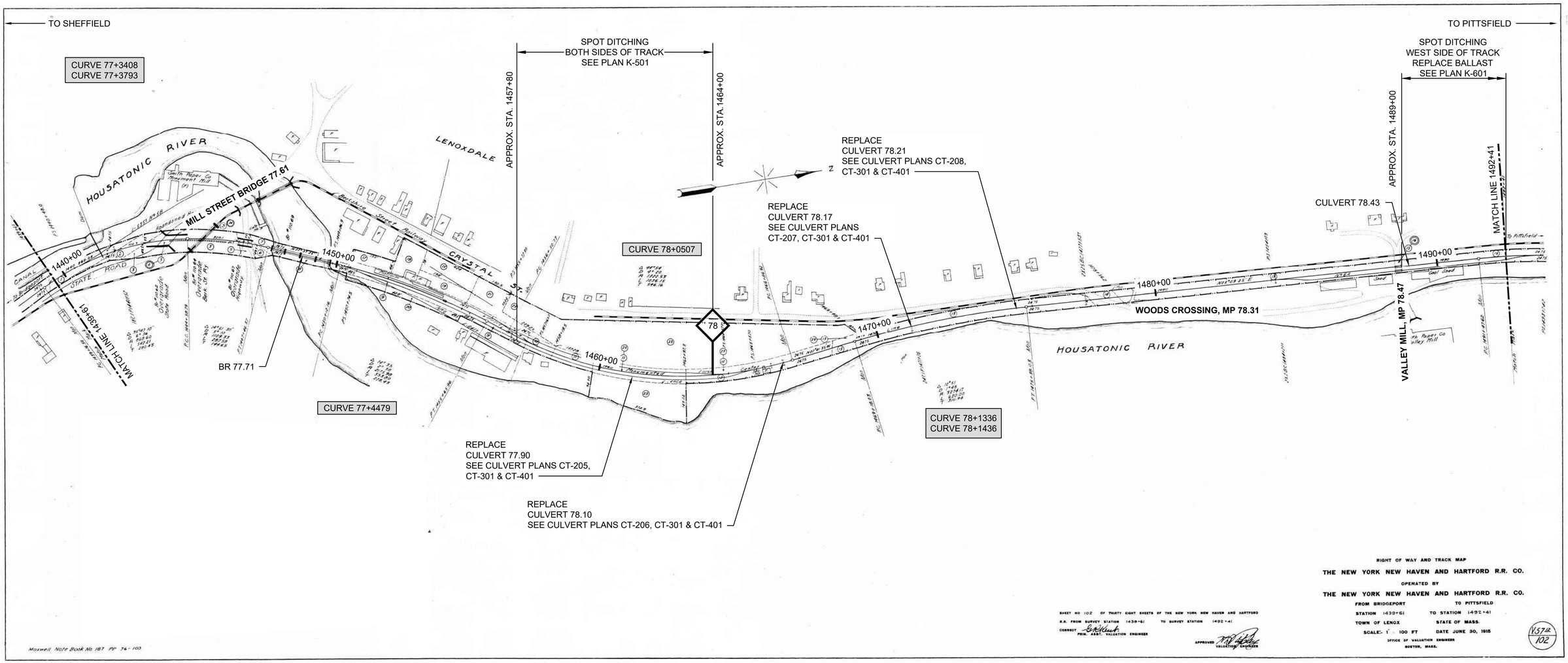
LENOX



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 6 OF 14
STA. 1439+61 TO STA. 1492+41

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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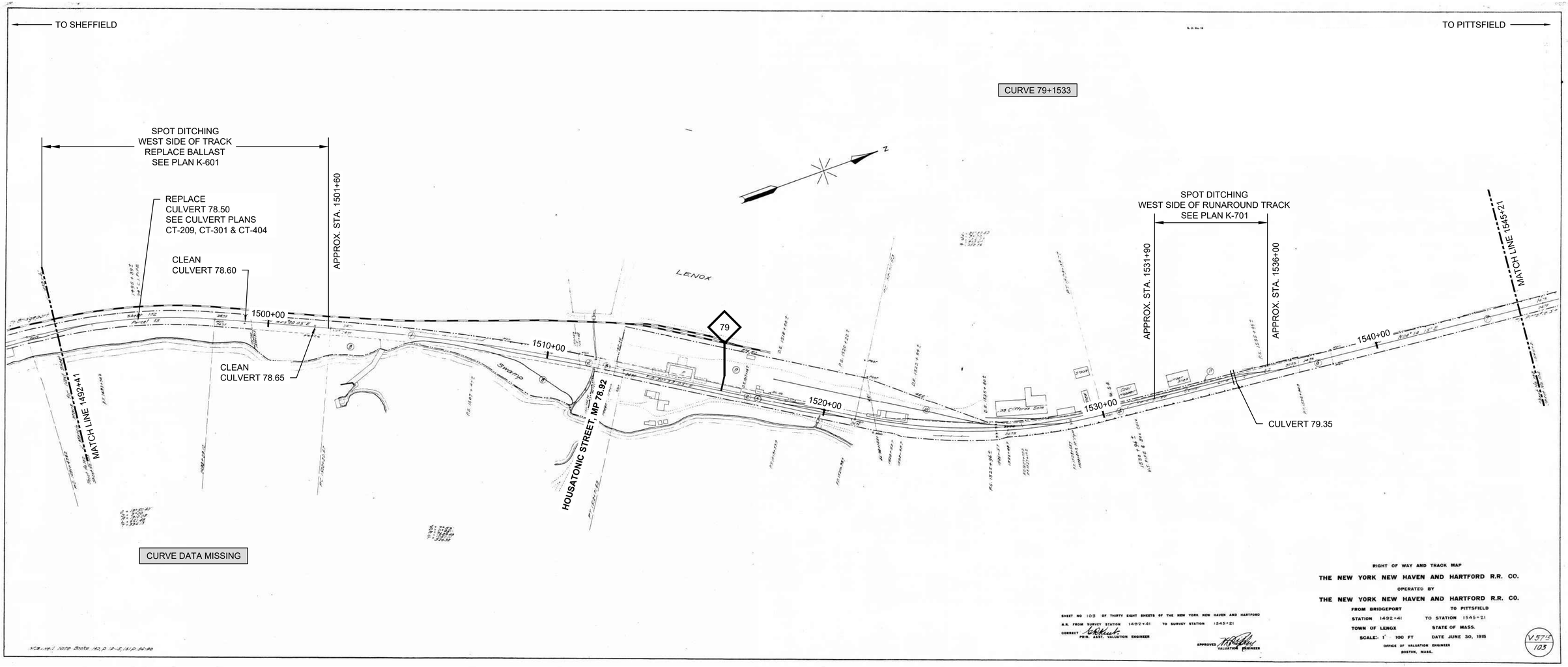

NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 7 OF 14
STA. 1492+41 TO STA. 1545+21

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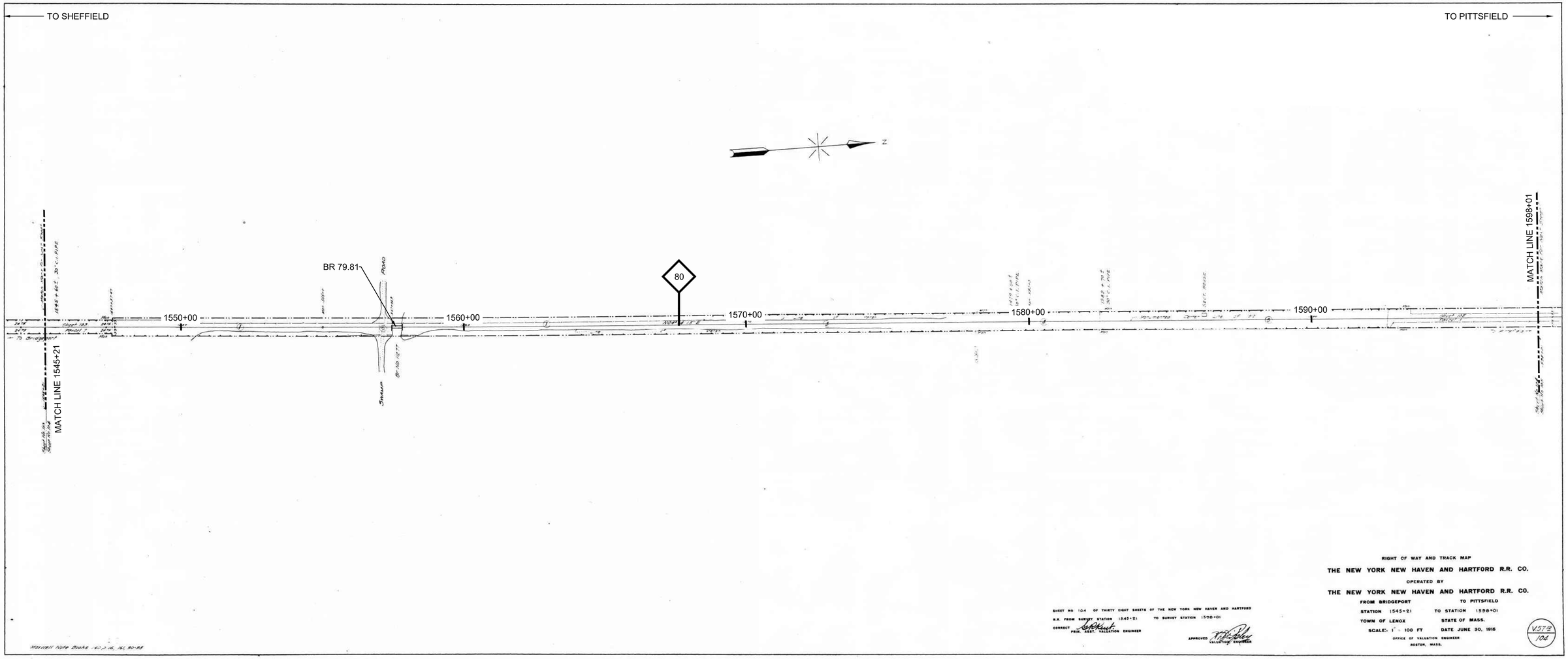

NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 8 OF 14
STA. 1545+21 TO STA. 1598+01

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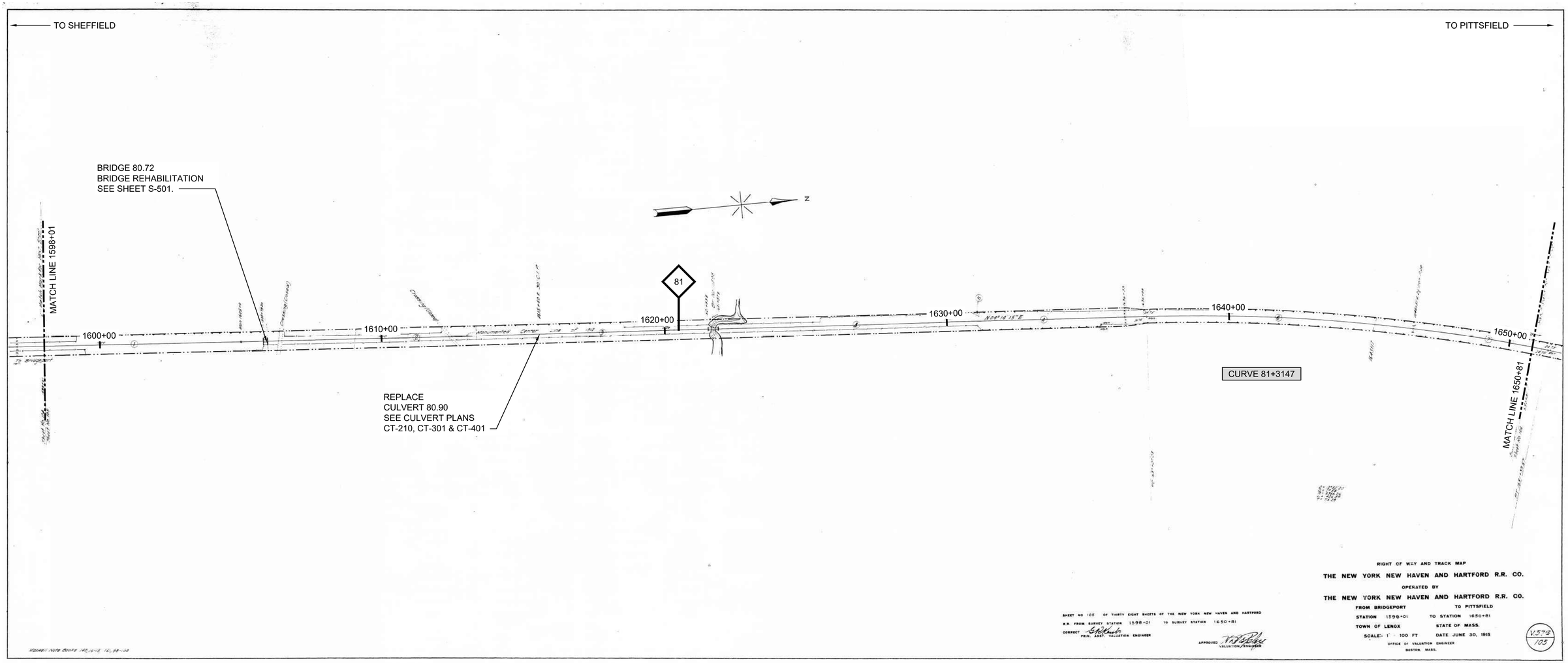

NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 9 OF 14
STA. 1598+01 TO STA. 1650+81

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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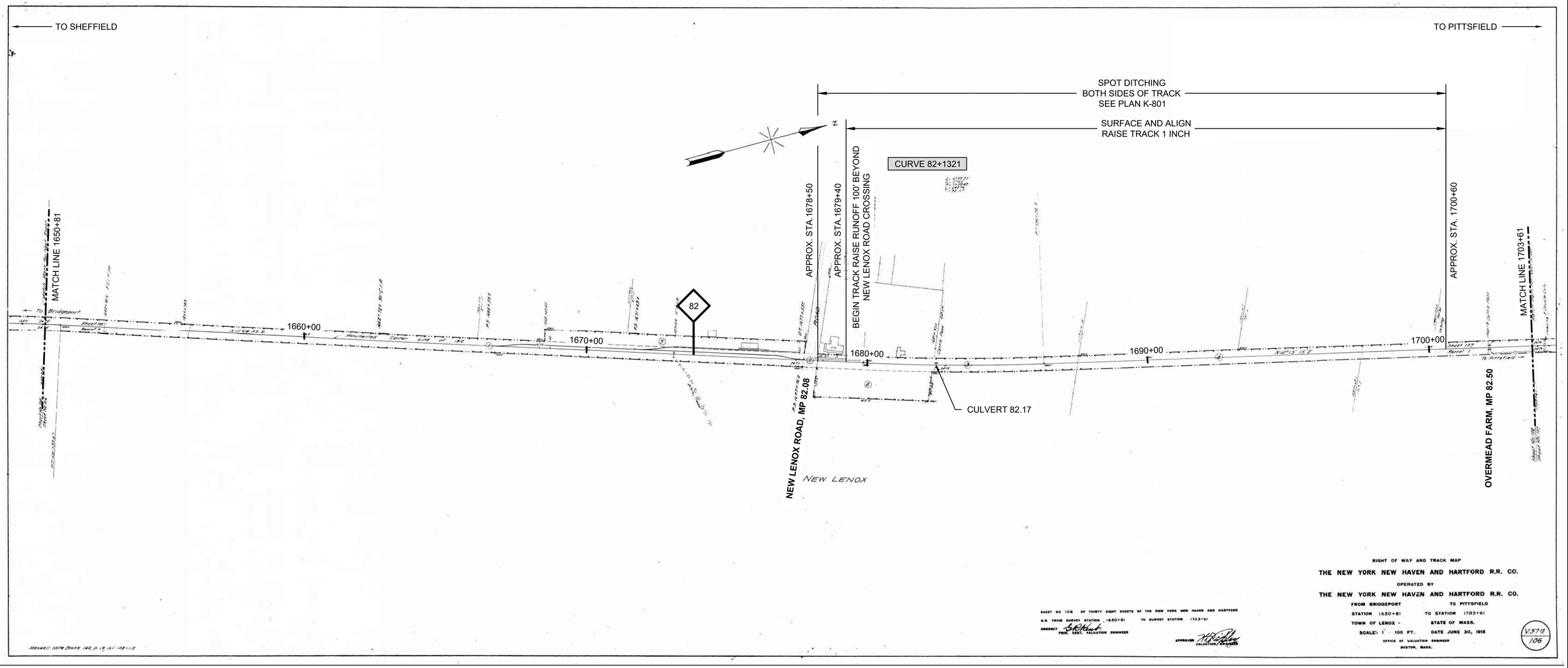

NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 10 OF 14
STA. 1650+81 TO STA. 1703+61

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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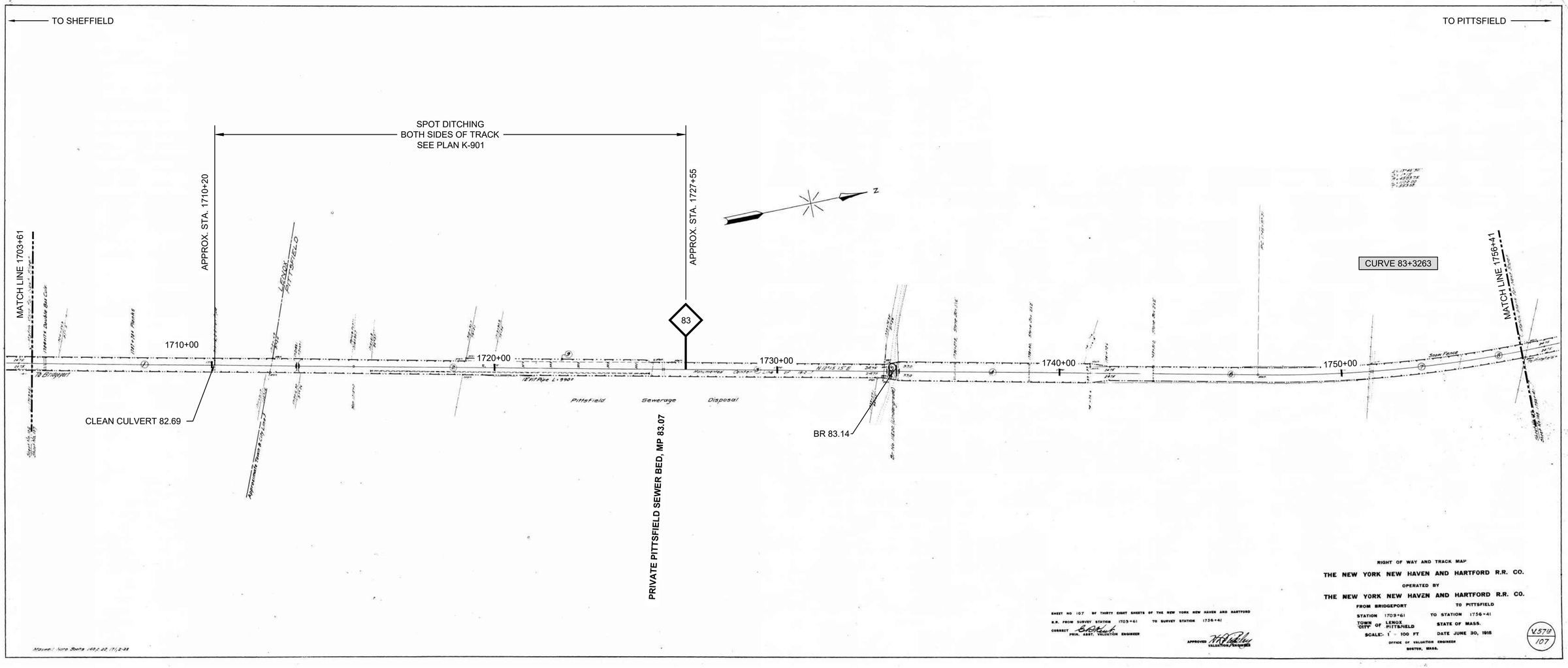
LENOX

PITTSFIELD



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 11 OF 14
STA. 1703+61 TO STA. 1756+41

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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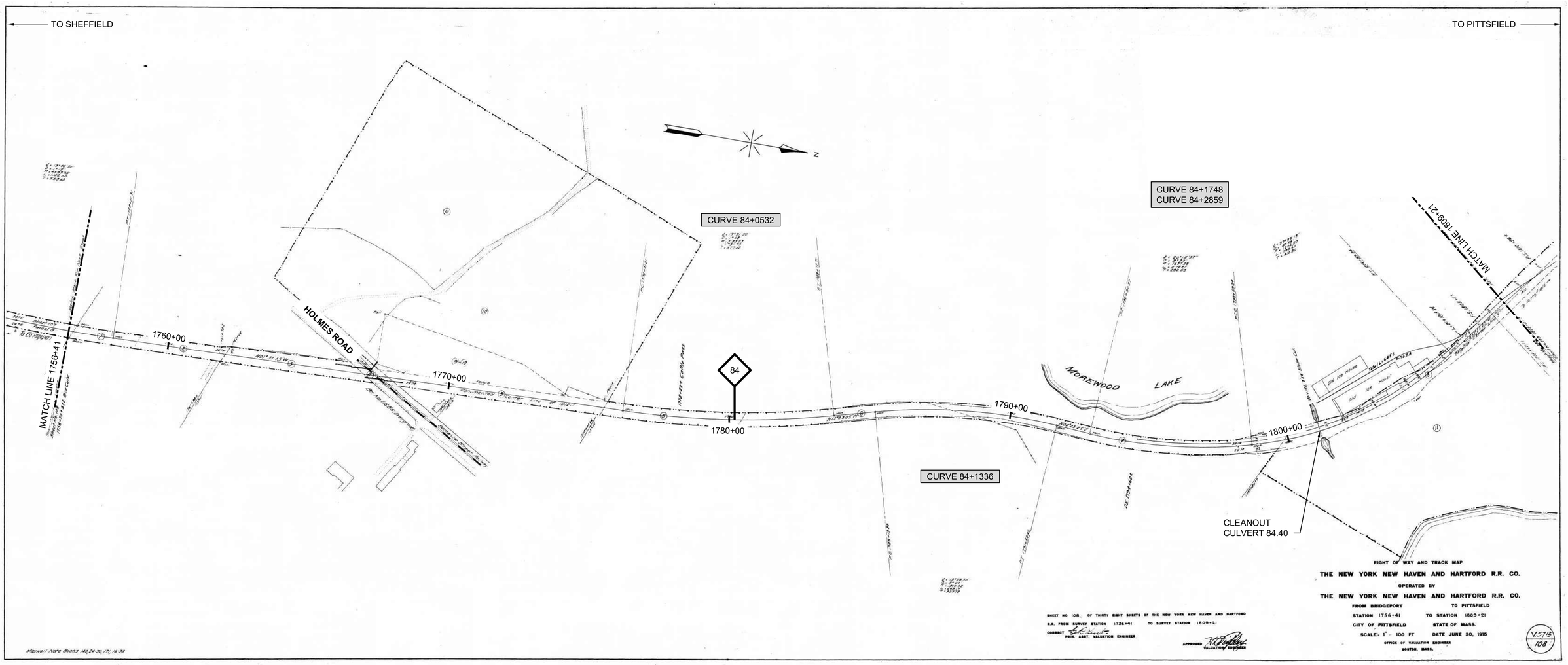
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-111	

PITTSFIELD



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 12 OF 14
STA. 1756+41 TO STA. 1809+21

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
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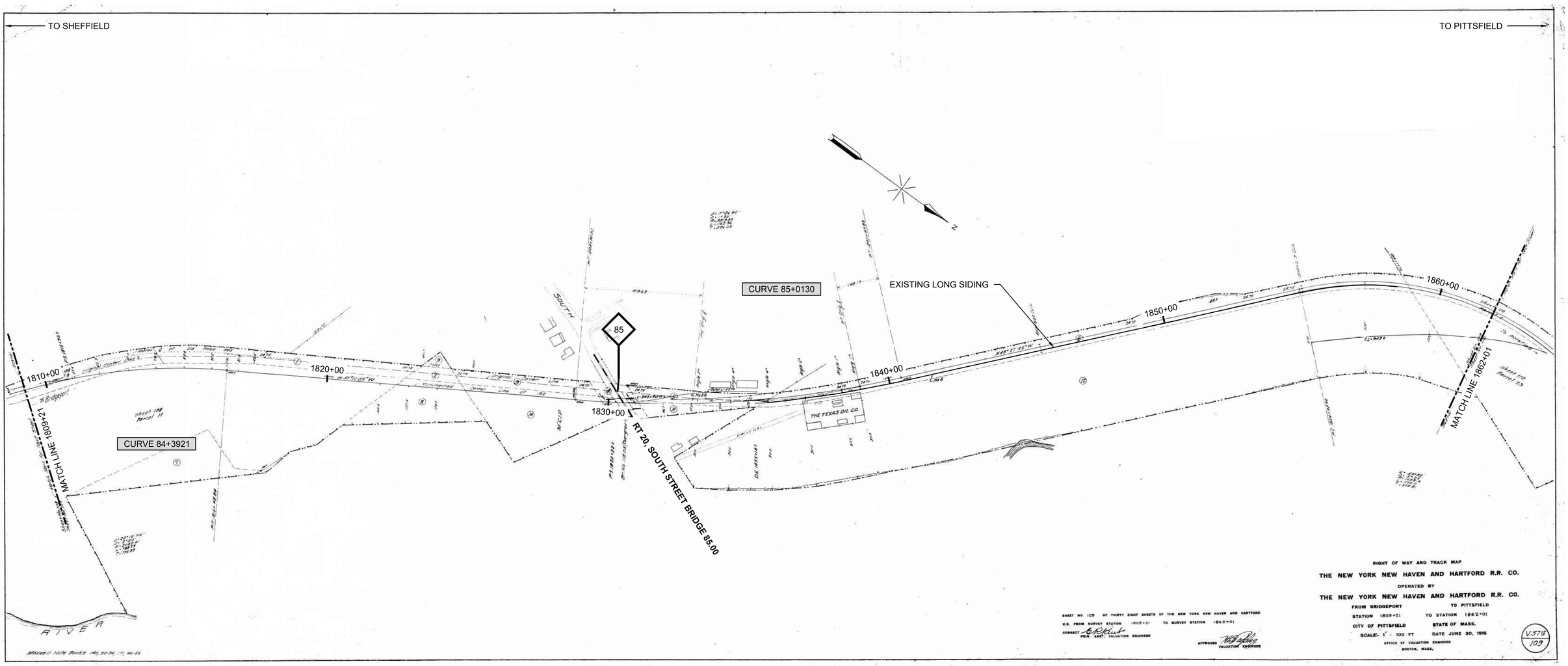
SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-112	

PITTSFIELD



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 13 OF 14
STA. 1809+21 TO STA. 1862+01

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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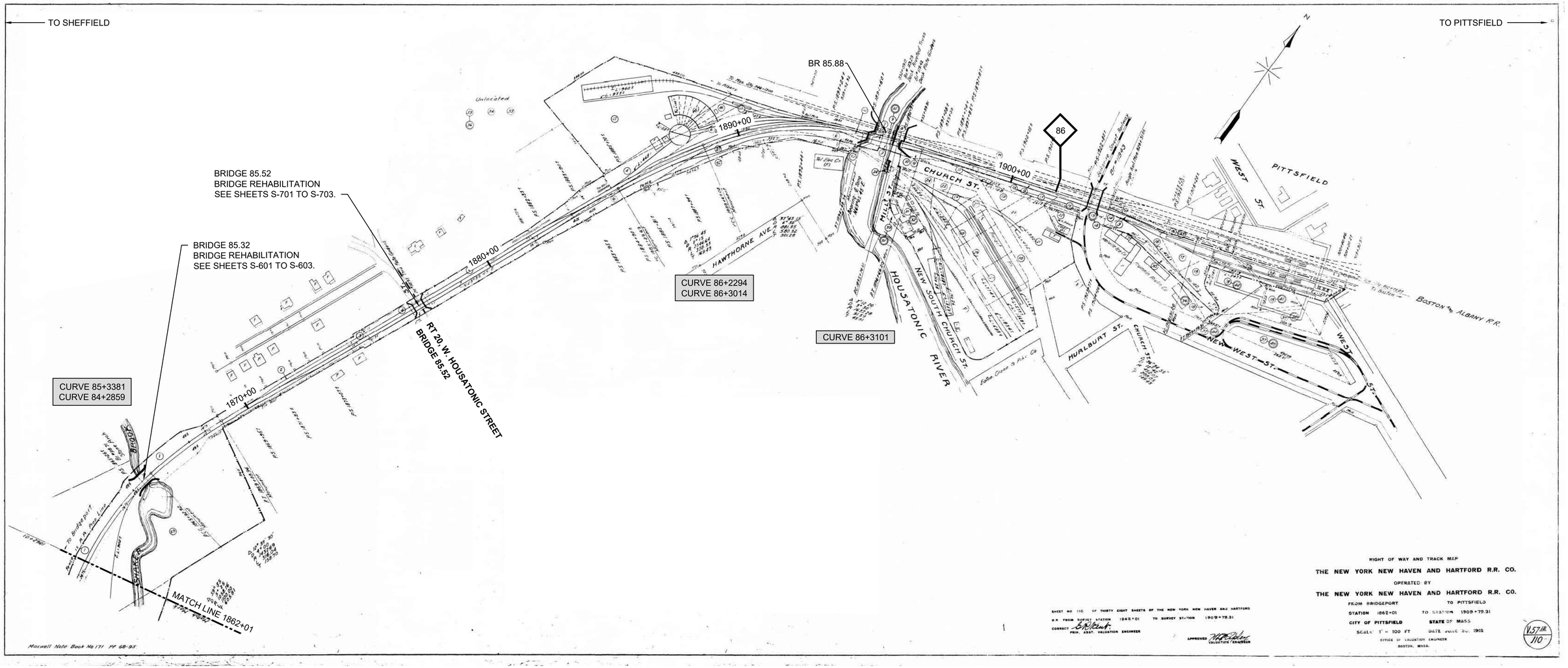
Massachusetts Department of Transportation
Rail & Transit Division

SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-113	

PITTSFIELD



NOTES:

1. SEE SHEET K-101 FOR TRACK GENERAL NOTES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
PLAN SHEET 14 OF 14
STA. 1862+01 TO STA. 1901+63

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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Rail & Transit Division

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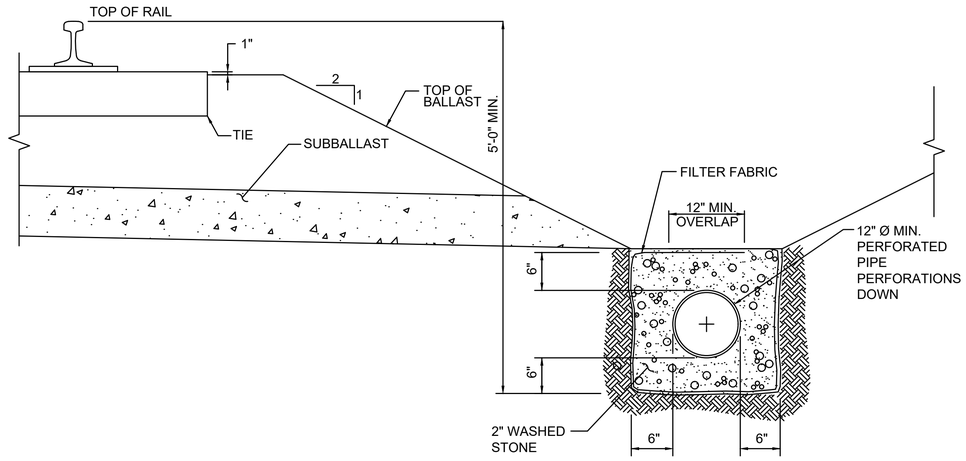
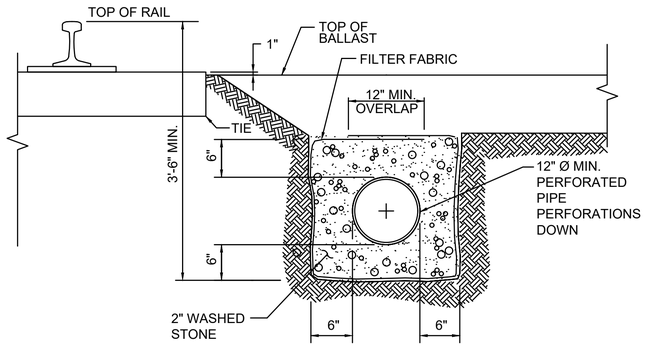
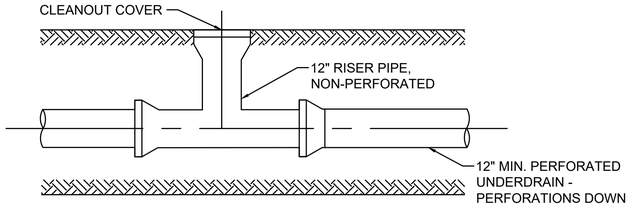


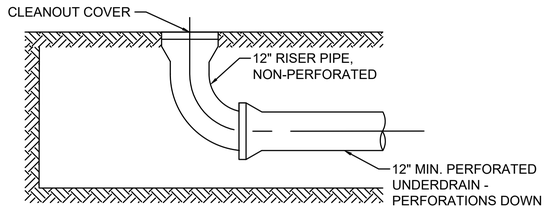
DITCH W/ UNDERDRAIN (UD)
N.T.S.



UNDERDRAIN (UD)
N.T.S.



IN LINE CLEANOUT

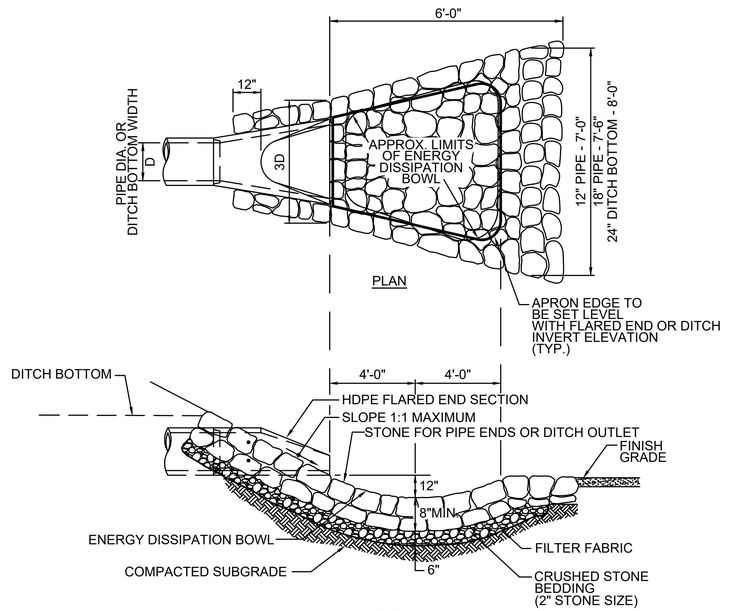


END OF LINE CLEANOUT

NOTES

1. CONSTRUCT CLEANOUTS AT ALL UNDERDRAIN UPSTREAM ENDS AND AT MAXIMUM 300' INTERVALS ALONG UNDERDRAINS.

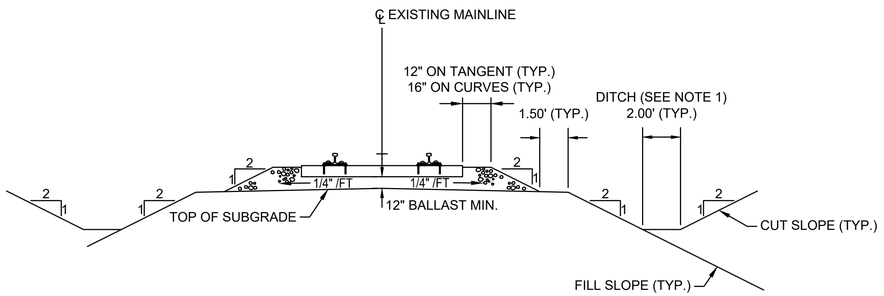
TRACK UNDERDRAIN CLEANOUT
N.T.S.



PLAN

SECTION

FLARED END SECTION (FES) OR DITCH OUTLET WITH STONE PROTECTION
N.T.S.



TYPICAL BALLAST AND DITCH SECTION
N.T.S

NOTES:

1. DITCHING REQUIREMENTS AND DIMENSIONS TO BE DETERMINED IN FIELD AT THE DIRECTION OF THE ENGINEER.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

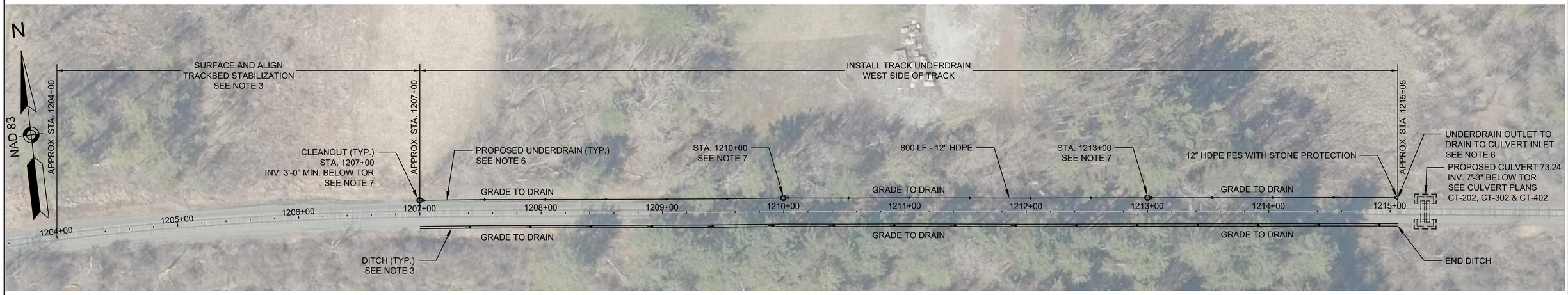
TRACK
TYPICAL SECTIONS
AND DRAINAGE DETAILS

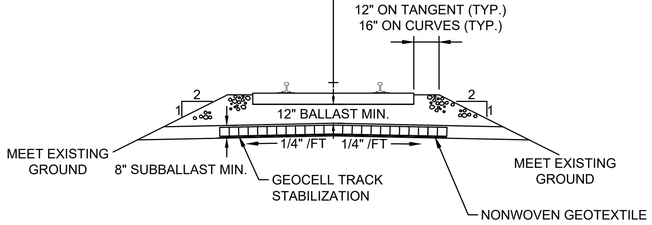
ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

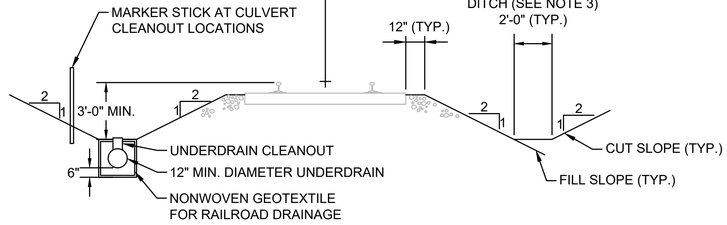
massDOT Massachusetts Department of Transportation Rail & Transit Division

SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K–201	





MAINLINE DITCH SECTION
STA. 1204+00 TO 1207+00
N.T.S.



MAINLINE DITCH SECTION
STA. 1207+00 TO 1215+05
N.T.S.

TRACK GENERAL NOTES

1. ALL STATION CALLOUTS, MILEPOSTS, WORK LIMITS AND GENERAL INFORMATION SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON THE VALUATION MAPS SHOWN. VALUATION MAPS HAVE NOT BEEN UPDATED, DO NOT REFLECT ALL CURRENT CONDITIONS, AND ARE INTENDED TO BE USED FOR GENERAL INFORMATION ONLY.
2. EXACT LOCATIONS OF WORKING LIMITS SHOWN ON THE PLANS SHALL BE DETERMINED IN THE FIELD AS DIRECTED BY THE ENGINEER.
3. DITCHING REQUIREMENTS AND DIMENSIONS TO BE DETERMINED IN FIELD AT THE DIRECTION OF THE ENGINEER.
4. FINAL BALLAST SHOULDER WIDTHS IN AREAS TO BE SURFACED AND ALIGNED SHALL BE A MIN. OF 12" IN TANGENT TRACK AND 16" IN CURVES PER MASSDOT MW-1.
5. BALLAST SHOULDER AND SLOPE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS ALSO APPLY TO THE ENTIRE LIMITS OF POTENTIAL DITCHING AREAS.
6. UNDERDRAIN IS TO BE AT A DEPTH TO MAINTAIN A GRADE TO DRAIN AND OUTLET MUST DRAIN TO CULVERT INVERT. MINIMUM SLOPE OF 2% OR OTHERWISE DIRECTED BY THE ENGINEER.
7. CONSTRUCT CLEANOUTS AT UNDERDRAIN UPSTREAM END AND AT MAXIMUM 300' INTERVALS ALONG UNDERDRAIN. INVERTS TO MATCH GRADE OF PIPE.
8. TRACKWORK SHALL BE CONSTRUCTED TO MATCH EXISTING LINE AND EXISTING PROFILE.

HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK DRAINAGE PLAN STA. 1204+00 TO 1215+05

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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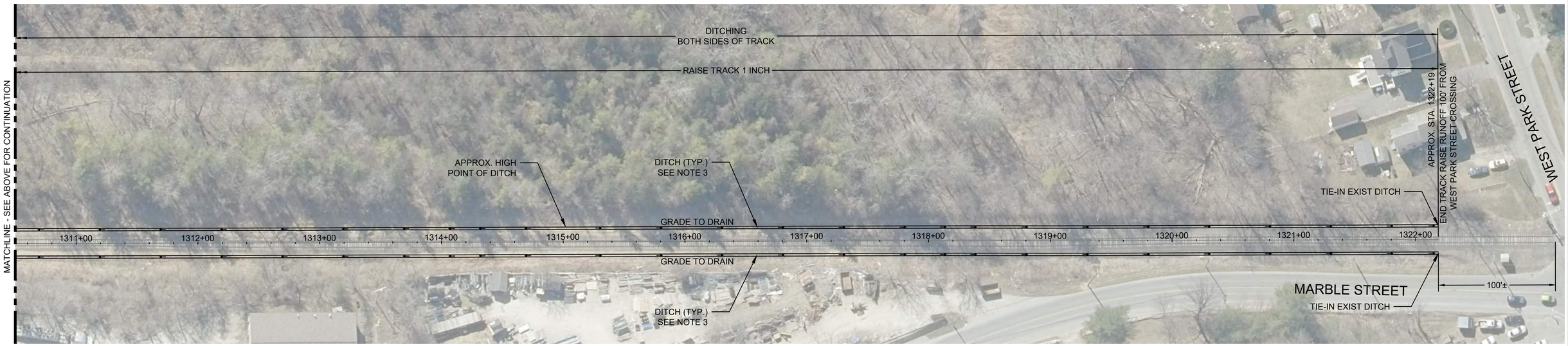
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-301	

TO SHEFFIELD

TO PITTSFIELD

NAD 83

N



TRACK GENERAL NOTES

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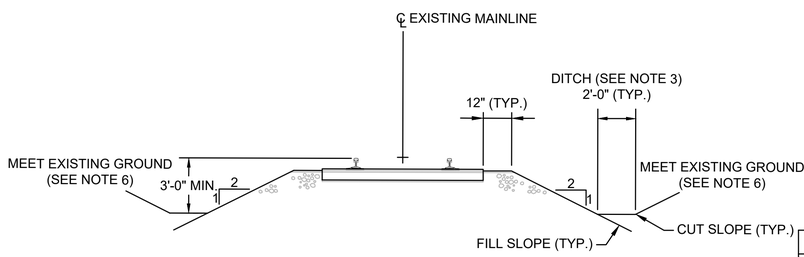
6. CUT SLOPE TO BE 2:1 WHERE POSSIBLE, STEEPER SLOPES ARE ALLOWABLE AS DIRECTED BY THE ENGINEER.
7. PROFILE RUNOFFS SHALL NOT EXCEED 1.5 INCHES IN 31 FEET PER MASSDOT MW-1 FOR CLASS 3 TRACK.



MAINLINE DITCH SECTION
STA. 1307+86 TO 1322+19
N.T.S.

HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CH'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN
STA. 1306+86 TO 1322+19

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

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Massachusetts Department of Transportation
Rail & Transit Division

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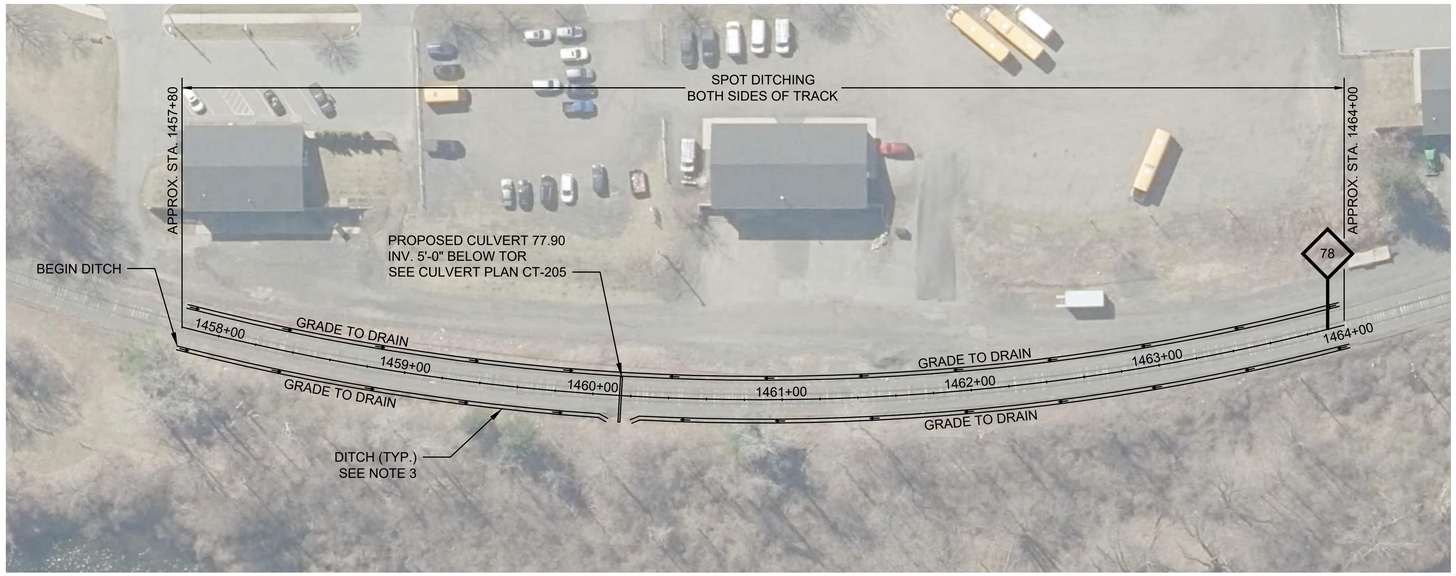
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-401	

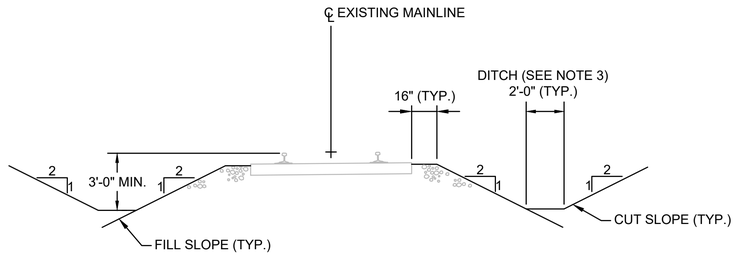
TO SHEFFIELD

TO PITTSFIELD

NAD 83

N





MAINLINE DITCH SECTION

STA. 1457+80 TO 1464+00
N.T.S

TRACK GENERAL NOTES

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4. FINAL BALLAST SHOULDER WIDTHS IN AREAS TO BE SURFACED AND ALIGNED SHALL BE A MIN. OF 12" IN TANGENT TRACK AND 16" IN CURVES PER MASSDOT MW-1.
5. BALLAST SHOULDER AND SLOPE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS ALSO APPLY TO THE ENTIRE LIMITS OF POTENTIAL DITCHING AREAS.

HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN
STA. 1457+80 TO 1464+00

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

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Rail & Transit Division

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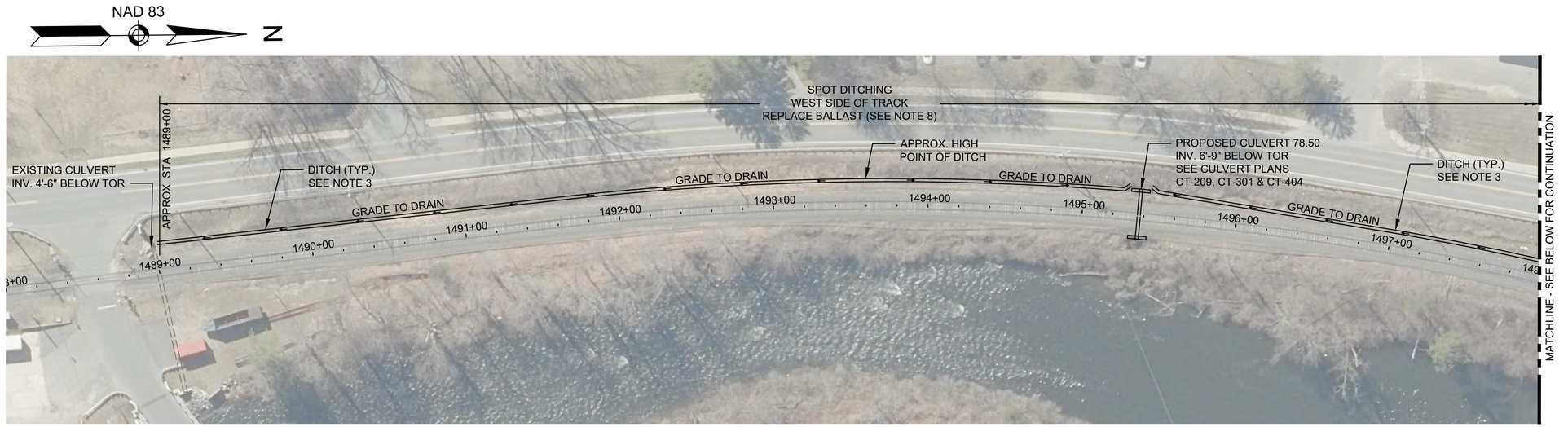
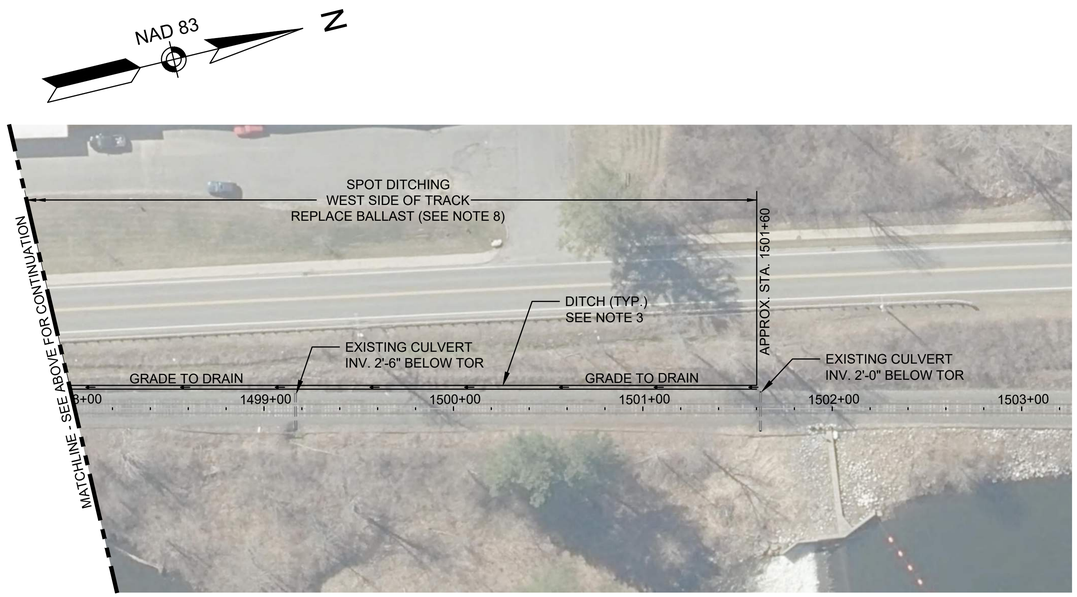
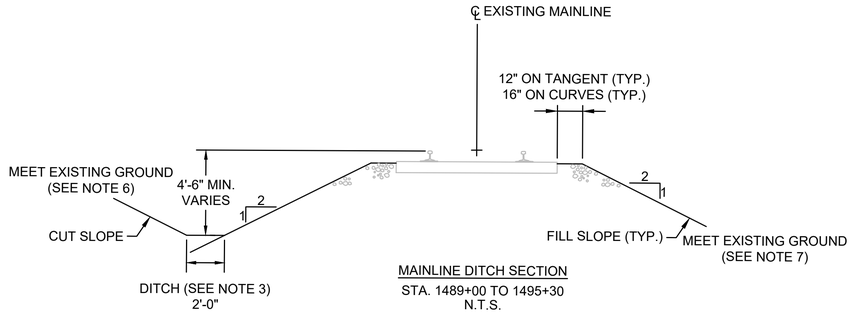
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-501	

TO SHEFFIELD

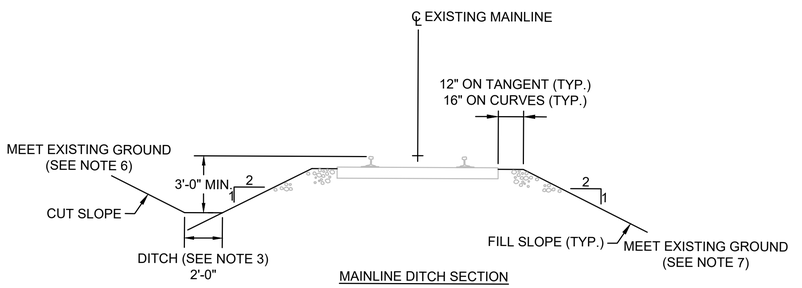
TO PITTSFIELD







MAINLINE DITCH SECTION
STA. 1489+00 TO 1495+30
N.T.S.



MAINLINE DITCH SECTION
STA. 1495+45 TO 1501+60
N.T.S.

TRACK GENERAL NOTES

1. ALL STATION CALLOUTS, MILEPOSTS, WORK LIMITS AND GENERAL INFORMATION SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON THE VALUATION MAPS SHOWN. VALUATION MAPS HAVE NOT BEEN UPDATED, DO NOT REFLECT ALL CURRENT CONDITIONS, AND ARE INTENDED TO BE USED FOR GENERAL INFORMATION ONLY.
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4. FINAL BALLAST SHOULDER WIDTHS IN AREAS TO BE SURFACED AND ALIGNED SHALL BE A MIN. OF 12" IN TANGENT TRACK AND 16" IN CURVES PER MASSDOT MW-1.
5. BALLAST SHOULDER AND SLOPE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS ALSO APPLY TO THE ENTIRE LIMITS OF POTENTIAL DITCHING AREAS.
6. CUT SLOPE TO BE 2:1 WHERE POSSIBLE, STEEPER SLOPES ARE ALLOWABLE AS DIRECTED BY THE ENGINEER.
7. CONTRACTOR TO ENSURE EXISTING SLOPE ON EAST SIDE OF TRACKS DRAINS TOWARDS THE RIVER. SLOPE ADJUSTMENTS MAY BE REQUIRED ON EAST SIDE OF THE TRACKS TO ENSURE RUNOFF TOWARDS THE RIVER.
8. BALLAST REPLACEMENT TO BE IMPLEMENTED BY CRIBBING BETWEEN EXISTING TIES. SEE SPECIAL PROVISION ITEM 492.10.1 BALLAST CLEANING FOR DETAILS.

HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN
STA. 1489+00 TO STA. 1501+60

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

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Rail & Transit Division

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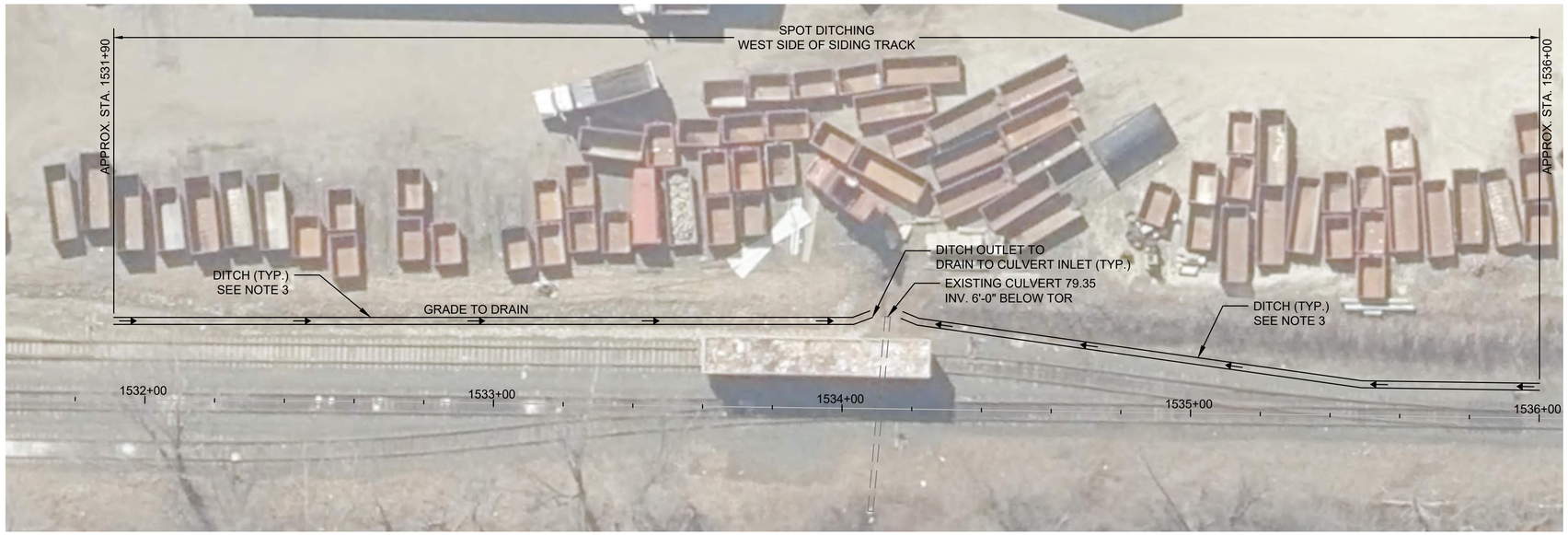
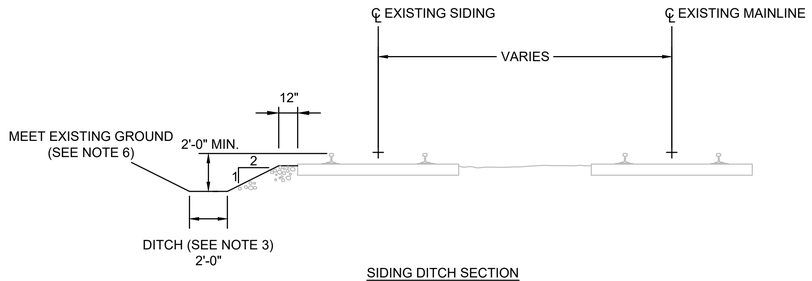
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-601	

NAD 83

N





SIDING DITCH SECTION

STA. 1531+90 TO 1536+00

TRACK GENERAL NOTES

1. ALL STATION CALLOUTS, MILEPOSTS, WORK LIMITS AND GENERAL INFORMATION SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON THE VALUATION MAPS SHOWN. VALUATION MAPS HAVE NOT BEEN UPDATED, DO NOT REFLECT ALL CURRENT CONDITIONS, AND ARE INTENDED TO BE USED FOR GENERAL INFORMATION ONLY.
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6. CUT SLOPE TO BE 2:1 WHERE POSSIBLE, STEEPER SLOPES ARE ALLOWABLE AS DIRECTED BY THE ENGINEER.

HOR. SCALE IN FEET

40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN
STA. 1531+90 TO 1536+00

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

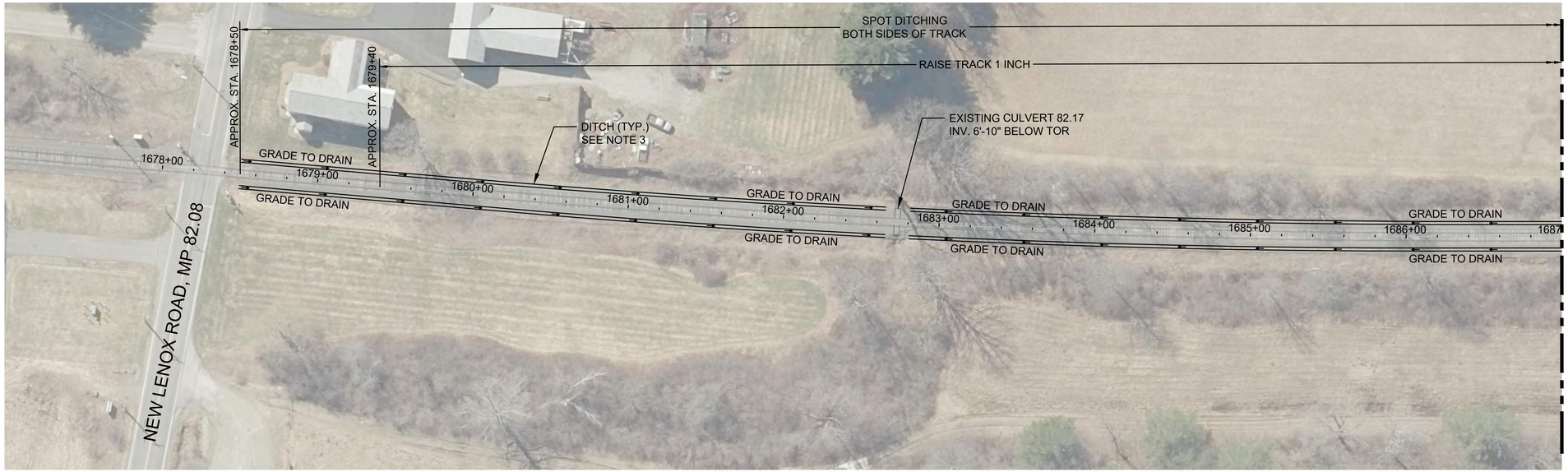
SCALE: 1"=40'	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-701	

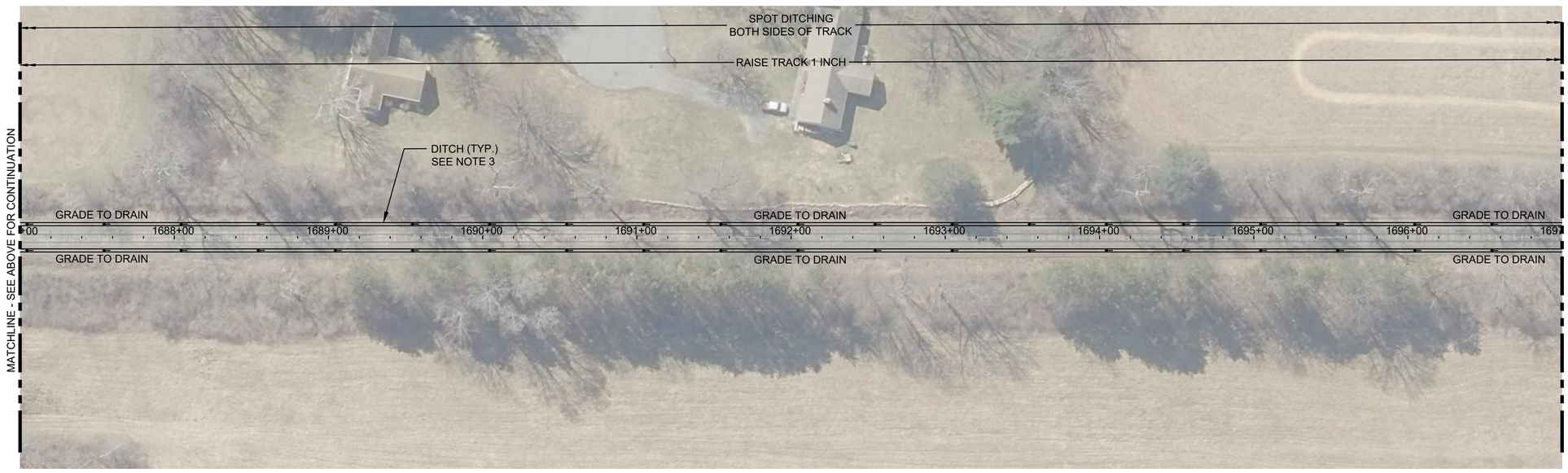
TO SHEFFIELD

NAD 83

N

TO PITTSFIELD





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HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN SHEET 1 OF 2
STA. 1678+50 TO STA. 1697+00

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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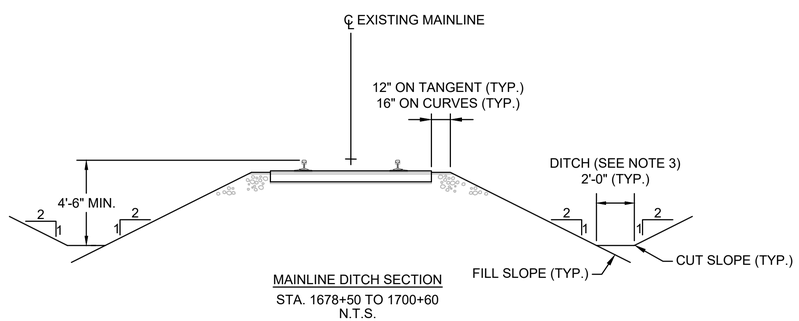
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-801	

TO SHEFFIELD

NAD 83

N

TO PITTSFIELD



MAINLINE DITCH SECTION
STA. 1678+50 TO 1700+60
N.T.S.

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HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN SHEET 2 OF 2
STA. 1697+00 TO STA. 1700+60

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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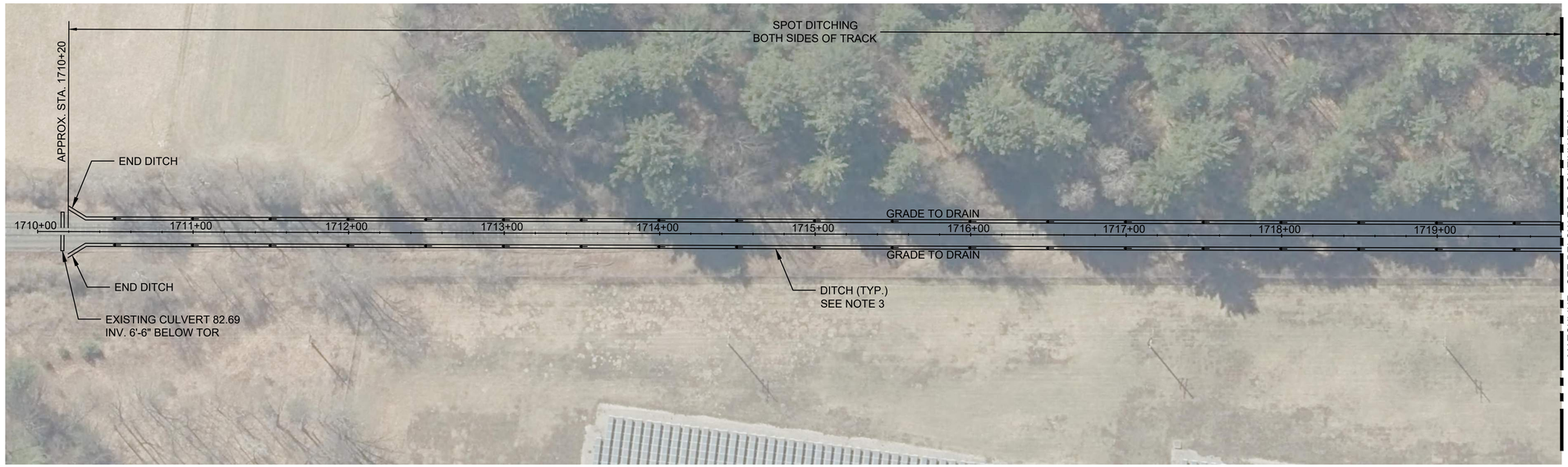
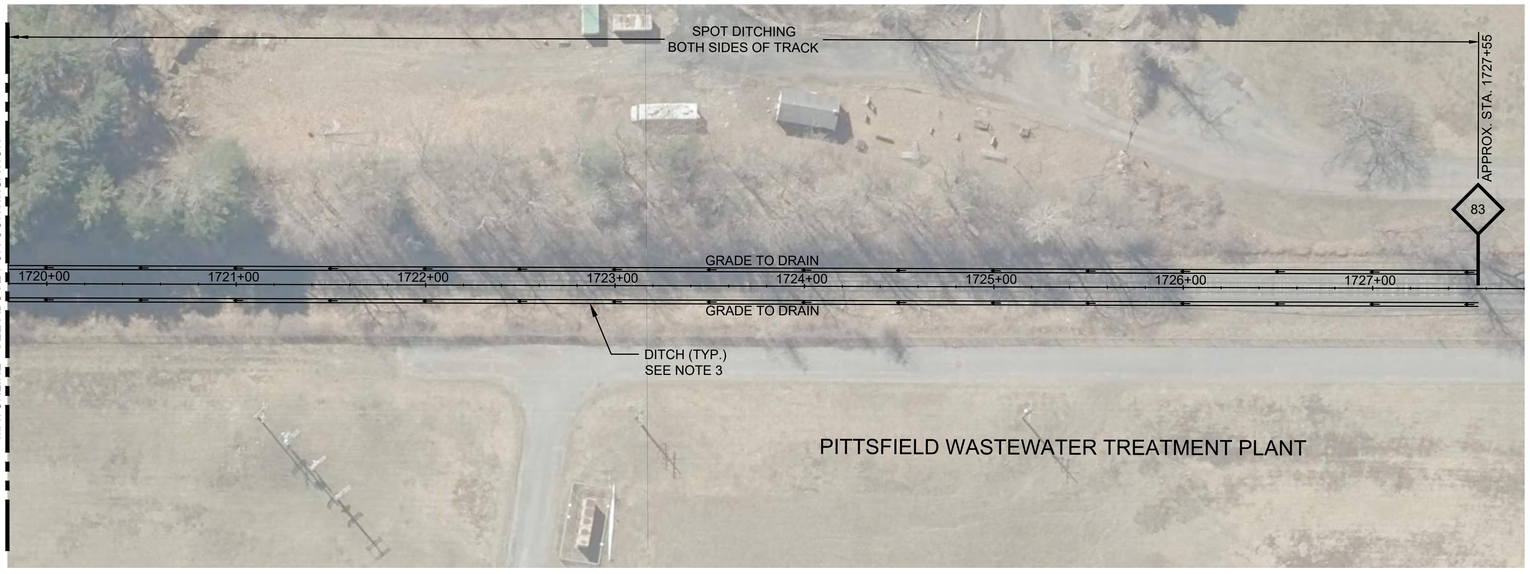
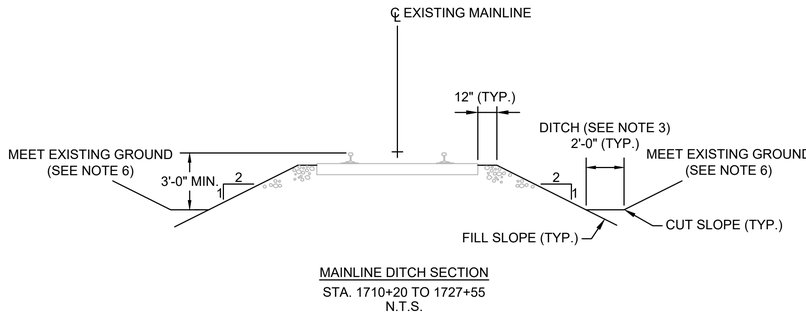
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-802	







MAINLINE DITCH SECTION
STA. 1710+20 TO 1727+55
N.T.S.

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6. CUT SLOPE TO BE 2:1 WHERE POSSIBLE, STEEPER SLOPES ARE ALLOWABLE AS DIRECTED BY THE ENGINEER.

HOR. SCALE IN FEET
40 0 40 80

ISSUE	DATE	DESCRIPTION	BY	CH'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

TRACK
DRAINAGE PLAN
STA. 1710+20 TO STA. 1727+55

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT
Massachusetts Department of Transportation
Rail & Transit Division

SCALE: 1"=40'	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: K-901	

GENERAL NOTES FOR CULVERT IMPROVEMENTS:

DESIGN, CONSTRUCTION AND FABRICATION:

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2025 MASSDOT STANDARD SPECIFICATIONS AND SUPPLEMENTAL. SPECIAL PROVISIONS PROVIDED IN THE CONTRACT DOCUMENTS, AND THE LATEST EDITION OF AMERICAN RAILWAY ENGINEERING AND MAINTENANCE–OF–WAY ASSOCIATION (AREMA) "MANUAL FOR RAILWAY ENGINEERING". IN THE EVENT OF DISCREPANCIES BETWEEN THE AREMA SPECIFICATIONS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE MORE STRINGENT SPECIFICATION SHALL APPLY AS DETERMINED BY THE ENGINEER.

LIVE LOAD:

CULVERTS AND HEADWALLS ARE DESIGNED FOR AREMA COOPER E80 LOADING.

EXISTING CONDITIONS:

ALL DIMENSIONS AND ELEVATIONS SHOWN ON EXISTING CULVERT AND TRACK STRUCTURES ARE APPROXIMATED FROM FIELD INSPECTION NOTES. ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK SHALL BE DETERMINED BY THE CONTRACTOR BY FIELD MEASUREMENT AND/OR PRE–CONSTRUCTION SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE FIELD MEASUREMENTS AND PRE–CONSTRUCTION SURVEY, AND SHALL NOT ORDER ANY MATERIAL OR BEGIN FABRICATION OR CONSTRUCTION UNTIL THE ABOVE WORK IS COMPLETED AND THE EXTENT OF THE PROPOSED WORK IS APPROVED BY THE ENGINEER.

FIELD WELDING:

ALL FIELD WELDERS SHALL BE CERTIFIED BY MASSDOT AND POSSESS THE DEPARTMENT'S WELDER QUALIFICATION TEST RECORD AND THE WELDER QUALIFICATION CERTIFICATE. ALL WELDING PROCEDURES SHALL BE APPROVED BY THE ENGINEER.

MATERIALS:

STEEL PIPE CULVERT:

PIPE SHALL BE IN ACCORDANCE WITH ASTM A139.
PIPE TO BE GRADE B AND STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 35 KSI.
A HYDROSTATIC TEST IS NOT REQUIRED.

SMOOTH STEEL PIPE SHALL HAVE A WELDED STRAIGHT LONGITUDINAL SEAM.
THE ENDS OF EACH SECTION OF PIPE SHALL BE SQUARE CUT. ONE END SHALL BE SUITABLY BEVELED FOR FIELD WELDING THE SECTIONS TOGETHER.

STEEL PLATES:

STEEL PLATES SHALL BE CONFORMING TO ASTM A709 GRADE 50.

CAST–IN–PLACE CONCRETE:

CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

CONCRETE FOR HEADWALL AND CULVERT INLET/OUTLET STRUCTURES SHALL BE HIGH EARLY STRENGTH CONCRETE. CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4,000 PSI AT 24 HOURS. THE CONCRETE MIX SHALL BE APPROVED BY MASSDOT AND USED IN PREVIOUS MASSDOT PROJECTS.

MINIMUM CONCRETE COVER SHALL BE AS SPECIFIED IN AREMA CHAPTER 8, SECTION 2.6.1, TABLE 8–2–7, UNLESS OTHERWISE NOTED.

ALL EXPOSED CORNERS SHALL HAVE A 1" CHAMFER, UNLESS OTHERWISE NOTED.

REINFORCING STEEL:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A615, GRADE 60, EPOXY COATED, UNLESS OTHERWISE NOTED.

ALL SPLICES OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH AREMA CHAPTER 8, SECTION 2.22, UNLESS OTHERWISE NOTED.

AGGREGATES AND RELATED MATERIALS:

MATERIAL	MASSDOT SPEC. SECTION
CRUSHED STONE	M2.01.1, M2.01.2, & M2.01.4
DUMPED RIPRAP	M2.02.2
GRAVEL BORROW FOR BACKFILLING STRUCTURES & PIPES	M1.03.0, TYPE B & TYPE C
GEOTEXTILE FILTER FABRIC	M9.50.0

CONSTRUCTION WORK:

1. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT CONTINUOUS COORDINATION WITH THE OPERATOR, HOUSATONIC RAILROAD (HRR), WILL BE REQUIRED THROUGHOUT CONSTRUCTION, EXCEPT AS NOTED IN THE SPECIFICATIONS. HRR WILL PROVIDE THE CONTRACTOR WITH FLAGGERS FOR PROTECTION FROM RAILROAD TRAFFIC WHILE WORK IS BEING PERFORMED ON THE RAILROAD RIGHT–OF–WAY (R.O.W.). THE CONTRACTOR SHALL NOT ENTER THE R.O.W. AT ANY TIME WITHOUT HRR AUTHORIZATION. THE CONRACTOR WILL ASLO BE REQUIRED TO OBTAIN R.O.W. TRAINING PRIOR TO WORKING IN THE R.O.W.
2. ALL WORK AT EACH CULVERT SHALL BE PERFORMED DURING NON–REVENUE HOURS AND A WEEKEND CLOSURE. THE CONTRACTOR SHALL COORDINATE ALL SHUTDOWNS WITH HRR. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SPECIFIC DATES, LENGTH OF SHUTDOWNS, AND LIQUIDATION DAMAGE PENALTIES FOR EXCEEDING AUTHORIZED TIME LIMITS.
3. THE CONTRACTOR SHALL COORDINATE WITH THE TOWNS AND BUILDING OWNERS ADJACENT TO TO THE PROJECT SITE FOR WORK SCHEDULE, STAGING AREA, AND ACCESS.
4. ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED AND APPROVED BY THE ENGINEER, AT NO ADDITIONAL EXPENSE TO THE BRIDGE OWNER, RAILROAD OPERATOR, OR ENGINEER.
5. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO ALL AREAS OF WORK ON THE CULVERTS FOR THE ENGINEER'S INSPECTIONS. COSTS SHALL BE INCLUDED IN MOBILIZATION.
6. ALL EXISTING MATERIALS REMOVED AND NOT REUSED OR RESET AS PART OF THIS PROJECT, AND ALL WASTE MATERIAL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. TREATED TIMBER SHALL BE DISPOSED OF ONLY AT AN APPROVED FACILITY.
7. ALL WASTE MATERIAL GENERATED AS PART OF THIS PROJECT SHALL BE DISPOSED OF OFF SITE.
8. INSTALLATION OF SMOOTH STEEL PIPE (SSP) SHALL CONFORM TO THE CURRENT AMERICAN RAILWAY ENGINEERING AND MAINTENACE–WAY ASSOCIATION (AREMA) MANUAL FOR RAILWAY ENGINEERING , CHAPTER 1, PART 4.
9. COFFERDAM TO BE DESIGNED AND INSTALLED BY THE CONTRACTOR PRIOR TO THE REMOVAL OF THE EXISTING CULVERT.
10. EXCAVATED SOIL SHALL BE DISPOSED OF WITHIN RAILROAD RIGHT OF WAY AS DIRECTED BY HRR.

SUGGESTED CONSTRUCTION SEQUENCE FOR CULVERT REPLACEMENT:

WORKING HOURS SHALL BE DURING NON–TRAIN OPERATION HOURS OR DURING A WEEKEND CLOSURE.

1. COORDINATE RAIL TRAFFIC SHUTDOWNS AND THE USE OF STAGING AREA WITH THE RAILROAD.
2. MOBILIZE EQUIPMENT AND PERSONNEL, AND SET UP STAGING AREA.
3. INSTALL COFFERDAM PRIOR TO REMOVAL OF EXISTING CULVERT AT LOCATIONS WHERE WATER TABLE IS ABOVE EXCAVATION LIMITS.
4. REMOVE EXISTING RAIL AND CROSS TIES TO THE LIMITS AS NEEDED FOR CONSTRUCTION.
5. DEWATER, EXCAVATE, AND REMOVE EXISTING CULVERT STRUCTURE AND HEADWALLS.
6. INSTALL CRUSHED STONE PADS FOR STEEL PIPE CULVERT AND HEADWALLS.
7. INSTALL STEEL PIPE, AND BACKFILL. TEMPORARY EMBANKMENT SLOPES WILL BE PROVIDED AT THE LOCATIONS WHERE HEADWALLS ARE PROPOSED.
8. FORM AND POUR PROPOSED CONCRETE HEADWALLS, AND BACKFILL AFTER CONCRETE IS TESTED AND REACHED 4000 PSI COMPRESSIVE STRENGTH.
9. INSTALL BALLAST, CROSS TIES AND RAIL.
10. OPEN TRACK TO TRAIN SERVICE.

ENVIRONMENTAL:

1. THE CONTRACTOR SHALL PREVENT ANY CONSTRUCTION DEBRIS FROM ENTERING THE WATERWAYS, PUBLIC OR PRIVATE PROPERTY, OR TRAVELED WAYS DURING CONSTRUCTION.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUTES AND REGULATIONS RELATING TO THE PREVENTION AND ABATEMENT OF ALL POLLUTION.
3. SEE SPECIFICATIONS FOR REQUIREMENTS FOR WORKING AT PROJECT SITE.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
GENERAL NOTES

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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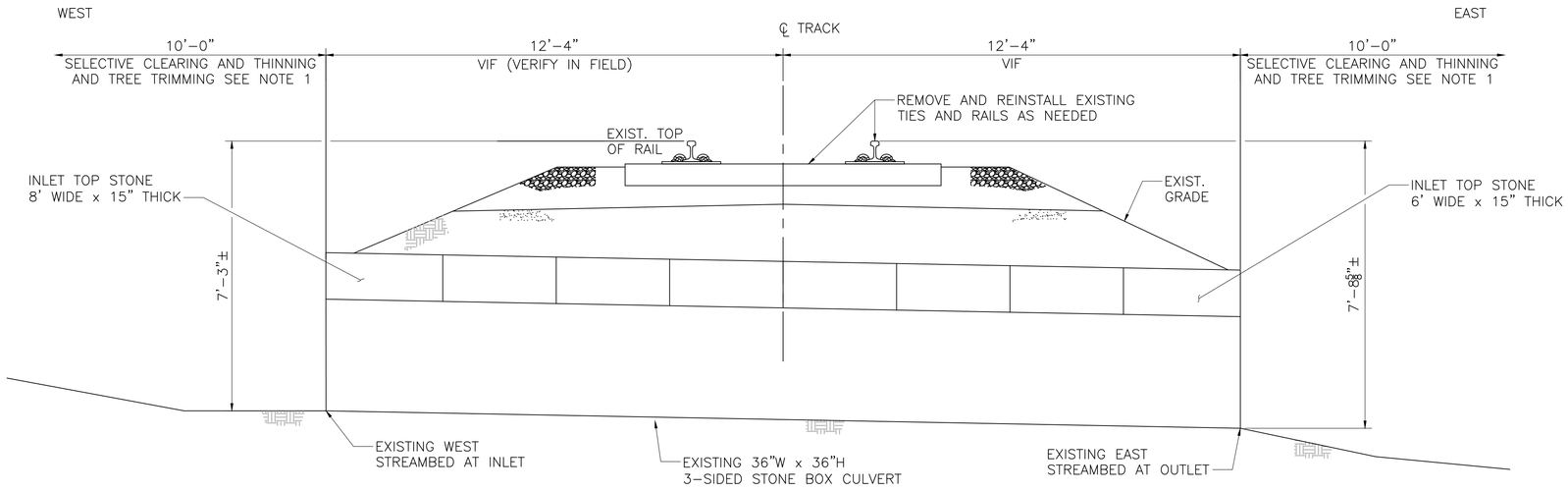
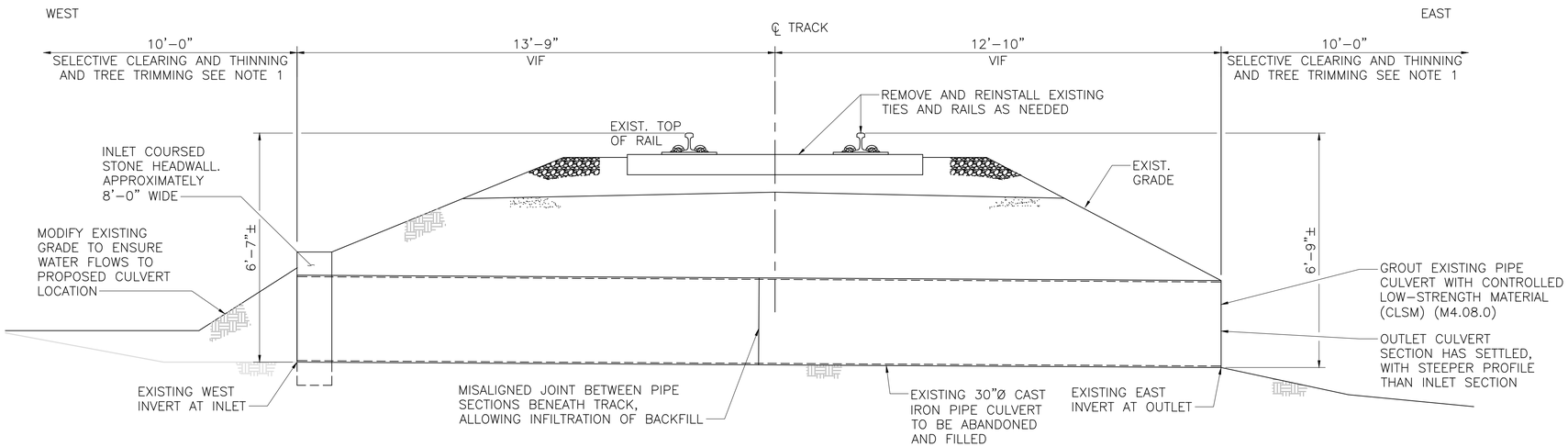


EXISTING CULVERT 73.24 LONGITUDINAL SECTION*

SCALE: 1/2"=1'–0"

* THIS IS THE NORTH OF TWO CULVERTS TO BE REPLACED BY A TWIN–PIPE CULVERT



EXISTING CULVERT 73.23 LONGITUDINAL SECTION**

SCALE: 1/2"=1'–0"

** THIS IS THE SOUTH OF TWO CULVERTS TO BE REPLACED BY A TWIN–PIPE CULVERT

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS.
3. SEE SHEETS K–102 FOR CULVERT LOCATIONS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
EXISTING SECTION
CULVERTS 73.23 & 73.24

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massDOT Massachusetts Department of Transportation Rail & Transit Division

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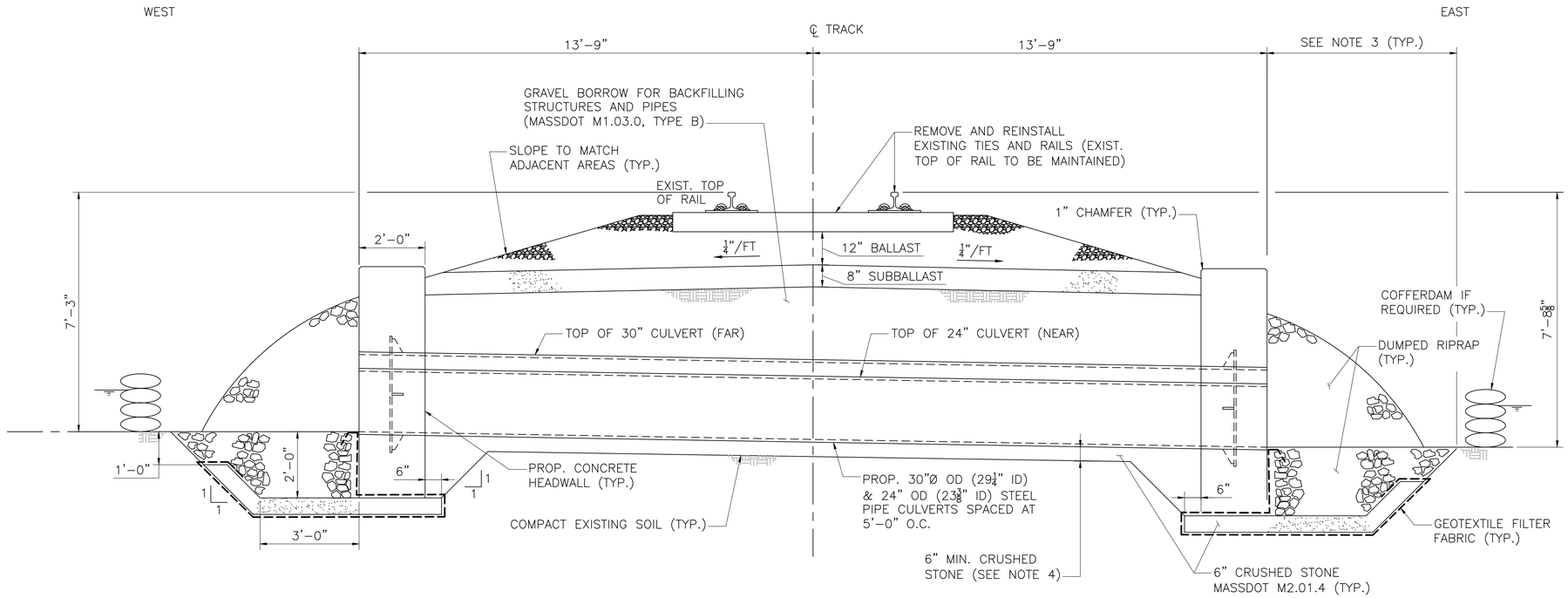

PROPOSED TWIN–PIPE CULVERT 73.24 LONGITUDINAL SECTION

SCALE: 1/2"=1'–0"

NOTES:

1. PROPOSED CULVERT WILL HAVE ONE 30" DIAMETER STEEL PIPE AND ONE 24" DIAMETER STEEL PIPE TO REPLACE TWO EXISTING CULVERTS AND BE LOCATED AT THE CHANNEL OF THE EXISTING STONE BOX CULVERT (PREVIOUSLY 73.24). EXISTING CAST IRON PIPE CULVERT TO THE SOUTH (PREVIOUSLY 73.23) WILL BE ABANDONED AND FILLED, AND THE WEST/INLET RAIL CORRIDOR EMBANKMENT TOE OF SLOPE WILL BE REGRADED AS NECESSARY TO ROUTE FLOW OF WATER TO THE REPLACEMENT NORTHERN PIPE OF THE TWO–PIPE CROSSING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED FOR A MINIMUM DISTANCE OF 12'–6" FROM THE OUTLET END OF THE CULVERT (NOT SHOWN TO SCALE). AT THE INLET END OF THE PIPE, RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–302 FOR CULVERT 73.40 PROPOSED CULVERT PLAN.
7. SEE SHEET CT–402 FOR CULVERT 73.40 PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
PROPOSED SECTION
CULVERT 73.24

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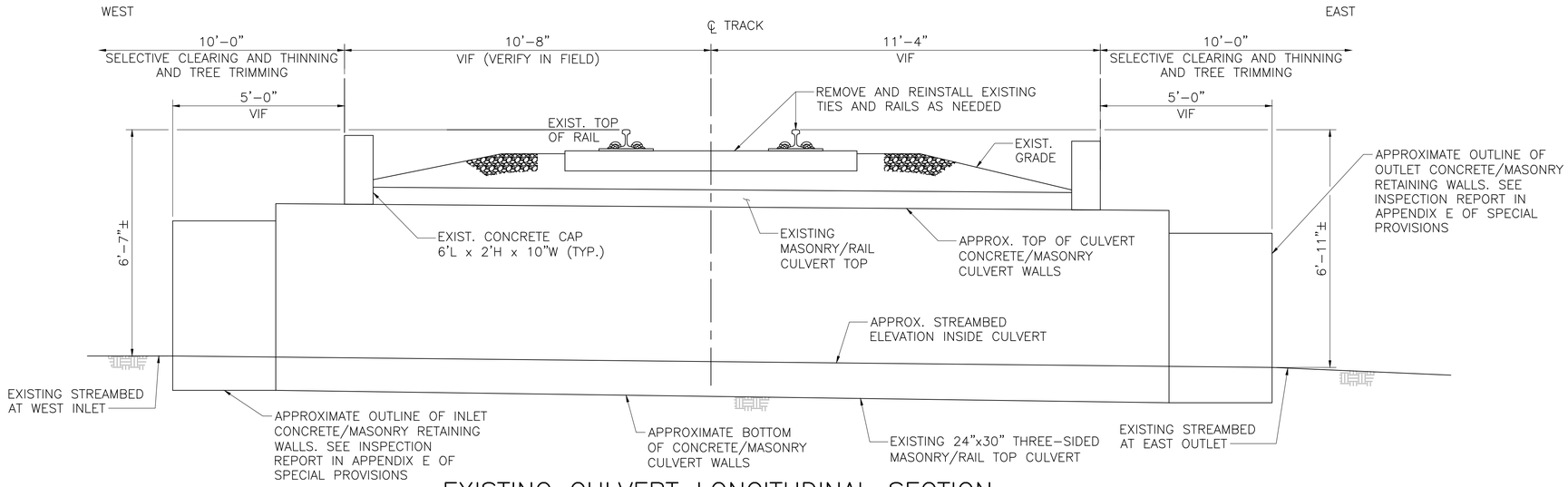
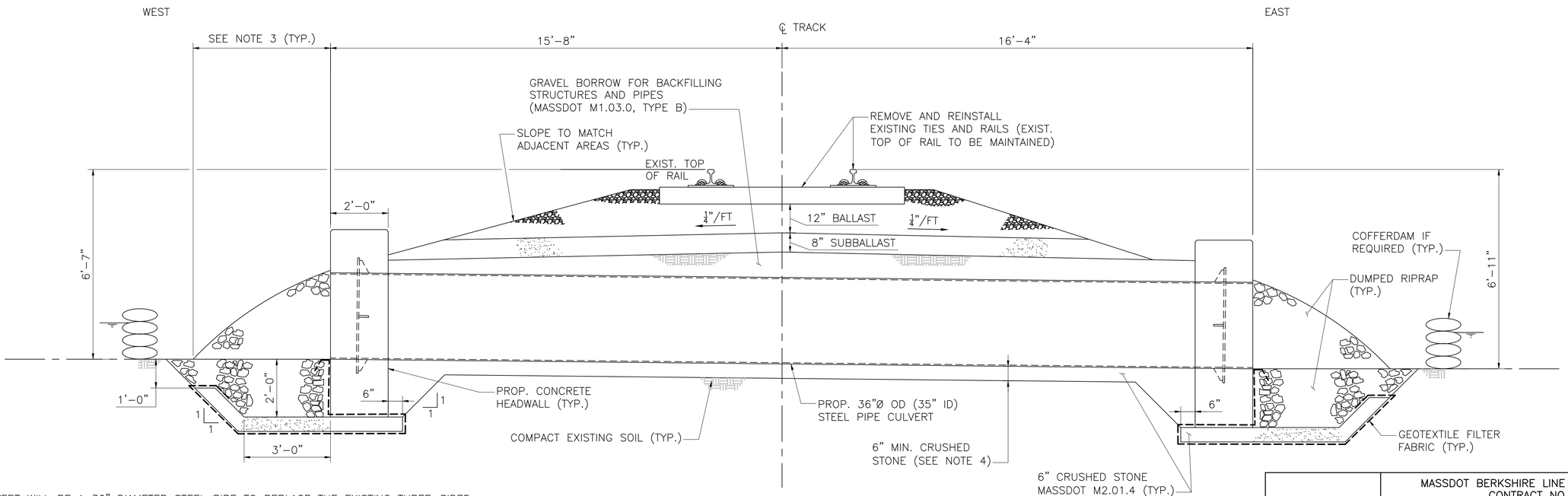


EXISTING CULVERT LONGITUDINAL SECTION CULVERT 74.30*

SCALE: 1/2"=1'–0"

* PREVIOUSLY IDENTIFIED AS CULVERT 74.38



PROPOSED CULVERT LONGITUDINAL SECTION CULVERT 74.30

SCALE: 1/2"=1'–0"

NOTES:

1. PROPOSED CULVERT WILL BE A 36" DIAMETER STEEL PIPE TO REPLACE THE EXISTING THREE–SIDED CONCRETE/STONE MASONRY RAIL TOP CULVERT (PREVIOUSLY 74.38). NEW CULVERT SHALL MATCH THE STATIONING AND ALIGNMENT OF THE EXISTING CULVERT.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–103 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS EXISTING & PROPOSED SECTION CULVERT 74.30

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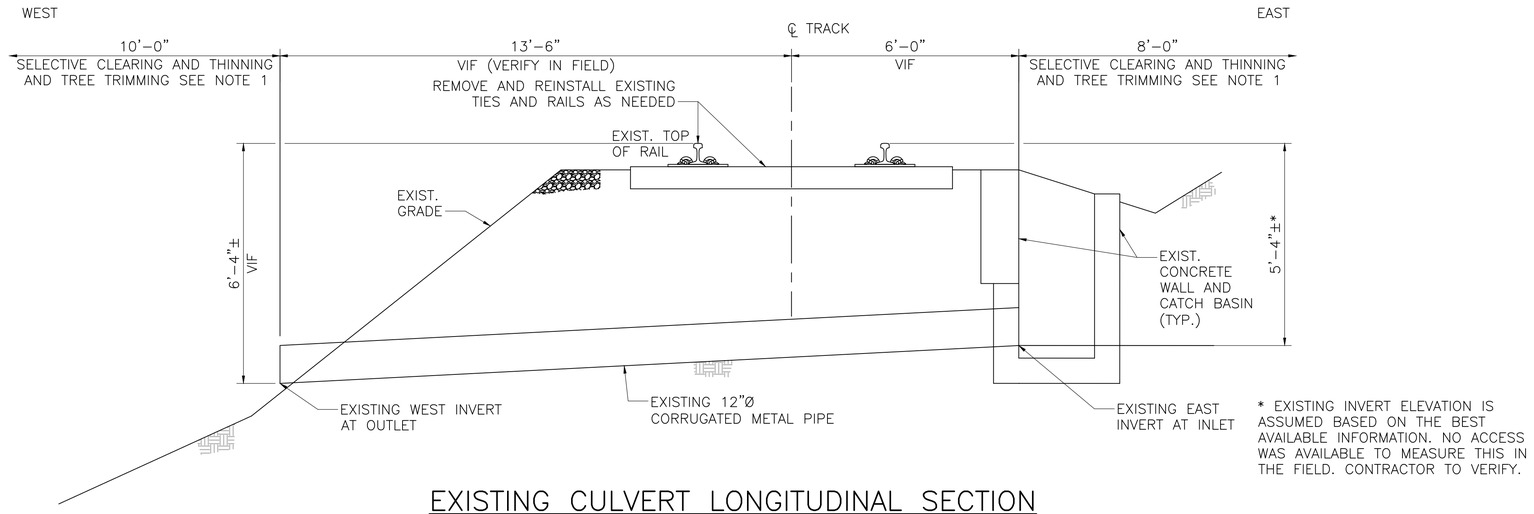
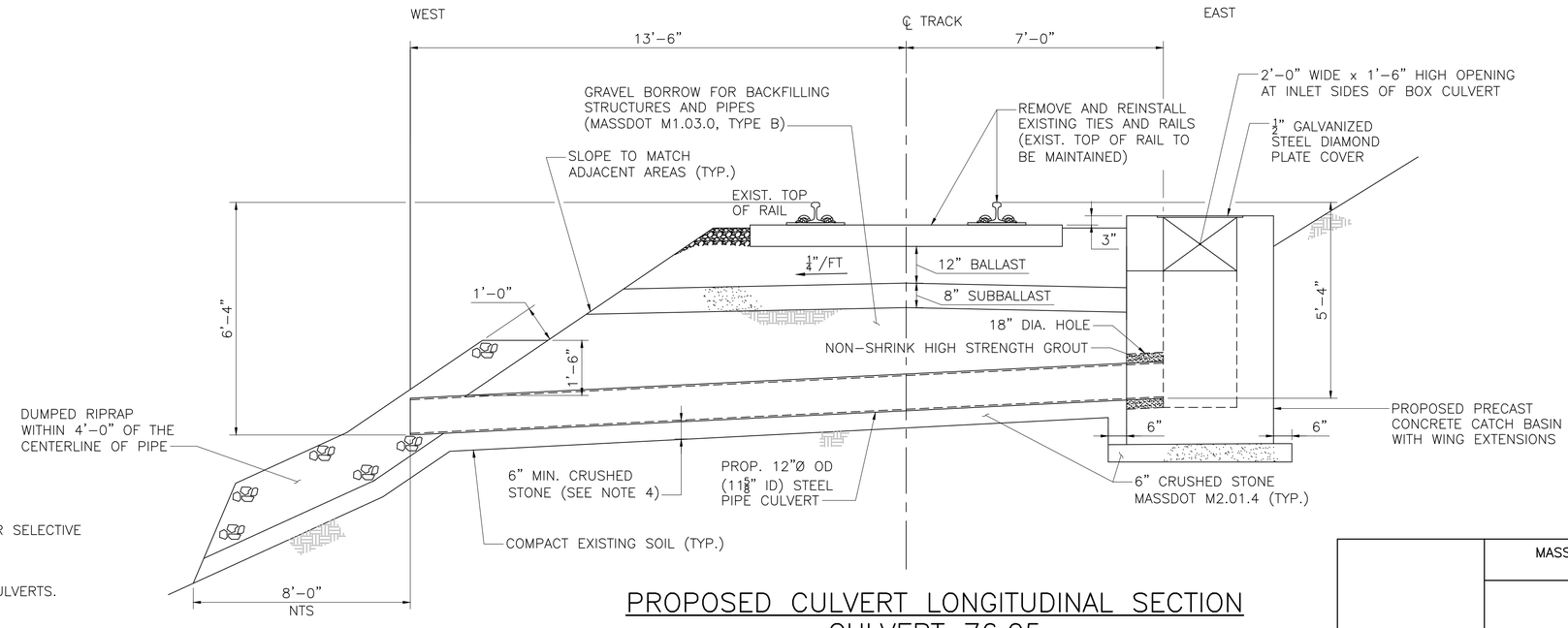


* EXISTING INVERT ELEVATION IS ASSUMED BASED ON THE BEST AVAILABLE INFORMATION. NO ACCESS WAS AVAILABLE TO MEASURE THIS IN THE FIELD. CONTRACTOR TO VERIFY.

EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 76.05

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 76.05

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS.
3. SEE SHEET K–105 FOR CULVERT LOCATION.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–303 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–403 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
EXISTING & PROPOSED SECTION
CULVERT 76.05

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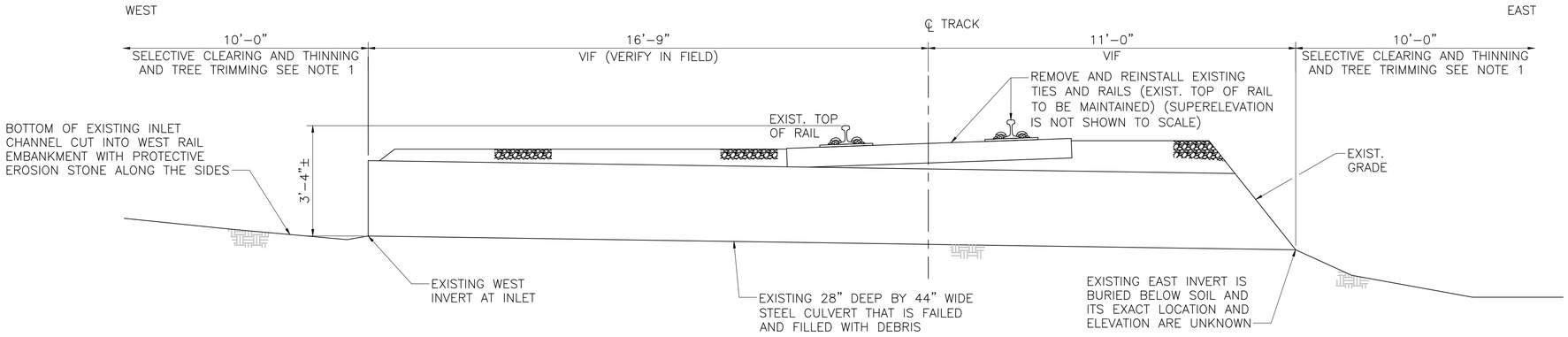
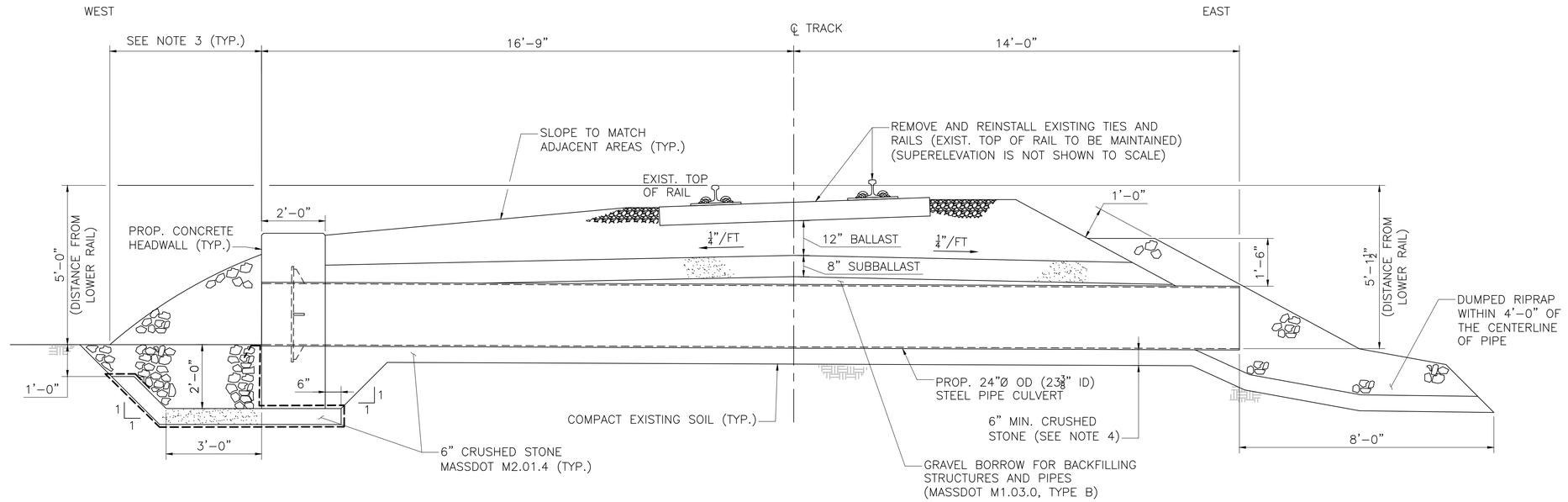


EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 77.90

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 77.90

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–106 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
EXISTING & PROPOSED SECTION
CULVERT 77.90

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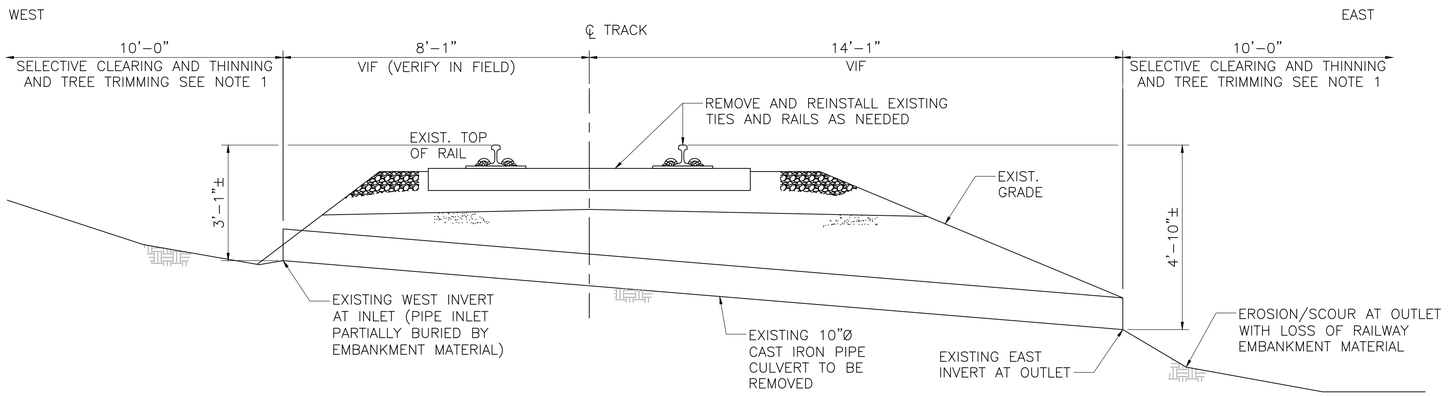
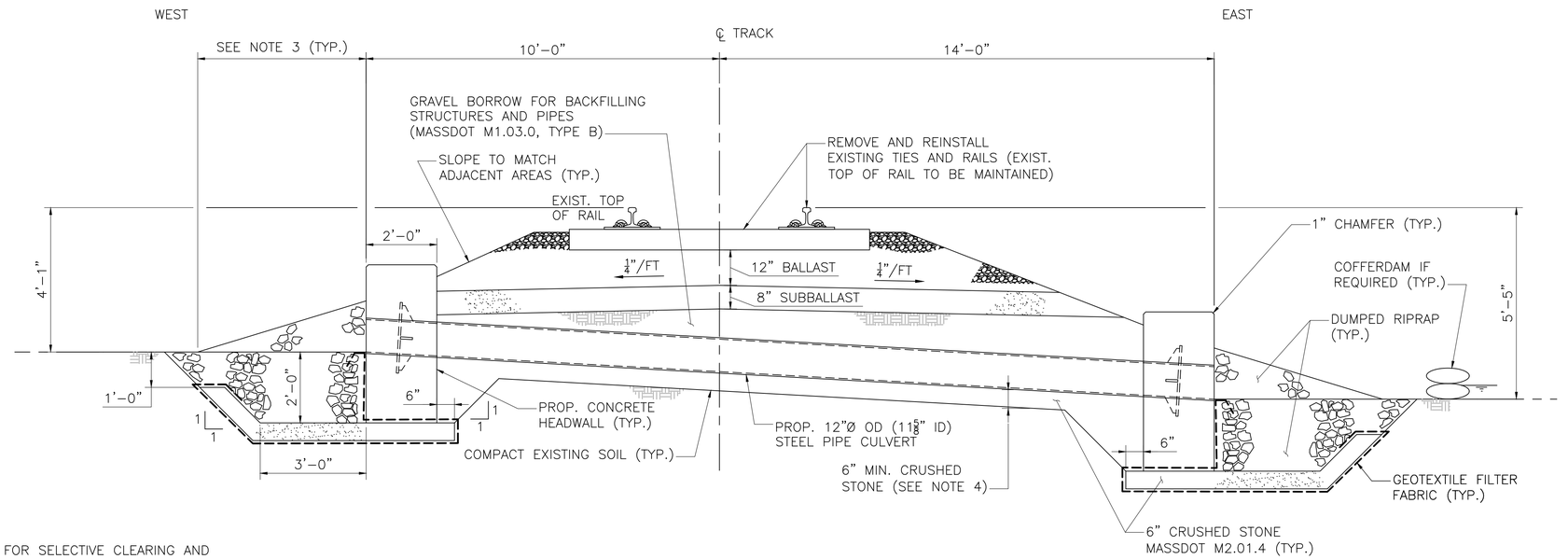


EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 78.10

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 78.10

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–107 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CT-206 EXISTING & PROPOSED SECTION CULVERT 78.10

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massDOT Massachusetts Department of Transportation Rail & Transit Division

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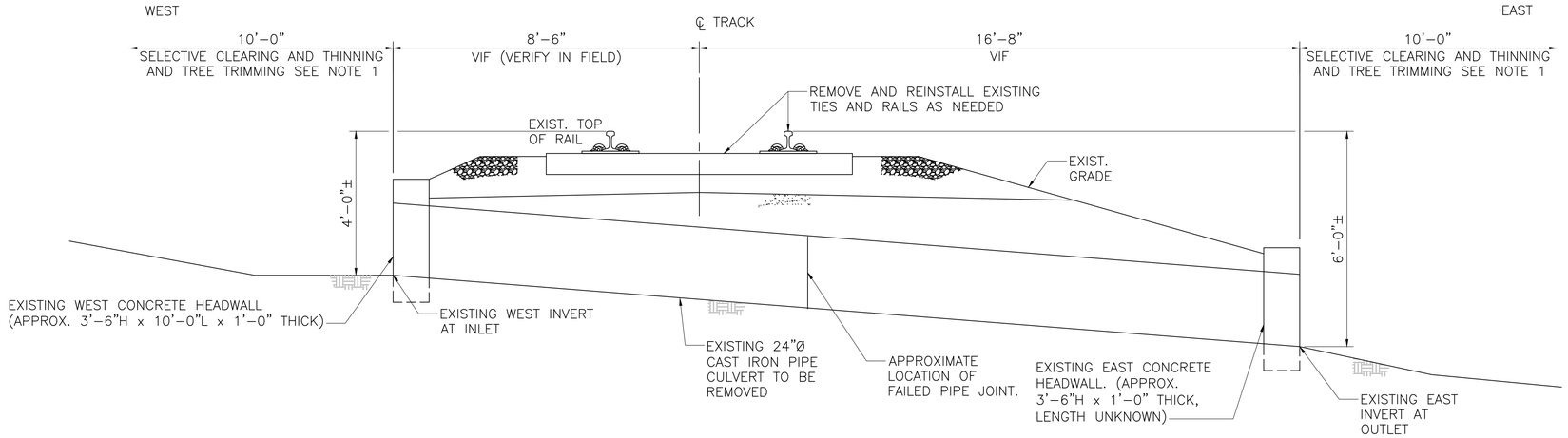
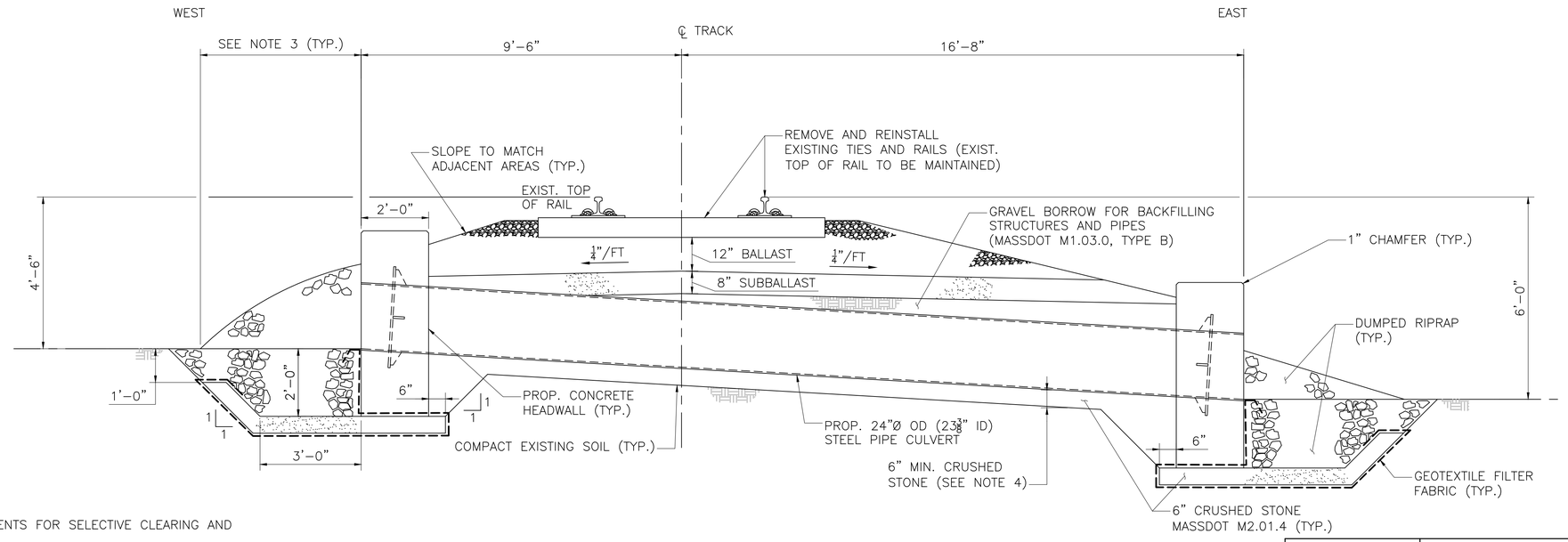


EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 78.17

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 78.17

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–107 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

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MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CT-207 EXISTING & PROPOSED SECTION
CULVERT 78.17

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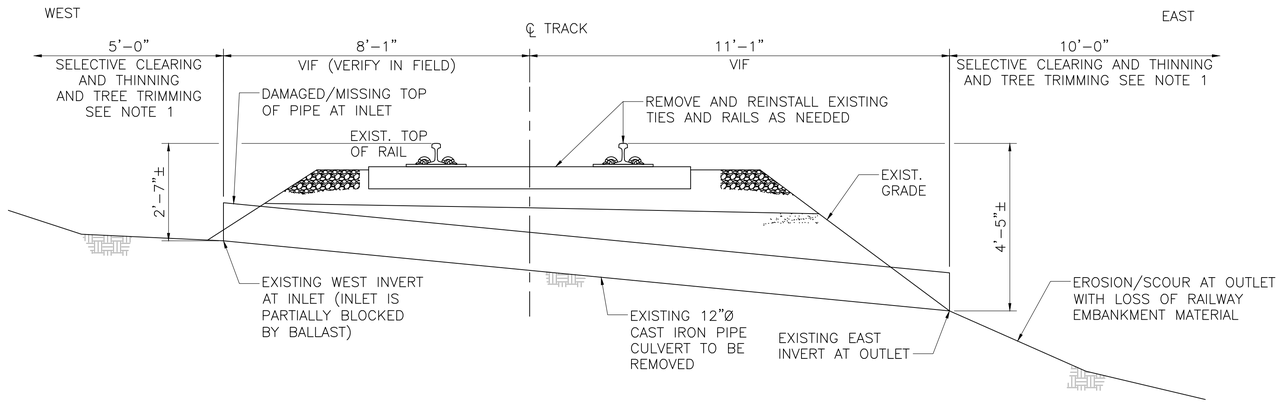
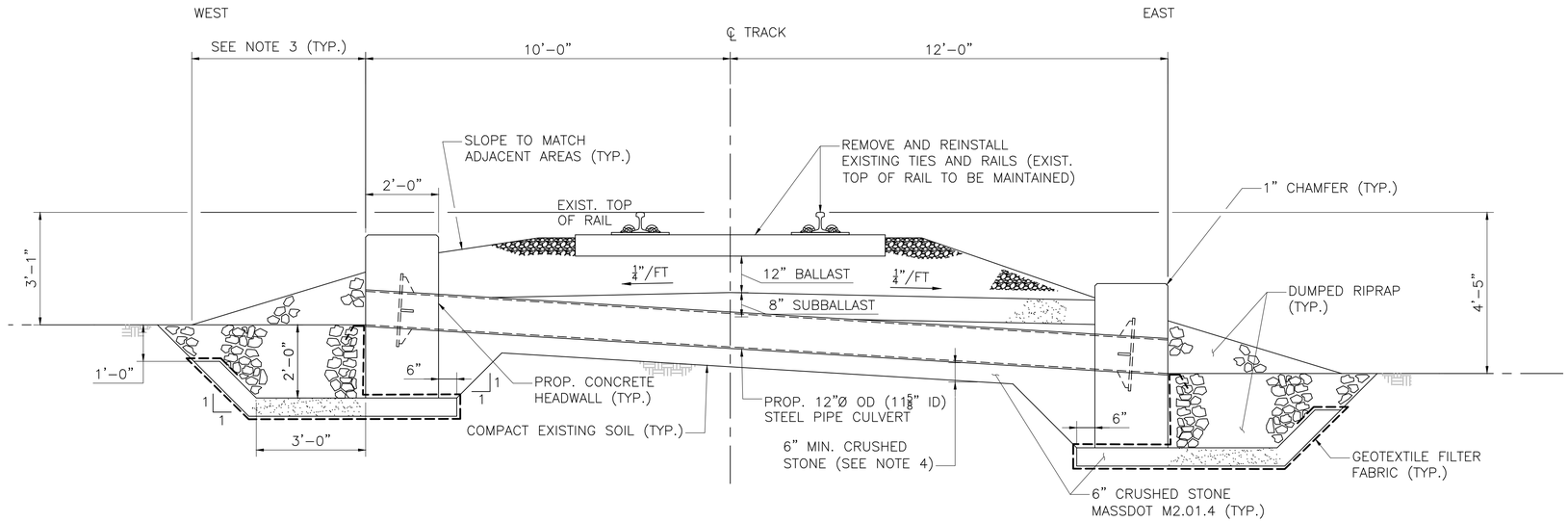


EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 78.21

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 78.21

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–107 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CT-208 EXISTING & PROPOSED SECTION CULVERT 78.21

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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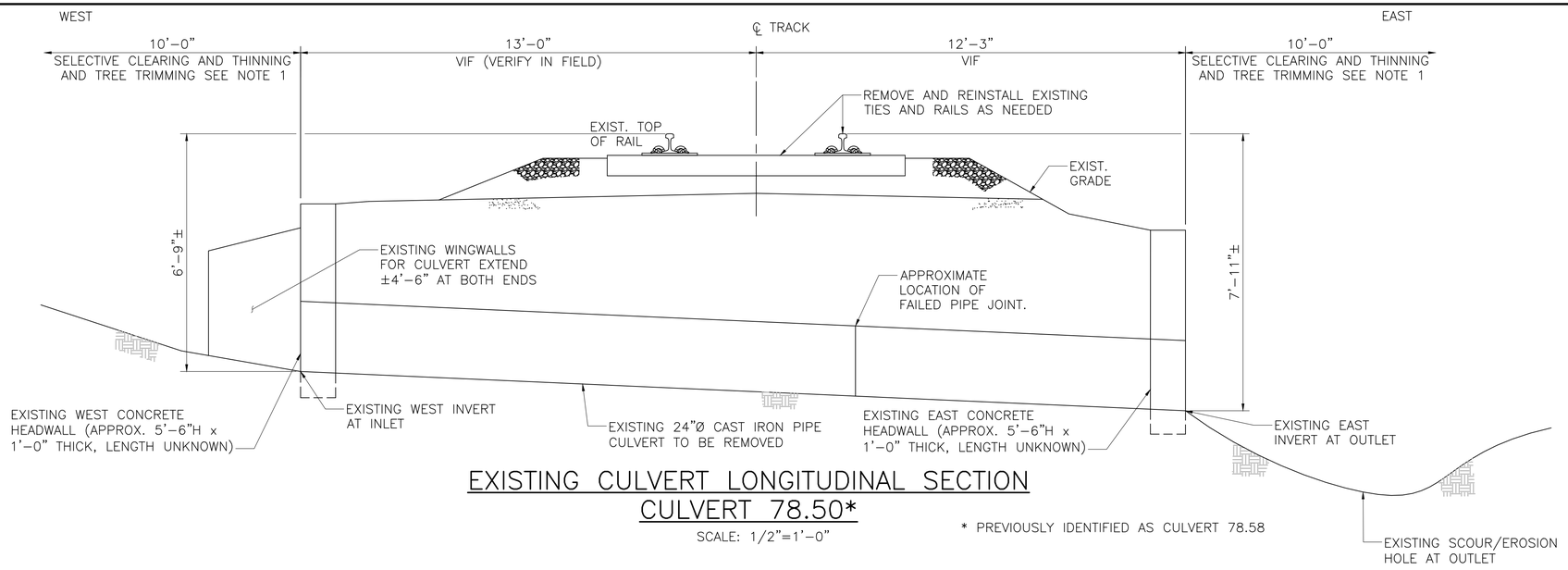
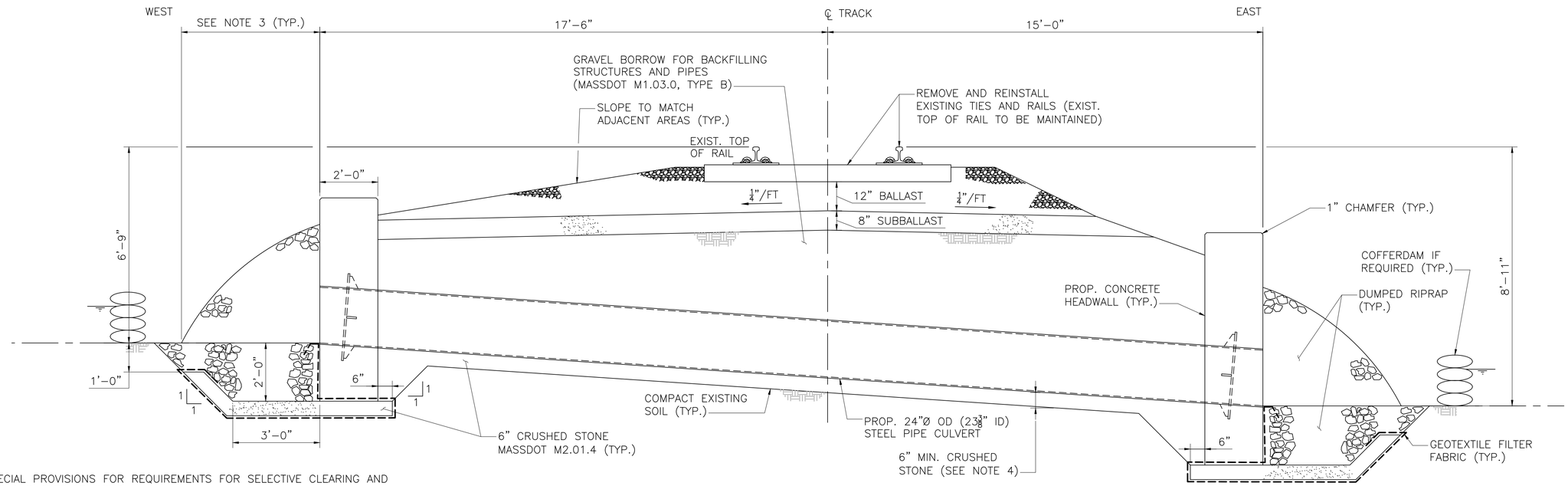
DATE: 6/20/25	BMH	BMH	SLB	SHEET: CT–208	



EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 78.50*

SCALE: 1/2"=1'–0"

* PREVIOUSLY IDENTIFIED AS CULVERT 78.58



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 78.50

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–108 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–404 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CT-209 EXISTING & PROPOSED SECTION CULVERT 78.50

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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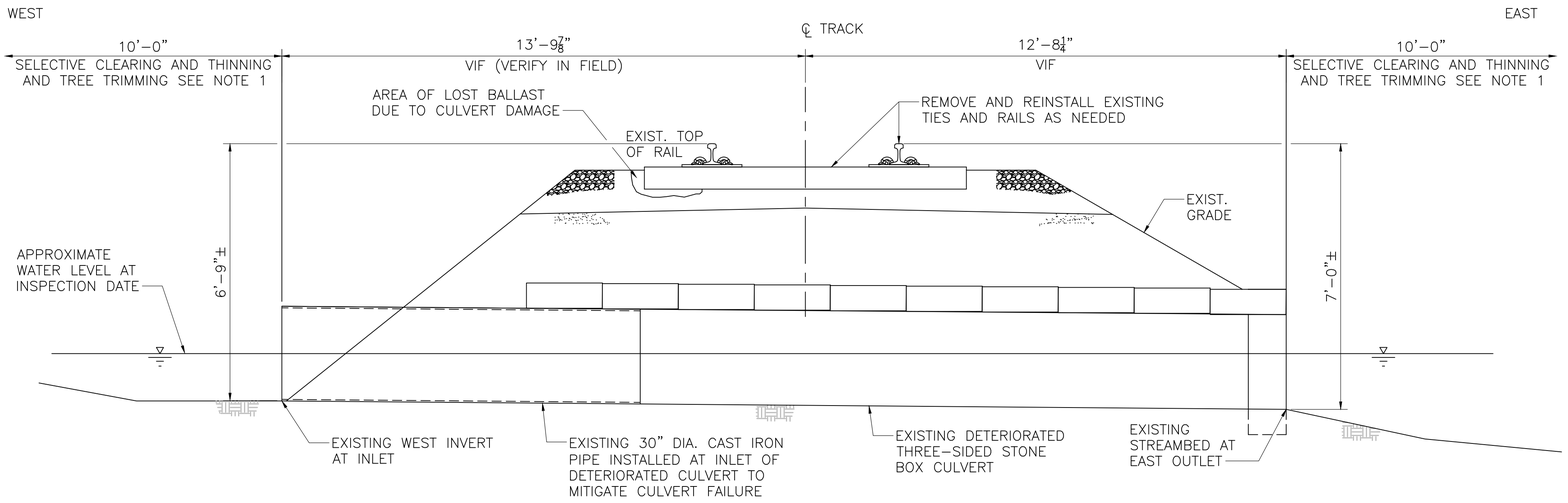
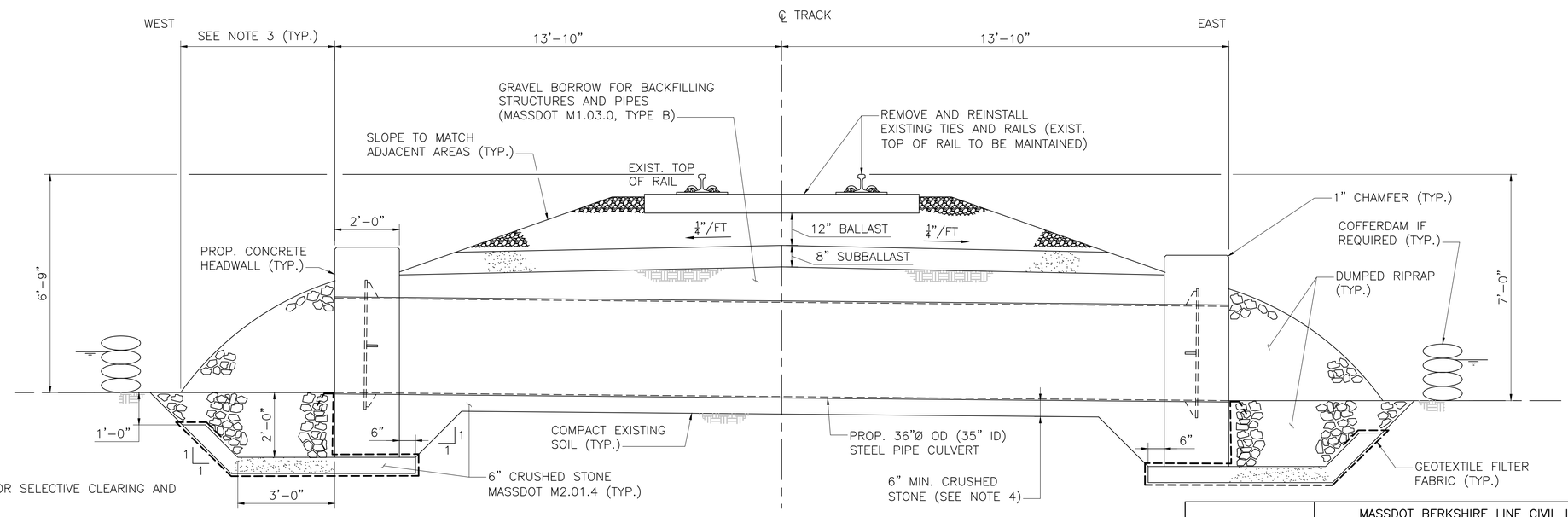


EXISTING CULVERT LONGITUDINAL SECTION
CULVERT 80.90

SCALE: 1/2"=1'–0"



PROPOSED CULVERT LONGITUDINAL SECTION
CULVERT 80.90

SCALE: 1/2"=1'–0"

NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR SELECTIVE CLEARING AND THINNING AND TREE TRIMMING.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS. SEE SHEET K–110 FOR CULVERT LOCATION.
3. EXISTING GROUND PROFILE VARIES AT ENDS OF THE PROPOSED CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
5. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
6. SEE SHEET CT–301 FOR PROPOSED CULVERT PLAN.
7. SEE SHEET CT–401 FOR PROPOSED CULVERT DETAILS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CT-210 EXISTING & PROPOSED SECTION CULVERT 80.90

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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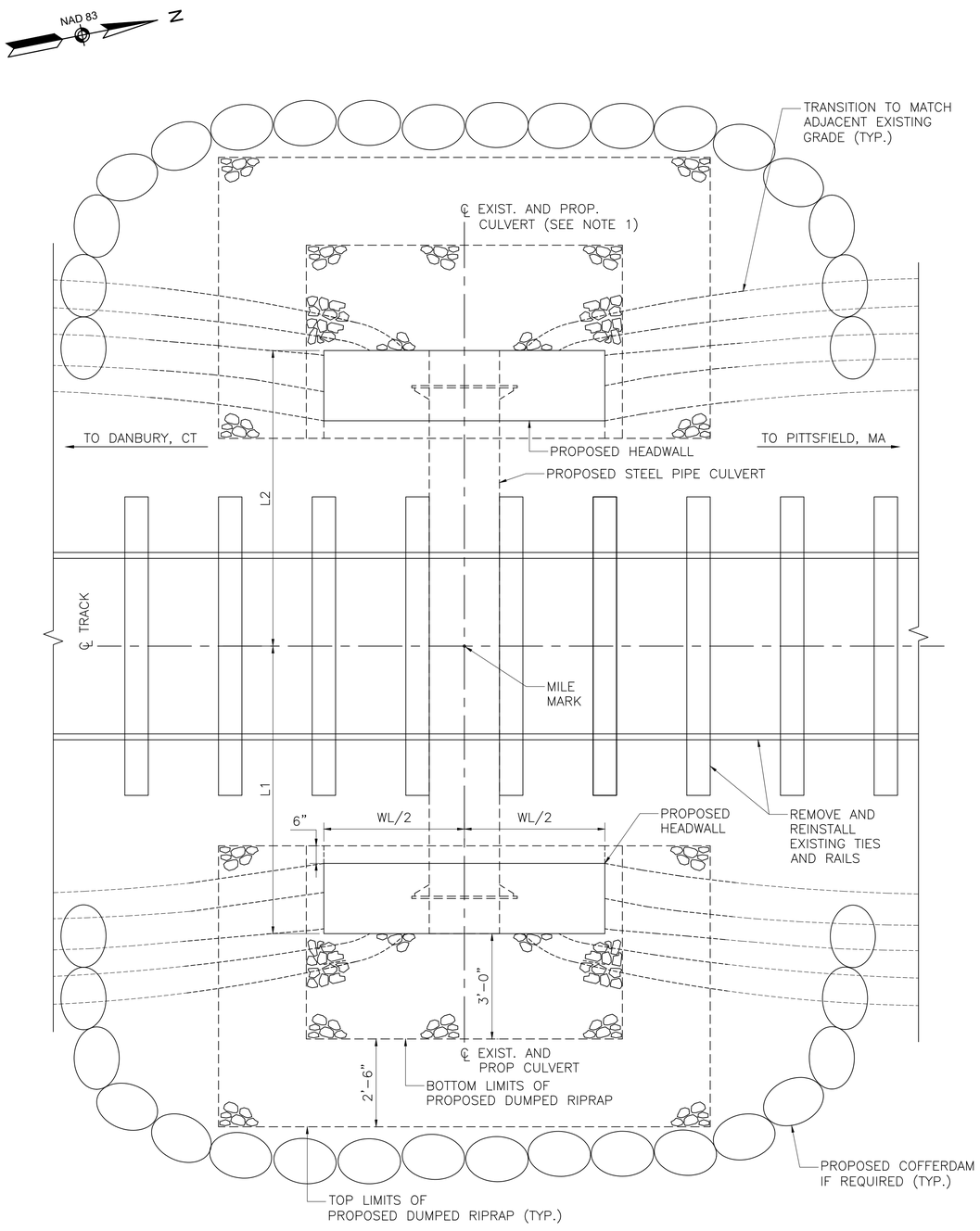

PROPOSED CULVERT PLAN

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

NOTES:

1. PROPOSED CULVERT ALIGNMENT SHALL MATCH EXISTING CULVERT ALIGNMENT.
2. IF UNSUITABLE SOILS ARE FOUND, THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND BACKFILLED WITH CRUSHED STONE.
3. EXISTING GROUND PROFILE VARIES AT END OF EACH CULVERT. PROPOSED RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.
4. SEE SHEET CT-101 FOR GENERAL NOTES FOR CULVERTS.
5. SEE SHEETS K-101 TO K-115 FOR CULVERT LOCATIONS.
6. SEE SHEETS CT-203 TO CT-210 FOR EXISTING CULVERT INFORMATION.
7. SEE SHEET CT-401 AND CT-404 FOR CULVERT TRANSVERSE SECTION AND DETAILS.
8. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.

PROPOSED CULVERT REPLACEMENT										
MILE MARK	STEEL PIPE CULVERT		EAST INVERT		WEST INVERT		EAST HEADWALL		WEST HEADWALL	
	OUTSIDE DIAMETER D_o	WALL THICKNESS t	OFFSET L1	BELOW RAIL H1*	OFFSET L2	BELOW RAIL H2*	LENGTH WL	HEIGHT WH	LENGTH WL	HEIGHT WH
74.30	36"	0.500"	16'-4"	6'-11"	15'-8"	6'-7"	8'-0"	6'-6"	8'-0"	6'-6"
77.90	24"	0.313"	14'-0"	5'-1 1/2"	16'-9"	5'-0"	N/A	N/A	8'-0"	5'-6"
78.10	12"	0.188"	14'-0"	5'-5"	10'-0"	4'-1"	6'-0"	4'-6"	6'-0"	4'-6"
78.17	24"	0.313"	16'-8"	6'-0"	9'-6"	4'-6"	8'-0"	5'-6"	8'-0"	5'-6"
78.21	12"	0.188"	12'-0"	4'-5"	10'-0"	3'-1"	6'-0"	4'-6"	6'-0"	4'-6"
78.50	24"	0.313"	15'-0"	8'-11"	17'-6"	6'-9"	12'-0"	8'-0"	12'-0"	7'-0"
80.90	36"	0.500"	13'-10"	7'-0"	13'-10"	6'-9"	8'-0"	6'-6"	8'-0"	6'-6"

*SLIGHT ADJUSTMENTS MAY BE NEEDED IN THE FIELD AS DIRECTED BY THE ENGINEER.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
PROPOSED CULVERT PLAN
TYPICAL

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
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(617) 357-7700

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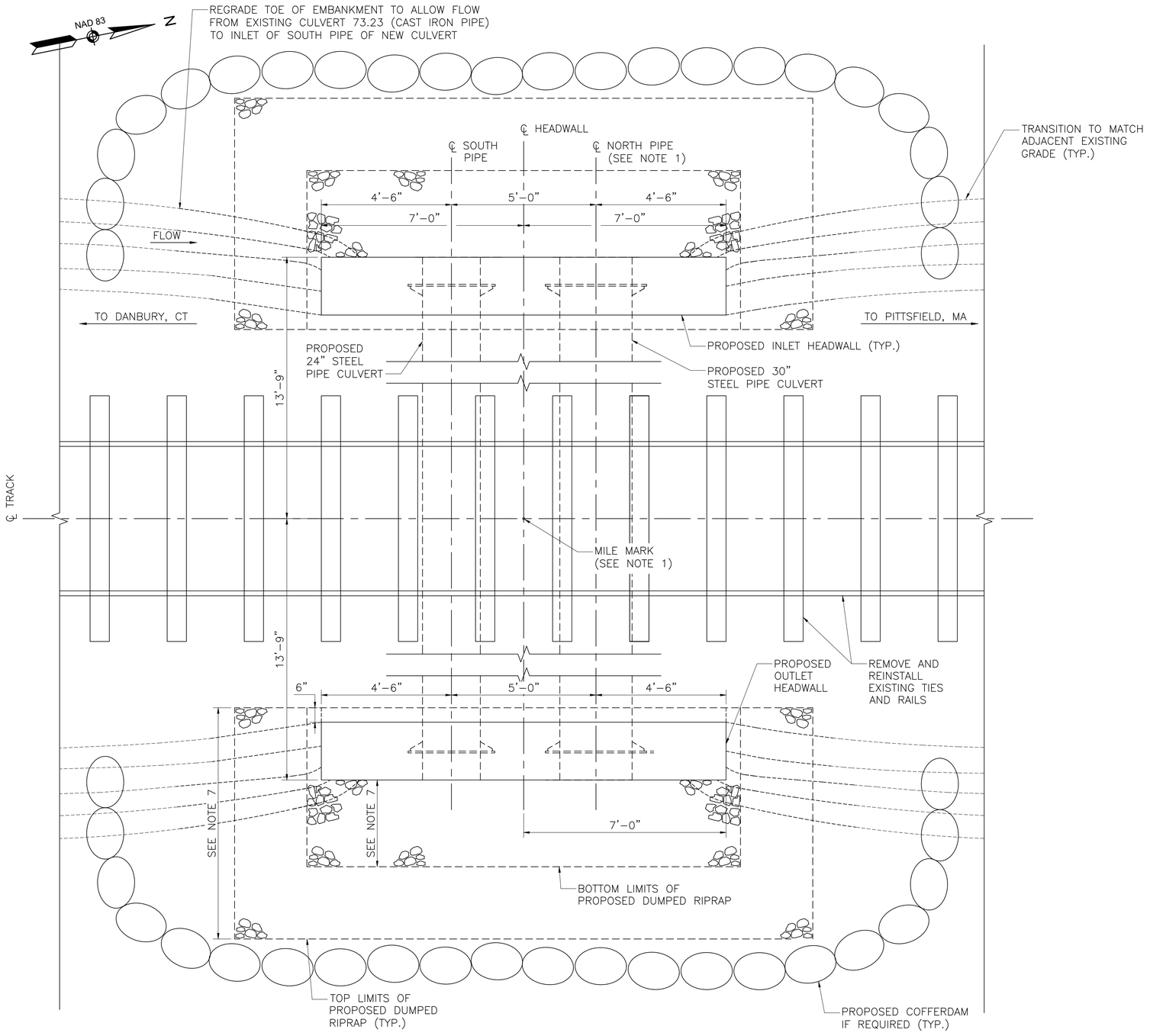

PROPOSED CULVERT PLAN AT 73.24

SCALE: 1/2"=1'–0"

NOTES:

1. CENTERLINE AND ALIGNMENT OF PROPOSED NORTH PIPE SHALL MATCH CENTERLINE AND ALIGNMENT OF EXISTING CULVERT 73.24 (STONE BOX CULVERT).
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS.
3. SEE SHEETS K–102 FOR CULVERT LOCATION.
4. SEE SHEETS CT–201 TO CT–202 FOR EXISTING AND PROPOSED CULVERT INFORMATION.
5. SEE SHEET CT–401 AND CT–402 FOR CULVERT TRANSVERSE SECTION AND DETAILS.
6. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.
7. PROPOSED RIPRAP WILL BE PLACED FOR A MINIMUM DISTANCE OF 12'–6" FROM THE OUTLET END OF THE CULVERT (NOT SHOWN TO SCALE). AT THE INLET END OF THE PIPE, RIPRAP WILL BE PLACED AS DIRECTED BY THE ENGINEER.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
PROPOSED CULVERT PLAN
CULVERT 73.24

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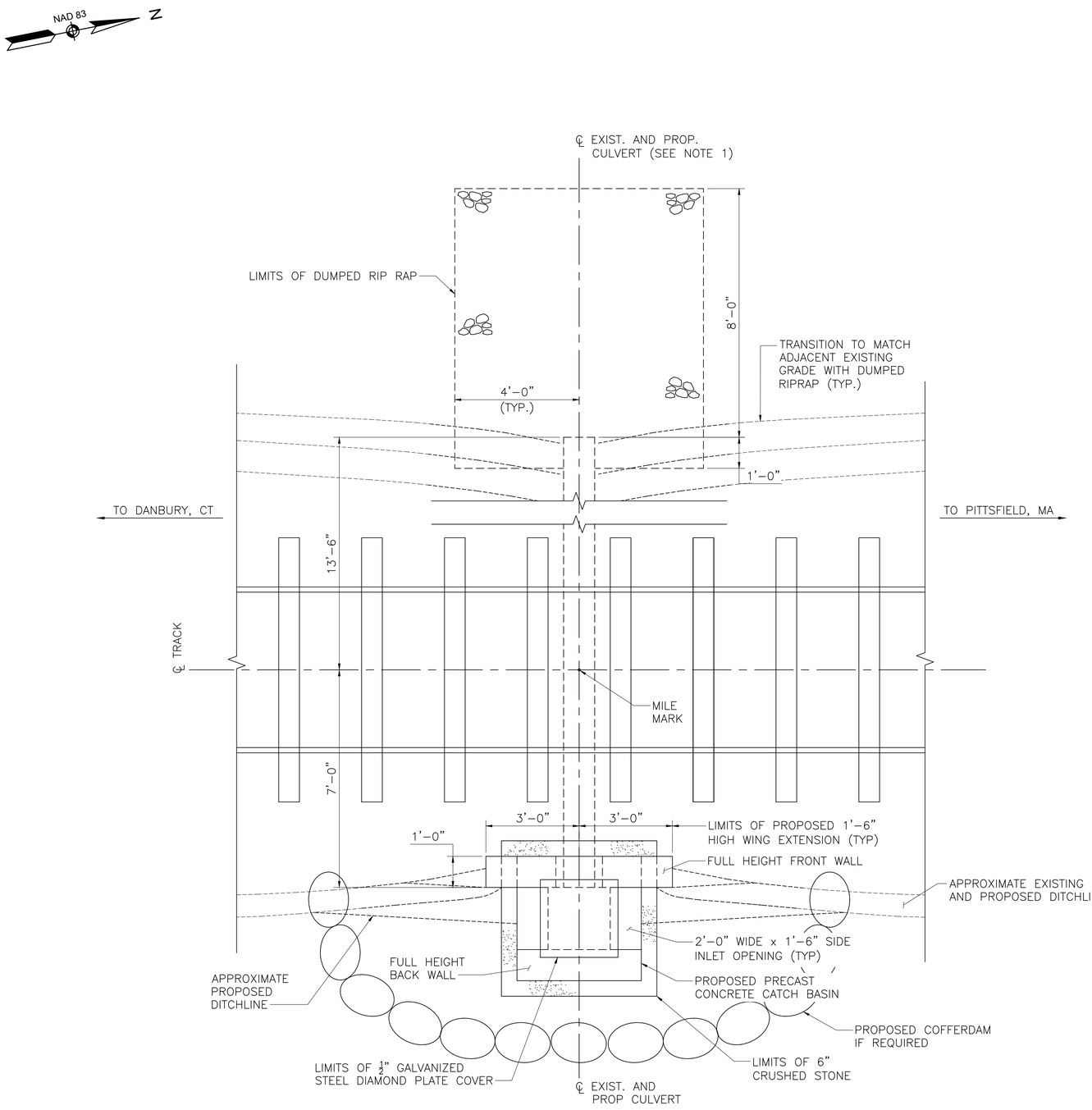

PROPOSED CULVERT PLAN AT 76.05

SCALE: 1/2"=1'–0"

NOTES:

1. CENTERLINE AND ALIGNMENT OF PROPOSED PIPE SHALL MATCH CENTERLINE AND ALIGNMENT OF EXISTING CULVERT 76.04.
2. SEE SHEET CT–101 FOR GENERAL NOTES FOR CULVERTS.
3. SEE SHEETS K–105 FOR CULVERT LOCATION.
4. SEE SHEET CT–204 FOR EXISTING AND PROPOSED CULVERT INFORMATION.
5. SEE SHEETS CT–401 AND CT–403 FOR CULVERT TRANSVERSE SECTION AND DETAILS.
6. TRACK TO BE RECONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ITEM 492.11.1 TRACK CONSTRUCTION.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
PROPOSED CULVERT PLAN
CULVERT 76.05

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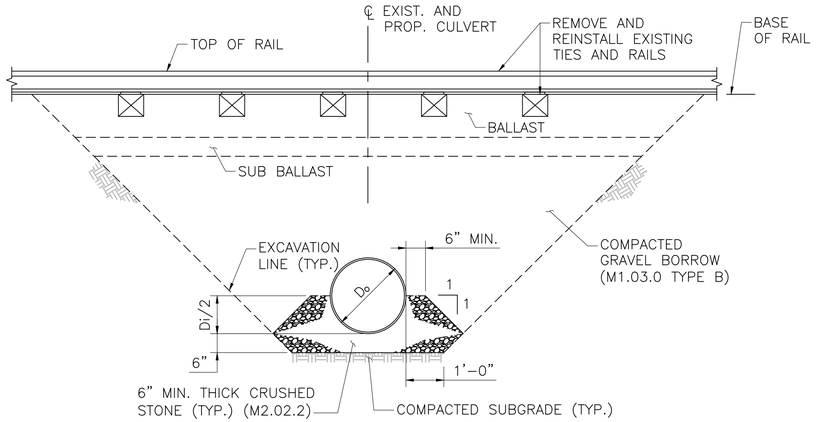
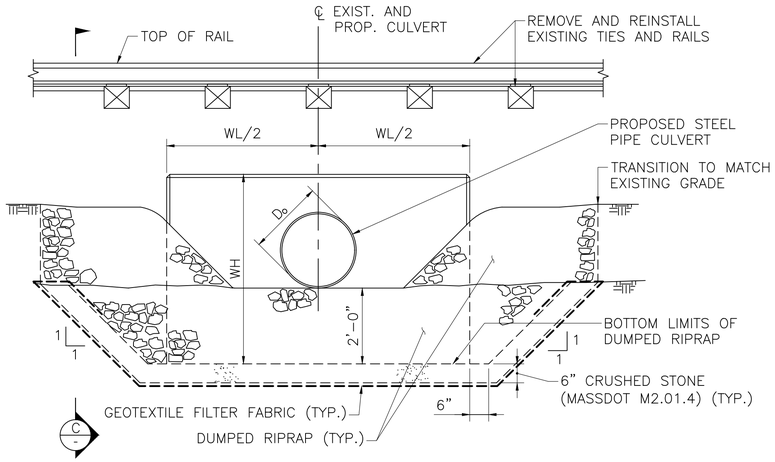


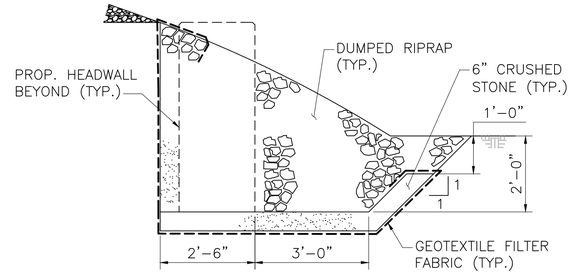
PROPOSED CULVERT TRANSVERSE SECTION

SCALE: 1/2"=1'–0"



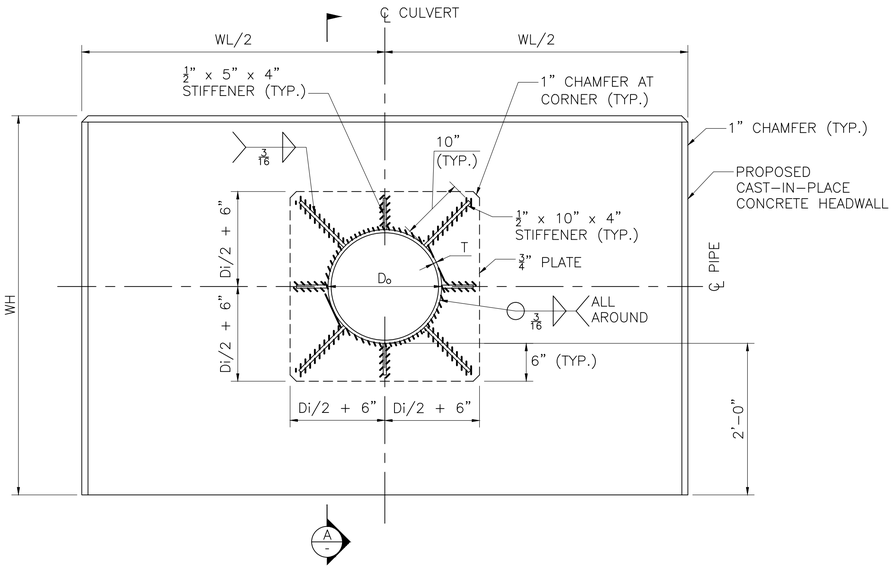
PROPOSED HEADWALL FRONT ELEVATION

SCALE: 1/2"=1'–0"



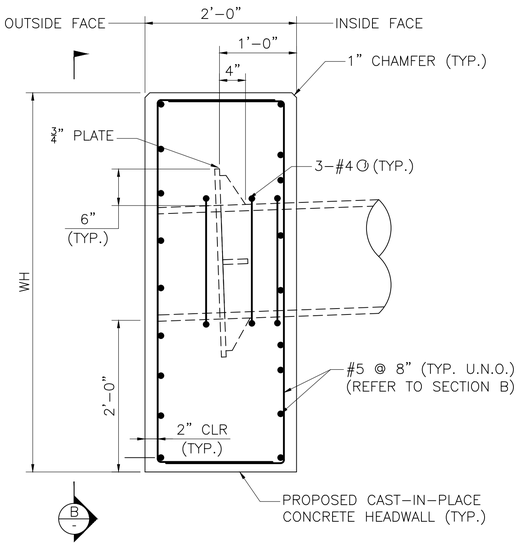
SECTION C

SCALE: 1/2" = 1'–0"



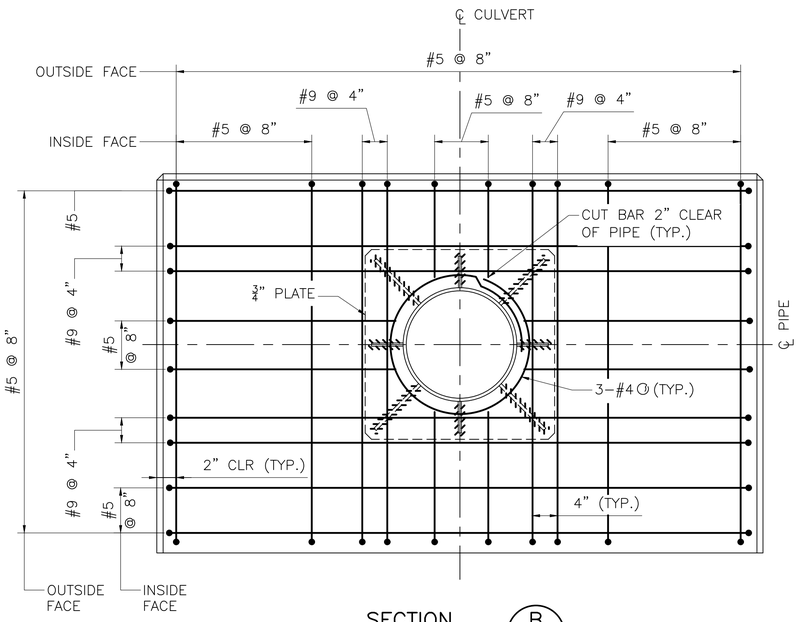
PROPOSED HEADWALL ELEVATION

SCALE: 1"=1'–0"



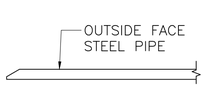
SECTION A

SCALE: 1" = 1'–0"



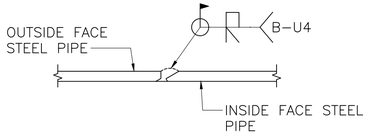
SECTION B

SCALE: 1" = 1'–0"



PIPE END BEVEL DETAIL

SCALE: 3"=1'–0"



PIPE END WELD DETAIL

SCALE: 3"=1'–0"

NOTE: PIPE SPLICE JOINT SHALL BE LOCATED OUTSIDE END OF TIES.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS TYPICAL DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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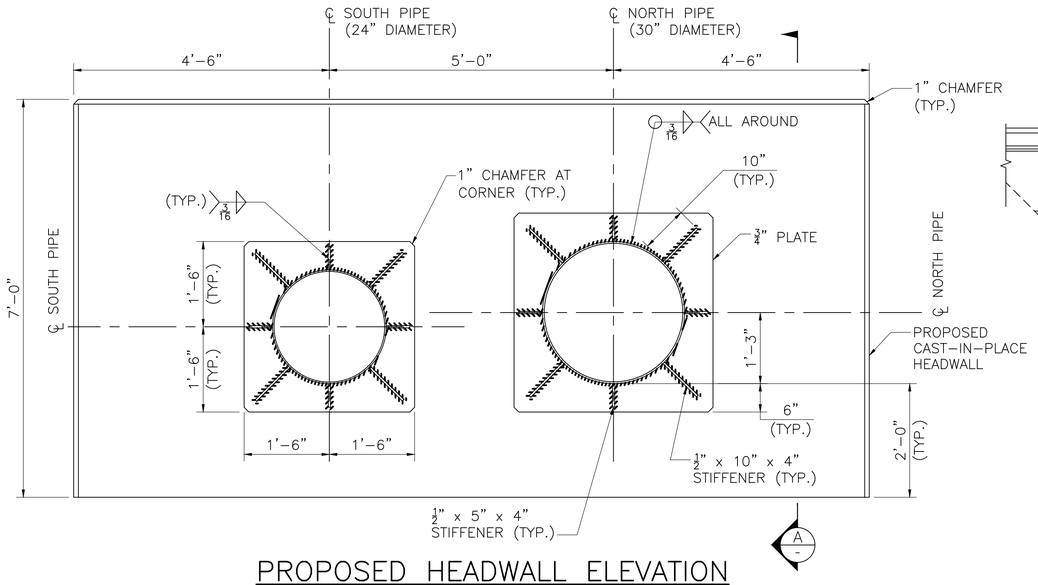
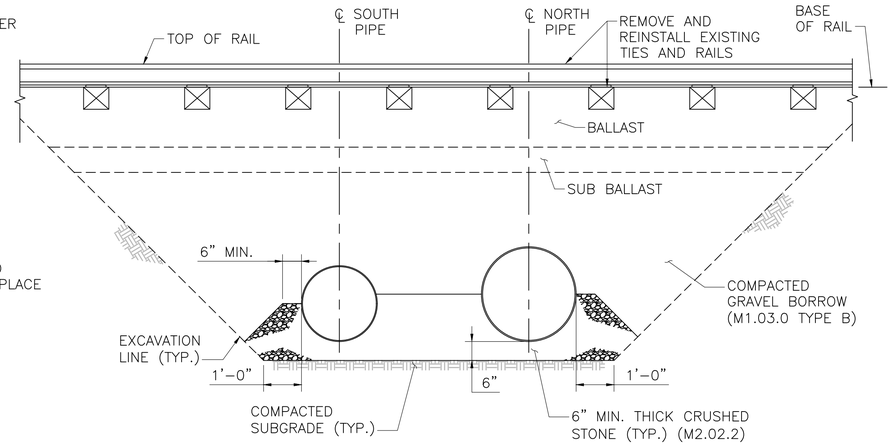


PROPOSED HEADWALL ELEVATION

(OUTLET HEADWALL SHOWN. INLET HEADWALL SIMILAR AS NOTED)

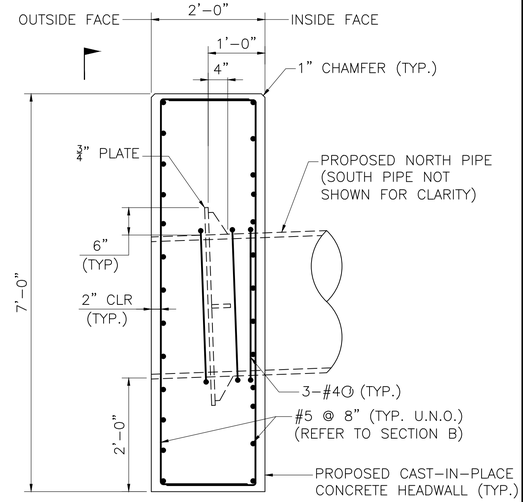
SCALE: 3/4"=1'–0"



PROPOSED CULVERT TRANSVERSE SECTION

(SECTION LOOKING WEST/UPSTREAM)

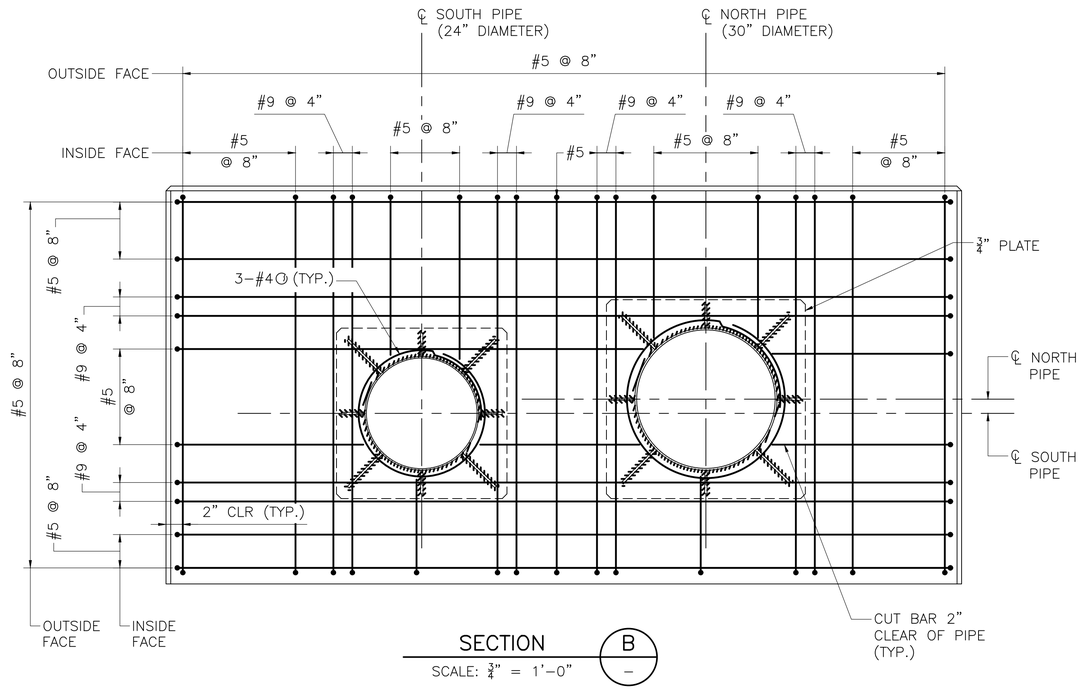
SCALE: 1/2"=1'–0"



B — SECTION — A

SCALE: 3/4" = 1'–0"

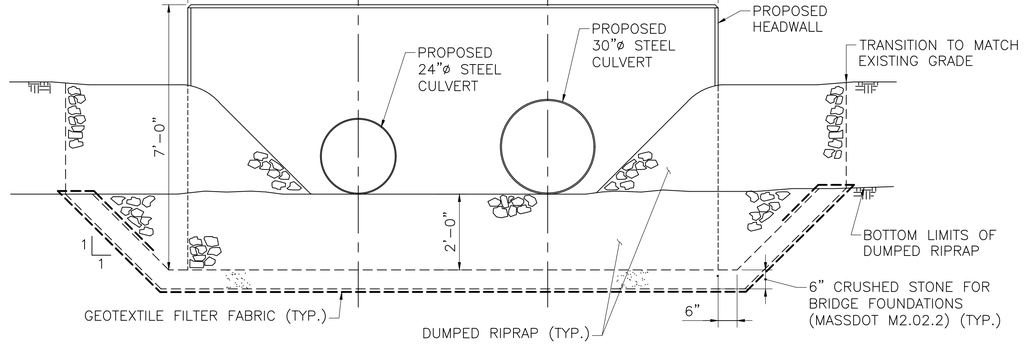
(OUTLET HEADWALL SHOWN. INLET HEADWALL SIMILAR AS NOTED)



B — SECTION — B

SCALE: 3/4" = 1'–0"

(OUTLET HEADWALL SHOWN. INLET HEADWALL SIMILAR AS NOTED)



PROPOSED HEADWALL FRONT ELEVATION

(OUTLET HEADWALL SHOWN. INLET HEADWALL SIMILAR AS NOTED)

SCALE: 1/2"=1'–0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CULVERT 73.24 DETAILS

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HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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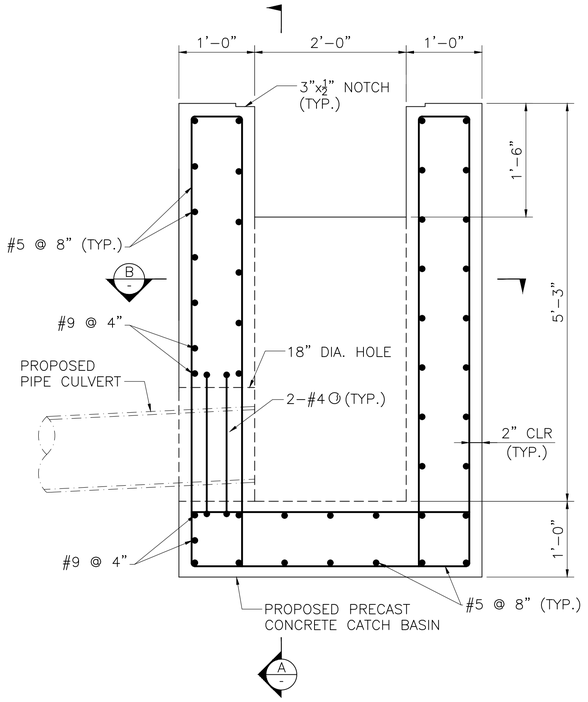
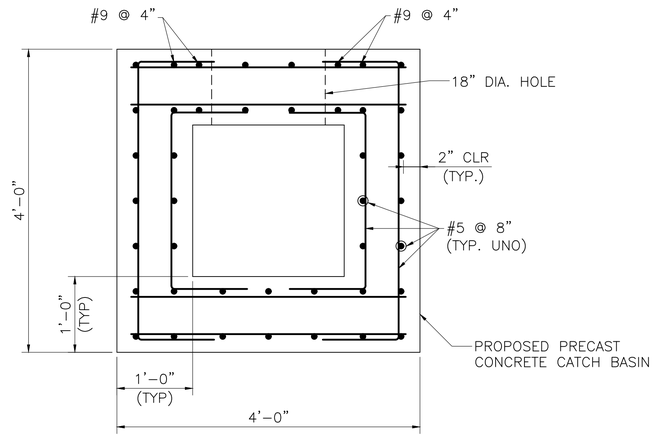


PROPOSED CATCH BASIN REINFORCING DETAIL

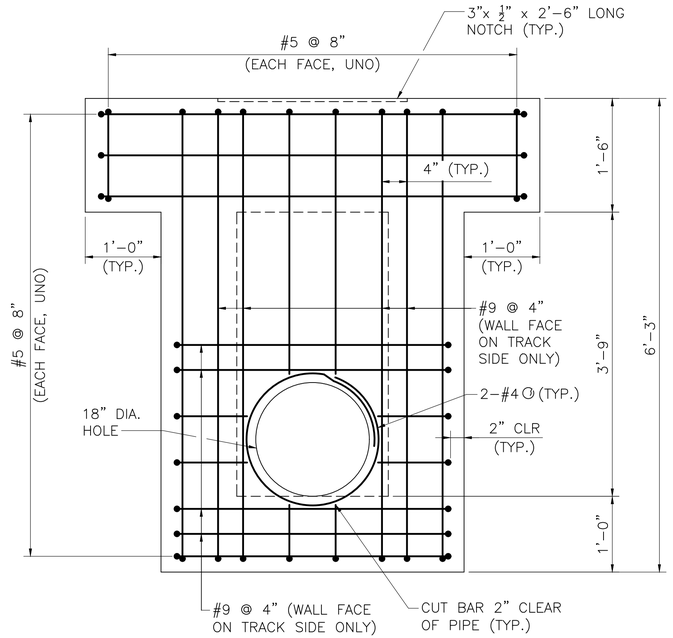
SCALE: 1"=1'-0"

(LOOKING NORTH ALONG EAST DITCHLINE AT INSTALLATION)



SECTION B

SCALE: 1" = 1'-0"



SECTION A

SCALE: 1" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CULVERT 76.05 DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

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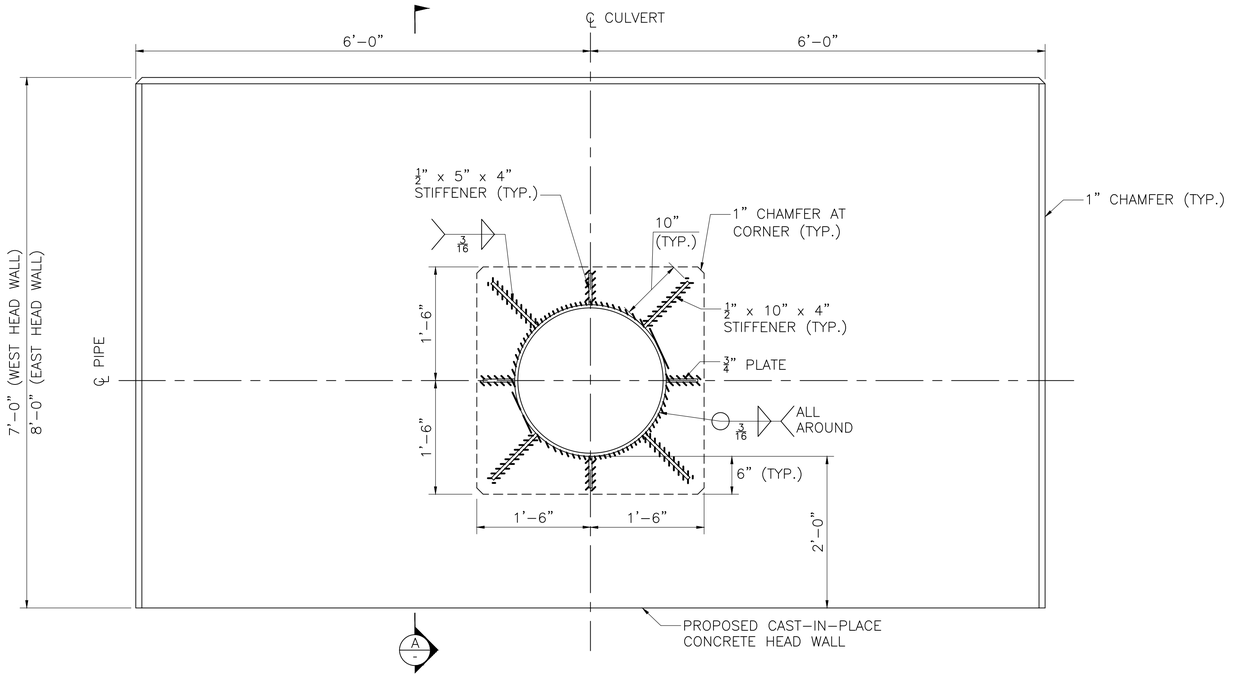
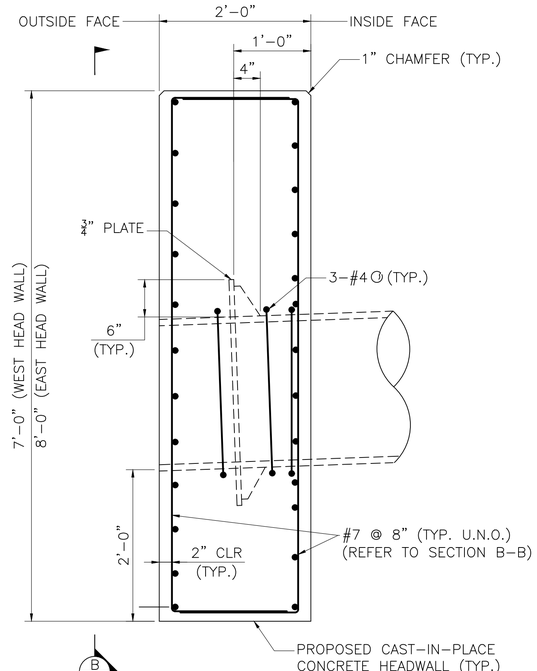


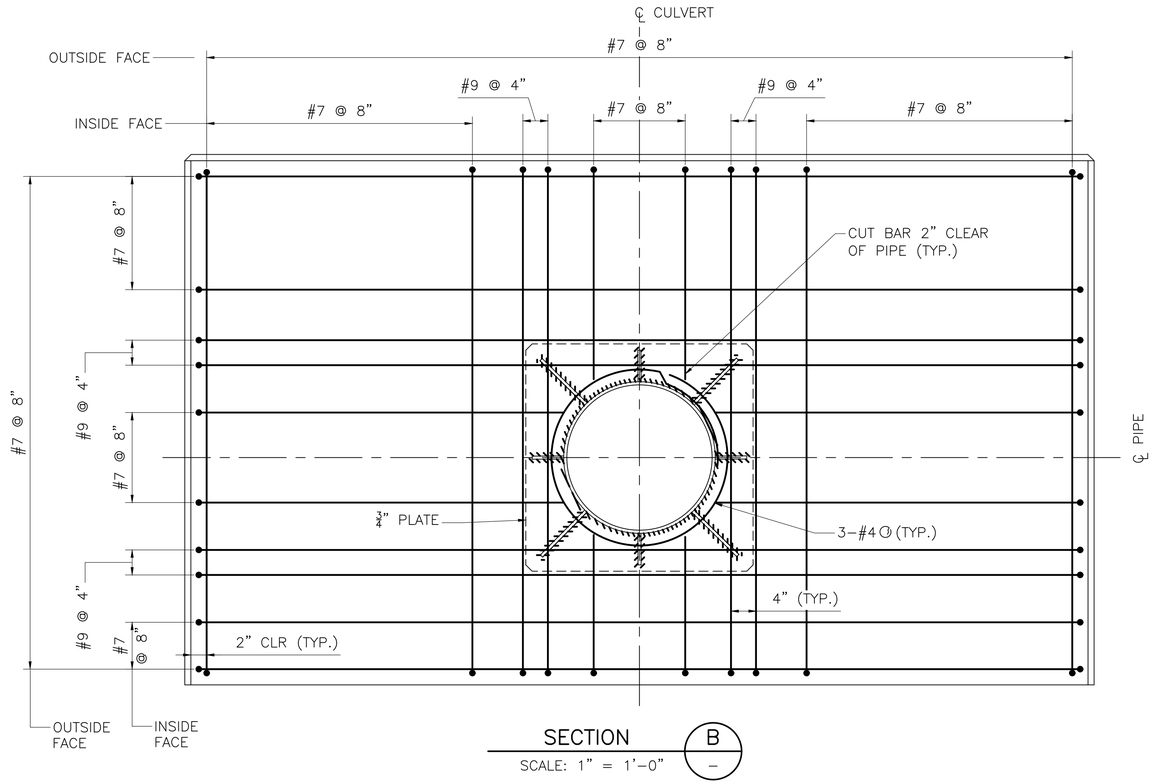
PROPOSED HEADWALL ELEVATION

SCALE: 1"=1'-0"



SECTION A

SCALE: 1" = 1'-0"



SECTION B

SCALE: 1" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

CULVERT IMPROVEMENTS
CULVERT 78.50 DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

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SCALE: AS SHOWN	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
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STRUCTURAL GENERAL NOTES FOR BRIDGE IMPROVEMENTS

DESIGN, CONTRUCTION AND FABRICATION

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2025 MASSDOT STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS DATED MARCH 31, 2025, SPECIAL PROVISIONS PROVIDED IN THE CONTRACT DOCUMENTS, AND THE LATEST EDITION OF AMERICAN RAILWAY ENGINEERING AND MAINTENANCE–OF–WAY ASSOCIATION (AREMA) "MANUAL FOR RAILWAY ENGINEERING". IN THE EVENT OF DISCREPANCIES BETWEEN THE AREMA SPECIFICATIONS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT SPECIFICATION SHALL APPLY AS DETERMINED BY THE ENGINEER.

LIVE LOAD

THE DESIGN LIVE LOAD FOR THE BRIDGE 74.17 AND 76.23 IS AREMA COOPER E80 LOADING.

EXISTING CONDITIONS

ALL DIMENSIONS AND ELEVATIONS SHOWN ON EXISTING STRUCTURE ARE FROM LIMITED FIELD INVESTIGATION. ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK SHALL BE DETERMINED BY THE CONTRACTOR BY FIELD MEASUREMENT AND PRE–CONSTRUCTION SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE FIELD MEASUREMENTS AND PRE–CONSTRUCTION SURVEY, AND SHALL NOT ORDER ANY MATERIAL OR BEGIN FABRICATION OR CONSTRUCTION UNTIL THE FIELD MEASUREMENTS AND PRE–CONSTRUCTION SURVEY ARE COMPLETED AND THE EXTENT OF THE PROPOSED WORK IS APPROVED BY THE ENGINEER.

DATUM

HORIZONTAL DATUM IS BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD–83) VIA RTK GPS. COORDINATES ARE MASSACHUSETTS STATE PLANE MAINLAND ZONE.
ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

MATERIALS

CONCRETE

1. THE COMPRESSIVE STRENGTH FOR CAST–IN–PLACE CONCRETE SHALL BE:

   f'_c = 5,000 PSI, $\frac{3}{4}$", 685 HIGH PERFORMANCE CEMENT CONCRETE, UNLESS OTHERWISE NOTED. THE CONCRETE MIX SHALL BE APPROVED BY MASSDOT AND USED IN PREVIOUS MASSDOT PROJECTS.

2. THE COMPRESSIVE STRENGTH FOR PRECAST CONCRETE SHALL BE:

   f'_c = 5,000 PSI, $\frac{3}{8}$", 710 HIGH PERFORMANCE CEMENT CONCRETE, UNLESS OTHERWISE NOTED. THE CONCRETE MIX SHALL BE APPROVED BY MASSDOT AND USED IN PREVIOUS MASSDOT PROJECTS.

3. ALL EXPOSED CORNERS SHALL HAVE 1" CHAMFER, UNLESS OTHERWISE NOTED.

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE DEFORMED AND EPOXY COATED, PER CURRENT ASTM A615 SPECIFICATIONS AND MUST MEET GRADE 60 REQUIREMENT, UNLESS OTHERWISE NOTED. EPOXY COATING SHALL BE IN ACCORDANCE WITH ASTM A775.
2. ALL SPLICES OF REINFORCEMENT SHALL BE ACCORDANCE WITH AREMA CHAPTER 8, SECTION 2.22, UNLESS OTHERWISE NOTED.
3. MINIMUM CONCRETE COVER SHALL BE AS SPECIFIED IN AREMA CHAPTER 8, TABLE 8–2–7, UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO ASTM A709, GRADE 50 AND SHALL BE HOT–DIPPED GALVANIZED PER ASTM A123, UNLESS OTHERWISE NOTED.
2. STEEL HSS SECTION SHALL HAVE A MINIMUM YIELD STRESS OF 42 KSI AND SHALL CONFORM TO ASTM A500.
3. WELDING ELECTRODES SHALL HAVE A MINIMUM YIELD STRESS OF 70 KSI, UNLESS OTHERWISE NOTED.

BOLTS:

1. HIGH STRENGTH BOLT SHALL BE ASTM F3125, GRADE A325, TYPE 1, $\frac{7}{8}$" DIAMETER IN $\frac{15}{16}$" DIAMETER HOLES WITH ASTM A563 HEAVY DUTY HEX HEAD HARD TYPE NUTS AND WASHERS SHALL BE HOT–DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153, UNLESS OTHERWISE NOTED.
2. ALL BOLTED CONNECTION ARE SLIP CRITICAL CONNECTIONS WITH CLASS D FAYING SURFACE, UNLESS OTHERWISE NOTED.
3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 GRADE 55, UNLESS OTHERWISE NOTED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE HOT–DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
4. ALL ANCHOR BOLTS SHALL BE GROUTED IN PLACE SHALL BE SET USING EPOXY BONDING/GROUTING ADHESIVE, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE NOTED. ANCHOR BOLTS AT BRIDGE 76.23 SHALL BE CAST IN PLACE UNLESS APPROVED BY THE ENGINEER.

CONSTRUCTION

GENERAL

1. THERE IS NO CONSTRUCTION STAGING AREA AT THE JOB SITE DESIGNATED OR PROVIDED, EXCEPT BRIDGE 74.17, WHERE LIMITS OF CONSTRUCTION STAGING AREAS AND WORK ZONES HAVE BEEN SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROVIDE HIS/HER OWN OFF–SITE STAGING AREA.
2. THE CONTRACTORS'S ATTENTION IS CALLED TO THE FACT THAT CONTINUOUS COORDINATION WITH THE OPERATOR, HOUSATONIC RAILROAD COMPANY (HRRC), WILL BE REQUIRED THROUGHOUT CONSTRUCTION. HRRC WILL PROVIDE THE CONTRACTOR WITH FLAGGERS FOR PROTECTION FROM RAILROAD TRAFFIC WHILE WORK IS BEING PERFORMED ON THE RAILROAD RIGHT–OF–WAY (R.O.W.). THE CONTRACTOR SHALL NOT ENTER THE R.O.W. AT ANYTIME WITHOUT HRRC AUTHORIZATION. THE CONTRACTOR WILL ALSO BE REQUIRED TO OBTAIN R.O.W. TRAINING PRIOR TO WORKING IN THE R.O.W.
3. ALL WORK SHALL BE PERFORMED DURING NONE–REVENUE HOURS AND WEEKEND CLOSURES. THE CONTRACTOR SHALL COORDINATE ALL SHUTDOWNS WITH HRRC. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SPECIFIC DATES, LENGTH OF SHUTDOWNS, AND LIQUIDATED DAMAGE PENALTIES FOR EXCEEDING AUTHORIZED TIME LIMITS.
4. THE CONTRACTOR IS RESPONSIBLE FOR SEQUENCING AND MEANS AND METHOD OF CONSTRUCTION. PRIOR TO BEGINNING ANY WORK, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR ITS REVIEW AND APPROVAL PROPOSED WORK PLANS, SCHEDULES AND MATERIALS TO BE USED IN THE WORK AS REQUIRED ON PLANS, IN THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS. WORK PLANS SHALL INCLUDE CONSTRUCTION SEQUENCING, EQUIPMENT, ACCESS, STAGING AREAS, EROSION CONTROL PLAN, SAFETY PLAN AND QUALITY CONTROL PROCEDURES AND FORMS.
5. ALL CONSTRUCTION AND ACCESS SHALL BE WITHIN THE R.O.W. UNLESS OTHERWISE APPROVED BY THE PROPERTY OWNER(S) AND MASSDOT. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE PROPERTY OWNER(S) TO OBTAIN WRITTEN APPROVAL OF LAND USE OUTSIDE THE R.O.W. THE CONTRACTOR SHALL SUBMIT COPIES OF WRITTEN PROPERTY AGREEMENTS TO THE ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL STABILITY OF THE BRIDGE DURING CONSTRUCTION, ALL DEMOLITION, ERECTION AND TEMPORARY BRACING REQUIRED FOR DEMOLITION SHALL BE COORDINATED WITH THE RAILROAD.
7. ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED AND APPROVED BY THE ENGINEER, AT NO ADDITIONAL EXPENSE TO THE BRIDGE OWNER OR RAILROAD OPERATOR OR THE ENGINEER.
8. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO ALL AREAS OF WORK ON THE BRIDGE FOR THE ENGINEER'S INSPECTIONS. COSTS SHALL BE INCLUDED IN MOBILIZATION.
9. ALL EXISTING MATERIALS NOT REUSED OR RESET AS PART OF THIS PROJECT SHALL BE CONSIDERED WASTE MATERIAL. ALL WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. ALL TREATED TIMBER SHALL BE DISPOSED OF ONLY AT AN APPROVED FACILITY.
10. COORDINATE THE USE OF TEMPORARY STAGING AREA WITHIN R.O.W. DURING THE SHUTDOWN WITH THE RAILROAD.

ENVIRONMENTAL:

1. THE CONTRACTOR SHALL PREVENT ANY CONSTRUCTION DEBRIS FROM ENTERING THE WATERWAYS, PUBLIC OR PRIVATE PROPERTY, OR TRAVELED WAYS DURING CONSTRUCTION. ALL WASTE MATERIAL GENERATED AS PART OF THIS PROJECT SHALL BE DISPOSED OF OFF SITE.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUES AND REGULATIONS RELATING TO THE PREVENTION AND ABATEMENT OF ALL POLLUTION.
3. SEE SPECIFICATIONS FOR REQUIREMENTS FOR WORKING AT PROJECT SITE.

ABBREVIATIONS:

B.F.	BACK FACE
BOT.	BOTTOM
E.F.	EACH FACE
EL. OR ELEV.	ELEVATION
EQ. SP.	EQUALLY SPACED
F.F.	FRONT FACE
R/F	REINFORCEMENT
TYP.	TYPICAL
W.P.	WORKING POINT

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

BRIDGE IMPROVEMENTS

STRUCTURAL GENERAL NOTES

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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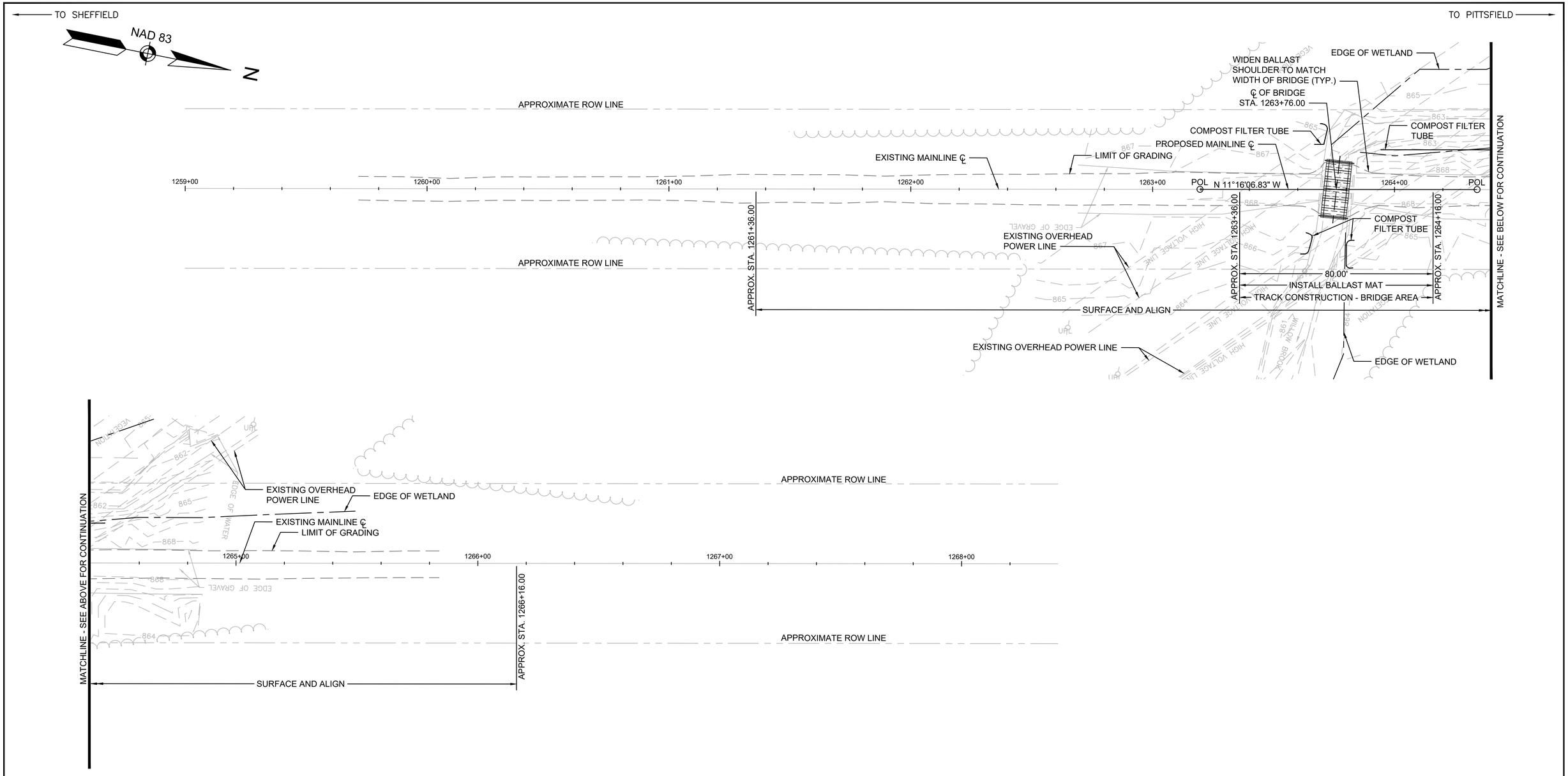

NOTES:

1. EXISTING TIES SHALL BE REMOVED WITHIN THE LIMITS SHOWN ON THE PLANS. TIES NOT IDENTIFIED FOR SALVAGE BY THE ENGINEER SHALL BE DISPOSED OF IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
2. EXISTING RAIL, PLATES, AND JOINT BARS TO BE REMOVED AND COLLECTED BY THE CONTRACTOR AND RETURNED TO HRRC. LIMIT OF REMOVAL SHALL BE AT THE FIRST RAIL JOINT LOCATED BEYOND THE TRACK CONSTRUCTION LIMIT. CONTRACTOR TO INSTALL NEW 136RE RAIL, RESILIENT FASTENER PLATES AND JOINT BARS.
3. BALLAST SHALL BE REMOVED TO A DEPTH OF 10" BELOW THE PROPOSED BOTTOM OF TIE ELEVATION IN TIE REPLACEMENT AREAS TO ALLOW FOR INSTALLATION OF BALLAST MAT.
4. EXISTING TRACK TO BE SURFACED AND ALIGNED TO MEET EXISTING ALIGNMENT.

HOR. SCALE IN FEET
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MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK MAINLINE PLAN STA. 1259+00 TO STA. 1268+40

HDR, INC.
99 HIGH STREET, SUITE 2300
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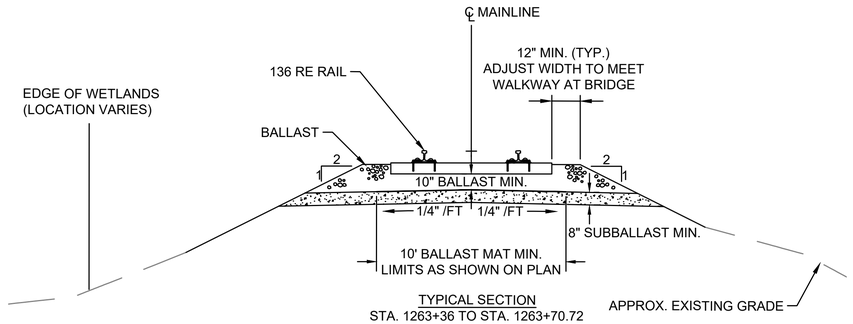

TYPICAL SECTION
STA. 1263+36 TO STA. 1263+70.72
STA. 1263+81.28 TO STA. 1264+16
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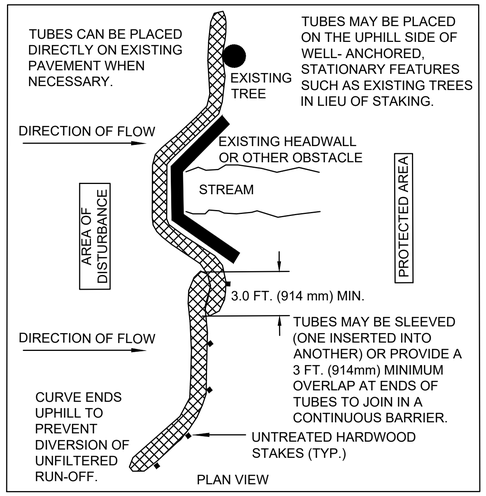
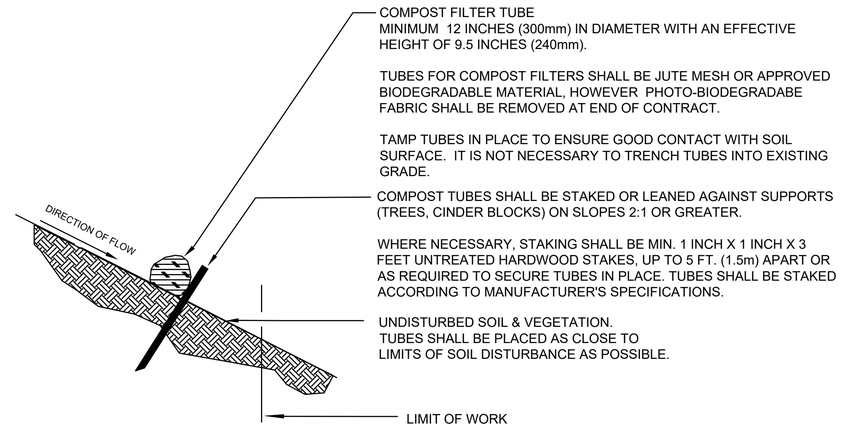


GENERAL NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES (300mm) FOR SLOPES UP TO 50 FEET (15.24m) IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. TUBE LOCATION MAY BE SHIFTED TO ADJUST TO LANDSCAPE FEATURES, BUT SHALL PROTECT UNDISTURBED AREA AND VEGETATION TO MAXIMUM EXTENT POSSIBLE.
4. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
5. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
6. ADDITIONAL STAKING SHALL BE USED AT THE DIRECTION OF THE ENGINEER.



DETAIL 1 - COMPOST FILTER TUBE

NOT TO SCALE

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK
TYPICAL SECTION & DETAIL

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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STRUCTURE NOTES

SCOPE OF WORK

THE GENERAL SCOPE OF WORK AT THIS BRIDGE INCLUDES:

1. SELECTIVE CLEARING AND THINNING AT BRIDGE APPROACHES.
2. INSTALLATION OF SNOW FENCES ALONG BOUNDARIES OF WORK ZONE AND SEDIMENT CONTROL BARRIERS.
3. TEMPORARILY REMOVAL AND REINSTALLATION OF EXISTING TRACK.
4. CONTROL OF WATER.
5. DEMOLITION OF EXISTING BRIDGE AND PORTIONS OF EXISTING WINGWALLS.
6. INSTALLATION OF PRECAST CONCRETE BRIDGE.
7. INSTALLATION OF SUPPORT EXCAVATION SYSTEM IF REQUIRED.
8. INSTALLATION OF CAST-IN-PLACE CONCRETE TRANSITION WALLS.
9. INSTALLATION OF NEW TRACK AND SURFACING.
10. REPOINTING STONE MASONRY JOINTS IN EXISTING WALLS.

BRIDGE 74.17 NOTES:

1. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES.
2. ALL WORK AT BRIDGE 74.17 SHALL BE PERFORMED DURING A SERIES OF SHUTDOWNS OF RAILROAD TRAFFIC. THE CONTRACTOR SHALL COORDINATE ALL SHUTDOWNS WITH HRRC. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SPECIFIC DATES, LENGTH OF SHUTDOWNS, AND LIQUIDATED DAMAGE PENALTIES FOR EXCEEDING AUTHORIZED TIME LIMITS.
3. THERE ARE EXISTING OVERHEAD ELECTRICAL LINES OVER THE BRIDGE AND WORK AREA AS SHOWN ON PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR PROTECTION AND DE-ENERGIZATION OF THE LINES PRIOR TO CONSTRUCTION; AND SHALL PERFORM WORK WITHIN OVERHEAD WORK ZONE AS SHOWN ON THE PLANS.
4. THE ENTIRE WORK AREA IS WITHIN THE 100-FOOT BUFFER ZONE AND 200 FOOT RIVERFRONT AREA. THE CONTRACTOR SHALL PERFORM WORK WITHIN WORK ZONE AS SPECIFIED ON PLANS FOR ENVIRONMENTAL PERMITTING APPLICATIONS. SNOW FENCES SHALL BE PROVIDED AT BOUNDARIES OF WORK ZONE AS SHOWN ON PLANS.
5. DUE TO LIMITED CONSTRUCTION HEADROOM CAUSED BY THE EXISTING ELECTRICAL LINES OVER THE CONSTRUCTION ZONE, TWO ALTERNATIVES INCLUDING PRECAST SPLIT BOX ALTERNATIVE AND PRECAST CONCRETE MONOLITHIC BOX ALTERNATIVE ARE PROVIDED. THE CONTRACTOR SHALL SELECT ONE ALTERNATIVE TO BID BASED ON CAPACITY OF EQUIPMENT AND MEANS AND METHODS OF CONSTRUCTION.
6. NEW CONTINUOUSLY WELDED RAIL (CWR) IS STAGED AT BOTH SIDES OF THE EXISTING BRIDGE FOR INSTALLATION BY HRRC DURING A FUTURE PROJECT. THE CONTRACTOR SHALL COORDINATE WITH HRRC TO HAVE THE CWR RELOCATED TO AVOID INTERFERENCE WITH THE CONTRACTOR'S OPERATIONS.

HANDRAIL:

1. STEEL PIPE FOR RAILS AND POSTS SHALL CONFORM TO REQUIREMENTS OF ASTM A53, GRADE B, AND SHALL BE GALVANIZED IN ACCORDANCE TO ASTM A123.
2. ENDS OF PIPE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17
OVER WILLOW BROOK
STRUCTURE NOTES

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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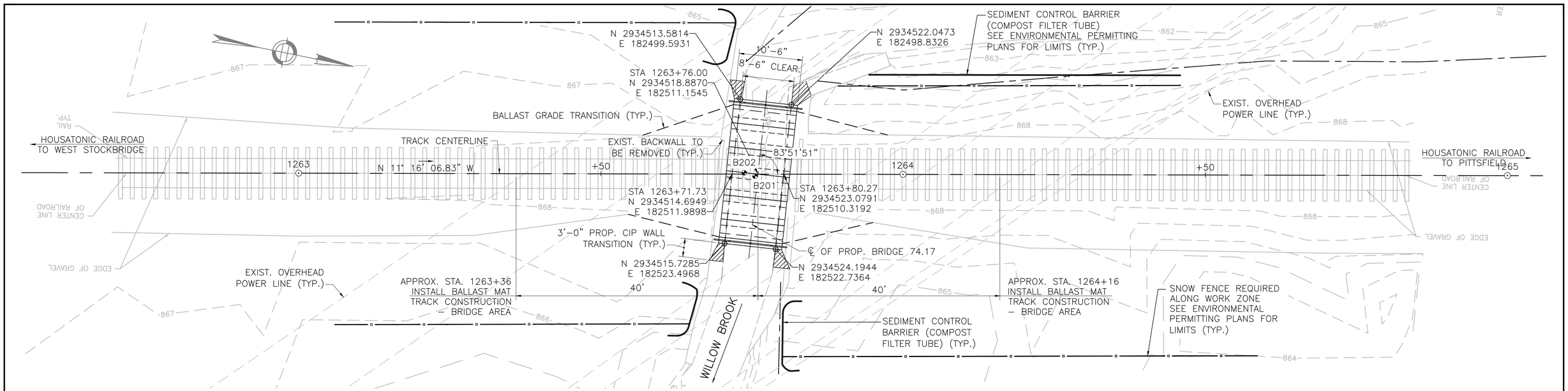
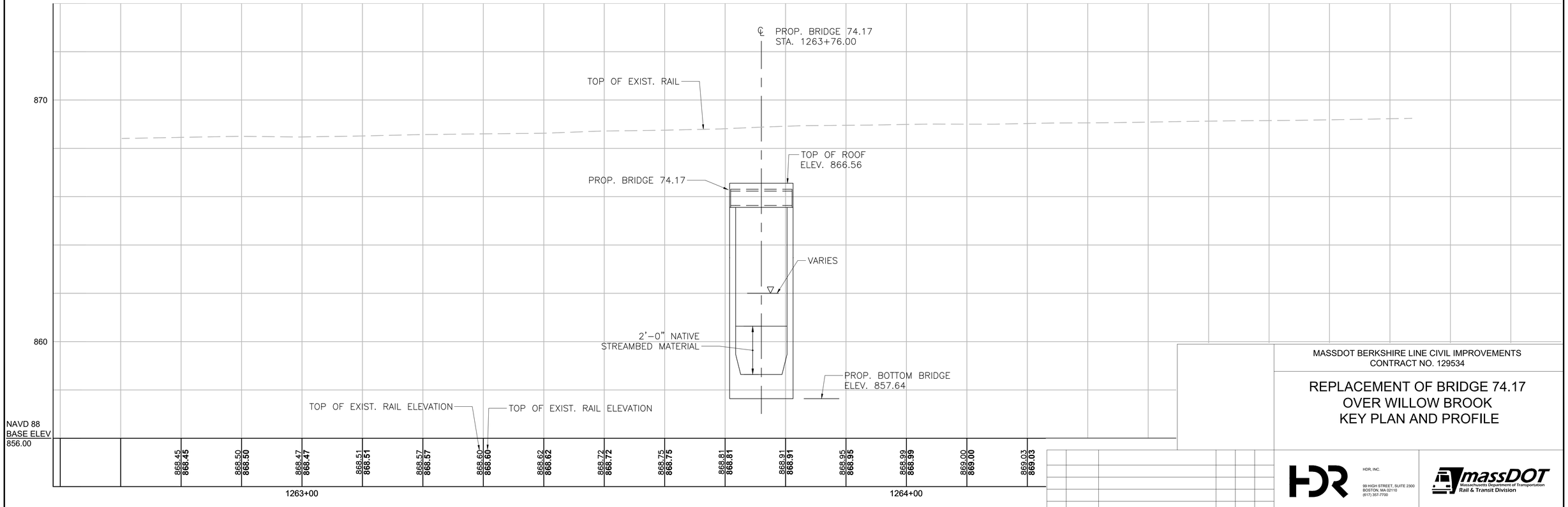


KEY PLAN
SCALE: 1" = 1'-0"



PROFILE ALONG TRACK CENTERLINE
HORIZONTAL SCALE: 1" = 8'-0"
VERTICAL SCALE: 1" = 2-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK KEY PLAN AND PROFILE

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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99 HIGH STREET, SUITE 2300
BOSTON, MA 02110
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SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
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ELEVATION (BASED ON NAVD 88): 865, 860, 855, 850, 845, 840, 835, 830, 825, 820, 815, 810, 805

BORING B201

BORING INFORMATION

LOCATION: 4-feet 7-inches south of N. Abut

GROUND SURFACE EL. (ft): 93 — DATE START/END: 1/16/2018 – 1/18/2018

VERTICAL DATUM: See Notes — DRILLING COMPANY: New England Boring

TOTAL DEPTH (ft): 55.0 — DRILLER NAME: Pete Michard

LOGGED BY: D. Litton — RIG TYPE: High Rail B-52

BORING B201 PAGE 1 of 2

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer – rope and cathead — CASING I.D./O.D.: 3 inch / 3.5 inch — CORE BARREL TYPE: NX

AUGER I.D./O.D.: NA / NA — DRILL ROD O.D.: 2.675 inch — CORE BARREL I.D./O.D. NA / NA

DRILLING METHOD: Driven casing and washed with rotary tooling.

WATER LEVEL DEPTHS (ft): See Notes

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D. = Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/Field Test Data	Layer Name	Soil and Rock Description
S1	0 to 2	24/11	25-66-39-37		SAND AND GRAVEL	S1: SILTY SAND WITH GRAVEL (SM); 70.4% fine to coarse sand, 16.7% fine gravel, 12.9% non-plastic silt from grain size analysis . Very dense. Tan.
S2	2 to 4	24/19	10-30-20-17		SAND AND GRAVEL	S2: SILTY SAND WITH GRAVEL(SM); 57% fine to coarse sand, 26.6% fine gravel, 16.4% non-plastic silt. Medium dense. Tan.
S3	4 to 5	12/7	14-17	Hole partially collapsed prior to split spoon	SILTY SAND	S3: SILTY SAND (SM); 71% fine to coarse sand, 29% non-plastic silt. Very dense. Tan
S4	5 to 7	24/22	15-22-24-20		SILTY SAND	S4: SILTY SAND (SM); 80.9% fine to medium sand, 19.1% non-plastic silt. Dense. Tan.
S5	10 to 12	24/12	6-12-10-11		SILTY SAND	S5: SILTY SAND (SM); ~60% fine to medium sand, ~30% low-plasticity silt, ~10% fine gravel. Medium dense.
C1	13 to 18	60/11		Core times (min/ft): 8, 3, 2, 3, 5	GLACIAL TILL	C1: 4" boulder, white, hard. 7" of till recovered.
S6	18 to 20	24/19	41-45-68-73		GLACIAL TILL	S6: SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~30% non-plastic silt, ~20% fine to coarse subangular gravel. Very dense. Tan to grey.
C2	25 to 26	12/10		Core times (min/ft): 3	GLACIAL TILL	C2: 12 inch core. 6" boulder, hard, white. 4" of till recovered.
S7	28 to 30	24/14	44-57-78-65		GLACIAL TILL	S7: CLAYEY SAND WITH GRAVEL (SC); ~40% low-plasticity fines, ~35% fine to coarse sand, ~25% fine to coarse gravel up to 1". Very dense. Brown.
S8	33 to 35	24/20	30-43-51-73		GLACIAL TILL	S8: CLAYEY SAND (SC); ~55% fine to medium sand, ~40% low-plasticity fines, ~5% fine gravel. Very dense. Grey.
S9	38 to 40	24/18	48-36-57-63		GLACIAL TILL	S9: CLAYEY SAND WITH GRAVEL (SC); ~45% fine to medium sand, ~40% low-plasticity fines, ~15% fine gravel. Very dense. Grey.
S10	43 to 45	24/19	33-37-51-105		GLACIAL TILL	S10: CLAYEY SAND (SC); ~50% fine to medium sand, ~40% low-plasticity fines, ~10% fine gravel. Very dense. Grey.
S11	48 to 48.1	1/1	100/1"		GLACIAL TILL	S11: SILTY GRAVEL WITH SAND (GM); ~55% fine to coarse gravel, ~25% non-plastic silt, ~20% fine to coarse sand. Very dense. Tan with black gravel.
C3	50 to 55	60/30		Core times (min/ft): 2, 3, 4, NM, NM	GLACIAL TILL	C3: 20" boulder into till. White, hard, fracture at 12" ~30 deg. 10" of till recovered. Multiple boulder and cobble fragments in till recovered.
						Bottom of boring at 55 feet. Borehole backfilled with cuttings.

NOTES: Vertical Datum: Top of rail at midspan of bridge taken as El. 100. Approximately 2-feet of water in Willow Brook at time of drilling.

PROJECT NAME: MassDOT Berkshire Line, Bridge MP 74.23

CITY/STATE: Lee, Massachusetts

GEI PROJECT NUMBER: 1703257

WATER TALBE EL. 863.9±

BOTTOM OF BOTTOM SLAB BRIDGE STRUCTURE EL. 857.64

BOTTOM OF PRECAST CUT-OFF WALL EL. 855.64

BORING B202

BORING INFORMATION

LOCATION: 6-feet 7-inches south of n. abut backwall

GROUND SURFACE EL. (ft): 93 — DATE START/END: 1/23/2018 – 1/25/2018

VERTICAL DATUM: See Notes — DRILLING COMPANY: New England Boring

TOTAL DEPTH (ft): 6.0 — DRILLER NAME: Pete Michard

LOGGED BY: D. Litton — RIG TYPE: High Rail B-52

BORING B202 PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer – rope and cathead — CASING I.D./O.D.: 3 inch / 3.5 inch — CORE BARREL TYPE: NA

AUGER I.D./O.D.: NA / NA — DRILL ROD O.D.: 2.675 inch — CORE BARREL I.D./O.D. NA / NA

DRILLING METHOD: Driven casing and washed with rotary tooling.

WATER LEVEL DEPTHS (ft): See Notes

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D. = Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/Field Test Data	Layer Name	Soil and Rock Description
S1	0 to 2	24/14	8-21-35-26		SAND AND GRAVEL	S1: NARROWLY GRADED GRAVEL WITH SILT AND SAND (GP-GM); ~50% fine to coarse gravel, ~40% fine to coarse sand, ~10% non-plastic fines. Very dense. Tan.
S2	2 to 4	24/16	41-24-26-26	Splitspoon extender used	SAND AND GRAVEL	S2: WIDELY GRADED SAND WITH GRAVEL (SW); ~60% fine to coarse sand, ~35% fine to coarse gravel, ~5% non-plastic fines. Very dense. Tan
S3	4 to 6	24/8	16-12-40-35		SILTY SAND	S3: NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% fine sand, ~10% non-plastic fines. Very dense, Tan.
						Bottom of boring at 6 feet. Borehole backfilled with cuttings.

NOTES: Vertical Datum: Top of rail at midspan of bridge taken as El. 100. Approximately 2-feet of water in Willow Brook at time of drilling.

PROJECT NAME: MassDOT Berkshire Line, Bridge MP 74.23

CITY/STATE: Lee, Massachusetts

GEI PROJECT NUMBER: 1703257

GEI WOBURN STD 1-LOCATION-LAYER NAME HOUSATONIC BR 74.23.GPJ 1/31/25

WATER TALBE EL. 863.9±

BOTTOM OF BOTTOM SLAB BRIDGE STRUCTURE EL. 857.64

BOTTOM OF PRECAST CUT-OFF WALL EL. 855.64

BORING NOTES:

1. LOCATION OF BRIDGE BORINGS SHOWN ON THE KEY PLAN THUS: B#
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 LOG 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 $1\frac{3}{8}$" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE BETWEEN JANUARY 16 AND JANUARY 25, 2018.
6. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK BORING LOGS

HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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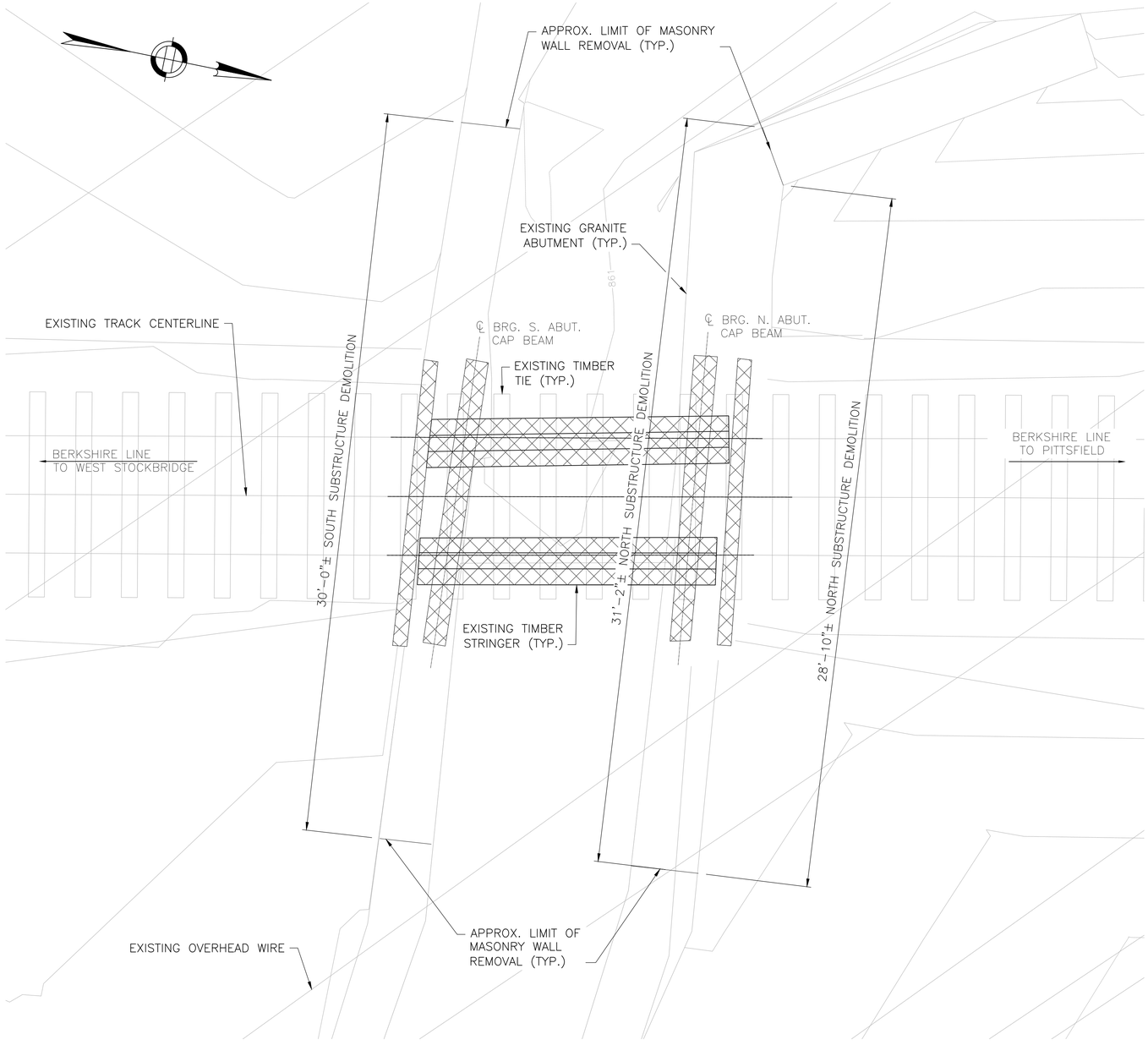
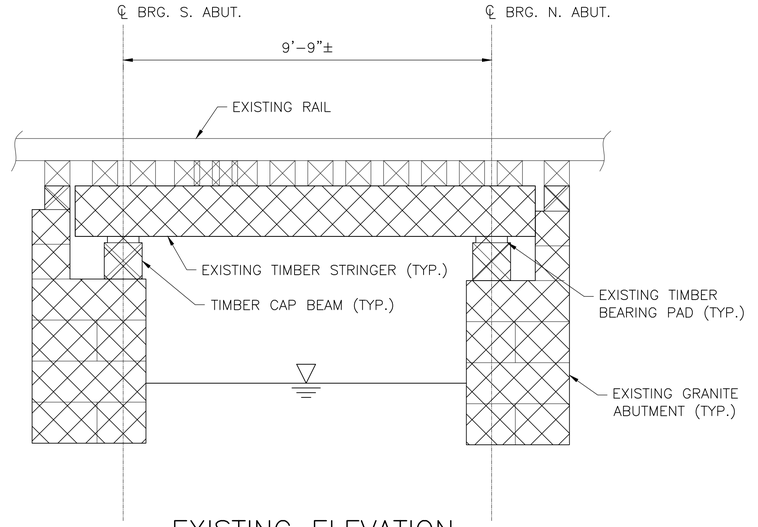
SCALE: ---- | DRAWN BY: SSL | DESIGN BY: SSL | CHECK BY: SLB | PLAN NO.

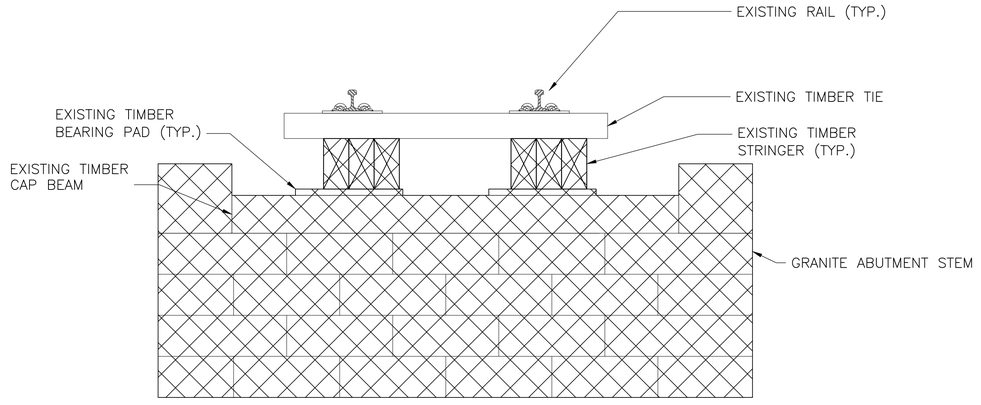
DATE: 06/20/25 | SHEET: S-203 | ISSUE



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



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



EXISTING – TYPICAL ABUTMENT ELEVATION
SCALE: $\frac{1}{2}$" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK
EXISTING PLAN AND DEMOLITION LIMITS

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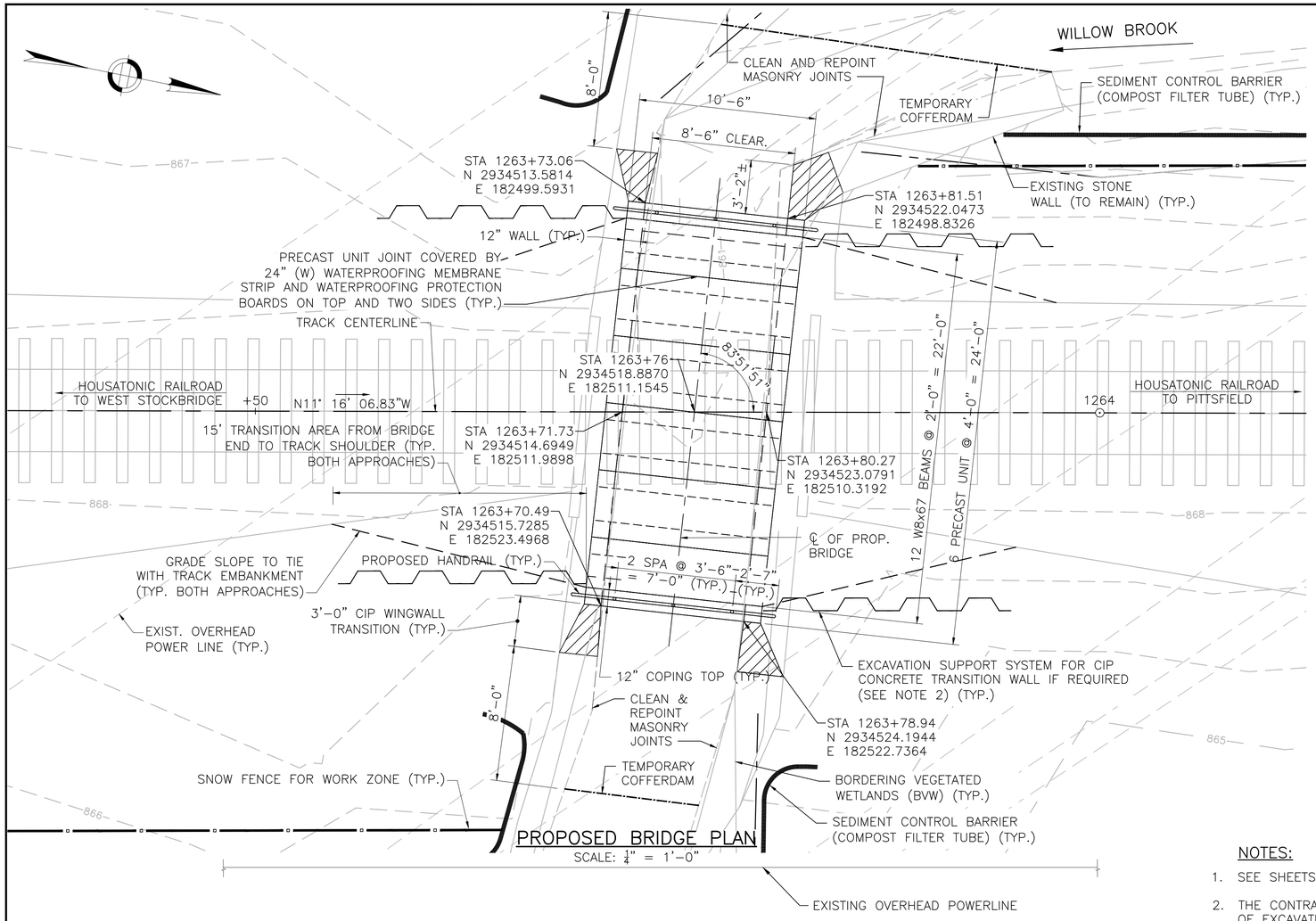
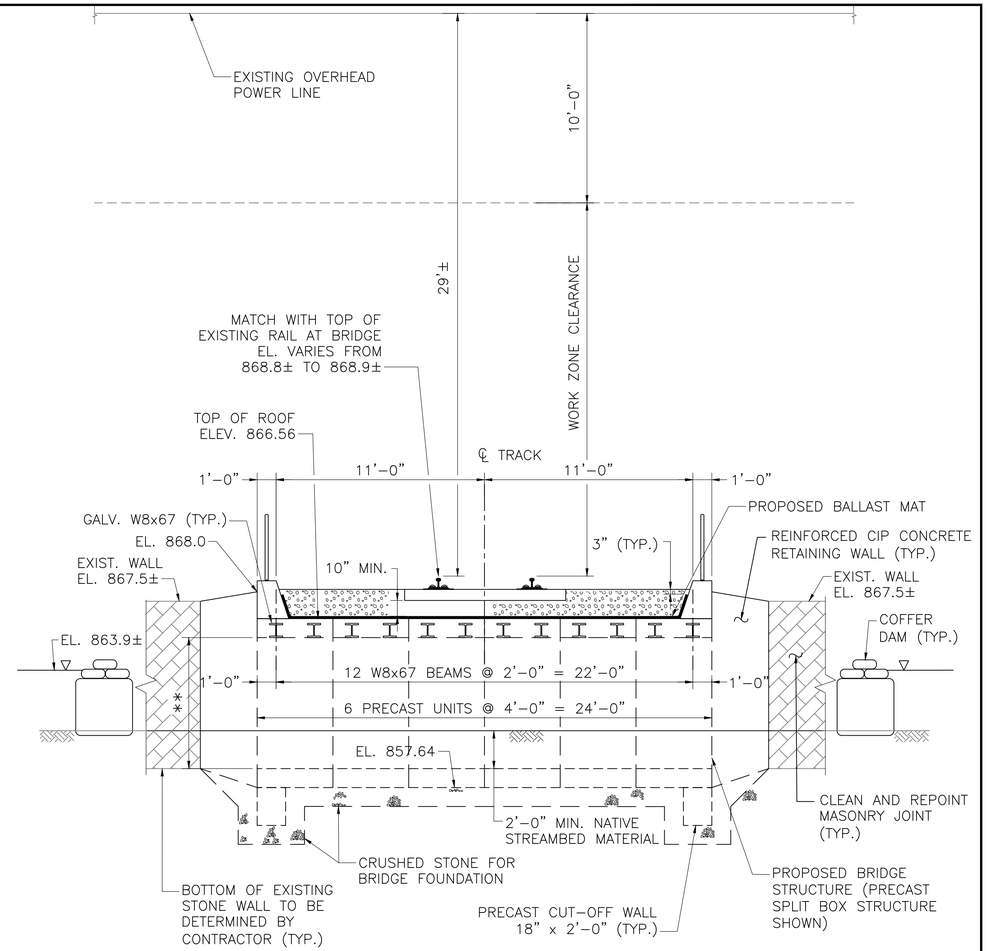
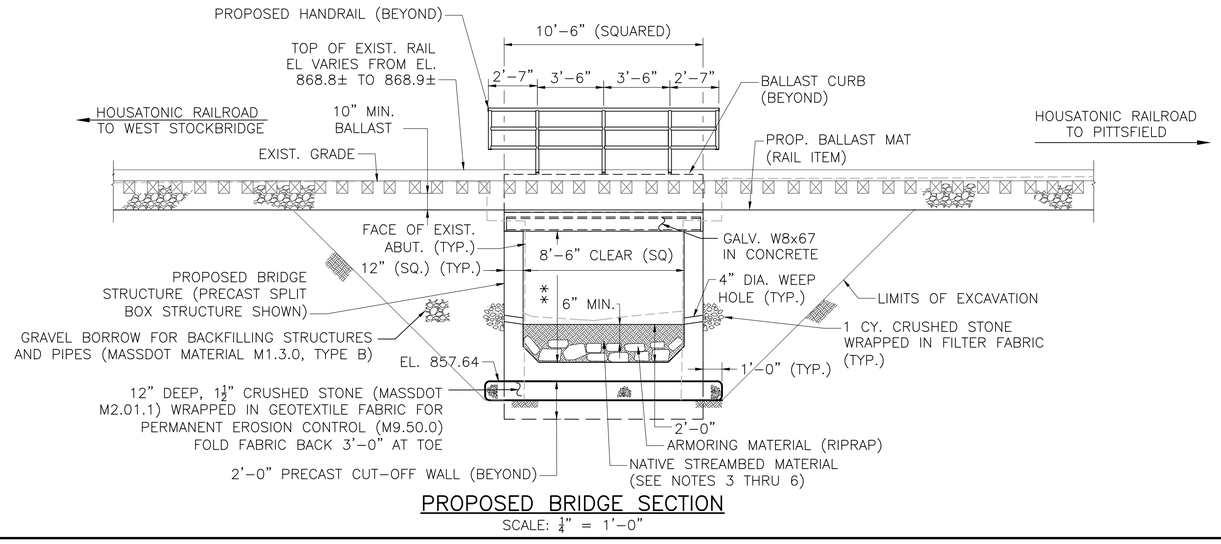


PROPOSED BRIDGE PLAN
SCALE: 1/4" = 1'-0"



TYPICAL LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"



PROPOSED BRIDGE SECTION
SCALE: 1/4" = 1'-0"

NOTES:

1. SEE SHEETS 100 AND 201 FOR STRUCTURAL NOTES.
2. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND LIMITS OF EXCAVATION SUPPORT SYSTEM BASED ON CONSTRUCTION SEQUENCING, MEANS AND METHODS OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF EXCAVATION SUPPORT SYSTEM IN ACCORDANCE WITH REQUIREMENTS IN SPECIAL PROVISIONS.
3. THE STREAMBED RESTORATION SHALL REPLICATE THE EXISTING NATURAL CHANNEL BED FOUND OUTSIDE THE WORK AREA IN TERMS OF MATERIAL, ROUGHNESS, SHAPE, PROFILE, AND APPEARANCE.
4. EXISTING STREAMBED MATERIAL EXCAVATED FROM LOCATION OF PERMANENT WATERWAY IMPACTS SHALL BE STOCKPILED TO FACILITATE REINSTALLATION AND REPLICATION OF THE NATURAL STREAMBED AND SHALL BE REUSED TO FILL THE VOIDS IN THE PROPOSED ARMORING MATERIAL.
5. ADDITIONAL STREAMBED MATERIAL SHALL BE LOCALLY SOURCED AND MATCH THE COMPOSITION OF THE EXISTING NATIVE RIVERBED.
6. THE PROPOSED BRIDGE AND STREAMBED RESTORATION IS REQUIRED TO COMPLY WITH ALL ENVIRONMENTAL PERMITS ISSUED FOR THE PROJECT AND TO BE IN ACCORDANCE WITH SPECIAL PROVISIONS FOR STREAM RESTORATION.

NOTE:

PRECAST CONCRETE SPLIT BOX ALTERNATIVE SHOWN THIS SHEET. PRECAST CONCRETE BOX ALTERNATIVE SIMILAR.

** VERTICAL CLEARANCE
6'-11" PRECAST CONCRETE SPLIT BOX ALTERNATIVE
6'-9" PRECAST CONCRETE BOX ALTERNATIVE

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK
PROPOSED BRIDGE PLAN AND SECTIONS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
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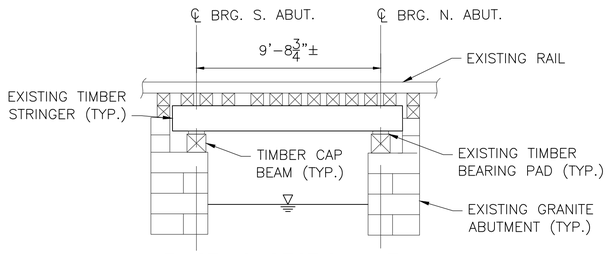
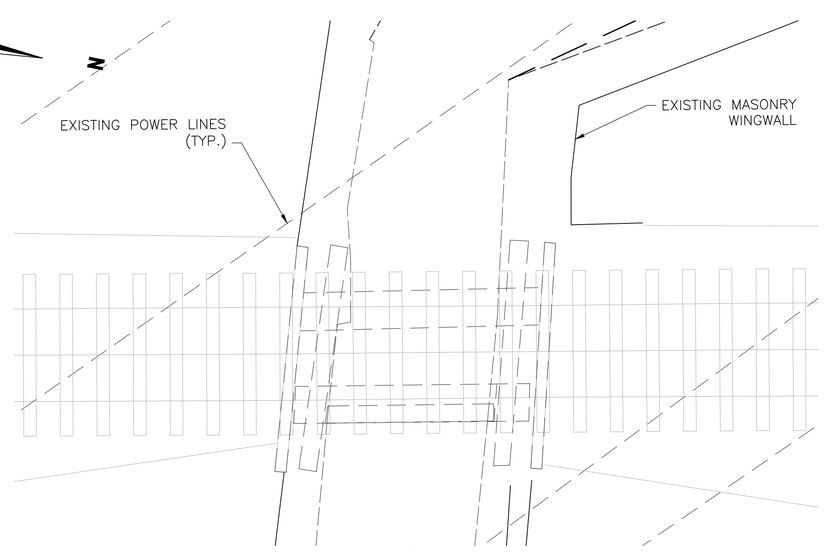


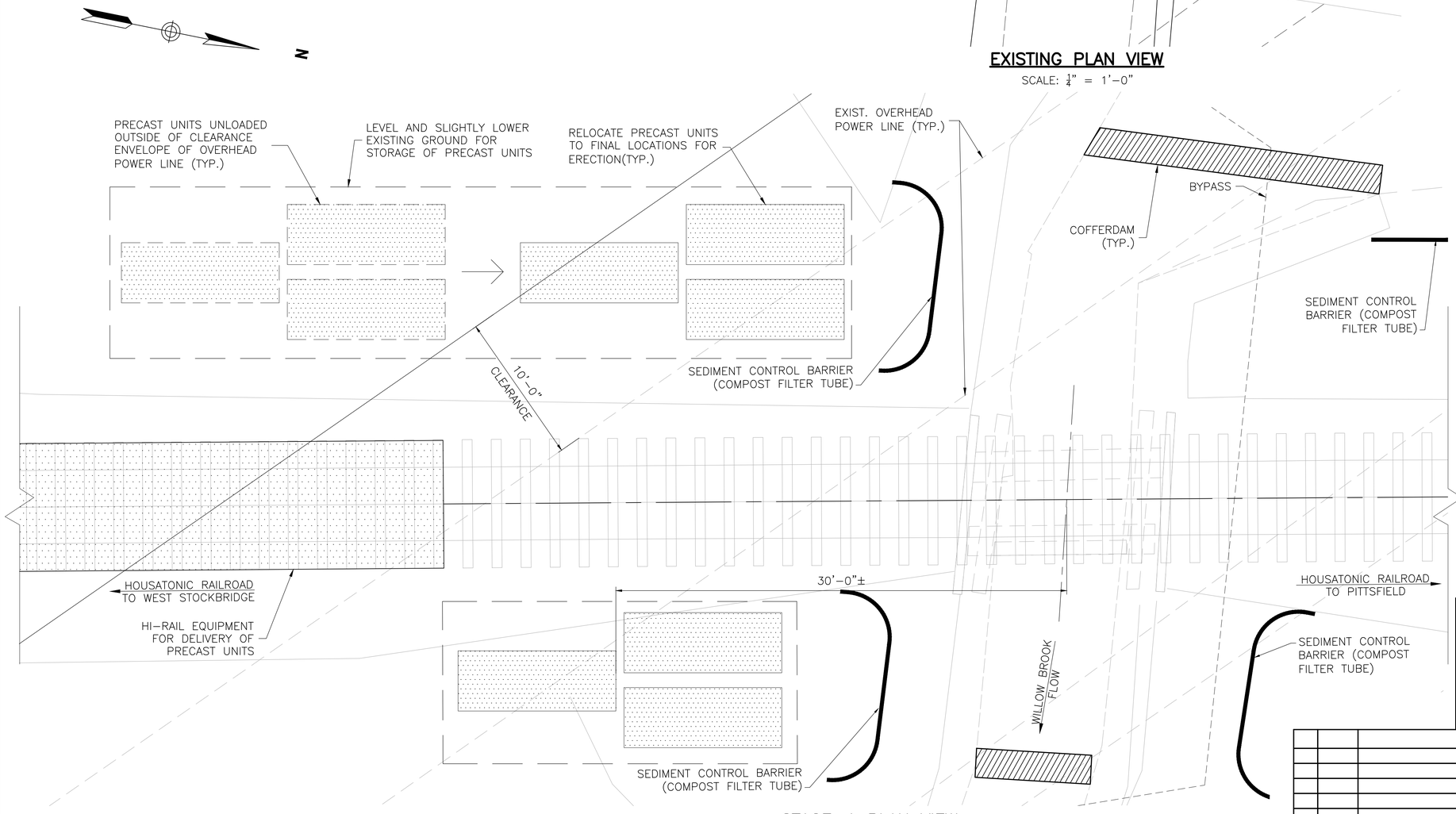
EXISTING SECTION VIEW

SCALE: ¼" = 1'-0"



EXISTING PLAN VIEW

SCALE: ¼" = 1'-0"



STAGE-1 PLAN VIEW

SCALE: ¼" = 1'-0"

SUGGESTED CONSTRUCTION SEQUENCING FOR BR. 74.17:

STAGE 1 – WORK WILL BE PERFORMED DURING NON-OPERATION HOURS

1. INSTALL COFFERDAM.
2. COORDINATE WITH EVERSOURCE FOR DEENERGIZE THE OVERHEAD POWERLINE DURING CONSTRUCTION.
3. DEENERGIZE THE OVERHEAD POWER LINE.
4. USE HI-RAIL EQUIPMENT TO DELIVER PRECAST U-SECTIONS AND BRIDGE ROOFS TO THE SITE AND USE EXCAVATOR TO OFFLOAD THE SECTIONS OUTSIDE OF CLEARANCE ENVELOPE OF OVERHEAD POWER LINE FIRST, THEN RELOCATE PRECAST UNITS TO FINAL LOCATIONS FOR ERECTIONS.
5. REENERGIZE THE OVERHEAD POWER LINE.
6. REPEAT THE SAME STEPS AS THE ABOVE TO INSTALL EXCAVATION SUPPORT SYSTEM AS NEEDED.

ISSUE	DATE	DESCRIPTION	BY	CH'KD	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK CONSTRUCTION STAGING 1 OF 2

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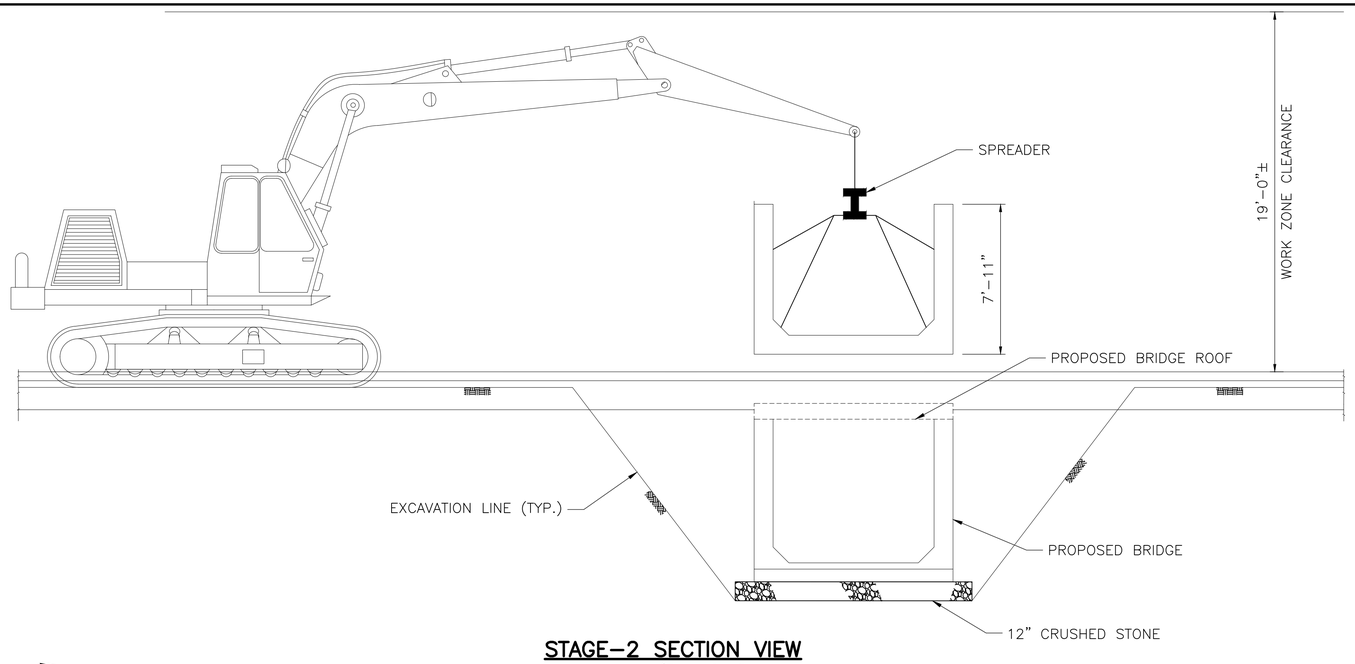
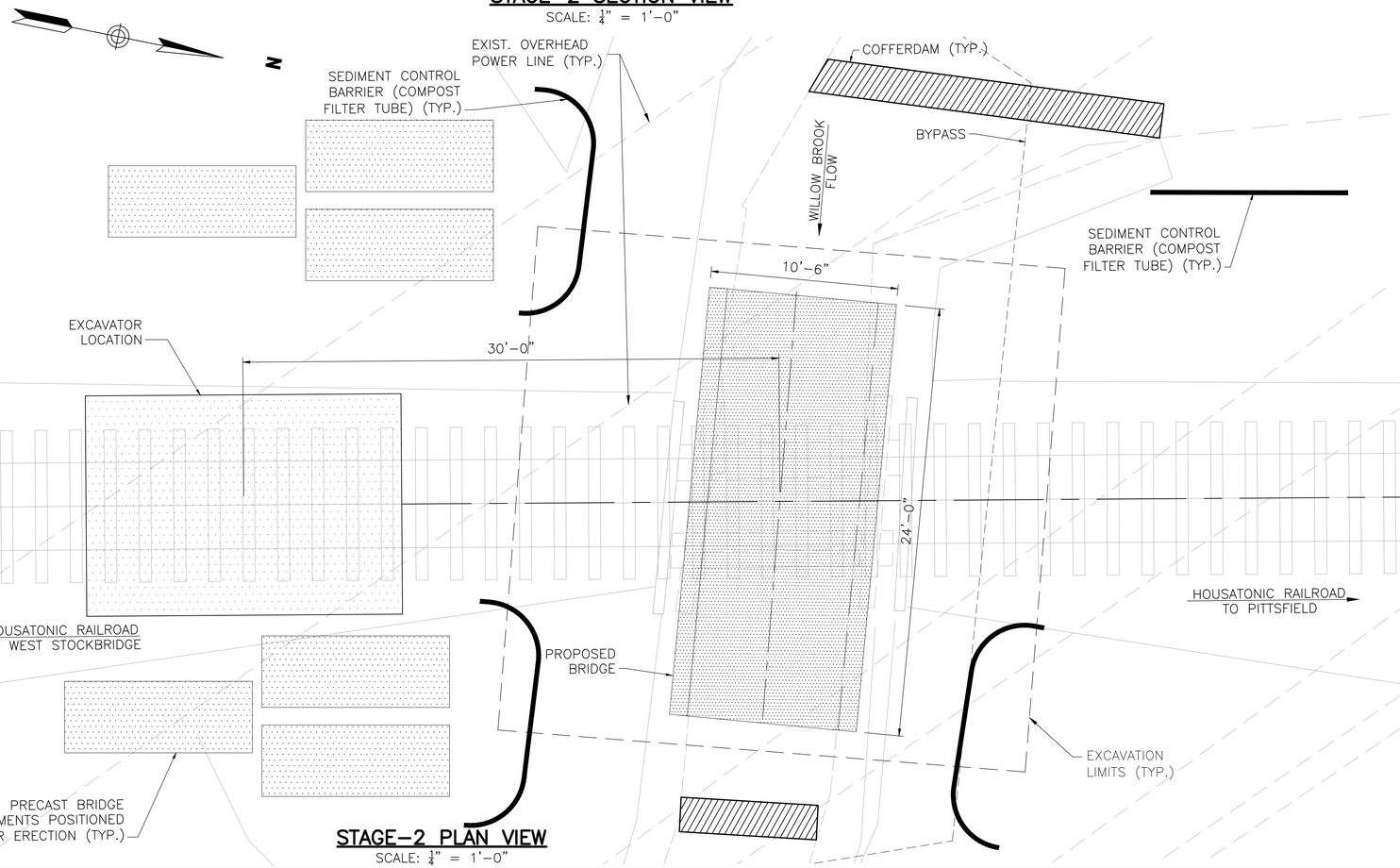


STAGE-2 SECTION VIEW

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



STAGE-2 PLAN VIEW

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

STAGE 2 – WORK WILL BE PERFORMED DURING 1ST WEEKEND TRACK CLOSURE

1. DEENERGIZE THE OVERHEAD POWER LINE AND DEWATER.
2. TEMPORARILY REMOVE EXISTING TRACK IN THE CONSTRUCTION ZONE.
3. DEMOLISH EXISTING TIMBER BRIDGE SUPERSTRUCTURE AND EXISTING STONE MASONRY ABUTMENTS AND WINGWALLS AS NEEDED FOR INSTALLATION OF PRECAST STRUCTURE.
4. EXCAVATE TO THE REQUIRED SUBGRADE ELEVATION AND COMPACT SUBGRADE. PLACE 12" CRUSHED STONE WRAPPED IN GEOTEXTILE ON THE COMPACTED SUBGRADE AS SHOWN ON SECTION.
5. USE EXCAVATOR TO ERECT PRECAST U-SECTIONS TO THE FINAL LOCATIONS.
6. INSTALL STREAMBED MATERIAL.
7. USE EXCAVATOR TO ERECT BRIDGE ROOF ONTO U-SECTIONS. INSTALL LONGITUDINAL RESTRAINT BRACKETS.
8. INSTALL MEMBRANE WATERPROOFING STRIPS AND WATERPROOFING PROTECTION BOARDS AT THE JOINTS OF BOX SECTIONS.
9. BACKFILL, INSTALL TRACK AND OPEN BRIDGE TO TRAIN SERVICE.

STAGE 3 – WORK WILL BE PERFORMED DURING 2ND WEEKEND TRACK CLOSURE

1. PARTIAL DEMOLISH EXISTING RETAINING WALLS AT FOUR CORNERS AS SHOWN ON THE PLANS, CONSTRUCT CAST-IN-PLACE CONCRETE RETAINING WALL TRANSITIONS AT FOUR CORNERS AND BACKFILL. THE CONTRACTOR CAN ELECT TO INSTALL EXCAVATION SUPPORT SYSTEM TO PERFORM THIS WORK DURING NON-OPERATION HOURS.

THE ABOVE IS A SUGGESTED SEQUENCE. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND TO ENSURE THE BRIDGE WORK WILL BE COMPLETE IN EACH WORK WINDOW AND WILL NOT INTERFERE WITH RAILROAD OPERATIONS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK
CONSTRUCTION STAGING SHEET 2 OF 2

HDR, INC.
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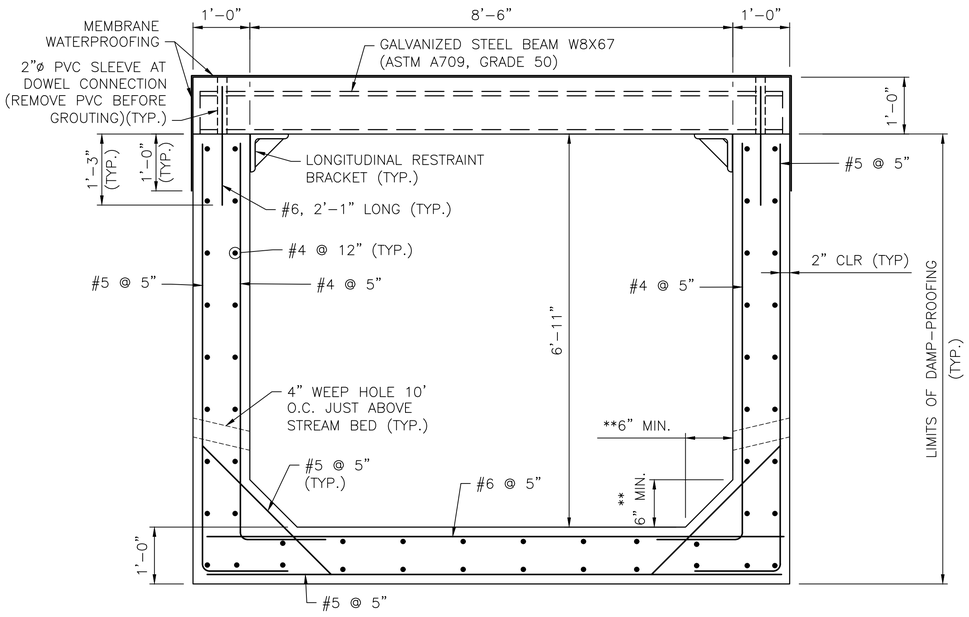
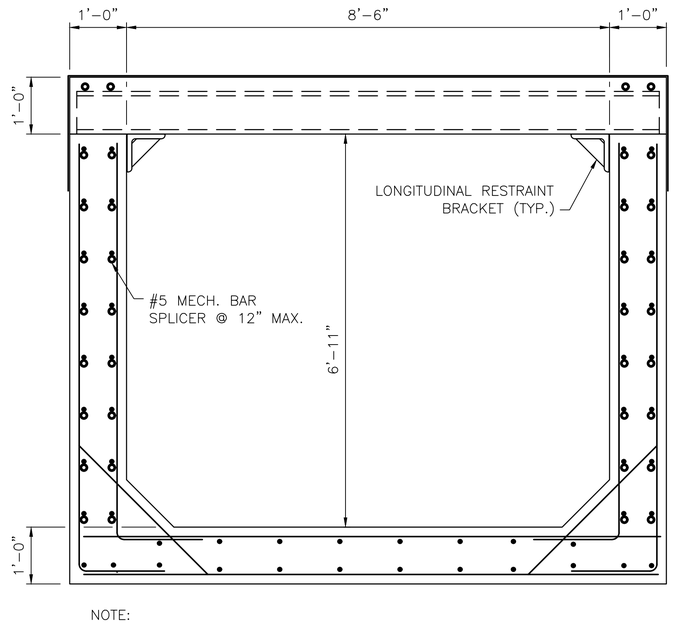


** HAUNCH MAY VARY BY CONTRACTOR.

TYPICAL SECTION FOR PRECAST SPLIT BOX ALTERNATIVE

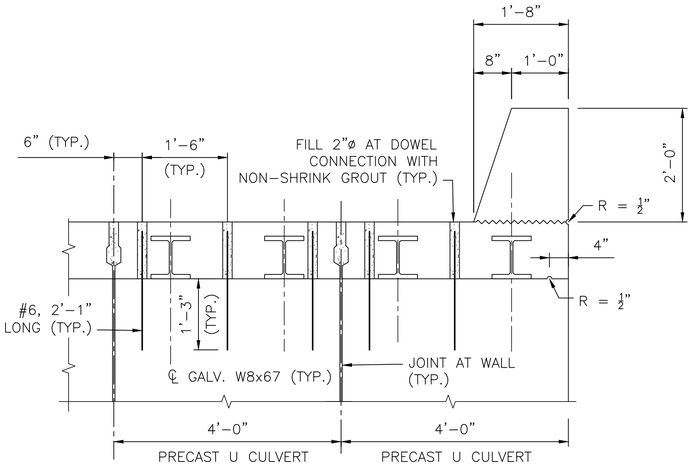
SCALE: $\frac{3}{4}$" = 1'–0"



NOTE:
RELEVANT INFORMATION NOT SHOWN, SEE TYPICAL SECTION THIS SHEET.

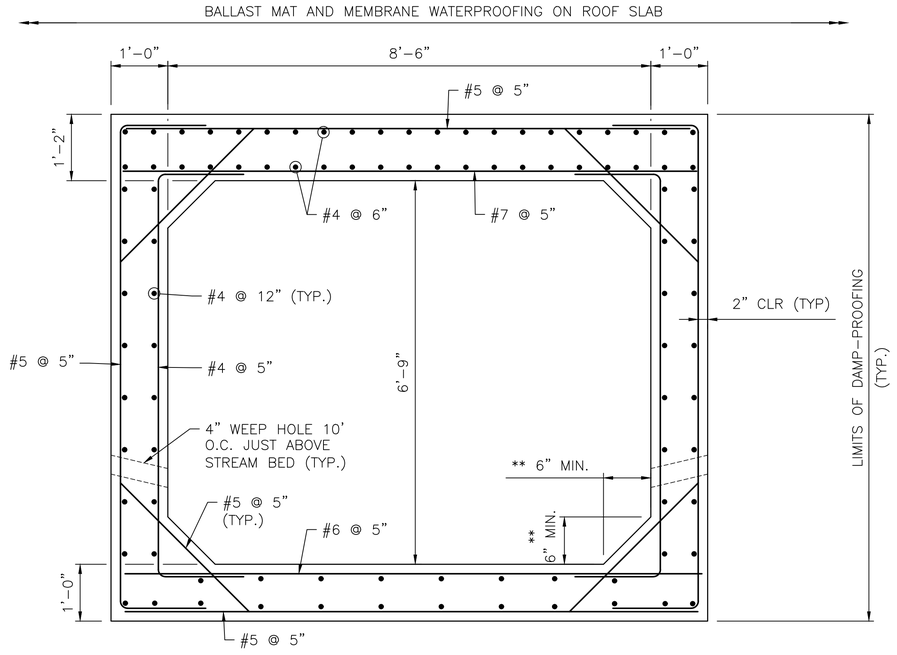
EXTERIOR PRECAST SECTION (FASCIA)

SCALE: $\frac{3}{4}$" = 1'–0"



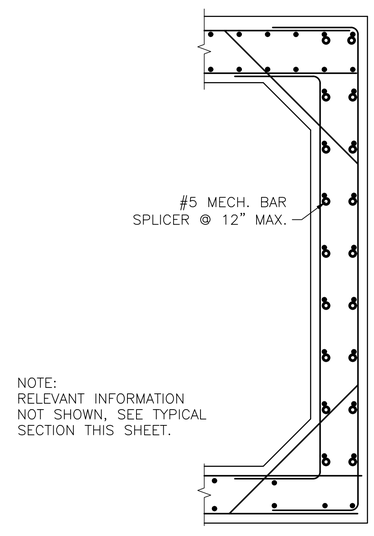
DETAILS FOR PRECAST SPLIT BOX ALTERNATIVE

SCALE: $\frac{3}{4}$" = 1'–0"



TYPICAL SECTION FOR PRECAST CONCRETE BOX ALTERNATIVE

SCALE: $\frac{3}{4}$" = 1'–0"



NOTE:
RELEVANT INFORMATION NOT SHOWN, SEE TYPICAL SECTION THIS SHEET.

EXTERIOR PRECAST SECTION (FASCIA)

SCALE: $\frac{3}{4}$" = 1'–0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK PRECAST CONCRETE BOX STRUCTURE DETAILS

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99 HIGH STREET, SUITE 2300
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MassDOT Massachusetts Department of Transportation Rail & Transit Division

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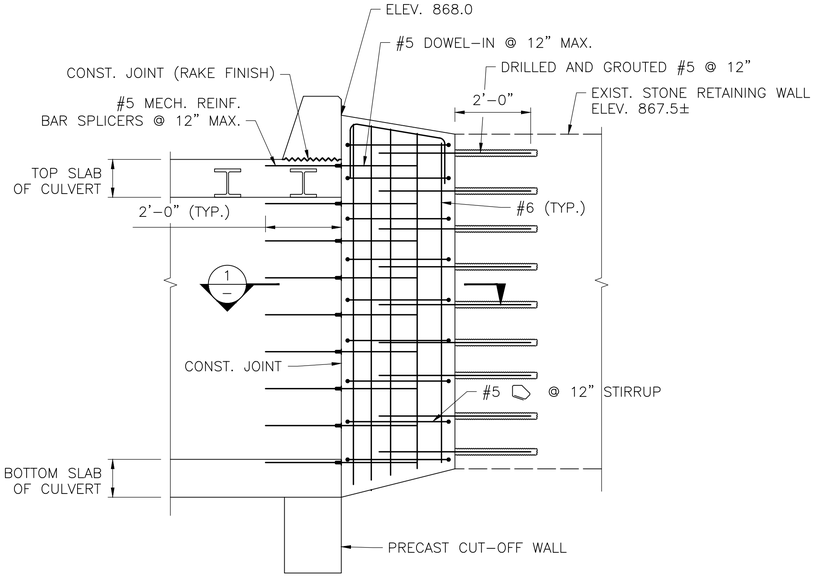
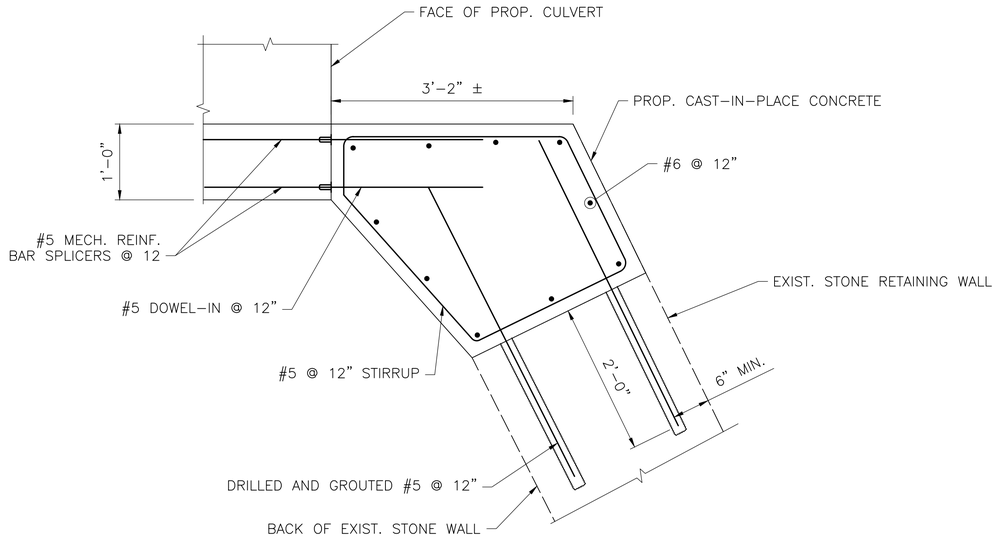


NOTES:
NORTHWEST RETAINING WALL DETAIL SHOWN. OTHER WALLS SIMILAR
EXTERIOR PRECAST SPLIT BOX STRUCTURE SHOWN.
EXTERIOR PRECAST CLOSED BOX STRUCTURE SIMILAR.

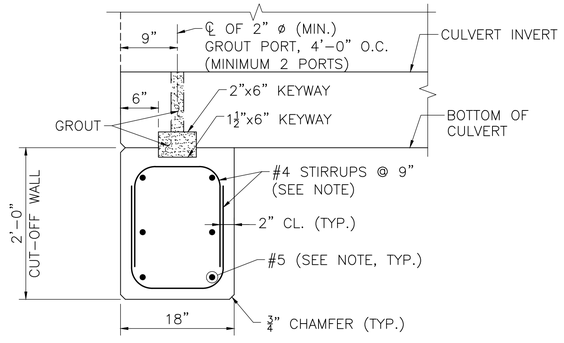
SECTION AT WINGWALL

SCALE: $\frac{1}{2}$" = 1'–0"



SECTION 1 (NW WALL TRANSITION)

SCALE: 1" = 1'–0"

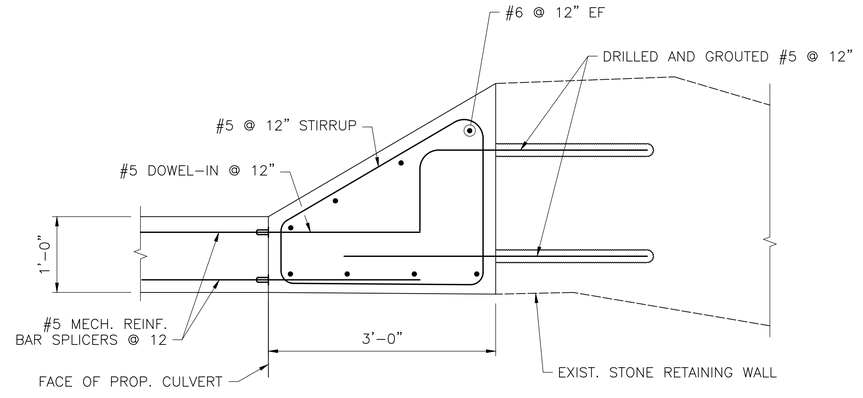


NOTE:

REINFORCEMENT SHOWN IS PRELIMINARY.
CONTRACTOR TO DETERMINE FINAL REINFORCEMENT.

CUT–OFF WALL CONNECTION DETAIL

SCALE: 1" = 1'–0"



SECTION 1

SCALE: 1" = 1'–0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK WINGWALL DETAILS

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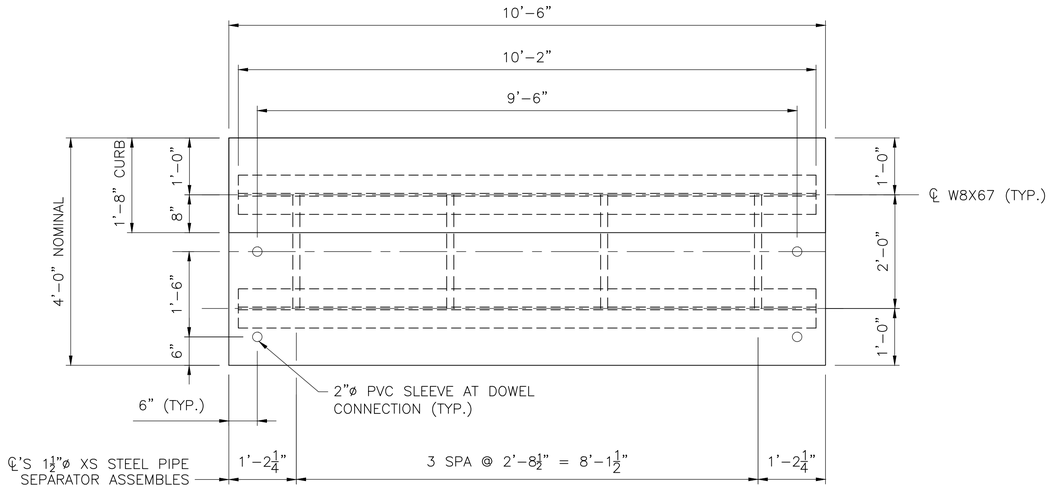
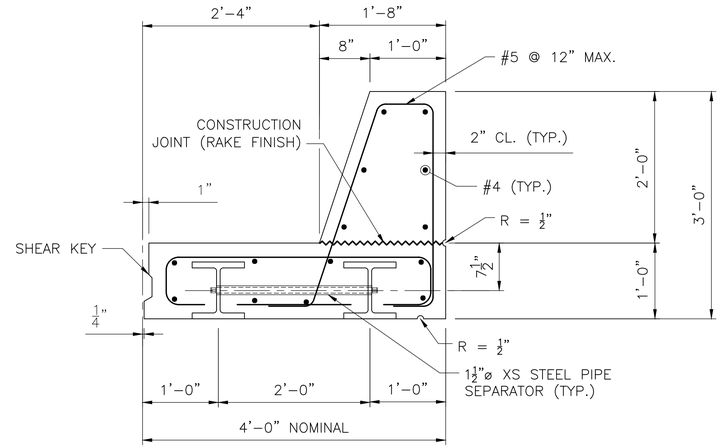


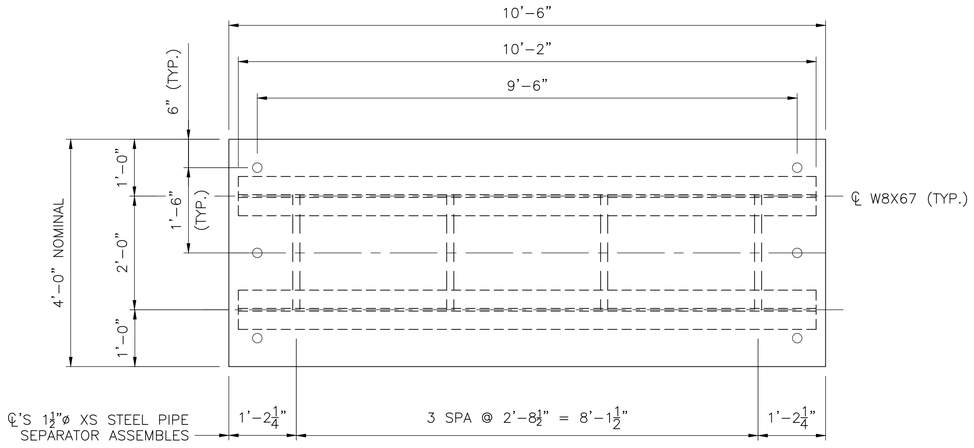
PLAN – EXTERIOR PRECAST PANEL

SCALE: ¾" = 1'–0"



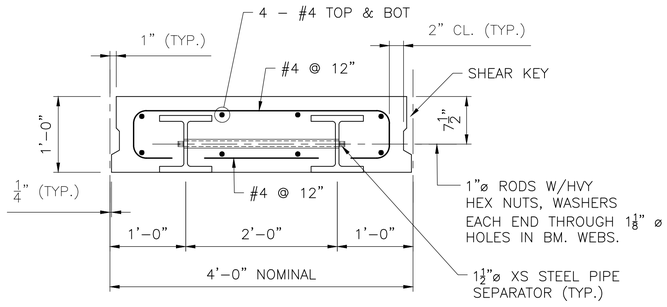
EXTERIOR PRECAST PANEL

SCALE: 1" = 1'–0"



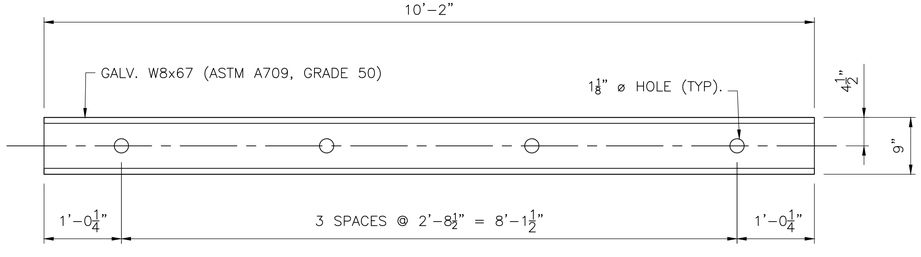
PLAN – INTERIOR PRECAST PANEL

SCALE: ¾" = 1'–0"



INTERIOR PRECAST PANEL

SCALE: 1" = 1'–0"



STEEL ENCASED BEAM DETAIL

SCALE: 1" = 1'–0"

PRECAST SPLIT BOX ALTERNATIVE

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK PROPOSED PRECAST PANEL

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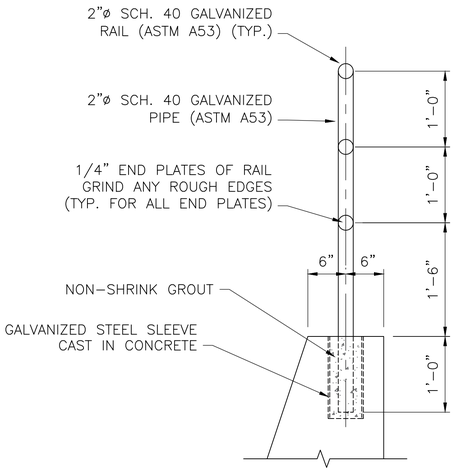
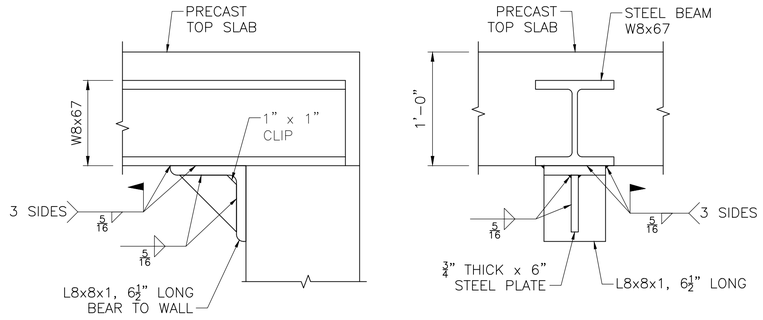


HANDRAIL DETAILS

SCALE: 1" = 1'-0"

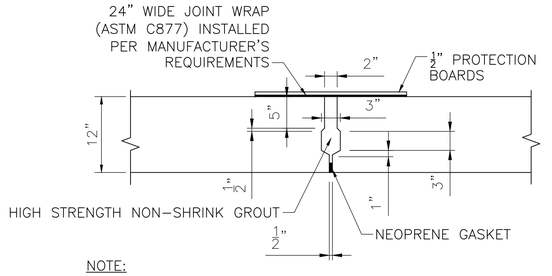


TERMINATE WELD 1/4" FROM ALL EDGES.

LONGITUDINAL RESTRAINT BRACKET

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

(4 EACH PRECAST PANEL; 24 TOTAL)

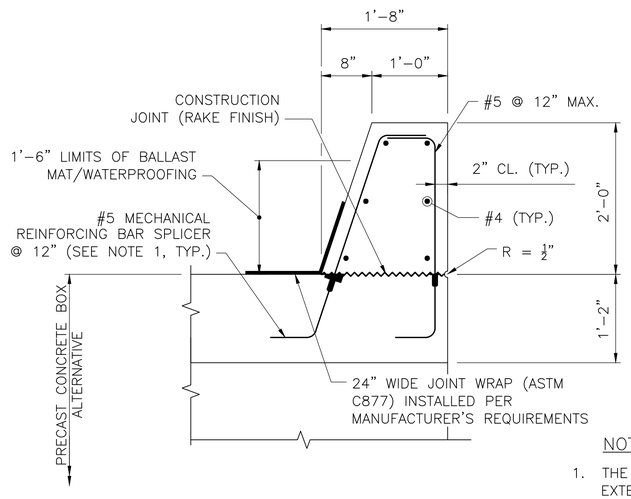


NOTE:

DETAILS AND DIMENSIONS ARE CONCEPTUAL AND MAY BE ALTERED BY THE FABRICATOR TO SUIT THEIR OPERATIONS, HOWEVER THE FUNCTION AND INTENT OF THE DETAIL MUST BE MET.

TOP SLAB SHEAR KEY
PRECAST SPLIT BOX ALTERNATIVE ONLY

SCALE: 1" = 1'-0"

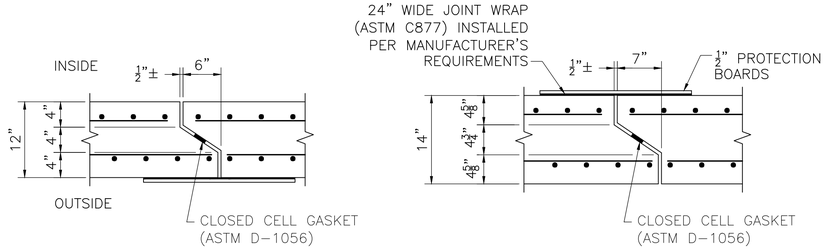


COPING DETAILS

SCALE: 1" = 1'-0"

NOTES:

1. THE CONTRACTOR MAY SUBSTITUTE EXTENDED #5 HOOPS FOR THE MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS AS SHOWN.
2. CONCRETE BOX REINFORCEMENT AND HANDRAIL NOT SHOWN FOR CLARITY.



NOTES:

1. INSTALL (2) STRIPS OF 1 1/8" X 3/4" CON-SEAL BUTYL CAULKING JOINT SEALANT CS-102 IN CONTINUOUS STRIP.
2. PRIME DRY CLEAN FRESH CONCRETE SURFACE WITH CON-SEAL.

JOINT SEALANT FOR PRECAST BOX DETAIL

SCALE: 1" = 1'-0"

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

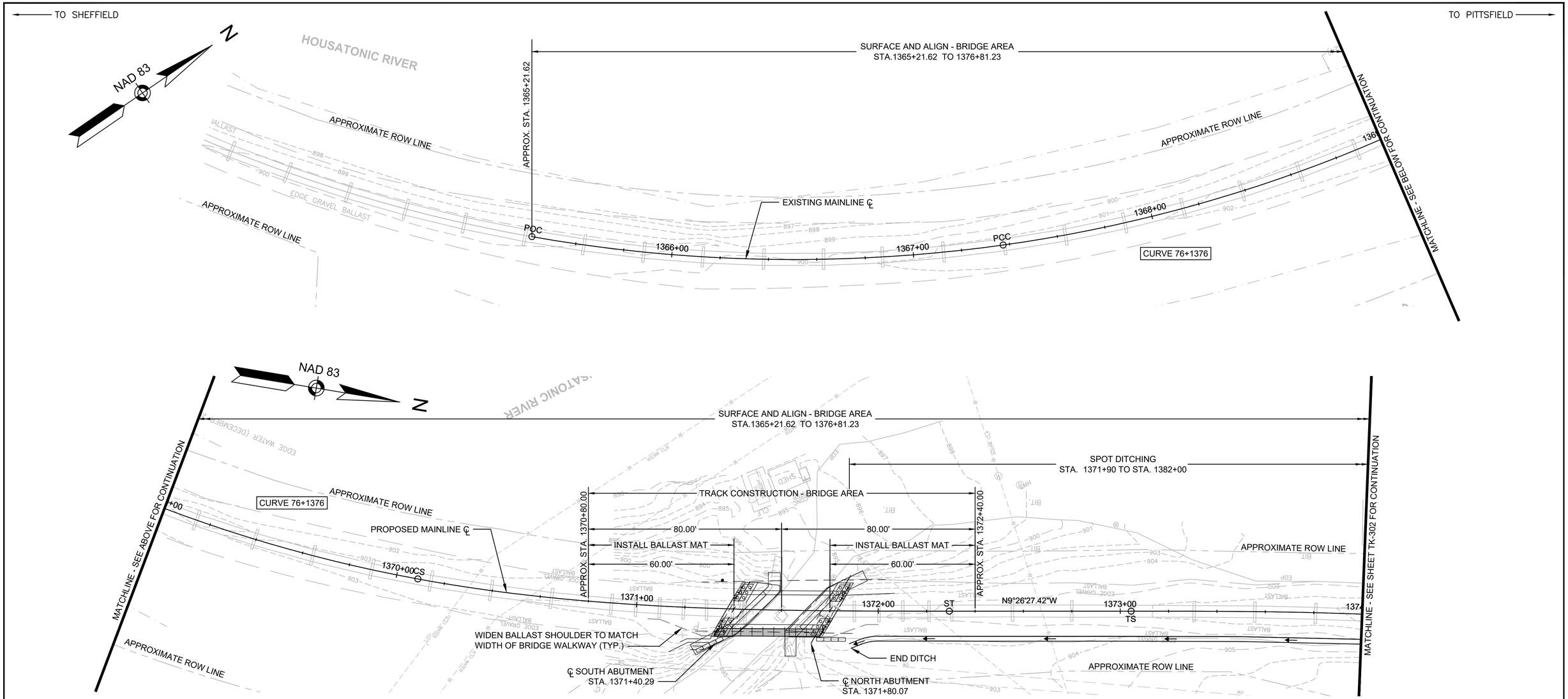
MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REPLACEMENT OF BRIDGE 74.17 OVER WILLOW BROOK MISCELLANEOUS DETAILS

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	SSL	SSL	SLB	SHEET: S-211	



PROPOSED TRACK GEOMETRY DATA

ELEMENT	CURVE NO.	POINT	STATION	BEARING	COORDINATES		DATA			
					Northing	Easting				
COMPOUND CURVE	76+1376	POC	1365+21.62		2943651.6334	183641.1257	V= 25 mph	Ea = 2.50"	Ee = 4.00"	Eu = 1.50"
		PI			2943644.2855	183672.5186	Δc = 36°23'06.07"	Dc= 9°09'22.25"	R= 626.43'	Lc= 397.81'
		PCC	1367+37.28		2943828.3357	183764.7529	Tc= 205.87'	Ec= 32.96'	CC: N 2944108.9918	E 183204.7146
							V= 25 mph	Ea = 2.50"	Ee = 4.13"	Eu = 1.63"
		PI			2943951.7984	183826.6247	Δc = 25°38'54.83"	Dc= 9°27'19.11"	R= 606.65'	Lc= 271.57'
		CS	1370+08.85		2944089.8771	183828.9592	Tc= 269.31'	Ec= 15.52'	CC: N 2944100.1321	E 183222.3936
SPIRAL							Δs = 10°24'34.36"	Ls= 220.43'	LT= 147.21'	STs=73.71'
		ST	1372+29.28		2944308.7934	183806.0580	Xs= 219.71'	Ys= 13.32'	P= 3.33'	K= 110.10'
TANGENT				N 9°26'27.42" W			L= 75.20'			
SPIRAL		TS	1373+04.49		2944382.9796	183793.7221	Δs = 3°47'29.48"	Ls= 124.04'	LT= 82.71'	STs= 41.36'
							Xs= 123.99'	Ys= 2.74'	P= 0.68'	K= 62.01'
CURVE	76+2497	SC	1374+28.53		2944505.7369	183776.0825	Δc = 40°36'45.43"	Dc= 6°06'58.23"	R= 937.24'	Lc= 664.34'
		PI			2944850.8639	183741.9418	V=25 mph	Ea = 2.63"	Ee = 2.67"	Eu = 0.04"
		POC	1376+88.95		2944756.1584	183835.9602	Tc= 346.81'	Ec= 62.11'	CC: N 2944597.9998	E 184708.7662

NOTES:

1. EXISTING TIES SHALL BE REMOVED WITHIN THE LIMITS SHOWN ON THE PLANS. TIES NOT IDENTIFIED FOR SALVAGE BY THE ENGINEER SHALL BE DISPOSED OF IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
2. EXISTING RAIL, PLATES, AND JOINT BARS TO BE REMOVED AND COLLECTED BY THE CONTRACTOR AND RETURNED TO HRRC. LIMIT OF REMOVAL SHALL BE AT THE FIRST RAIL JOINT LOCATED BEYOND THE TRACK CONSTRUCTION LIMIT. CONTRACTOR TO INSTALL NEW 136RE RAIL, RESILIENT FASTENER PLATES AND JOINT BARS.
3. BALLAST SHALL BE REMOVED TO A DEPTH OF 10" BELOW THE PROPOSED BOTTOM OF TIE ELEVATION IN TIE REPLACEMENT AREAS TO ALLOW FOR INSTALLATION OF BALLAST MAT.
4. EXISTING TRACK TO BE SURFACED AND ALIGNED TO MEET EXISTING ALIGNMENT.

HOR. SCALE IN FEET
20 0 20 40

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS MAINLINE PLAN STA. 1364+00 TO STA. 1374+00

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT
Massachusetts Department of Transportation
Rail & Transit Division

SCALE: 1"=20'	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: TK-201	

TO SHEFFIELD

TO PITTSFIELD

NAD 83

N

SURFACE AND ALIGN - BRIDGE AREA
STA.1365+21.62 TO 1376+81.23

APPROXIMATE ROW LINE

SPOT DITCHING
STA. 1371+90 TO STA. 1382+00

END DITCH

EXISTING MAINLINE ℄

PROPOSED MAINLINE ℄

POC

SC

1375+00

1376+00

1377+00

1378+00

CURVE 76+2497

STA. 1378+07
12" HDPE FES

STA. 1378+63
12" HDPE FES

56 LF - 12" HDPE

APPROXIMATE ROW LINE

MATCHLINE - SEE SHEET TK-101 FOR CONTINUATION

MATCHLINE - SEE SHEET TK-103 FOR CONTINUATION

BUILDING

BIT.

EDGE GRAVEL BALLAST

BALLAST

LEDGE

6"CLF

COLUMBIA STREET

NAD 83

N

SPOT DITCHING
STA. 1371+90 TO STA. 1382+00

APPROXIMATE ROW LINE

EXISTING MAINLINE ℄

EXISTING NO.10 TO

BEGIN DITCH

1380+00

1381+00

1382+00

1383+00

BEGIN DITCH

CONC.WALL

BALLAST

CURVE 76+2497

APPROXIMATE ROW LINE

MATCHLINE - SEE SHEET TK-101 FOR CONTINUATION

COLUMBIA STREET

APPROXIMATE ROW LINE

INV 24" RCP
EL=911.34'

HW

HOR. SCALE IN FEET
20 0 20 40

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS MAINLINE PLAN STA. 1374+00 TO STA. 1384+00

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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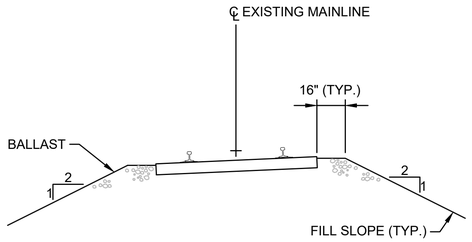
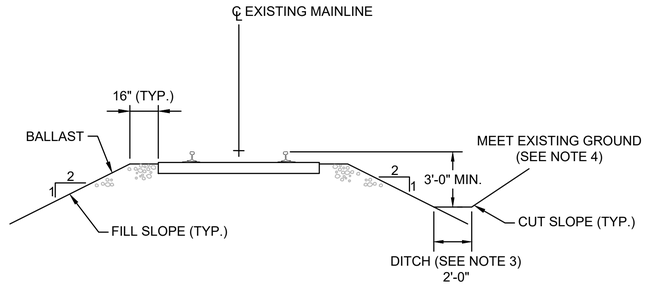
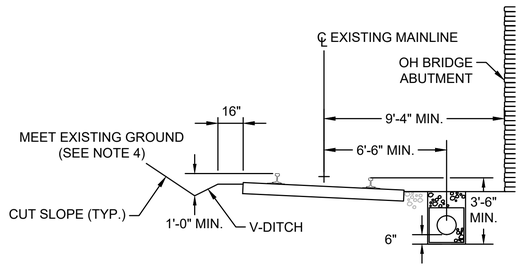
DATE: 06/20/25	HRW	HRW	DDF	SHEET: TK-202	



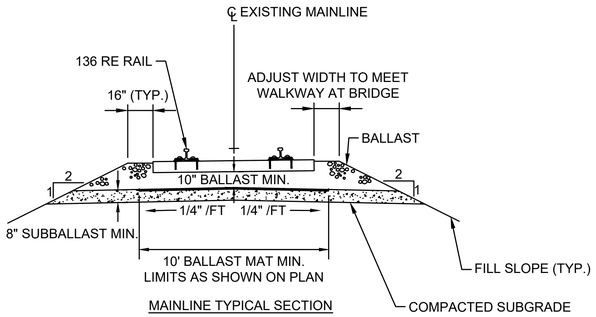
MAINLINE TYPICAL SECTION
STA. 1365+21 TO 1370+80
N.T.S.



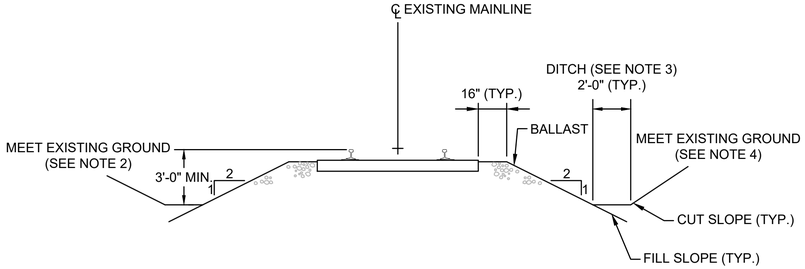
MAINLINE TYPICAL SECTION
STA. 1372+40 TO 1375+00
N.T.S.



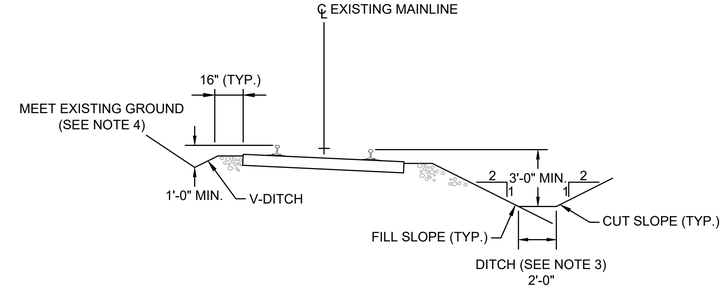
MAINLINE TYPICAL SECTION
STA. 1378+07 TO 1378+63
N.T.S



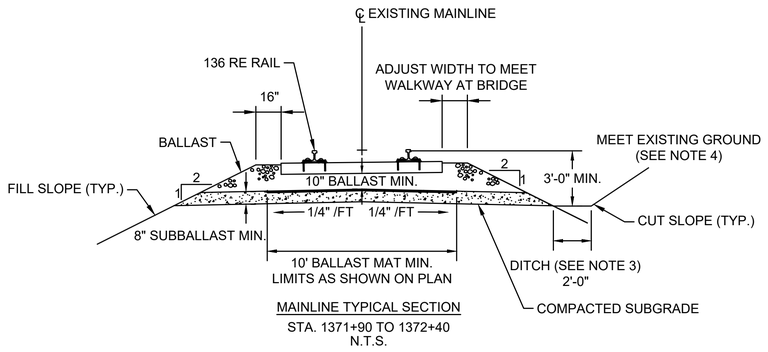
MAINLINE TYPICAL SECTION
STA. 1370+80 TO 1371+40
STA. 1371+80 TO 1371+90
N.T.S.



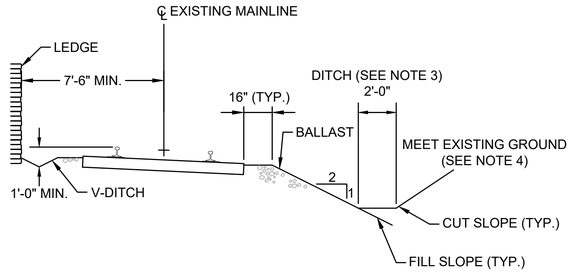
MAINLINE TYPICAL SECTION
STA. 1375+00 TO 1376+50
N.T.S.



MAINLINE TYPICAL SECTION
STA. 1378+63 TO 1382+00
N.T.S



MAINLINE TYPICAL SECTION
STA. 1371+90 TO 1372+40
N.T.S.



MAINLINE TYPICAL SECTION
STA. 1376+50 TO 1378+07
N.T.S

TRACK GENERAL NOTES

1. DITCHING REQUIREMENTS AND DIMENSIONS TO BE DETERMINED IN FIELD AT THE DIRECTION OF THE ENGINEER.
2. FINAL BALLAST SHOULDER WIDTHS IN AREAS TO BE SURFACED AND ALIGNED SHALL BE A MIN. OF 12" IN TANGENT TRACK AND 16" IN CURVES PER MASSDOT MW–1.
3. BALLAST SHOULDER AND SLOPE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS ALSO APPLY TO THE ENTIRE LIMITS OF POTENTIAL DITCHING AREAS.
4. CUT SLOPE TO BE 2:1 WHERE POSSIBLE, STEEPER SLOPES ARE ALLOWABLE AS DIRECTED BY THE ENGINEER.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS TYPICAL SECTIONS

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

MassDOT Massachusetts Department of Transportation
Rail & Transit Division

SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 06/20/25	HRW	HRW	DDF	SHEET: TK–203	

SCOPE OF WORK:

THE GENERAL SCOPE OF WORK AT THIS BRIDGE INCLUDES:

1. SELECTIVE CLEARING AND THINNING AT BRIDGE APPROACHES.
2. REPOINTING STONE MASONRY JOINTS IN EXISTING ABUTMENTS AND WINGWALLS.
3. INSTALLATION OF DRILLED MICROPILES FOR PROPOSED BRIDGE FOUNDATIONS.
4. TEMPORARY REMOVAL AND REINSTALLATION OF EXISTING TRACK.
5. DEMOLITION OF EXISTING BRIDGE SUPERSTRUCTURE AND PARTIAL DEMOLITION OF EXISTING STONE ABUTMENTS.
6. INSTALLATION OF PROPOSED PRECAST CONCRETE ABUTMENT CAPS.
7. INSTALLATION OF PROPOSED STEEL BRIDGE SUPERSTRUCTURE.
8. INSTALLATION OF NEW TRACK AND SURFACING.

STRUCTURE NOTES:

1. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES.
2. ALL WORK AT BRIDGE 76.23 SHALL BE PERFORMED DURING A SERIES OF SHUTDOWNS OF RAILROAD TRAFFIC. THE CONTRACTOR SHALL COORDINATE ALL SHUTDOWNS WITH HRRC. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SPECIFIC DATES, LENGTH OF SHUTDOWNS, AND LIQUIDATED DAMAGE PENALTIES FOR EXCEEDING AUTHORIZED TIME LIMITS.
3. THE PROPOSED REPLACEMENT BRIDGE ABUTMENT SEAT/CAPS WILL BE SUPPORTED BY DRILLED MICROPILES. DRILLED MICROPILES SHALL BE INSTALLED AT THE LOCATIONS AND ELEVATIONS SHOWN IN ADVANCE OF REMOVAL OF THE EXISTING BRIDGE. DRILLED MICROPILES HAVE BEEN LOCATED TO MINIMIZE INTERFERENCE WITH EXISTING ABUTMENT AND BACKWALL MASONRY AND EXISTING TRACK. SEE THE DEMOLITION PLAN SHEET FOR EXPECTED TRACK AND ABUTMENT REMOVAL LIMITS IN SUPPORT OF MICROPILE INSTALLATION. SEE MICROPILE DETAILS SHEET FOR ADDITIONAL INFORMATION.
4. THERE ARE EXISTING OVERHEAD UTILITIES PARALLEL TO THE TRACK IN THE WORK AREA TO THE EAST OF THE RAIL CORRIDOR. CONTRACTOR SHALL PERFORM DEMOLITION AND INSTALLATION OPERATIONS AT BRIDGE 76.23 SO THAT THE OVERHEAD UTILITIES ARE NOT IMPACTED OR SHALL COORDINATE TEMPORARY IMPACTS TO THE UTILITIES, INCLUDING RELOCATION OR DE-ENERGIZATION, WITH THE UTILITY OWNERS.
5. THERE IS NO CONSTRUCTION STAGING AREA DESIGNATED AT THE JOB SITE. AS REQUIRED, THE CONTRACTOR SHALL PROVIDE HIS/HER OWN ON-SITE AND/OR OFF-SITE STAGING AREA.
6. ALL CONSTRUCTION AND ACCESS SHALL BE WITHIN THE R.O.W. UNLESS OTHERWISE APPROVED BY THE PROPERTY OWNER(S) AND MASSDOT. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE PROPERTY OWNER(S) TO OBTAIN WRITTEN APPROVAL OF LAND USE OUTSIDE THE R.O.W. THE CONTRACTOR SHALL SUBMIT COPIES OF WRITTEN PROPERTY AGREEMENTS TO THE RESIDENT ENGINEER.
7. NEW CONTINUOUSLY WELDED RAIL (CWR) HAS BEEN STAGED WITHIN THE RIGHT-OF- WAY ON BOTH SIDES OF THE EXISTING TRACK FOR INSTALLATION BY HRRC DURING A FUTURE PROJECT. THE CONTRACTOR SHALL COORDINATE WITH HRRC TO HAVE THE CWR RELOCATED TO AVOID INTERFERANCE WITH THE CONTRACTORS OPERATIONS.
8. DRILLED MICROPILE DESIGN SHALL BE CONFIRMED BY MEANS OF A VERIFICATION TEST PERFORMED ON ONE SACRIFICIAL DRILLED MICROPILE. ONE PROOF TEST SHALL BE PERFORMED ON A PRODUCTION DRILLED MICROPILE.

BRIDGE 76.23 SUGGESTED CONSTRUCTION SEQUENCE:

1. CONSTRUCTION PHASE PRIOR TO BRIDGE REMOVAL.
   a. INSTALL DRILLED MICROPILES AT LOCATIONS SHOWN DURING A TRACK SHUTDOWN PERIOD.
2. CONSTRUCT REPLACEMENT THROUGH-GIRDER BRIDGE SUPERSTRUCTURE IN AN ADJACENT LAYDOWN AREA, INCLUDING DECK PLATES, WATERPROOFING, AND PROTECTION BOARDS.
3. CONSTRUCT REINFORCED CONCRETE ABUTMENT CAPS BACKWALLS AND STAGE IN LAYDOWN AREA.
4. EXISTING BRIDGE REMOVAL AND REPLACEMENT PHASE
   a. REMOVE EXISTING BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE SHOWN ON DEMOLITION PLANS.
   b. INSTALL PRECAST ABUTMENT CAP AT BOTH ABUTMENTS. COMPLETE CONNECTION TO DRILLED MICROPILES.
   c. INSTALL BRIDGE BEARINGS AT BOTH ABUTMENTS
   d. INSTALL THE REPLACEMENT BRIDGE SUPERSTRUCTURE.
   e. INSTALL BALLAST AT THE NEW BRIDGE.
   f. COMPLETE CONSTRUCTION OF THE APPROACHES TO THE NEW BRIDGE AS SHOWN ON THE TRACK PLANS
   g. WELD THE THROUGH GIRDERS TO THE BEARING SOLE PLATES.
   h. INSTALL THE NEW TIES AND TRACK ACROSS THE NEW BRIDGE.
5. POST-BRIDGE REPLACEMENT PHASE.
   a. REPOINT EXISTING MASONRY JOINTS.

ABUTMENT CAP NOTES:

1. THE ABUTMENT CAPS ARE TO BE PRECAST WITH BLOCKOUTS SIZED TO MAKE SURE THEY FIT OVER THE DRILLED MICROPILES SHOWN ON THE PLANS. THE BLOCKOUT DIMENSIONS SHOWN ON THE ABUTMENT CAP SHEETS ARE BASED ON THE FOLLOWING:
   a. BLOCKOUTS SHALL PROVIDE SPACE TO FIT OVER THE DRILLED MICROPILES, INCLUDING INSTALLATION TOLERANCES FOR THE MICROPILES AS LISTED IN THE PROJECT SPECIAL PROVISIONS. CONTRACTOR HAS THE OPTION TO CAST THE ABUTMENT CAPS AND BLOCKOUTS AFTER THE DRILLED MICROPILES ARE INSTALLED, IN ORDER TO BETTER KNOW THE ACTUAL INSTALLATION LOCATIONS.
   b. BLOCKOUTS SHALL PROVIDE A MINIMUM OF 2" CONCRETE COVER FOR REINFORCING BARS CAST INTO THE ABUTMENT CAP NEXT TO THE BLOCKOUT.
   c. BLOCKOUTS SHALL PROVIDE A MINIMUM OF 2" CLEAR DISTANCE AROUND REINFORCING BARS CAST INSIDE THE BLOCKOUTS AND THE BLOCKOUT EDGES PARALLEL TO THE REINFORCING BARS, SO THAT CONCRETE WILL BE ABLE TO FLOW ADEQUATELY AROUND THE REINFORCEMENT WHEN THE BLOCKOUTS ARE FILLED.
2. THE CONTRACTOR CAN PROPOSE CHANGES TO THE BLOCKOUTS SHOWN ON THE PLANS PROVIDED THE REQUIREMENTS OF (NOTE 1) ABOVE ARE MET. PROPOSED CHANGES SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.
3. LIFTING ATTACHMENTS AT THE ABUTMENT CAPS SHALL BE LOCATED AND DESIGNED BY THE CONTRACTOR.
4. THE REINFORCING BARS AT THE BOTTOM OF THE ABUTMENT CAPS ARE LOCATED IN BETWEEN THE DRILLED MICROPILES SO THAT THEY ARE SPACED RELATIVELY EVENLY ACROSS THE WIDTH OF THE CAP. THE DRILLED MICROPILES WILL INTERFERE WITH REINFORCING BARS AT THE ENDS OF THE CAPS. IN THE DRILLED MICROPILE AREAS, INTERFERING REINFORCEMENT SHALL BE TERMINATED AND THOSE BARS SHALL BE REPLACED WITH PARALLEL STRAIGHT BARS MOVED LATERALLY TO AVOID THE DRILLED MICROPILES, DESIGNED TO THE FOLLOWING:
   a. THE REPLACEMENT BARS SHALL OVERLAP WITH THE TERMINATED BARS. IF THE TWO BARS ARE STRAIGHT, THE MINIMUM LAP LENGTH SHALL BE 60 INCHES.
   b. IF THE LAPPED BARS BOTH TERMINATE AT A STANDARD 90 DEGREE HOOK, THE MINIMUM LAP LENGTH BETWEEN THE 90 DEGREE HOOKS SHALL BE 36 INCHES.
   c. THE ENDS OF THE REPLACEMENT BARS AT THE ENDS OF THE CAP SHALL TERMINATE AT STANDARD 90 DEGREE HOOKS, ORIENTED VERTICALLY SO THAT THEY DO NOT INTERFERE WITH EACH OTHER.
   d. THE LAPPED BARS SHALL BE NONCONTACT LAP SPLICES. THEY MUST MEET THE FOLLOWING CRITERIA: THE MAXIMUM CENTER TO CENTER DISTANCE BETWEEN THE LAPPED BARS IS 6 INCHES. A LAPPED BAR MUST MAINTAIN AT LEAST 1 3/4" CLEAR DISTANCE BETWEEN ANY OTHER ADJACENT PARALLEL BAR, OR ELSE IT MUST BE BUNDLED WITH THAT PARALLEL BAR. LAPPED BARS MAY BE BUNDLED VERTICALLY WITH ADJACENT BARS IN ORDER TO HELP MAINTAIN CLEARANCES AT THE DRILLED MICROPILE BLOCKOUTS DESCRIBED IN (NOTE 1) ABOVE.
5. CONCRETE USED TO FILL THE BLOCKOUTS AROUND THE MICROPILES SHALL MEET THE REQUIREMENTS OF SPECIAL PROVISION 995.2. IF THE CONTRACTOR USES SELF-CONSOLIDATING CONCRETE (SCC), IT SHALL MEET THE REQUIREMENTS OF M4.02.17. CONTRACTOR SHALL SUBMIT FOR APPROVAL THE CONCRETE MIX TO BE USED TO FILL BLOCKOUTS.

INDICATES PROPOSED LOCATION OF FIELD VERIFICATION TEST. CONTRACTOR TO FIELD VERIFY THE PROPOSED TEST LOCATION.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
STRUCTURE NOTES

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

SCALE:	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
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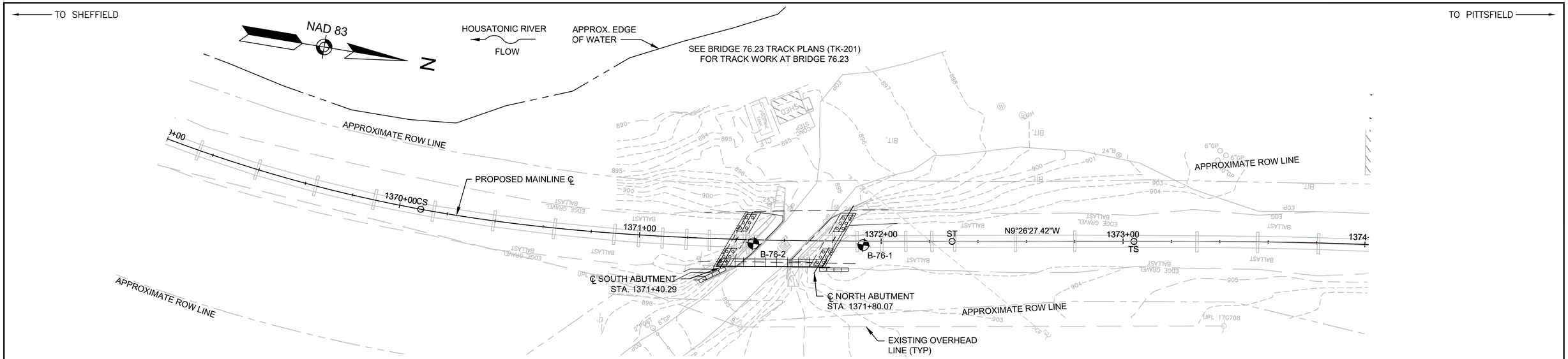
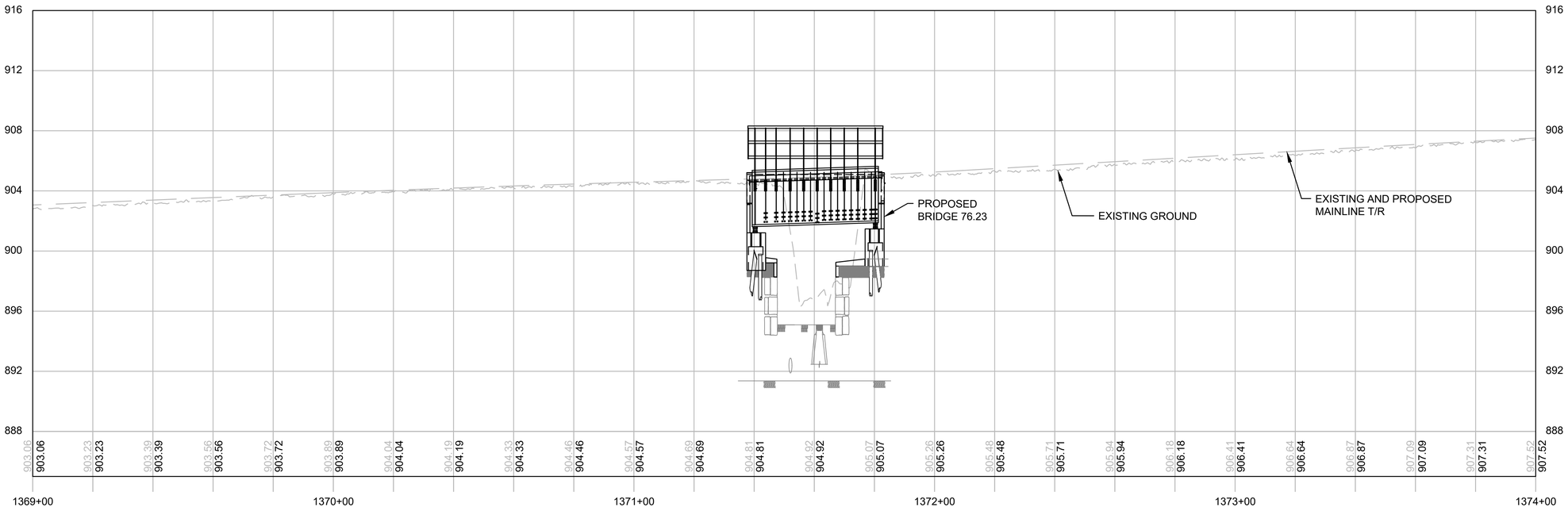
DATE: 12/27/24	DD	SLB	PJL	SHEET: S-300	



KEY PLAN



PROFILE

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

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
KEY PLAN AND PROFILE

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
DATE: 12/27/24	DD	SLB	PJL	SHEET: S-301	

99 High Street Suite 2300
Boston, MA 02110
Telephone: 617.357.7700

BORING NUMBER B-76-1
PAGE 1 OF 1

CLIENT	MassDOT Rail Division	PROJECT NAME	Berkshire Line Improvements
PROJECT NUMBER	10370244	PROJECT LOCATION	Lee and Lenox, MA
NORTH	2944273	EAST	183812
DATE STARTED	1/2/25	COMPLETED	1/3/25
STATION	---	OFFSET	---
GROUND ELEVATION	905 ft NAVD88	CASING SIZE (IN)	4 (ID)
DRILLING CO.	New England Boring Co.	DRILLER	M. Pham
DRILLING METHOD	Drive & Wash	SPT HAMMER TYPE	Safety
LOGGED BY	R. Manson, EIT	CHECKED BY	R. Lavorati, PE
NOTES	Behind bridge 76.23 north abutment.		

GROUND WATER LEVELS:
- ∇ AT TIME OF DRILLING: 10.0 ft / Elev 895.0 ft measured with casing to 14 ft
- AT END OF DRILLING: ---
- AFTER DRILLING: ---

DEPTH (ft)	ELEV (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	Other Tests	Remarks
0	905		Dark brown fine to coarse SAND and GRAVEL, some Silt, medium dense, dry [Ballast]	SPT 1	29	6-7-9-11 (16)		Ground surface elevation defined as the top of the railroad tie. Top sample frozen due to freezing temperatures.
5	900		Dark brown fine to coarse SAND and GRAVEL, some Silt, medium dense, wet	SPT 2	33	10-9-9-16 (18)		
10	895		∇ Dark brown fine to coarse SAND and GRAVEL, some Silt, medium dense, wet	SPT 3	42	6-9-12-20 (21)		
15	890		Gray, hard, slightly weathered, moderately fractured, medium grained DOLOMITE MARBLE	RC 1	58 (0)			Top of rock at 14 ft below ground surface. Drill into rock 1 ft to start coring. Rock cores C-1 and C-2 stopped after only 1 ft with core barrel jams likely due to natural rock fractures. No water return while rock coring deeper than 18 feet
			Gray, hard, slightly weathered, extremely fractured, medium grained DOLOMITE MARBLE	RC 2	67 (0)			
			Gray, hard, slightly weathered, slightly fractured, medium grained DOLOMITE MARBLE	RC 3	81 (67)		Unconfined Compressive Strength = 43501 psi. Bulk Density = 162 pcf	
20	885		Gray, hard, slightly weathered, slightly fractured, medium grained DOLOMITE MARBLE	RC 4	65 (57)			
25	880							Borehole backfilled with grout and bentonite at the end of drilling.

Bottom of borehole at 26.0 feet.

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BOTTOM OF PILE CAP AT CL BRIDGE EL. 898.62

BORING NO. B-76-1
NOT TO SCALE

99 High Street Suite 2300
Boston, MA 02110
Telephone: 617.357.7700

BORING NUMBER B-76-2
PAGE 1 OF 1

CLIENT	MassDOT Rail Division	PROJECT NAME	Berkshire Line Improvements
PROJECT NUMBER	10370244	PROJECT LOCATION	Lee and Lenox, MA
NORTH	2944228	EAST	183819
DATE STARTED	1/6/25	COMPLETED	1/8/25
STATION	---	OFFSET	---
GROUND ELEVATION	904 ft NAVD88	CASING SIZE (IN)	4 (ID)
DRILLING CO.	New England Boring Co.	DRILLER	Z. Ohman
DRILLING METHOD	Drive & Wash	SPT HAMMER TYPE	Safety
LOGGED BY	R. Manson, EIT	CHECKED BY	R. Lavorati, PE
NOTES	Through bridge 76.23 south abutment.		

GROUND WATER LEVELS:
- AT TIME OF DRILLING: ---
- AT END OF DRILLING: ---
- AFTER DRILLING: ---

DEPTH (ft)	ELEV (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	Other Tests	Remarks
0			Bridge includes a 2 ft void between the top of tie and the top of the bridge seat where this boring was drilled.					Ground surface elevation defined as the top of the railroad tie.
	900		Stone abutment blocks					Drilled 2 ft beyond abutment block to confirm not just a joint in the masonry stones.
5			Gray GRAVEL, little fine to coarse Sand, trace Silt, dense, moist	SPT 1	42	4-27-20-18 (47)		
10	895		Gray GRAVEL, little fine to coarse Sand, trace Silt, dense, wet	SPT 2	33	21-14-17-16 (31)		
15	890		Brown GRAEL and fine to coarse Sand, little Silt, very dense, wet	SPT 3	71	39-50/1 (50/1)		Rock fragments in tip of sample S-3. Rock core C-1 stopped after 3 ft with core barrel jams likely due to natural rock fractures. Boring stopped at 20 ft due to equipment failure in freezing conditions. Borehole backfilled with bentonite and grout at the end of drilling.
20	885		Gray, hard, slightly weathered, moderately fractured, medium grained DOLOMITE MARBLE	RC 1	61 (31)			

Bottom of borehole at 20.0 feet.

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BOTTOM OF PILE CAP AT CL BRIDGE EL. 898.36

BORING NO. B-76-2
NOT TO SCALE

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE KEY PLAN AND GENERAL PLAN THUS: B-76-X
2. BORINGS ARE TAKEN FOR PURPOSES OF DESIGN AND SHOW CONDITIONS AT THE BORING LOCATION ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. THE SUBSURFACE SOIL STRATIFICATIONS AND GROUNDWATER CONDITIONS SHOWN ON THE BORING LOGS AND SOIL PROFILES ARE REPRESENTATIVE OF THE CONDITIONS ENCOUNTERED ONLY AT THE ACTUAL BORING LOCATION. VARIATIONS IN THE OVERALL SITE SUBSURFACE CONDITIONS MAY OCCUR AND SHOULD BE EXPECTED BETWEEN BORING LOCATIONS AND ACROSS THE SITE IN THE AREAS THAT WERE NOT EXPLORED. THE BOUNDARY BETWEEN LAYERS PROVIDED IN THE BORING LOGS ARE APPROXIMATE AND ARE BASED ON OBSERVATIONS OF SPLIT - SPOON SAMPLES, DRILLING FLUID COLOR, DRILL CUTTINGS, AND DRILL RIG BEHAVIOR. THE ACTUAL TRANSITION BETWEEN LAYERS MAY BE GRADUAL OR MORE ABRUPT THAN SHOWN ON THE BORING LOGS.
4. GROUNDWATER LEVELS FLUCTUATE DUE TO LOCAL AND REGIONAL FACTORS INCLUDING, BUT NOT LIMITED TO, WATER LEVEL IN THE HOUSATONIC RIVER SITE TOPOGRAPHY, SEASONAL CHANGES, WELL PUMPING, AND PERIODS OF WET AND DRY WEATHER, NEARBY CONSTRUCTION, OR OTHER BELOW GRADE ACTIVITIES, SUCH AS EXCAVATION, DEWATERING, INFILTRATION BASINS.
5. FIGURES IN THE BLOW COUNTS (N VALUE) COLUMN INDICATE THE NUMBER OF BLOWS REQUIRES TO DRIVE A 1.38 INCH I.D. SPLIT SPOON SAMPLER 6 INCHES USING A 140 POUND HAMMER FALLING 30 INCHES.
6. SOIL AND BEDROCK SAMPLES ARE STORED AT HDR'S OFFICE AT 99 HIGH STREET, BOSTON, MA FOR THE DURATION OF CONSTRUCTION.
7. BORINGS DRILLED BY NEW ENGLAND BORING CONTRACTORS OF TAUNTON, MASSACHUSETTS, BETWEEN JANUARY 2 AND JANUARY 15, 2025. BORINGS WERE OBSERVED BY AN HDR ENGINEER ON A FULL TIME BASIS.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS BORING LOGS

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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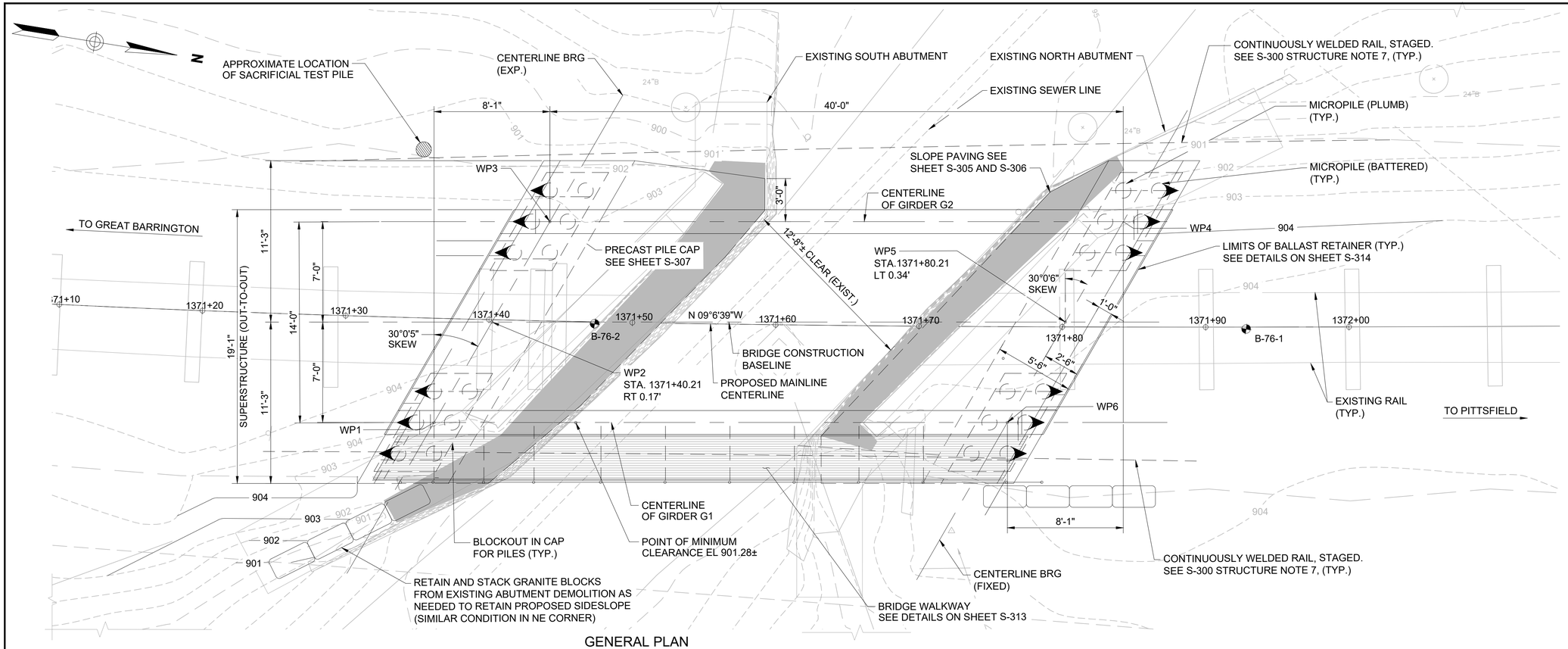
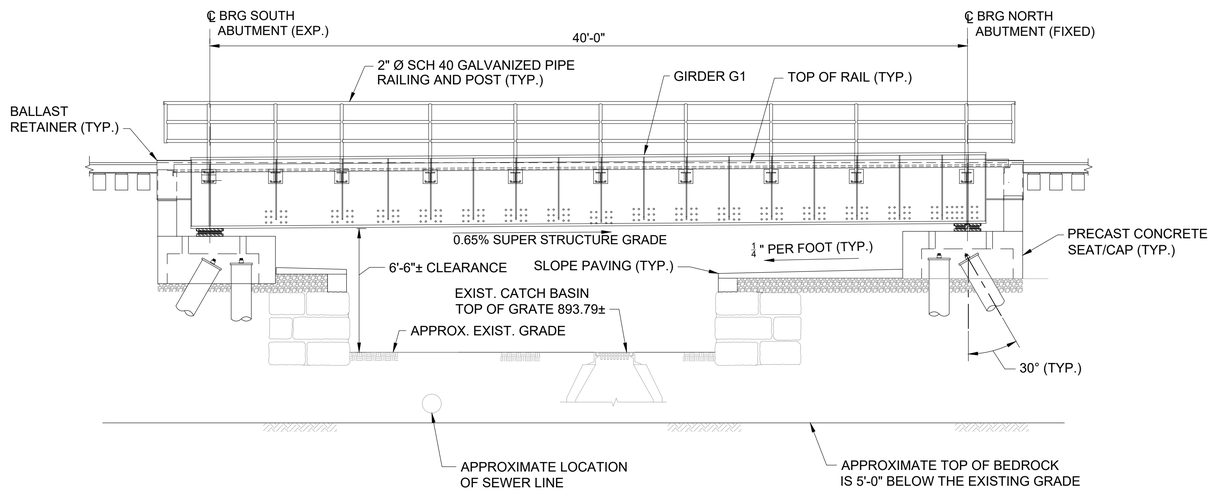
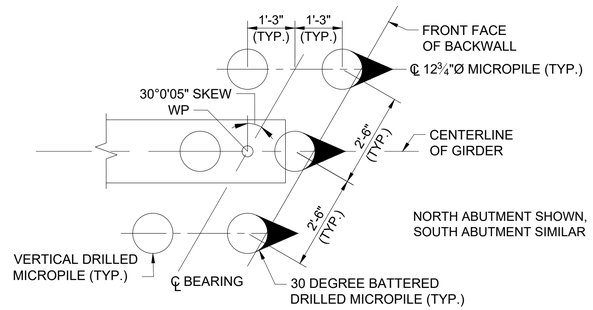


GENERAL PLAN
SCALE: 1/4" = 1'-0"

WORK POINTS		
WORK POINT	NORTHING	EASTING
WP1	2944217.9283	183827.5136
WP2	2944220.8112	183819.9618
WP3	2944223.6940	183812.4101
WP4	2944263.1893	183806.0764
WP5	2944260.3070	183813.6281
WP6	2944257.4247	183821.1797



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



MICROPILE - LOCATION PLAN
SCALE: 1/2" = 1'-0"

NOTE:

1. FOR MICROPILE DETAILS SEE SHEET S-309.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
GENERAL PLAN AND ELEVATION

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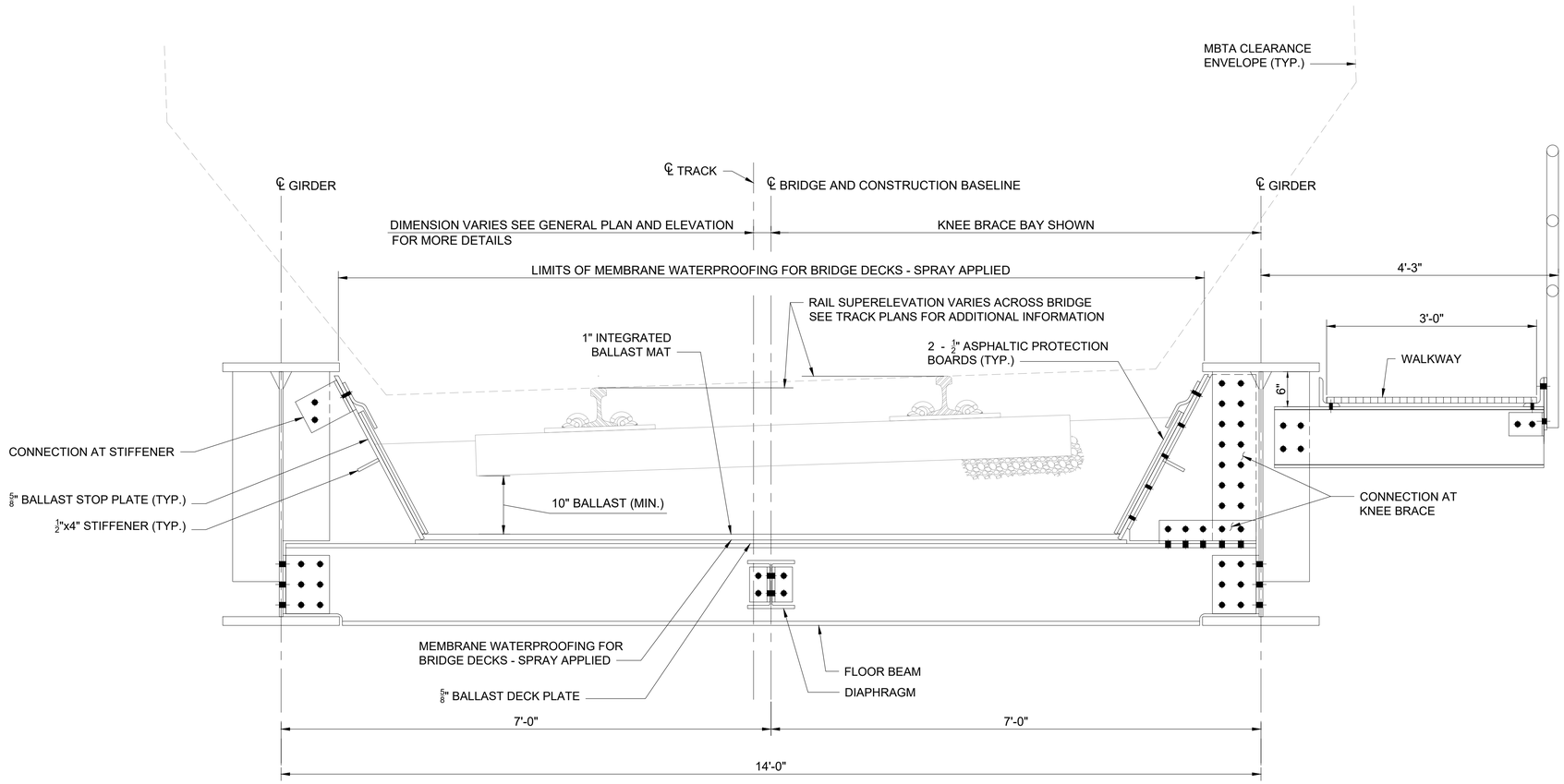

TYPICAL SECTION
SCALE: 1" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS BRIDGE TYPICAL SECTION

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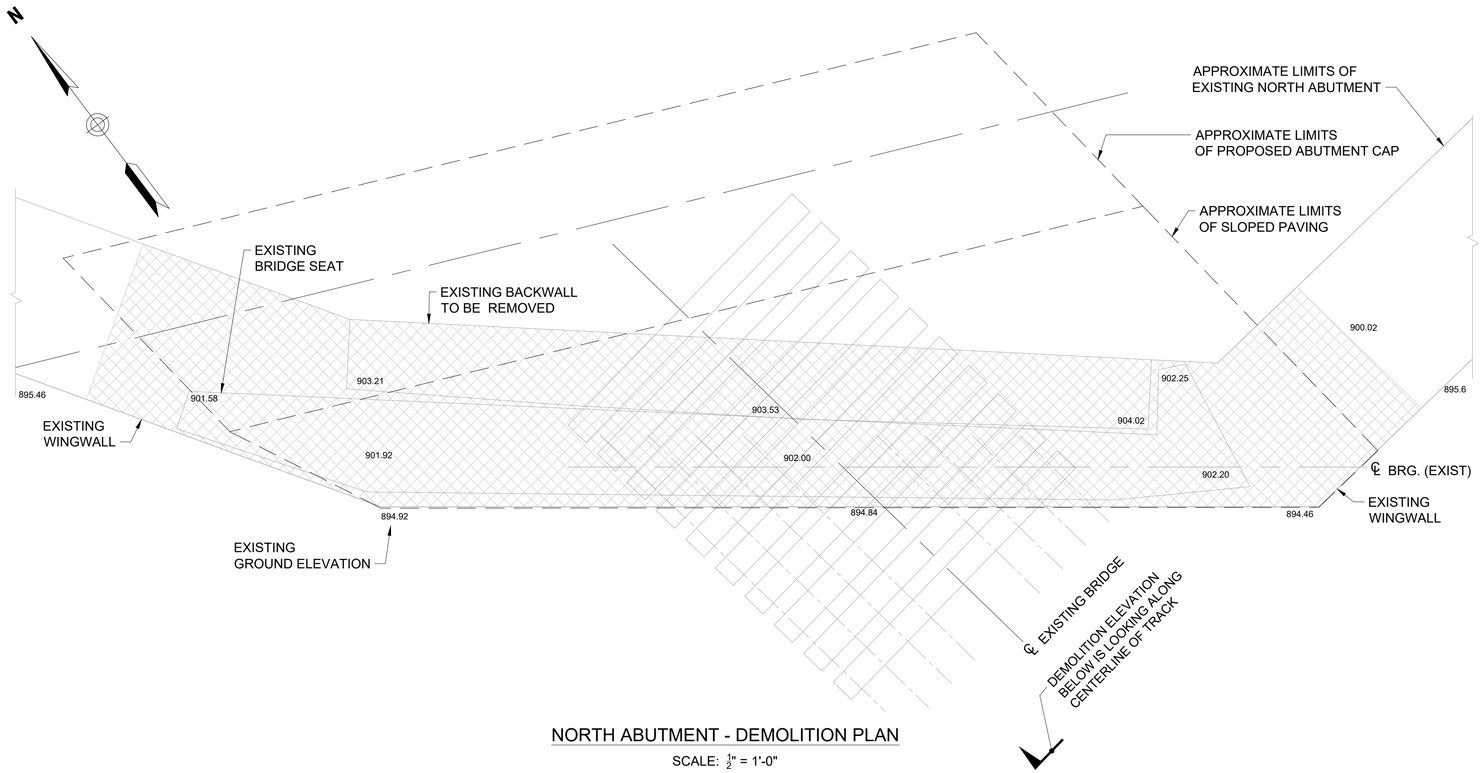
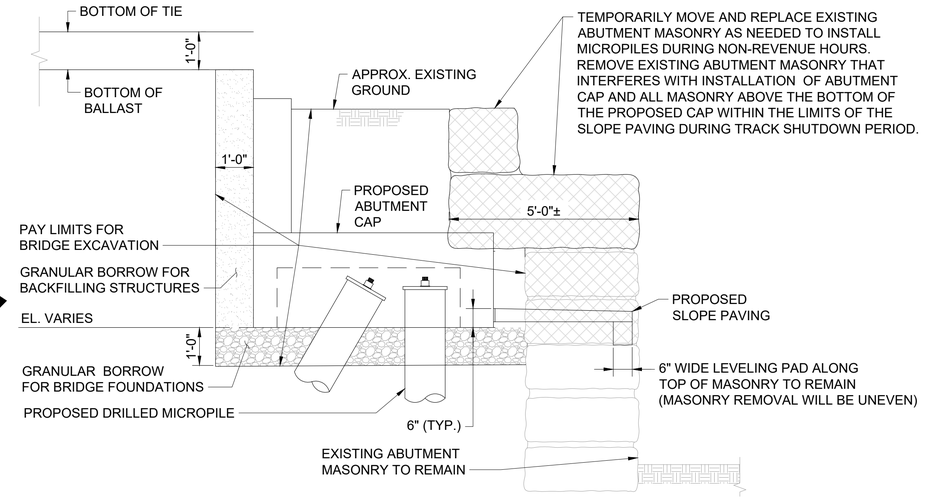


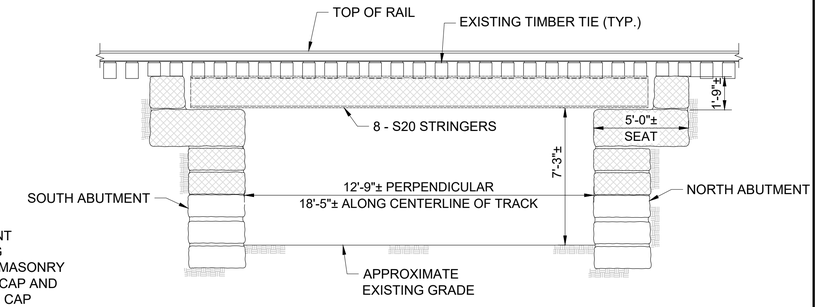
NORTH ABUTMENT - DEMOLITION PLAN

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



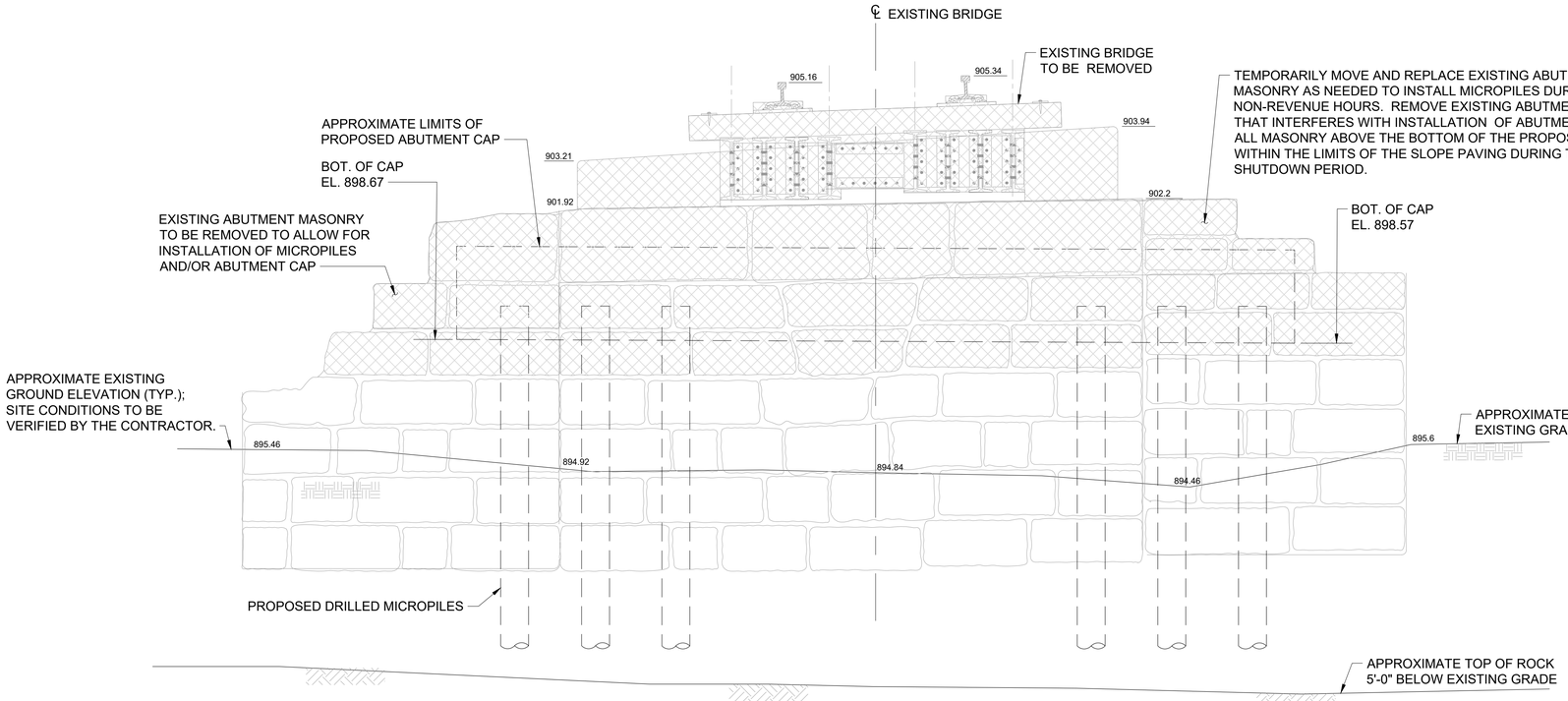
ABUTMENT DEMOLITION - SECTION SIMILAR AT BOTH ABUTMENTS

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



ELEVATION THROUGH EXISTING BRIDGE

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



NORTH ABUTMENT - DEMOLITION ELEVATION

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

LEGEND

INDICATES THE LIMITS OF DEMOLITION FOR EXISTING BRIDGE

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
DEMOLITION PLAN & DETAILS 1 OF 2

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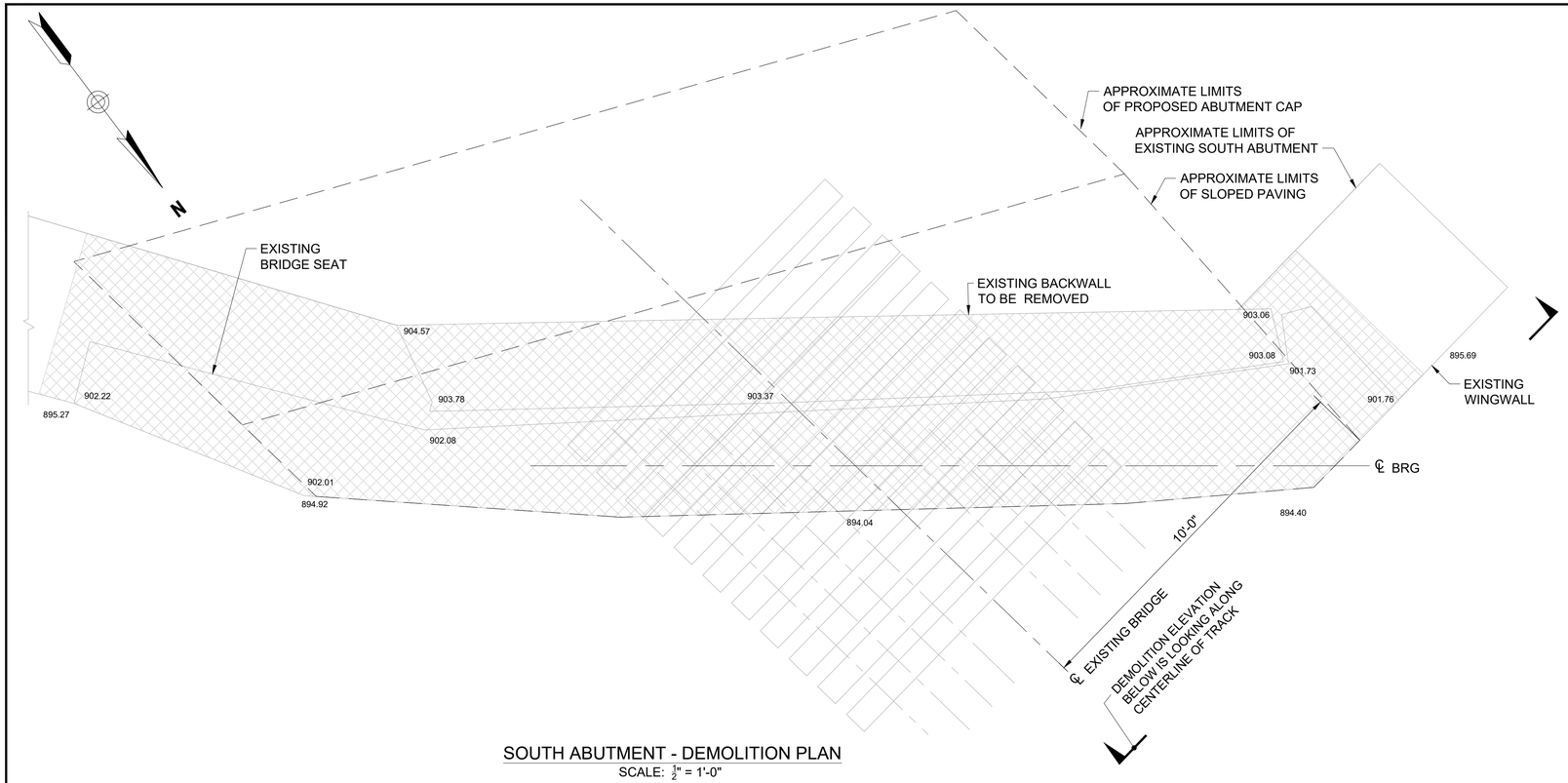
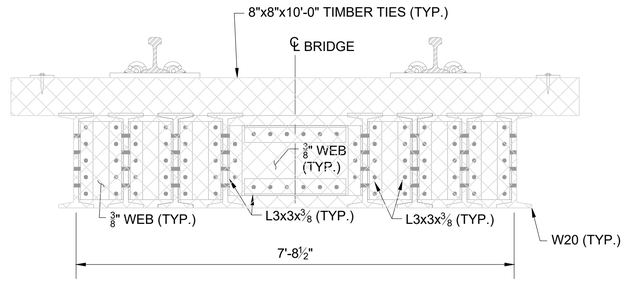


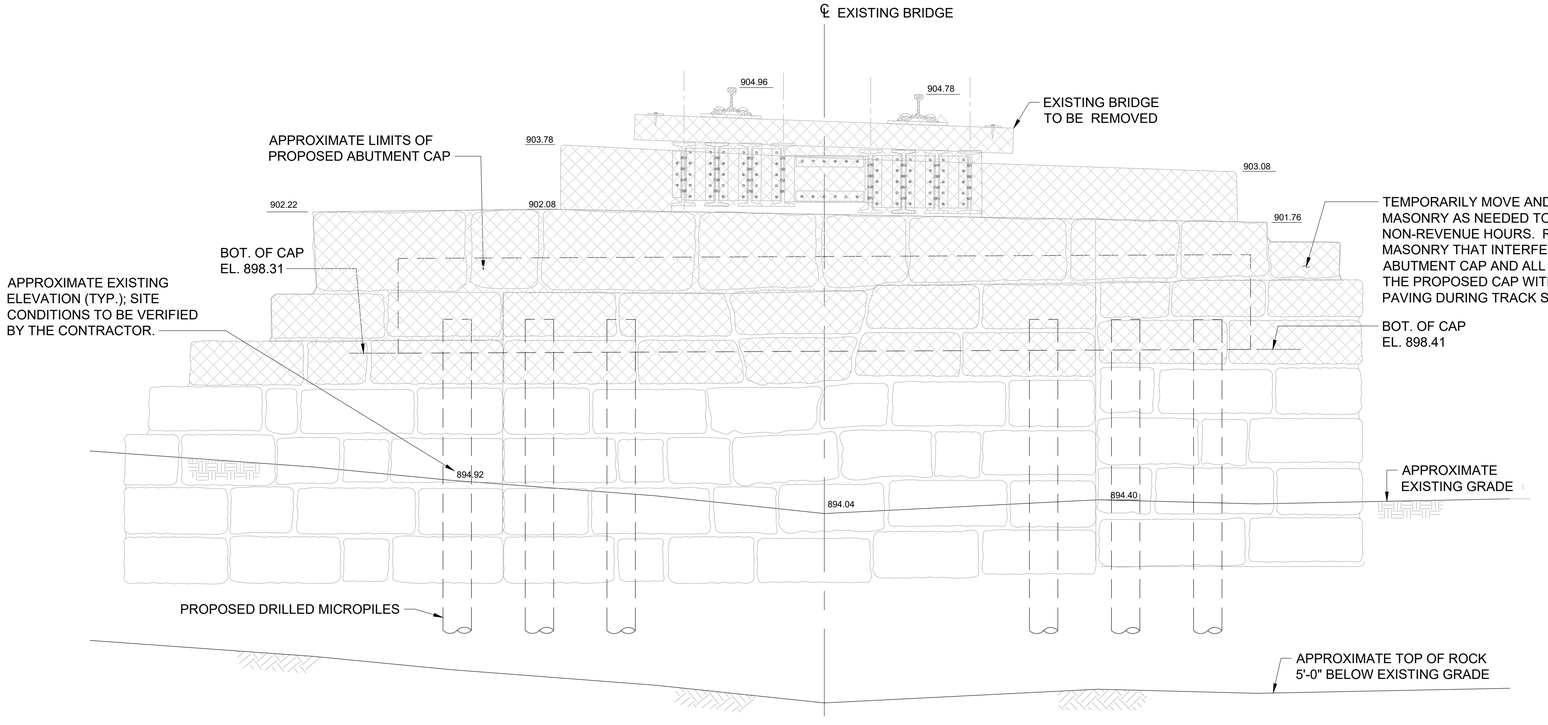
SOUTH ABUTMENT - DEMOLITION PLAN

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



DEMOLITION - CROSS SECTION
EXISTING SUPERSTRUCTURE

SCALE: $\frac{3}{4}$" = 1'-0"



SOUTH ABUTMENT - DEMOLITION ELEVATION

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

LEGEND

INDICATES THE LIMITS OF DEMOLITION FOR EXISTING BRIDGE

NOTE:

1. SEE ABUTMENT DEMOLITION SECTION ON DEMOLITION PLAN SHEET 1 OF 2 FOR ADDITIONAL INFORMATION.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23
OVER COLUMBIA MILLS
DEMOLITION PLAN & DETAILS 2 OF 2

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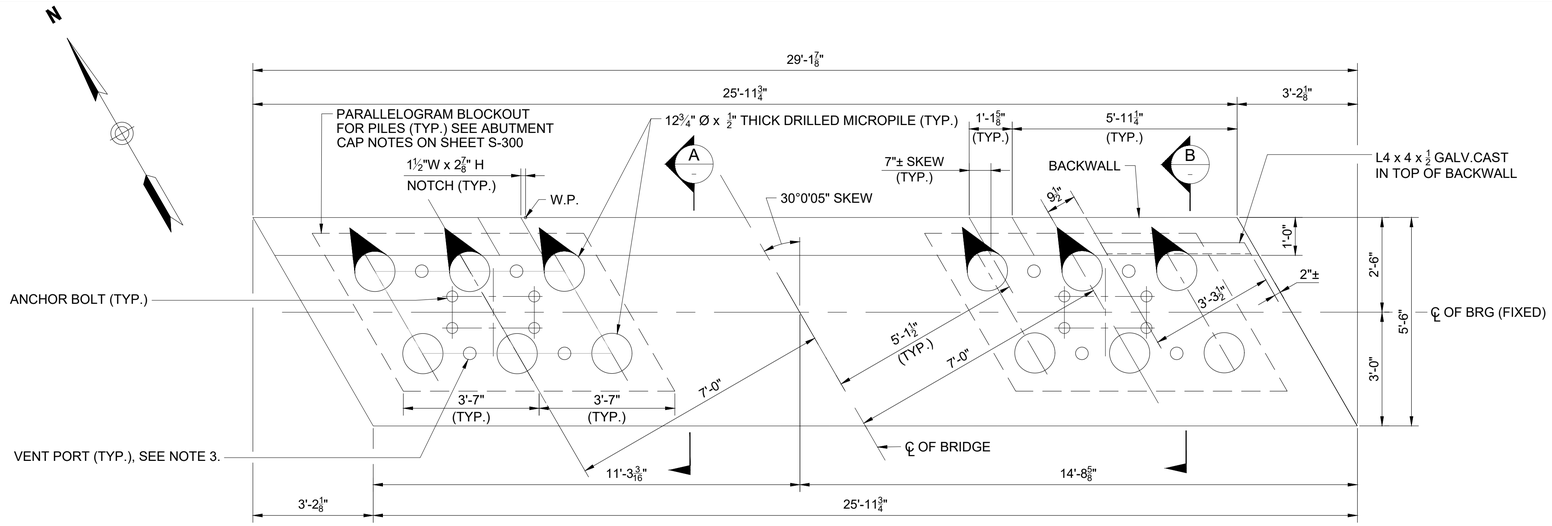
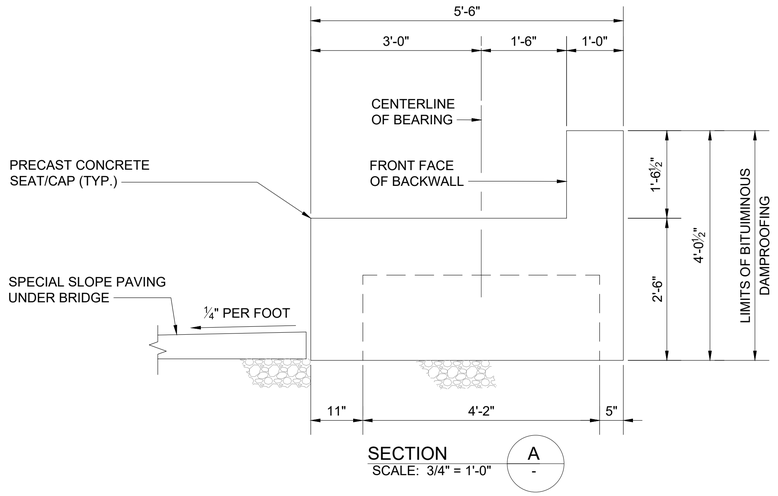


NORTH ABUTMENT PLAN - PROPOSED PILE CAP AND BACKWALL
SOUTH ABUTMENT OPPOSITE HAND
SCALE: 1/2" = 1'-0"



SECTION A
SCALE: 3/4" = 1'-0"

NORTH ABUTMENT ELEVATION - PROPOSED PILE CAP AND BACKWALL
SOUTH ABUTMENT OPPOSITE HAND
SCALE: 1/2" = 1'-0"

SECTION B
SCALE: 3/4" = 1'-0"

NOTES:

1. SEE SHEET S-314 FOR BACKWALL-BALLAST PLATE DETAILS.
2. SEE ABUTMENT CAP NOTES ON SHEET S-300 FOR ADDITIONAL INFORMATION.
3. VENT PORTS WILL BE USED TO FILL THE BLOCKOUT WITH CONCRETE AFTER SETTING THE ABUTMENT CAPS. FOUR ARE REQUIRED PER BLOCKOUT; SIZE AND LOCATION TO BE DETERMINED BY THE CONTRACTOR. CLEAR COVER DISTANCE TO REINFORCING BARS IN THE ABUTMENT CAP WILL BE 2" MIN. (TYP.)

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
ABUTMENT CAP PLAN AND DETAILS

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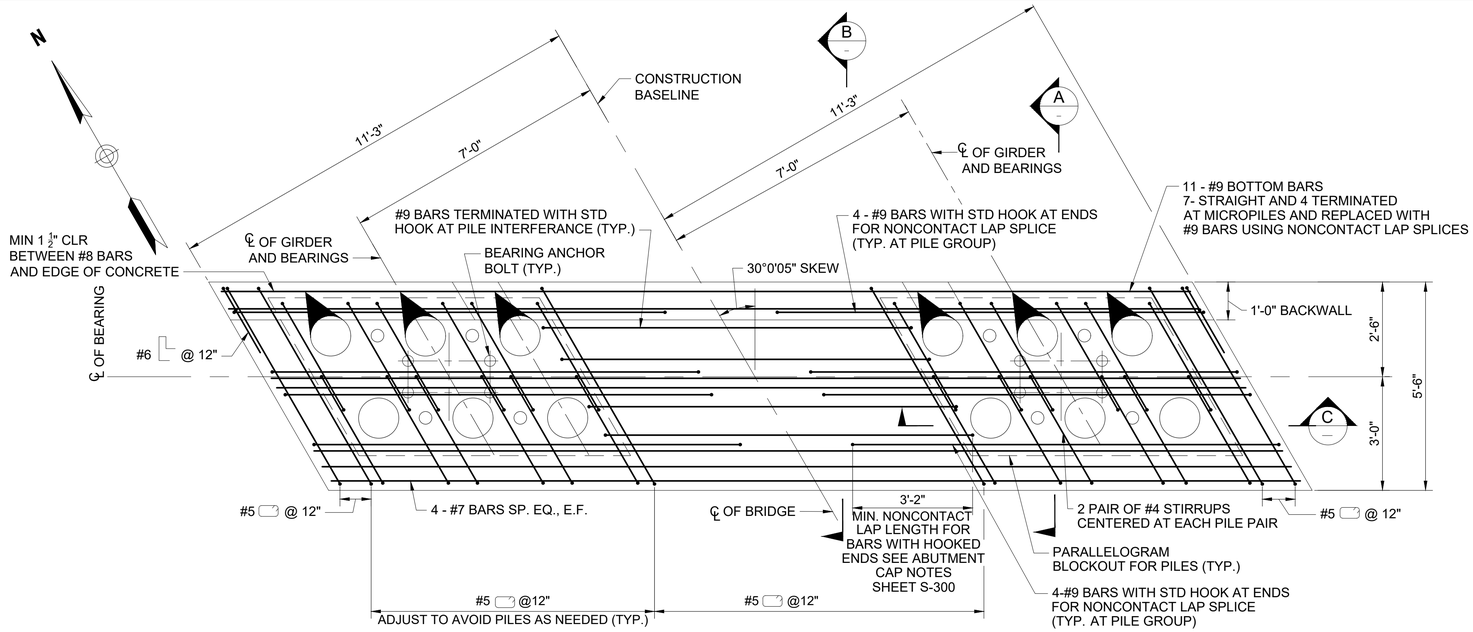
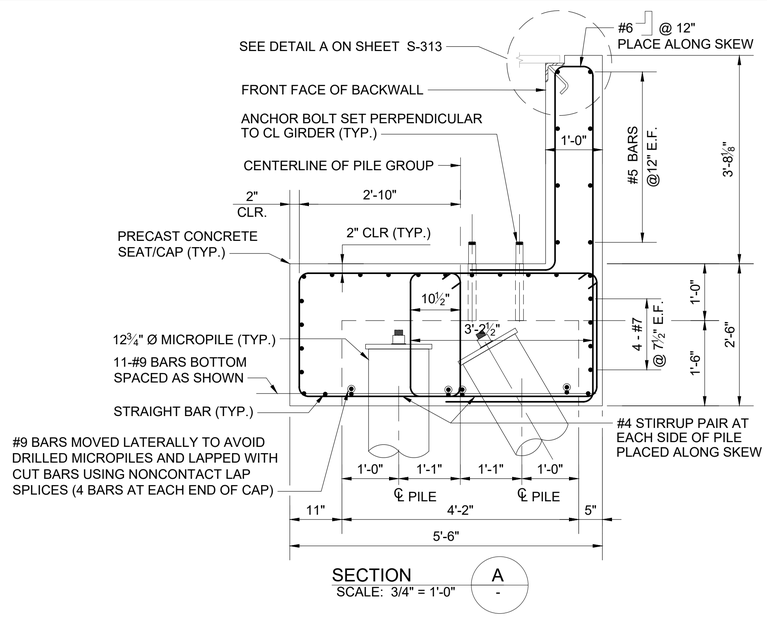


NORTH ABUTMENT PLAN - PILE CAP AND BACKWALL REINFORCEMENT

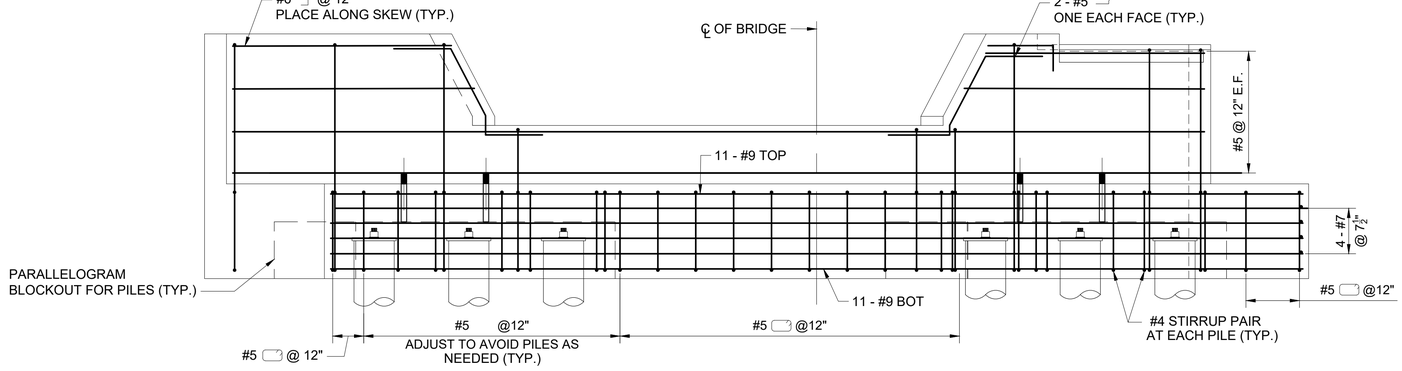
SOUTH ABUTMENT OPPOSITE HAND

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



SECTION A

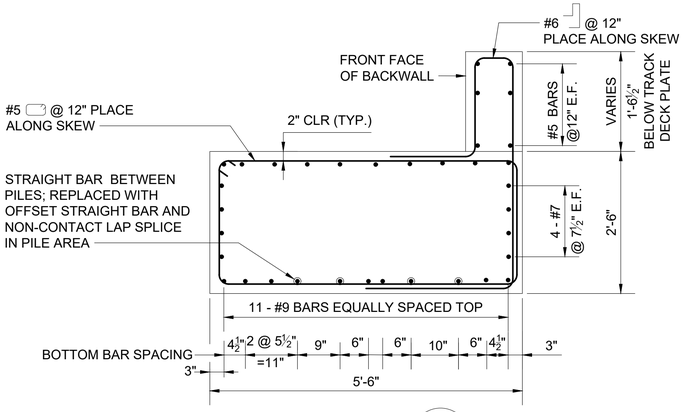
SCALE: 3/4" = 1'-0"



NORTH ABUTMENT ELEVATION - PILE CAP AND BACKWALL REINFORCEMENT

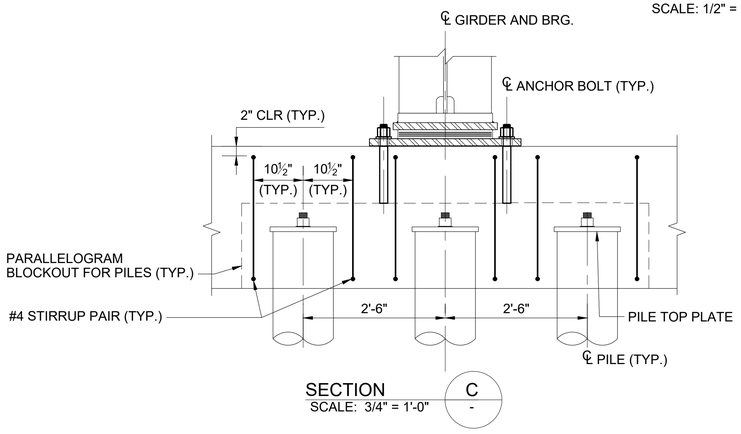
SOUTH ABUTMENT OPPOSITE HAND

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



SECTION B

SCALE: 3/4" = 1'-0"



SECTION C

SCALE: 3/4" = 1'-0"

NOTES:

1. SEE ABUTMENT CAP NOTES ON THE STRUCTURE NOTES SHEET FOR ADDITIONAL INFORMATION.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS ABUTMENT CAP REINFORCING

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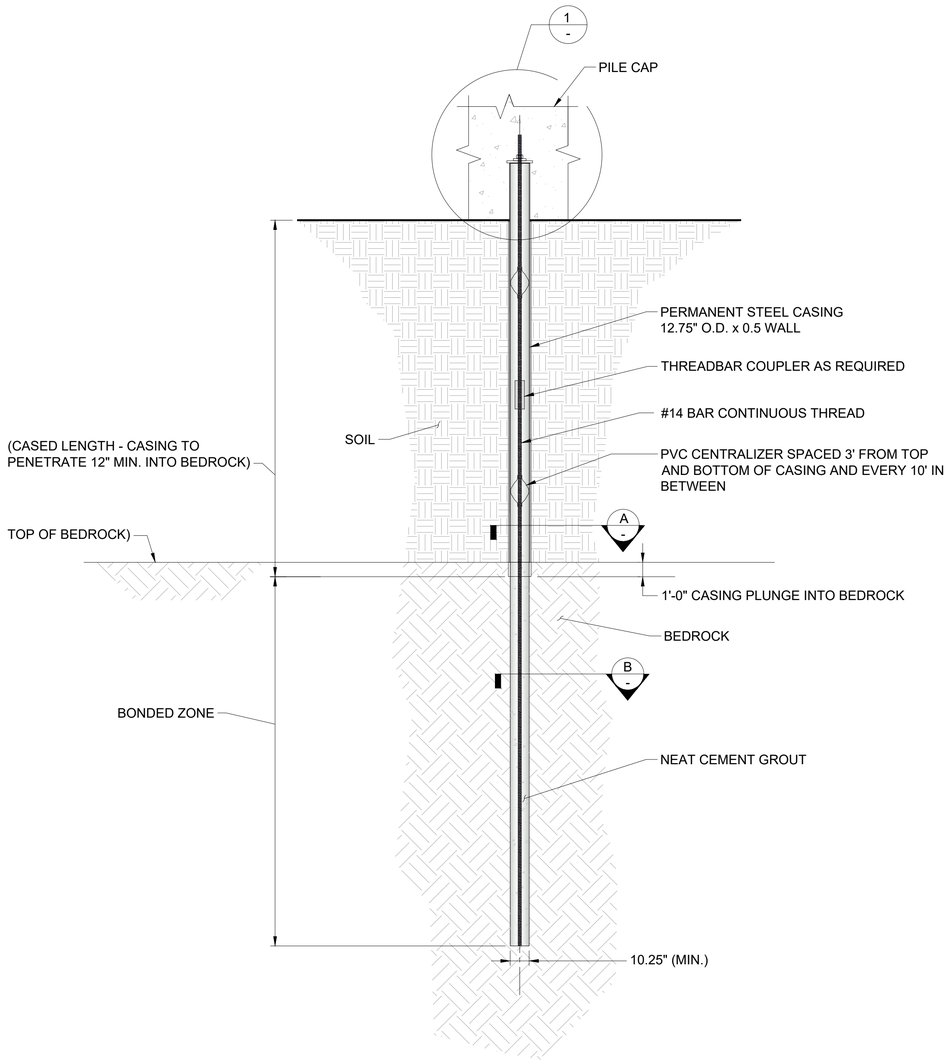
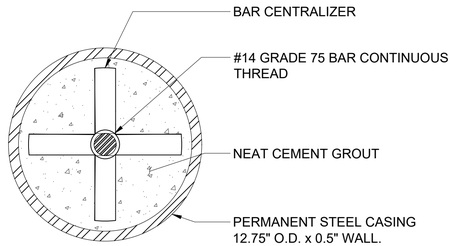
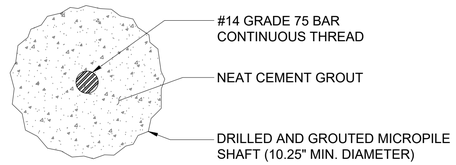


DETAIL DRILLED MICROPILES
N.T.S.



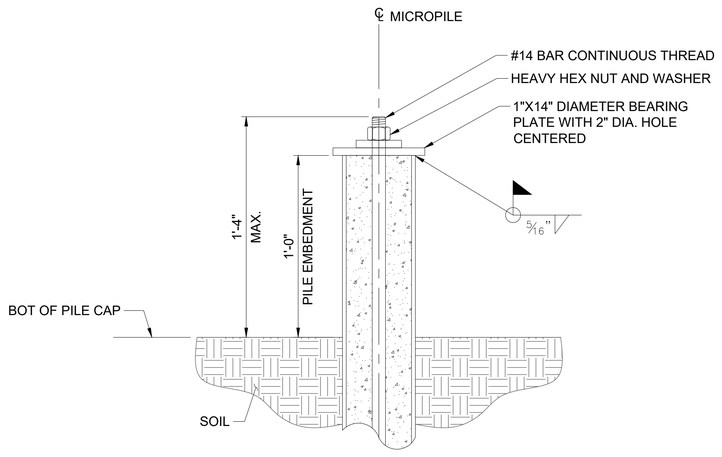
SECTION A - CASED SECTION
N.T.S.



SECTION B - BONDED ZONE
N.T.S.

MICROPILE NOTES:

1. GROUT SHALL BE A NEAT CEMENT GROUT WITH A MINIMUM 28-DAY UNCONFINED COMPRESSIVE STRENGTH OF 5,000 PSI. THE GROUT SHALL CONFORM TO AASHTO T106/ASTM C109.
2. PERMANENT STEEL CASING SHALL BE NEW PRIME STEEL MEETING THE REQUIREMENTS OF API N80 PIPE WITH A MINIMUM YIELD STRENGTH OF 80 KSI OR APPROVED EQUAL.
3. NO THREADED CASING JOINTS SHALL BE LOCATED WITHIN 3 FEET OF THE PILE CAP.
4. STRUCTURAL STEEL PLATES FOR PILE TOP ATTACHMENTS SHALL CONFORM TO ASTM A709, GRADE 50.
5. THREADED BARS SHALL BE ASTM A615, GRADE 75, AND SHALL BE JOINED WITH COUPLERS SUPPLIED BY THE MANUFACTURER. THE COUPLERS SHALL BE CAPABLE OF DEVELOPING OR EXCEEDING THE STRENGTH OF THE THREAD BAR.
6. THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE, PILE INSTALLATION, AND PILE TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.
7. PERFORM ONE VERIFICATION LOAD TEST ON A SACRIFICIAL TEST PILE PRIOR TO INSTALLING PRODUCTION PILES. PERFORM PROOF TESTS ON 5 PERCENT OF PRODUCTION PILES, WITH A MINIMUM OF ONE PROOF TEST PER SUBSTRUCTURE. THE MAXIMUM TEST LOADS SHALL BE 150% OF THE FACTORED DESIGN LOAD (FDL) FOR THE MICROPILE VERIFICATION TEST AND 100% OF THE FDL FOR MICROPILE PROOF TEST. THE FDL IS 84 KIPS IN AXIAL COMPRESSION.
8. MICROPILES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH ITEM 948.60 AND 948.61.
9. MICROPILE HAS A NOMINAL RESISTANCE OF 580 KIPS. THE NOMINAL RESISTANCE IS BASED ON PRESUMPTIVE GROUT-TO-GROUND BOND STRENGTH. FACTORED PILE RESISTANCE WILL BE BASED ON THE RESULTS ON THE FIELD VERIFICATION TEST AND A RESISTANCE FACTOR OF 0.7. THE DRILLED MICROPILE GROUP (3 VERTICAL AND 3 BATTERED MICROPILES AT EACH GIRDER BEARING) WAS DESIGNED BASED ON A CONCENTRATED LATERAL LOAD OF 91.2 KIPS AND A CONCENTRATED AXIAL COMPRESSION LOAD OF 232 KIPS.
10. EACH PILE CAP SHALL INCLUDE 6 VERTICAL DRILLED MICROPILES AND 6 BATTERED DRILLED MICROPILES. (3 VERTICAL AND 3 BATTERED DRILLED MICROPILES AT EACH GIRDER BEARING - SEE DRAWINGS). BATTERED MICROPILES ANGLE SHALL BE 30 DEGREES ON VERTICAL. PILES SHALL BE INSTALLED WITHIN 3 INCHES OF THE LOCATION SHOWN ON THE PLANS.



DETAIL 1 - N.T.S.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS MICROPILE DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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99 HIGH STREET, SUITE 2300
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SCALE: N.T.S.	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
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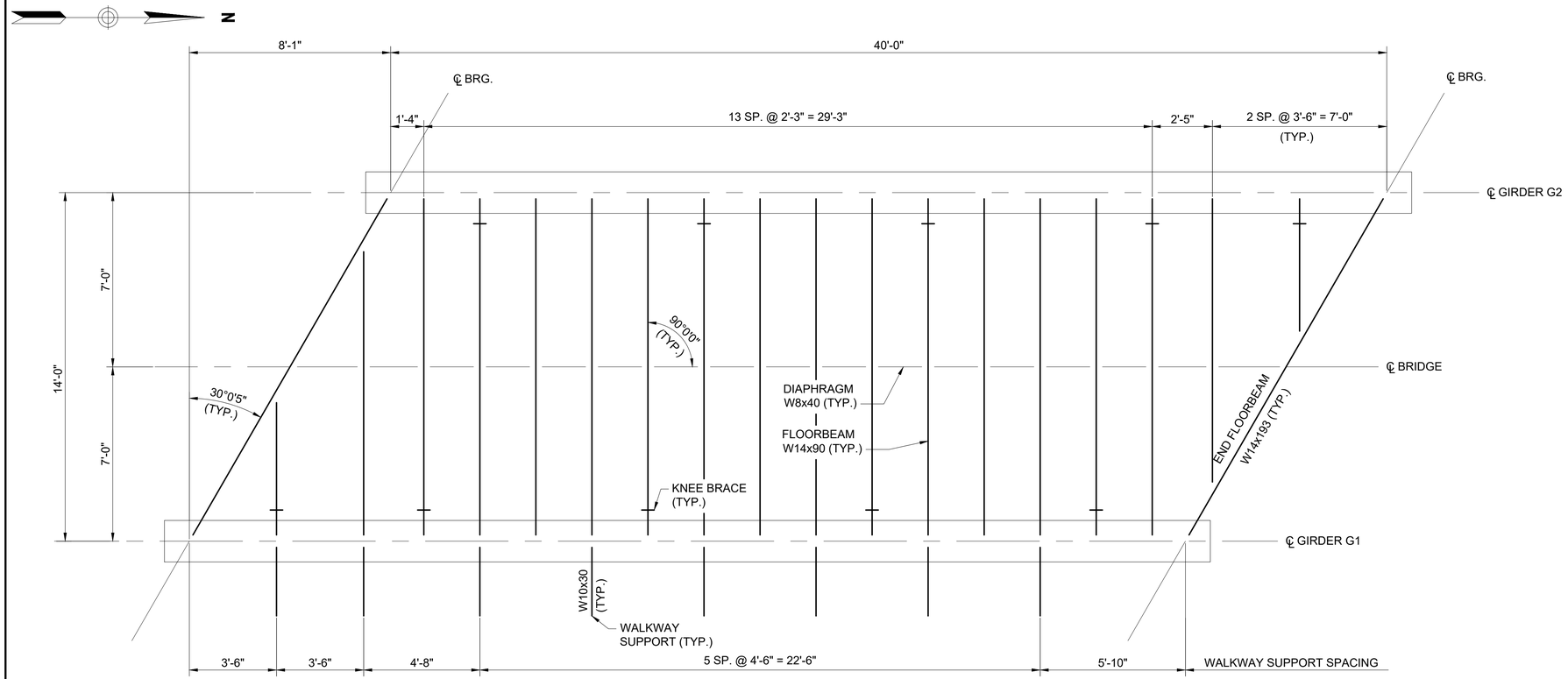
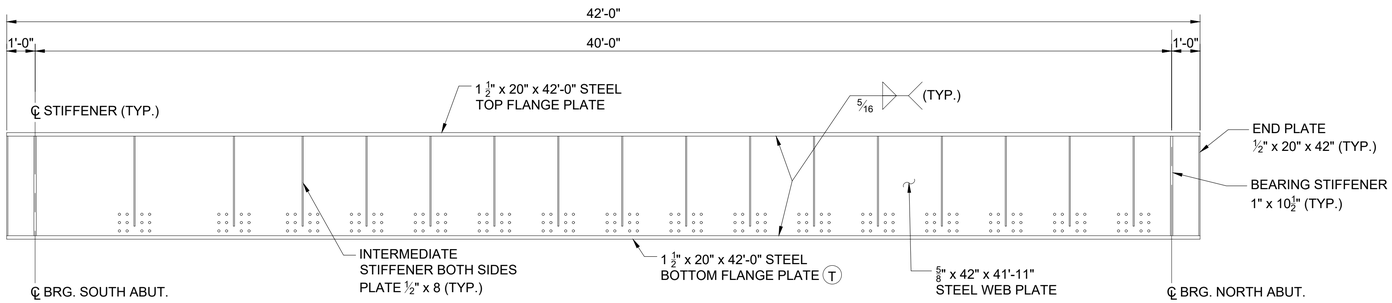


FRAMING PLAN

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

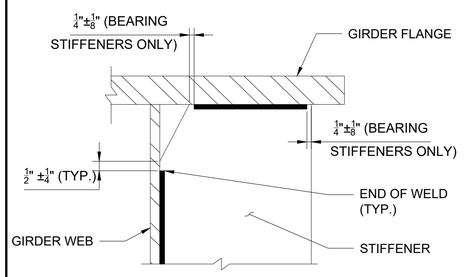
TO GREAT BARRINGTON

TO PITTSFIELD



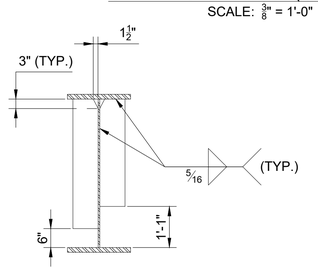
GIRDER ELEVATION G1 SHOWN
GIRDER G2 SIMILAR (OPP HAND)

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



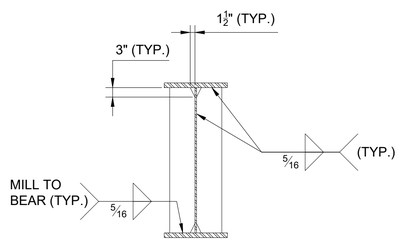
STIFFENER WELD DETAIL

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



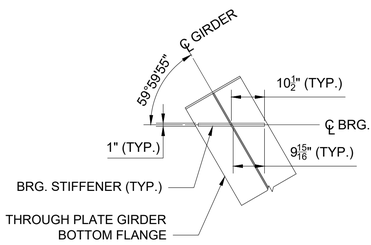
INTERMEDIATE STIFFENER

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



BEARING STIFFENER (ELEV.)

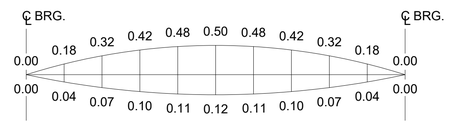
SCALE: $\frac{1}{2}$" = 1'-0"



BEARING STIFFENER (PLAN)

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

GIRDER CAMBER DIAGRAM (INCHES)



GIRDER DEAD LOAD DEFLECTION (INCHES)

NOTES:

1. FOR ADDITIONAL STRUCTURAL STEEL NOTES SEE "GENERAL STRUCTURAL NOTES" SHEET.
2. UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL BE SLIP CRITICAL MADE WITH $\frac{7}{8}$" DIA. HIGH STRENGTH BOLTS CONFORMING TO A.S.T.M. A325, FURNISHED WITH HEAVY HEX HEAD NUTS, AND WASHERS. ALL HOLES SHALL BE $\frac{1}{16}$" LARGER THAN BOLT DIAMETER. FAYING SURFACES SHALL BE MASKED AND FINISHED WITH A CLASS D FAYING SURFACE PROVIDING A MINIMUM SLIP COEFFICIENT OF 0.45.
3. WELDING DETAILS, PROCEDURES, AND TESTING METHODS SHALL CONFORM TO THE ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5: 2008 WITH 2009 INTERIM REVISIONS. USE E70XX ELECTRODES UNLESS OTHERWISE NOTED.
4. FRACTURE CRITICAL STEEL ELEMENTS SUBJECT TO TENSION SHALL MEET CHARPY V NOTCH TOUGHNESS REQUIREMENTS OF CHAPTER 15, SECTION 1.14.5 AREMA TABLE 1-14 (ZONE 2) SHALL APPLY. THESE MEMBERS ARE DESIGNATED BY (T).
5. FLOORBEAMS AND KNEE BRACES AND THEIR CONNECTION ELEMENTS, AND DECK PLATES SHALL MEET CHARPY V-NOTCH TOUGHNESS REQUIREMENTS OF CHAPTER 15, SECTION 1.2.1 (AREMA) TABLE1-2 (ZONE 2) SHALL APPLY.
6. STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF ASTM A709 GRADE 50 UNLESS OTHERWISE NOTED.
7. ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED.
8. THE STRUCTURAL STEEL FABRICATORS SHALL BE CERTIFIED UNDER THE A.I.S.C. QUALITY CONTROL PROGRAM, CATEGORY III, MAJOR STEEL BRIDGES. EVIDENCE OF CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE BEGINNING ANY WORK.
9. THE DESIGN AS DETAILED IN THE CONTRACT DRAWINGS DOES NOT CONSIDER ANY ERECTION STRESSES. THE CONTRACTOR SHALL SUBMIT AN ERECTION PROCEDURE AND SUPERSTRUCTURE STRESS CALCULATIONS TO THE ENGINEER IN ACCORDANCE WITH THE SPECIFICATIONS.
10. GIRDERS SHALL NOT HAVE ERECTION MARKS OR OTHER PAINTED MARKS ON THE OUTSIDE FACE.
11. THE ENDS OF GIRDERS AND THEIR BEARING STIFFENERS SHALL BE FABRICATED SO THAT THEY WILL BE PLUMB UNDER FULL DEAD LOAD.
12. TERMINATE ALL FILLET WELDS ¼" FROM EDGES OF PARTS JOINED UNLESS OTHERWISE NOTED.
13. ALL FIELD WELDS TO BE MADE WITH E-70XX LOW HYDROGEN ELECTRODE, SHALL BE MADE WITH ON-SITE PROTECTION AND USE ELECTRODE HEATING UNITS PER AWS D1-5.
14. FOR EXTENT OF TRACK REALIGNMENT, SEE TRACK DRAWINGS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
FRAMING PLAN AND GIRDER ELEVATION

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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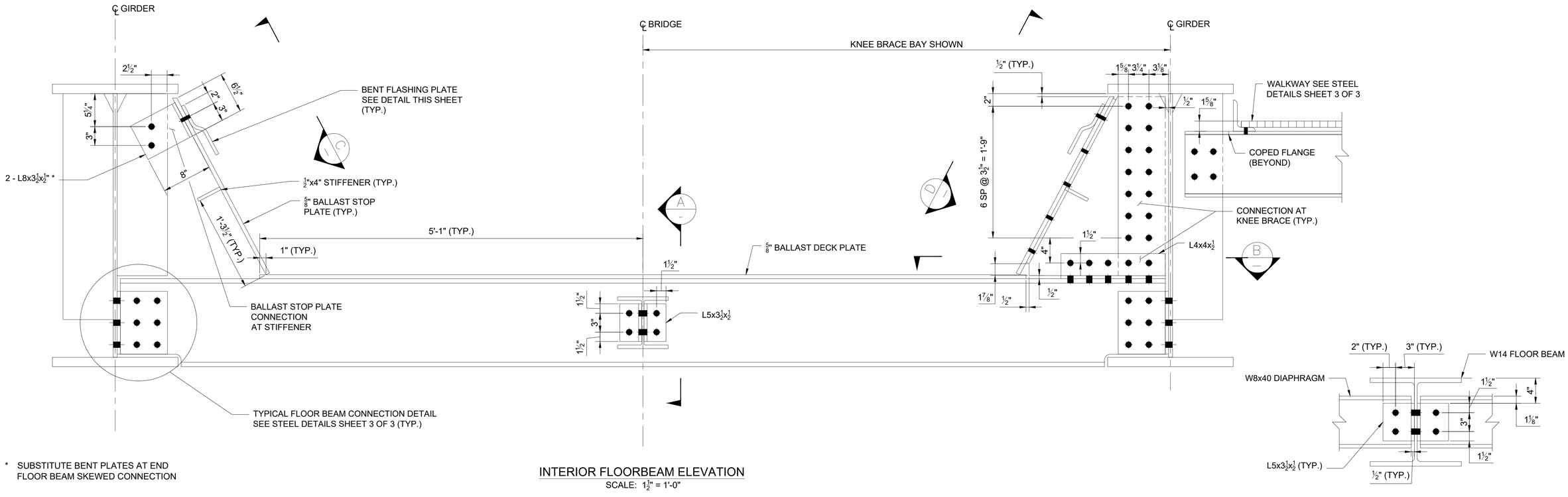
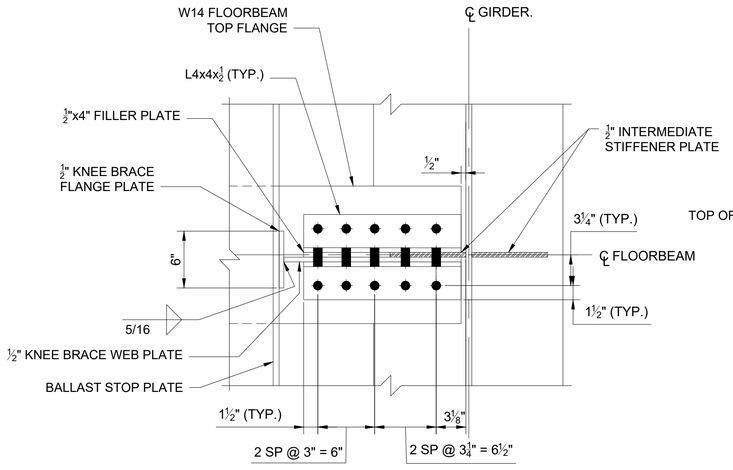


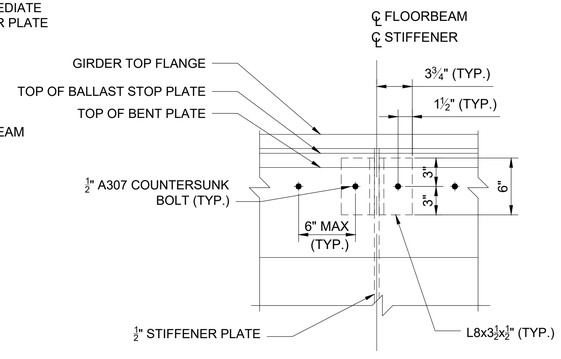
* SUBSTITUTE BENT PLATES AT END FLOOR BEAM SKEWED CONNECTION

INTERIOR FLOORBEAM ELEVATION

SCALE: 1½" = 1'-0"



SECTION B
SCALE: 1½" = 1'-0"



SECTION C
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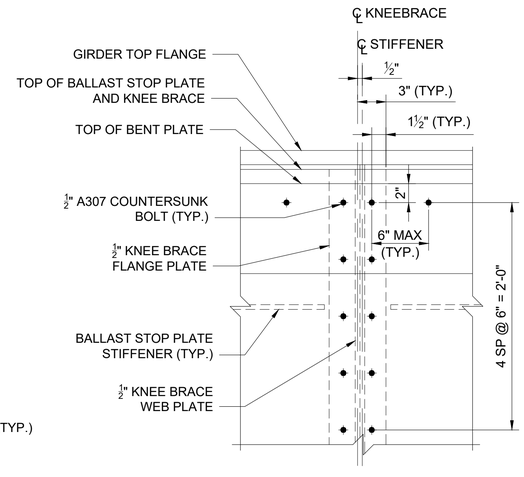
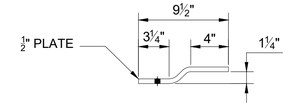


SECTION D
SCALE: 1½" = 1'-0"

SECTION A
SCALE: 1½" = 1'-0"



BENT FLASHING PLATE DETAIL

SCALE: 1½" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
STEEL DETAILS SHEET 1 OF 3

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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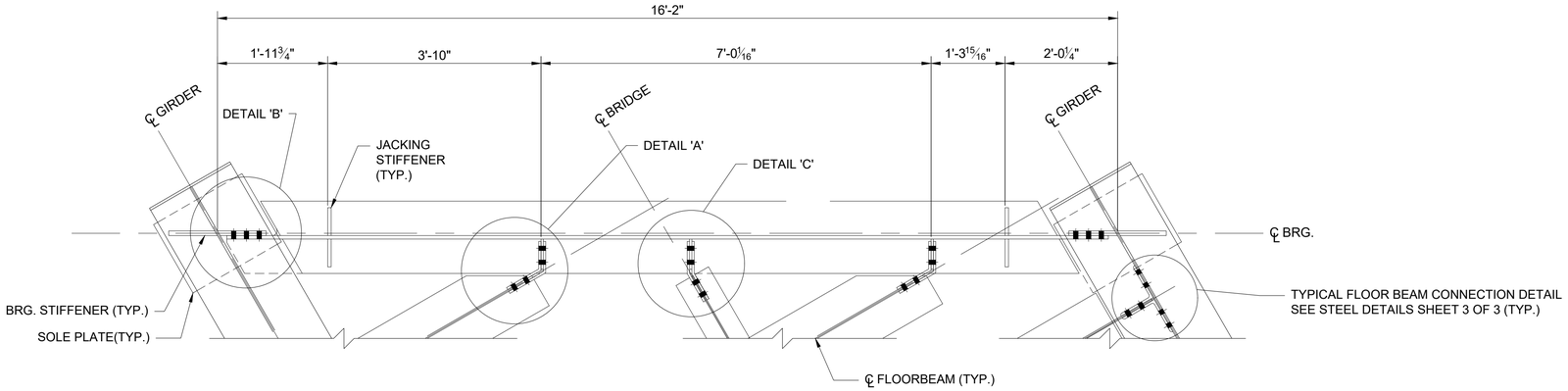
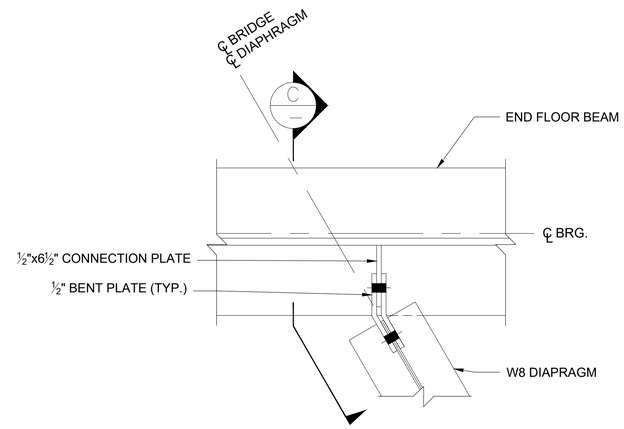
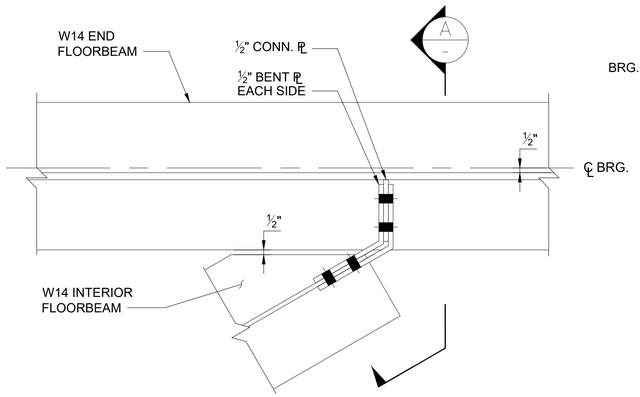


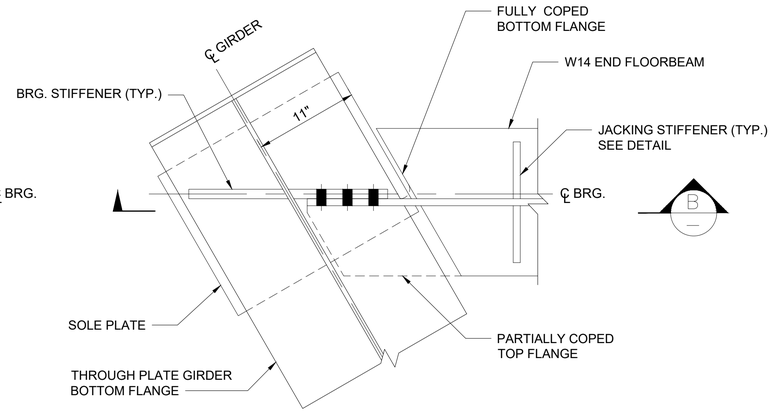


DETAIL 'C'
SCALE: 1½" = 1'-0"

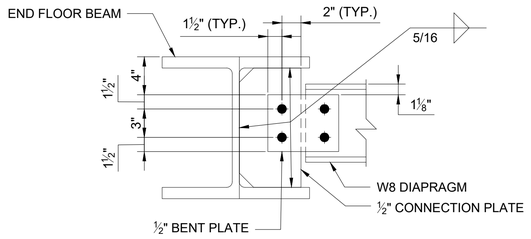
END FLOORBEAM PLAN VIEW
SCALE: ¾" = 1'-0"



DETAIL 'A'
SCALE: 1½" = 1'-0"



DETAIL 'B'
SCALE: 1½" = 1'-0"



SECTION C
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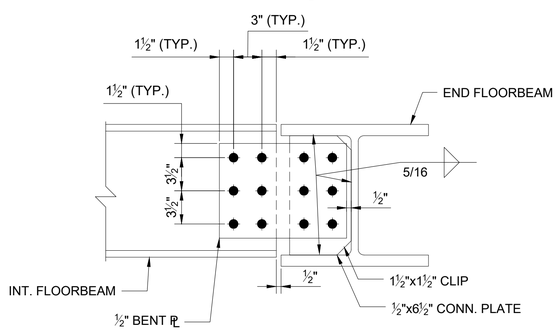

SECTION A
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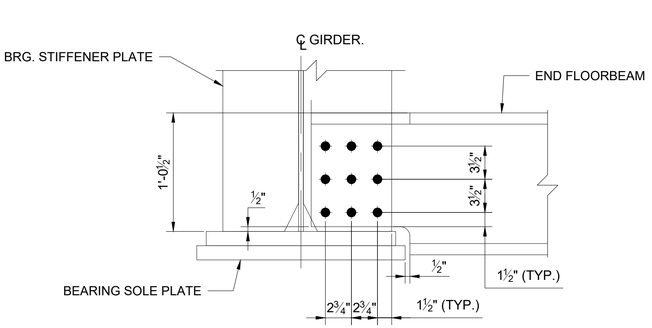

SECTION B
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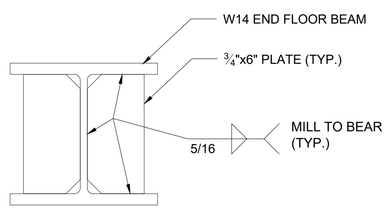

JACKING STIFFENER DETAIL
SCALE: 1½" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
STEEL DETAILS SHEET 2 OF 3

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
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massDOT Massachusetts Department of Transportation Rail & Transit Division

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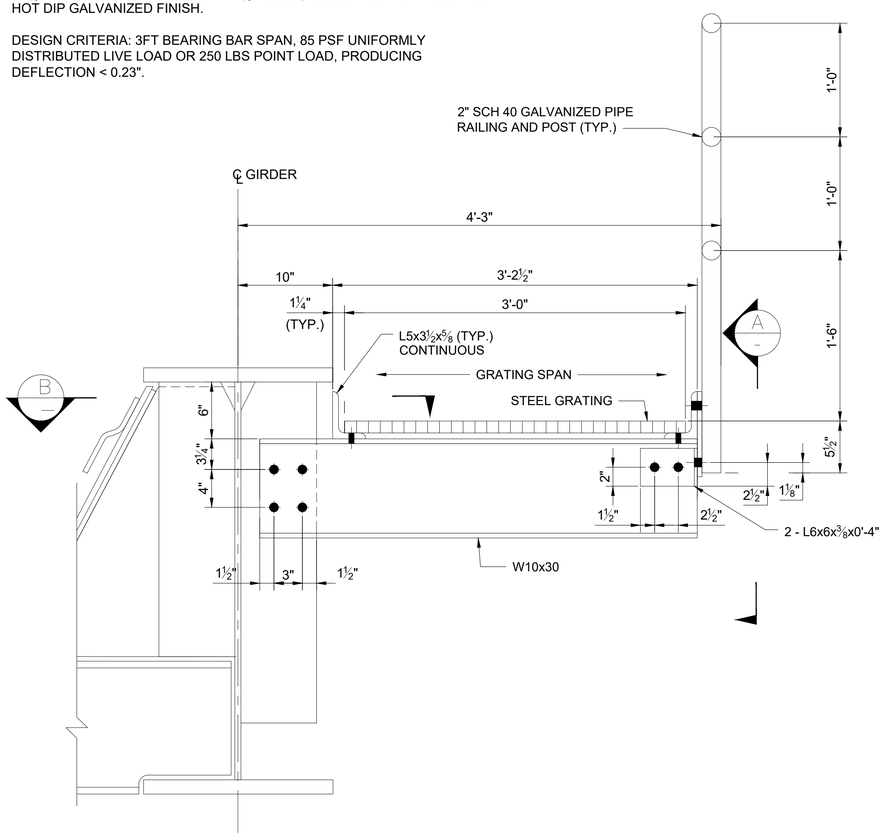
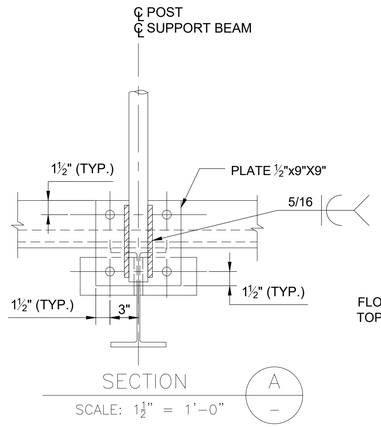
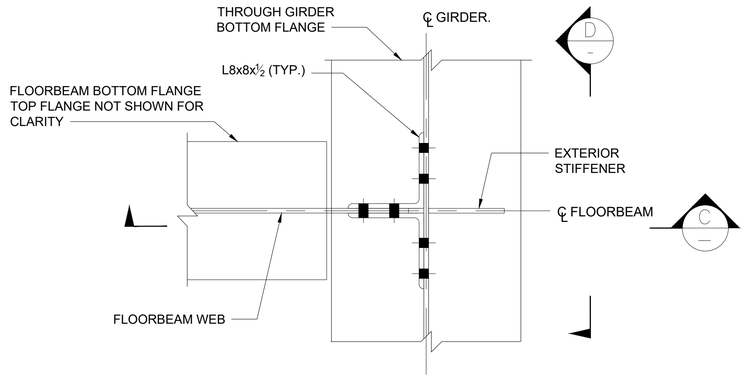
NOTE:

1. STEEL GRATING SHALL BE 19-W-4 WELDED STEEL BAR GRATING WITH 1" x $^{3}/_{16}$" BEARING BARS SPACED AT $1^{3}/_{16}$" O.C., $^{1}/_{4}$" SERRATED SURFACE, AND HOT DIP GALVANIZED FINISH.
2. DESIGN CRITERIA: 3FT BEARING BAR SPAN, 85 PSF UNIFORMLY DISTRIBUTED LIVE LOAD OR 250 LBS POINT LOAD, PRODUCING DEFLECTION < 0.23".

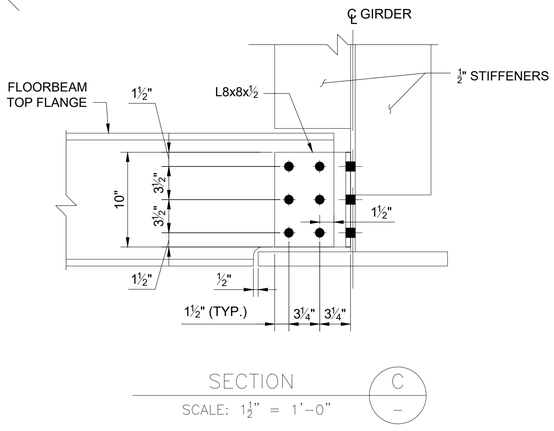


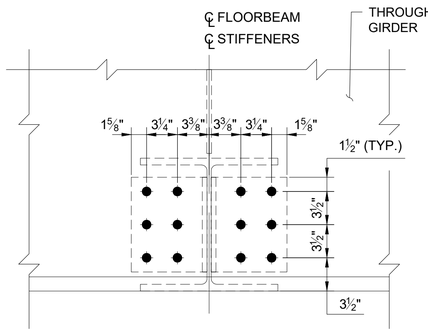
TYPICAL WALKWAY SECTION AT SUPPORT BEAM
SCALE: $1\frac{1}{2}$" = 1'-0"

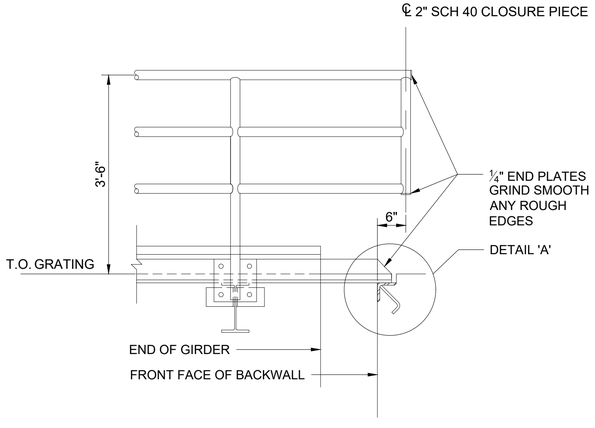




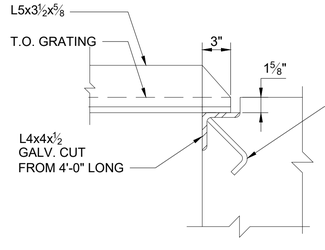
TYPICAL FLOORBEAM CONNECTION DETAIL
SCALE: 1½" = 1'-0"



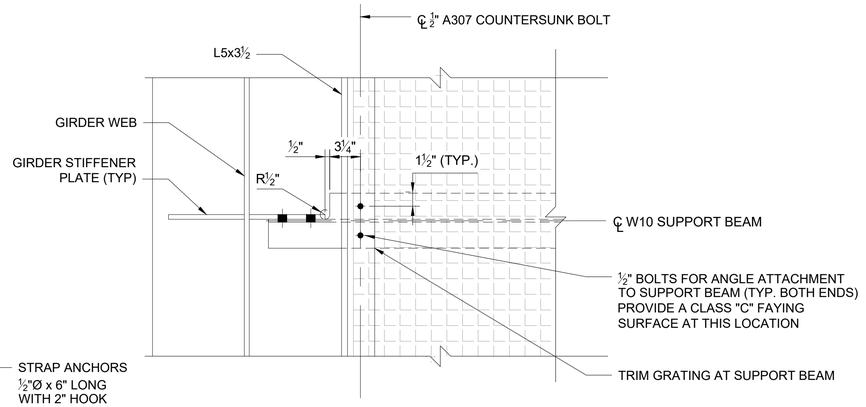




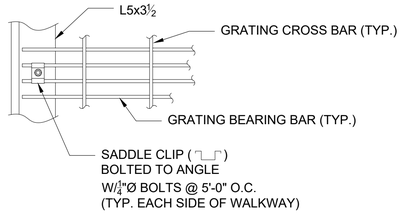
SAFETY RAILING END DETAIL
SCALE: ¾" = 1'-0"



DETAIL 'A'
SCALE: 1½" = 1'-0"



SECTION
SCALE: 1½" = 1'-0"
B



GRATING ATTACHMENT PLAN
SCALE: NTS

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS STEEL DETAILS SHEET 3 OF 3

ISSUE	DATE	DESCRIPTION	BY	CH'D	APP.

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99 HIGH STREET, SUITE 2300
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(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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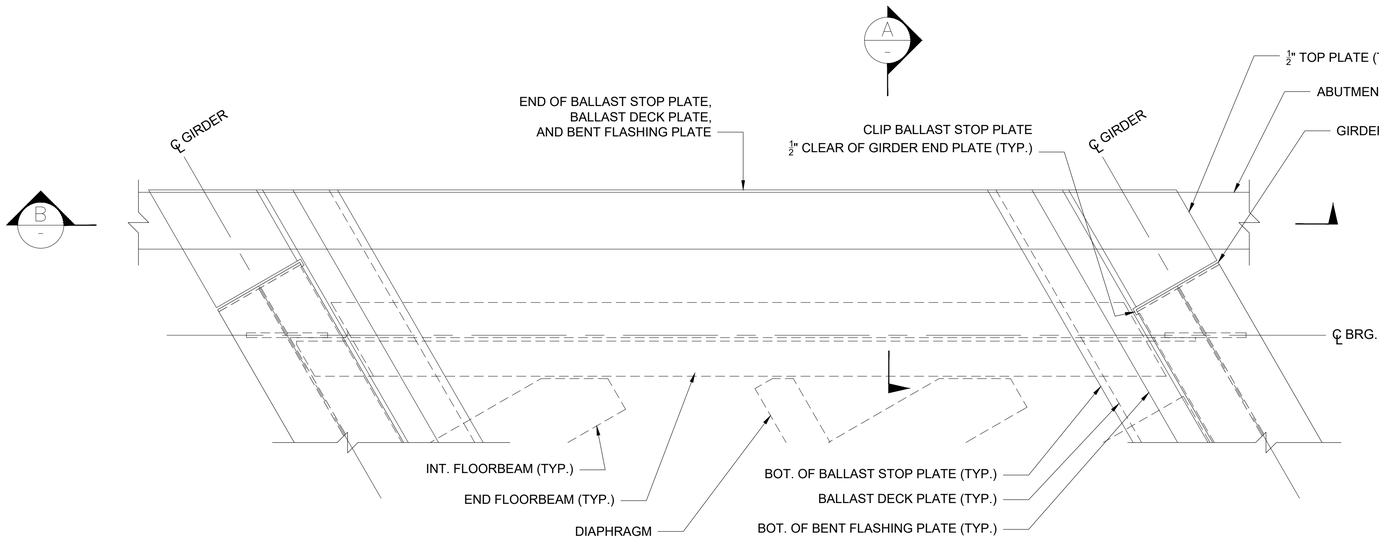
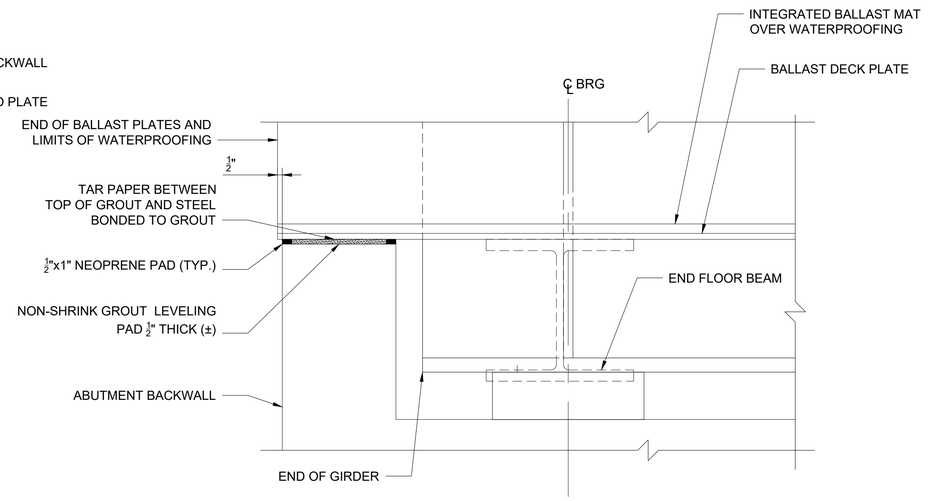
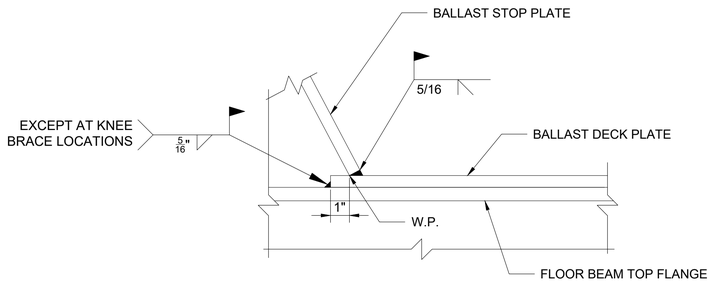


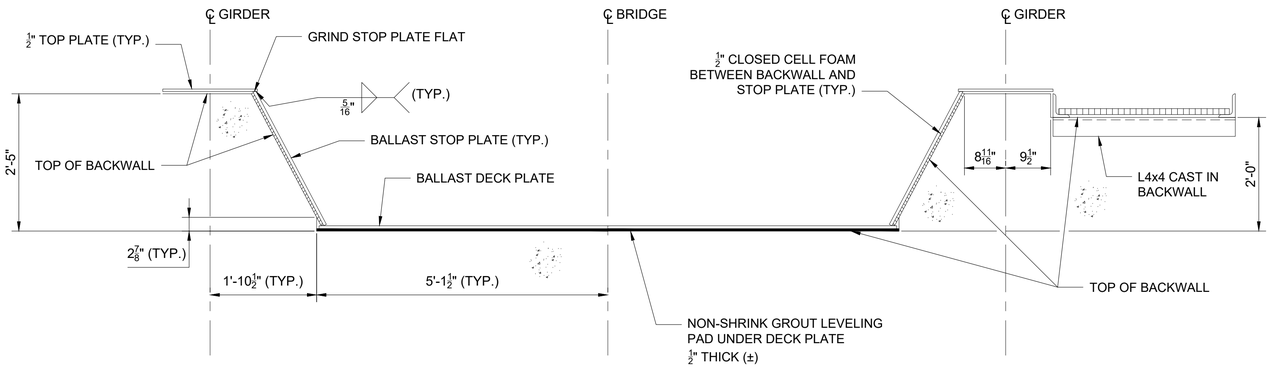
DECK END PLAN
SCALE: ¾" = 1'-0"



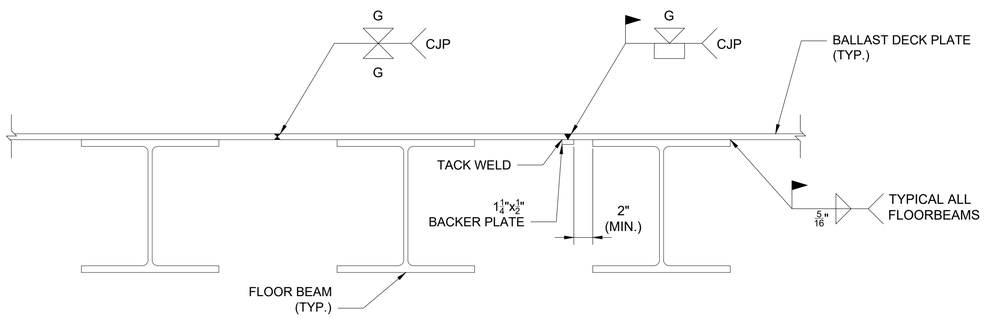
SECTION A
SCALE: 1½" = 1'-0"



BALLAST PLATE WELD DETAIL
SCALE: 3" = 1'-0"



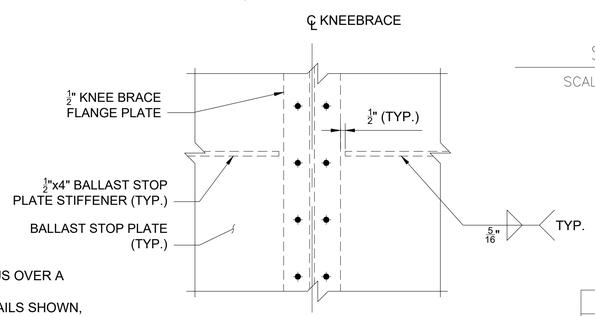
SECTION B
SCALE: ¾" = 1'-0"



TYPICAL SHOP SPLICE TYPICAL FIELD SPLICE

BALLAST PLATE SPLICE DETAIL
SCALE: 1½" = 1'-0"

BALLAST PLATE SPLICE NOTES:
1. BALLAST PLATE TO BE CONTINUOUS OVER A MINIMUM OF 3 SPANS.
2. BALLAST DECK PLATE SPLICE DETAILS SHOWN, BALLAST STOP PLATE SIMILAR.
3. DECK PLATE TO FLOOR BEAM MAY BE SHOP WELDED.



BALLAST STOP PLATE STIFFENER DETAIL
SCALE: 1½" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS DECK DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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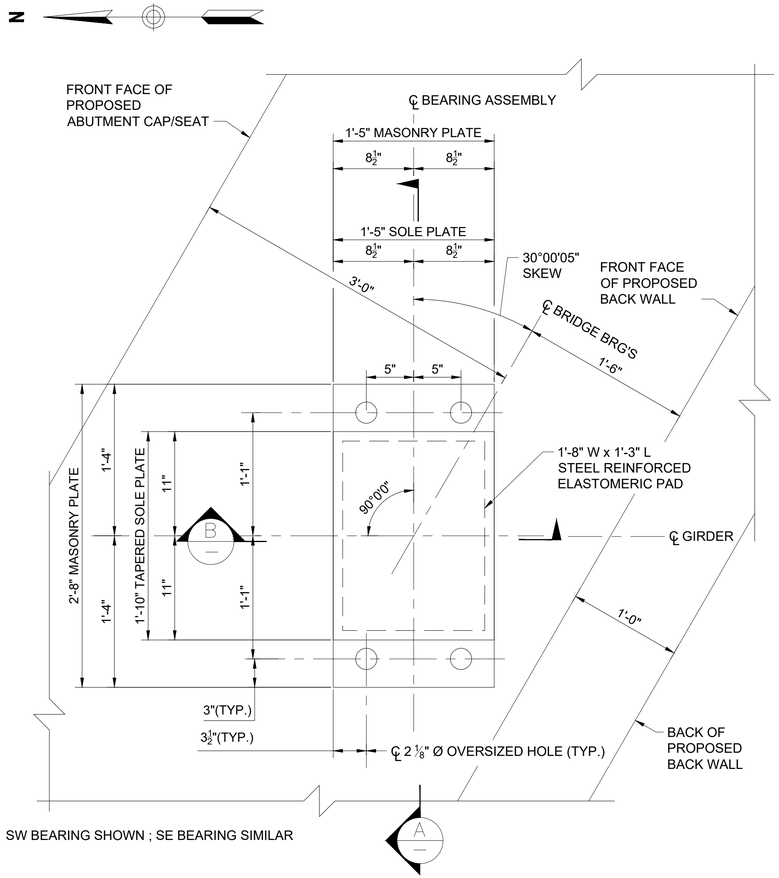
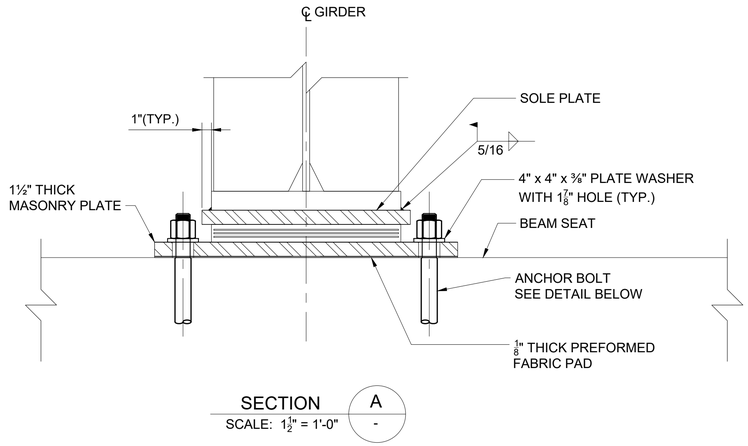
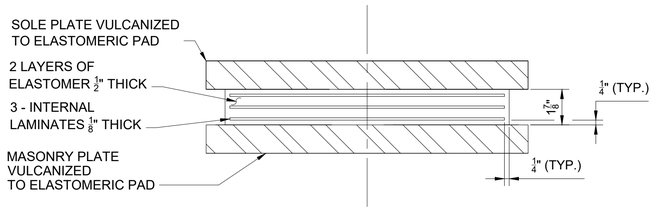


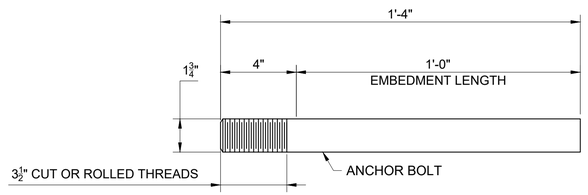
EXPANSION BEARING ASSEMBLY AT ABUTMENT
SCALE: 1½" = 1'-0"



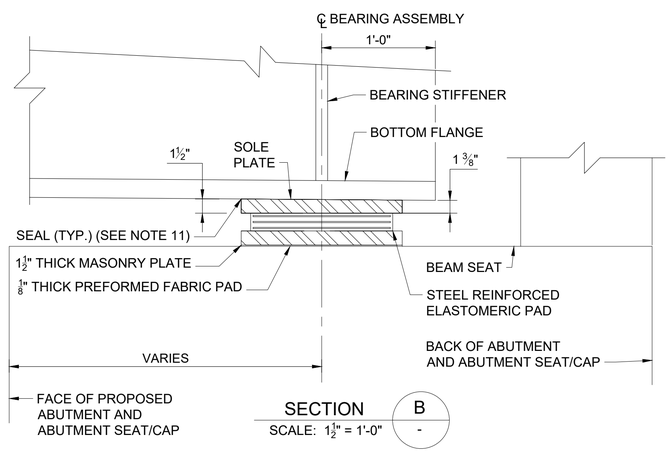
SECTION A
SCALE: 1½" = 1'-0"



ELASTOMERIC BEARING PAD
SCALE: 3" = 1'-0"



ANCHOR BOLT DETAIL
SCALE: 3" = 1'-0"



SECTION B
SCALE: 1½" = 1'-0"

BEARING DESIGN LOADS AND DEFLECTION
(AREMA ASD/SERVICE LOADS)

LOCATION	TYPE	COMPRESSIVE LOAD (KIPS)				INITIAL TOTAL DL COMPRESSIVE DEFLECTION (IN)
		DL	LL + IMPACT	TOTAL	LATERAL	
NORTH ABUTMENT	FIXED	51	238	289	90.4	0.038
SOUTH ABUTMENT	EXPANSION	51	238	289	36.3	0.038

ELASTOMERIC BEARING NOTES:

1. BEARING ASSEMBLIES, INCLUDING ELASTOMERIC BEARING PADS, SOLE PLATES, MASONRY PLATES, PINTLES, ANCHOR RODS, NUTS, AND WASHERS, SHALL BE INCLUIDED IN THE LUMP SUM OF ITEM 995.2 BRIDGE STRUCTURE NO. 76.23.
2. ELASTOMERIC BEARING PADS SHALL BE VIRGIN NATURAL RUBBER, OR NEOPRENE, HARDNESS (SHORE "A" DUROMETER) OF 60 AND A MINIMUM LOW-TEMPERATURE GRADE 4. STEEL LAMINATES FOR ELASTOMERIC BEARING PADS SHALL CONFORM TO ASTM A1011 WITH A MINIMUM GRADE OF 36.
3. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A709 GRADE 50.
4. ANCHOR BOLTS SHALL BE FABRICATED USING ASTM F1554, GRADE 55 MATERIAL. ANCHOR RODS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION AND CONFORM TO ASTM A153.
5. PREFORMED FABRIC BEARING PADS SHALL MEET THE REQUIREMENTS OF MASSDOT M9.16.2 AND THE MOST CURRENT VERSION OF MIL-C-882.
6. BEARING ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED. AREAS OF THE PLATE TO BE VULCANIZED TO BEARING OR WELDED TO GIRDERS SHALL BE BLANKED OFF AS NECESSARY AND CLEANED PRIOR TO WELDING OR VULCANIZING.
7. THE FABRICATOR SHALL CLEARLY MARK THE BEARING ASSEMBLIES TO ENSURE PROPER ORIENTATION IN THE FIELD.
8. PINTLES SHALL BE FABRICATED FROM ASTM F1554 GRADE 55 MATERIAL.
9. THE FIELD WELDS CONNECTING THE BOTTOM FLANGE OF GIRDERS TO THE TOP OF THE SOLE STEEL PLATES SHALL BE ALLOWED TO COOL AFTER EACH PASS. THE TEMPERATURE OF THE STEEL ADJACENT TO THE ELASTOMER SHALL NOT EXCEED 200°F (TEMPERATURE SHALL BE CONTROLLED BY WELDING PROCEDURES AND TEMPERATURE INDICATING CRAYON, OR OTHER DEVICES APPROVED BY THE ENGINEER). ALL PLATES SHALL BE FLAT AND TRUE AFTER WELDING.
10. FOLLOWING THE MANUFACTURE OF ELASTOMERIC BEARINGS AND VERIFICATION OF THE INTERNAL STEEL LAMINATES, THE PIN GROOVE OPENING SHALL BE COATED WITH AN APPROVED ASPHALTIC SEALER AND THE SPACE FILLED WITH SILICONE CAULKING.
11. APPLY AN APPROVED SEALANT ALONG THE TRANSVERSE EDGES UP AND AROUND TO THE FILLET WELD TERMINATION ON THE SOLE PLATE.
12. BEARING HEIGHT SHOWN ON THE PLANS IS FOR THE NO-LOAD CONDITION. FOR COMPRESSIVE DEFLECTION DUE TO DEAD LOAD SEE THE BEARING DESIGN LOADS AND DEFLECTION TABLE.
13. ALL PLATES SHALL BE FLAT AND TRUE AFTER WELDING.
14. WELDING DETAILS, PROCEDURES, AND TESTING METHODS SHALL CONFORM TO THE ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5:2008 WITH 2009 INTERIM REVISIONS. USE E70XX ELECTRODES UNLESS OTHERWISE NOTED.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
BEARING DETAILS SHEET 1 OF 2

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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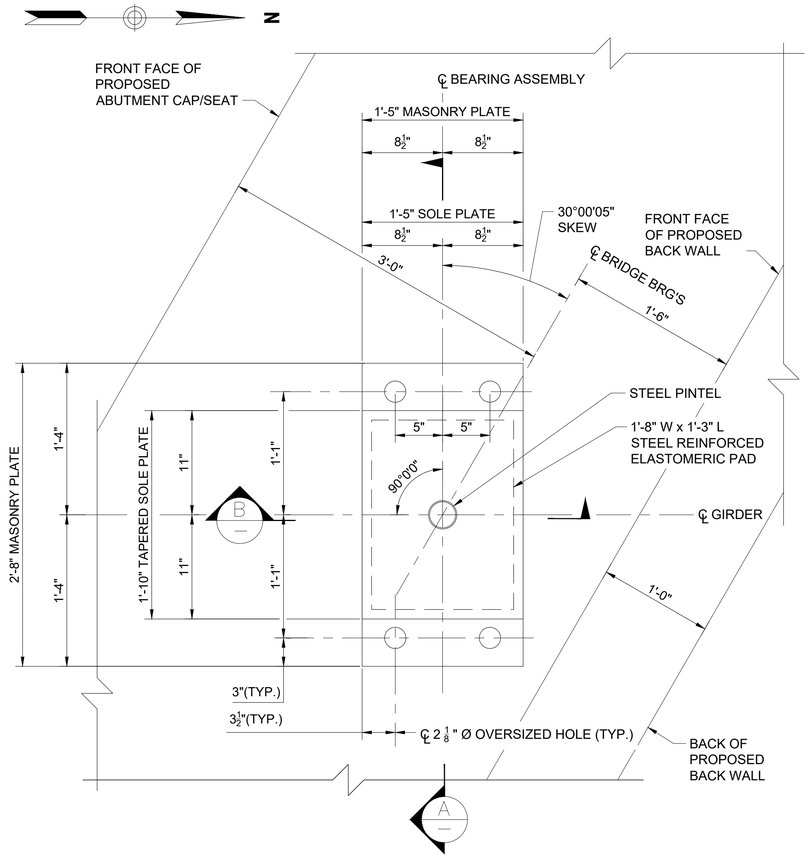
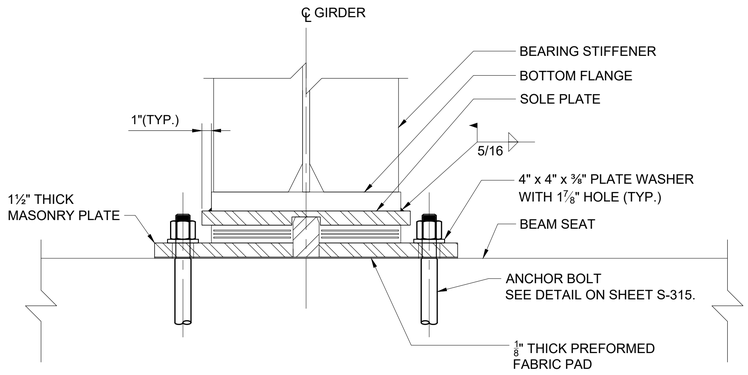
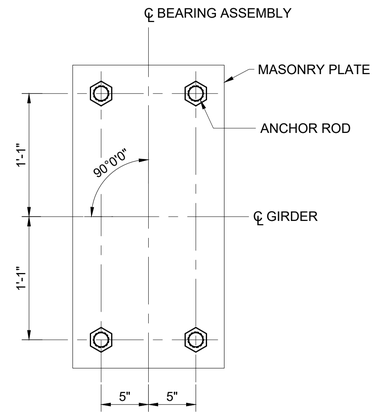


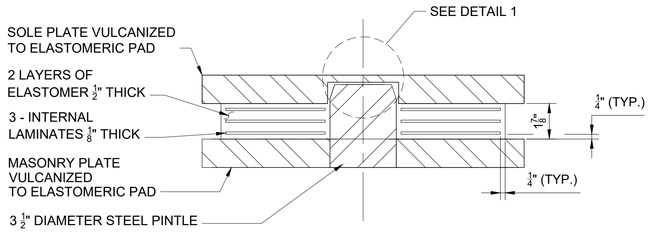
FIXED BEARING ASSEMBLY AT ABUTMENT
SCALE: 1½" = 1'-0"



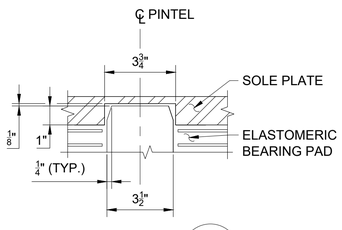
SECTION A
SCALE: 1½" = 1'-0"



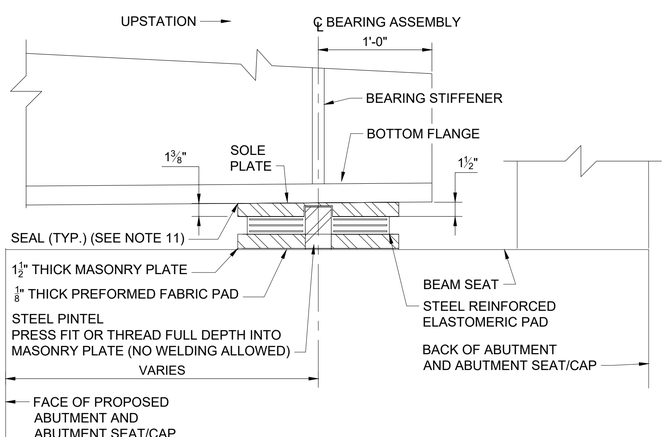
ANCHOR BOLT LAYOUT
SCALE: 1½" = 1'-0"



ELASTOMERIC BEARING PAD
SCALE: 3" = 1'-0"



DETAIL 1
SCALE: 3 = 1'-0"



SECTION B
SCALE: 1½" = 1'-0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 76.23 OVER COLUMBIA MILLS
BEARING DETAILS SHEET 2 OF 2

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STRUCTURE NOTES

SCOPE OF WORK

THE GENERAL SCOPE OF WORK AT THIS BRIDGE INCLUDES:

1. SELECTIVE CLEARING AND THINNING AT BRIDGE APPROACHES.
2. CLEAN VEGETATION FROM THE STONE MASONRY JOINTS OF THE ABUTMENTS AND WINGWALLS.
3. CLEAN DEBRIS FROM THE BRIDGE SEATS AND GIRDER BOTTOM FLANGES ABOVE THE BRIDGE SEAT AREAS.
4. INSTALLING COFFERDAM AND DEWATERING. DEMOLITION OF EXISTING CONCRETE SECTION ON THE FOOTING.
5. CLEAN SURFACES AND RE-POINT STONE JOINTS PRIOR TO PLACEMENT OF CONCRETE BREAST WALL AND APRON AS DIRECTED BY THE ENGINEER.
6. INSTALL NEW CONCRETE BREAST WALL AND TIEBACK ANCHORS.
7. REMOVE EXISTING MASONRY STONE AT THE SOUTHEAST WINGWALL AND INSTALL NEW CONCRETE CAP.
8. DURING AN EXTENDED WEEKEND CLOSURE, REPLACE BEARING PEDESTAL UNDER NORTH END OF WEST GIRDER, RAISE SOUTH ENDS OF TWO GIRDERS BY 1½" AND REPLACE BEARING PEDESTALS.
9. RESET ROTATED GRANITE STONE IN SOUTH ABUTMENT BACKWALL TO MATCH THE ALIGNMENT OF THE EXISTING ADJACENT BACKWALL MASONRY.

BRIDGE 77.28 NOTES:

1. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES.
2. FOR CONSTRUCTION WORK, ANY STAGING AREA AND PROPERTY ACCESS OUTSIDE WHAT IS SHOWN ON THE PLANS FOR THE ENVIRONMENTAL PERMITTING APPLICATION NEEDS TO BE IN NON-JURISDICTIONAL WETLAND RESOURCE AREAS, INCLUDING BUFFER ZONE OR RIVERFRONT AREAS. ANY WORK OUTSIDE OF WHAT IS SHOWN ON THE PLANS SHALL BE PROPERLY AUTHORIZED BY THE LEE CONSERVATION COMISSION UNDER THE MA WETLANDS PROTECTION ACT, AS MAY BE NECESSARY

SUGGESTED CONSTRUCTION SEQUENCE FOR REHABILITATION OF SOUTH ABUTMENT:

1. COORDINATE RAIL TRAFFIC SHUTDOWNS AND THE USE OF STAGING AREA WITH THE RAILROAD.
2. MOBILIZATION
3. FIELD MEASURE EXISTING BRIDGE COMPONENTS IMPACTED BY THE NEW WORK TO ENSURE CONSISTENCY WITH PROPOSED WORK.
4. CLEAN THE VEGETATION AND DEBRIS ON THE BRIDGE SEATS AND BOTTOM FLANGES OF GIRDERS AT THE BRIDGE SEAT AREAS.
5. INSTALL COFFERDAM AND DEWATER. DEMOLISH EXISTING CONCRETE SECTION ON THE FOOTING AND REMOVE EXISTING STONE AT THE NORTHEAST CORNER OF THE WINGWALL.
6. CLEAN SURFACES AND RE-POINT STONE JOINTS AS DIRECTED BY THE ENGINEER.
7. INSTALL PROPOSED CONCRETE BREAST WALL AND APRON AT THE SOUTH ABUTMENT AND CONCRETE CAP AT THE SOUTHEAST CORNER OF THE WINGWALL.
8. INSTALL TIEBACK ANCHORS.
9. DEMOBILIZE.

SUGGESTED CONSTRUCTION SEQUENCE FOR RESET BEARING PEDESTALS:

1. COORDINATE RAIL TRAFFIC SHUTDOWNS.
2. LOOSEN RAIL SPIKES WITHIN 10'-0" ON EACH SIDE OF THE GIRDER ENDS.
3. LOOSEN BEARING ANCHOR BOLT NUTS.
4. JACK UP GIRDER ENDS (< 1/8" ON NORTHWEST END AND 1" ON SOUTH ENDS) TO RELIEVE THE DEAD LOAD ON PEDESTALS AND TEMPORARILY SUPPORT THE GIRDER PRIOR TO BRIDGE PEDESTAL REPLACEMENT.
5. REMOVE EXISTING PEDESTALS AND INSTALL NEW PEDESTALS WITH HIGH STRENGTH NON-SHRINK GROUT.
6. AFTER GROUT REACHES 4,000 PSI COMPRESSIVE STRENGTH, REMOVE TEMPORARY SUPPORT, LOWER THE GIRDER ONTO NEW PEDESTALS, REMOVE JACKING DEVICE AND TIGHTEN BEARING ANCHOR BOLT NUTS AND RAIL SPIKES

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK
STRUCTURE NOTES

HDR, INC.
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massDOT Massachusetts Department of Transportation Rail & Transit Division

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99 High Street Suite 2300
Boston, MA 02110
Telephone: 617.357.7700

BORING NUMBER B-77-1
PAGE 1 OF 1

CLIENT	MassDOT Rail Division	PROJECT NAME	Berkshire Line Improvements
PROJECT NUMBER	10370244	PROJECT LOCATION	Lee and Lenox, MA
NORTH 2949237	EAST 185132	DATE STARTED 1/8/25	COMPLETED 1/9/25
STATION ---	OFFSET ---	GROUND ELEVATION	CASING SIZE (IN) 4 (ID)
DRILLING CO. New England Boring Co.	DRILLER Z. Ohman	GROUND WATER LEVELS:	
DRILLING METHOD Drive & Wash	SPT HAMMER TYPE Safety	∇ AT TIME OF DRILLING	15.0 ft measured with casing to 24 ft
LOGGED BY R. Manson, EIT	CHECKED BY R. Lavorati, PE	AT END OF DRILLING	---
NOTES	Behind bridge 77.28 south abutment.	AFTER DRILLING	---

DEPTH (ft)	ELEV (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	Other Tests	Remarks
0			Black GRAVEL, little fine to coarse Sand, trace Silt, medium dense, dry [Ballast]	SPT 1	29	9-12-9-12 (21)		Ground surface defined as the top of the railroad tie. Top sample frozen due to freezing temperatures.
5			Brown fine to coarse SAND, some Gravel, little Silt, medium dense, moist	SPT 2	50	7-7-9-8 (16)		
10			Brown fine to coarse SAND, some Gravel, some Silt, medium dense, moist	SPT 3	33	6-5-5-5 (10)	44.3% Sand, 32.5% Gravel, 23.2% Fines	
15			∇ Brown fine to coarse SAND, some Gravel, little Silt, trace roots/wood, medium dense, wet	SPT 4	21	14-7-7-9 (14)		Roots and buried vegetation indicate likely bottom of fill layer.
20			Brown GRAVEL, some fine to coarse Sand, trace Silt, medium dense, wet	SPT 5	13	9-8-10-10 (18)	S-5 and S-6 combined: 60.7% Gravel, 32.4% Sand, 6.9% Fines	
25			Brown GRAVEL, some fine to coarse Sand, trace Silt, medium dense, wet	SPT 6	42	18-10-8-8 (18)		Strata change at 28 ft inferred based on casing advancment difficulty.
30			Brown GRAVEL and fine to coarse Sand, some Silt, very dense, wet	SPT 7	92	43-23-50/ (50/1)		
			Weathered Dolomite	SPT 8	63	52-50/2 (50/2)		Borehole backfilled with cuttings at the end of drilling.
			Bottom of borehole at 33.7 feet.					

BORING NO. B-77-1
NOT TO SCALE

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE BRIDGE PLAN THUS:
2. THE SUBSURFACE SOIL STRATIFICATIONS AND GROUNDWATER CONDITIONS SHOWN ON THE BORING LOGS AND SOIL PROFILES ARE REPRESENTATIVE OF THE CONDITIONS ENCOUNTERED ONLY AT THE ACTUAL BORING LOCATION. VARIATIONS IN THE OVERALL SITE SUBSURFACE CONDITIONS MAY OCCUR AND SHOULD BE EXPECTED BETWEEN BORING LOCATIONS AND ACROSS THE SITE IN THE AREAS THAT WERE NOT EXPLORED. THE BOUNDARY BETWEEN LAYERS PROVIDED IN THE BORING LOGS ARE APPROXIMATE AND ARE BASED ON OBSERVATIONS OF SPLIT - SPOON SAMPLES, DRILLING FLUID COLOR, DRILL CUTTINGS, AND DRILL RIG BEHAVIOR. THE ACTUAL TRANSITION BETWEEN LAYERS MAY BE GRADUAL OR MORE ABRUPT THAN SHOWN ON THE BORING LOGS.
3. GROUNDWATER LEVELS FLUCTUATE DUE TO LOCAL AND REGIONAL FACTORS INCLUDING, BUT NOT LIMITED TO, WATER LEVEL IN THE HOUSATONIC RIVER SITE TOPOGRAPHY, SEASONAL CHANGES, WELL PUMPING, AND PERIODS OF WET AND DRY WEATHER, NEARBY CONSTRUCTION, OR OTHER BELOW GRADE ACTIVITIES, SUCH AS EXCAVATION, DEWATERING, INFILTRATION BASINS.
4. FIGURES IN THE BLOW COUNTS (N VALUE) COLUMN INDICATE THE NUMBER OF BLOWS REQUIRES TO DRIVE A 1.38 INCH I.D. SPLIT SPOON SAMPLER 6 INCHES USING A 140 POUND HAMMER FALLING 30 INCHES.
5. SOIL AND BEDROCK SAMPLES ARE STORED AT HDR'S OFFICE AT 99 HIGH STREET, BOSTON, MA FOR THE DURATION OF CONSTRUCTION.
6. BORINGS DRILLED BY NEW ENGLAND BORING CONTRACTORS OF TAUNTON, MASSACHUSETTS, BETWEEN JANUARY 2 AND JANUARY 15, 2025. BORINGS WERE OBSERVED BY AN HDR ENGINEER ON A FULL TIME BASIS.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK BORING LOGS

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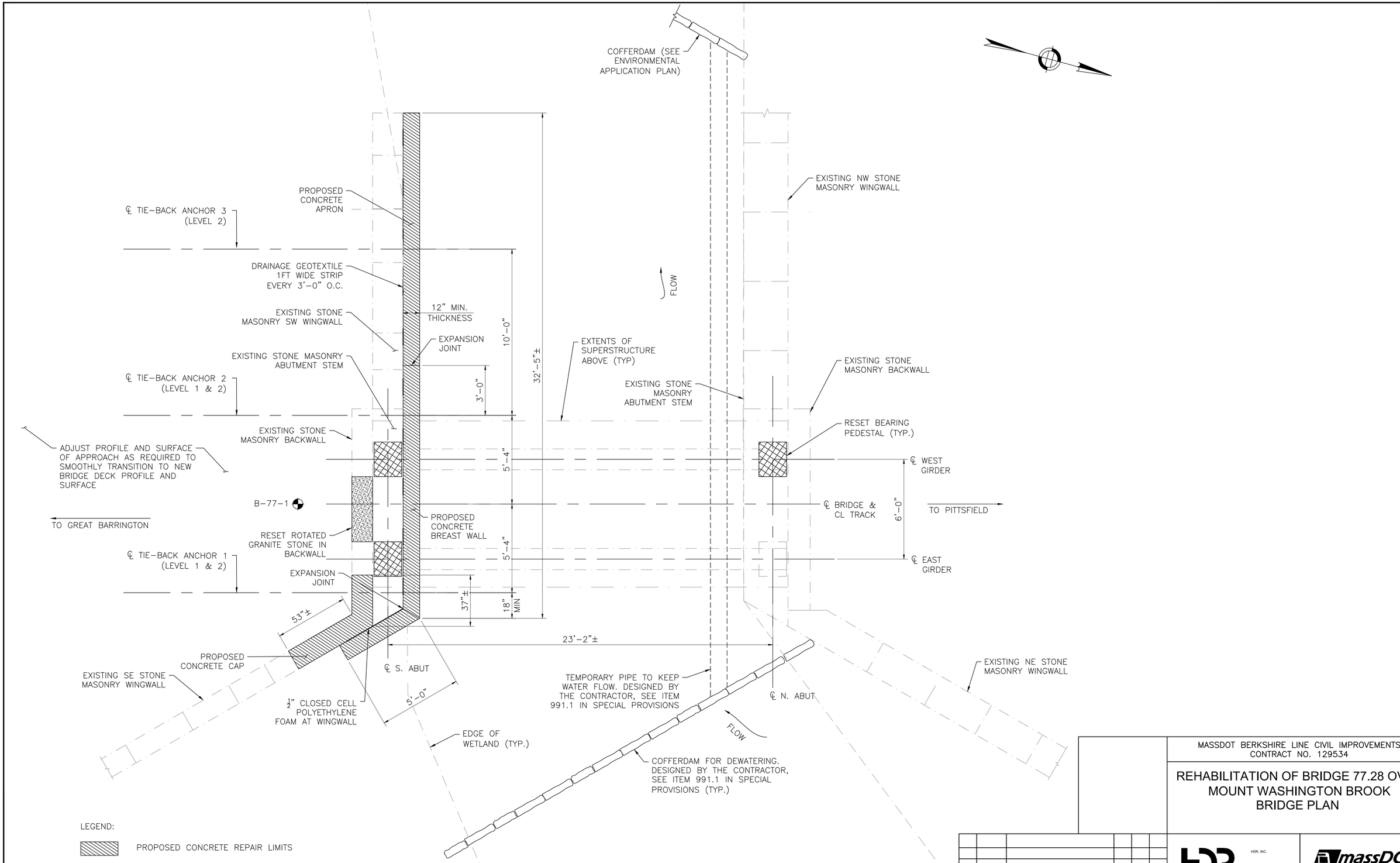

BRIDGE PLAN – PROPOSED WORK

SCALE: ⅜" = 1'–0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
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REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK BRIDGE PLAN

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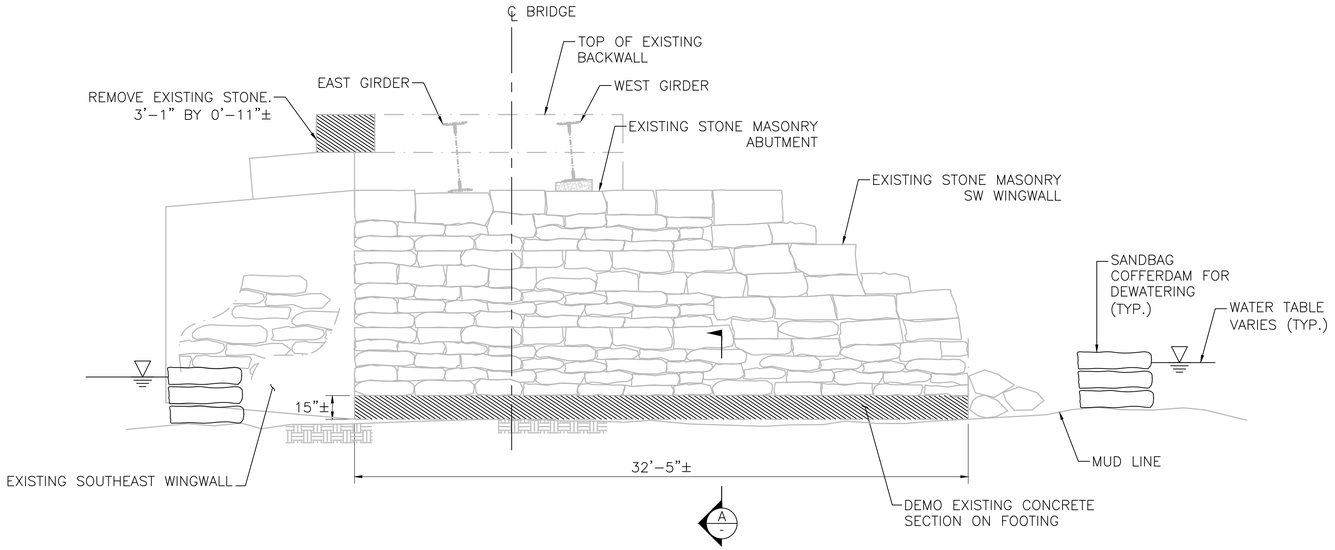
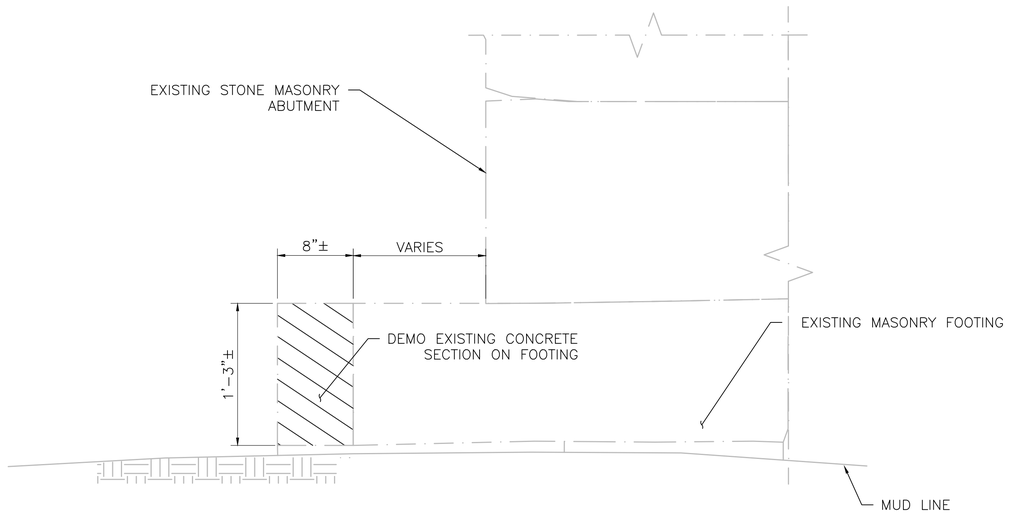


LEGEND:

DEMOLITION LIMITS

SOUTH ABUTMENT ELEVATION – DEMOLITION LIMITS

SCALE: $\frac{1}{4}$" = 1'–0"



SECTION A – SCALE: $1\frac{1}{2}$" = 1'–0"

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK
DEMOLITION LIMITS

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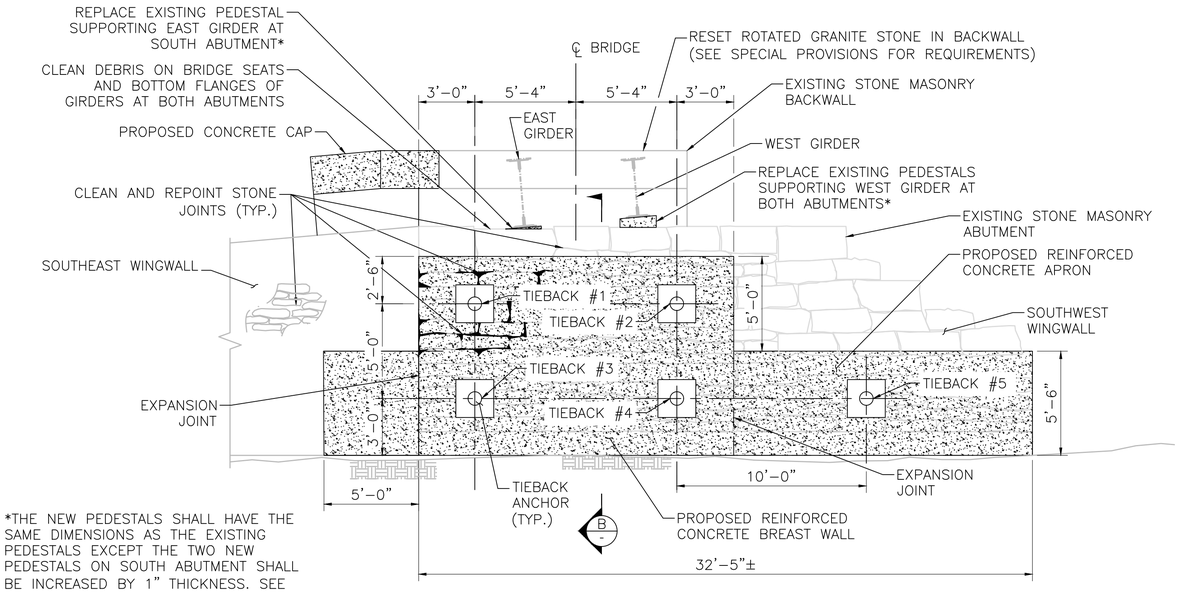
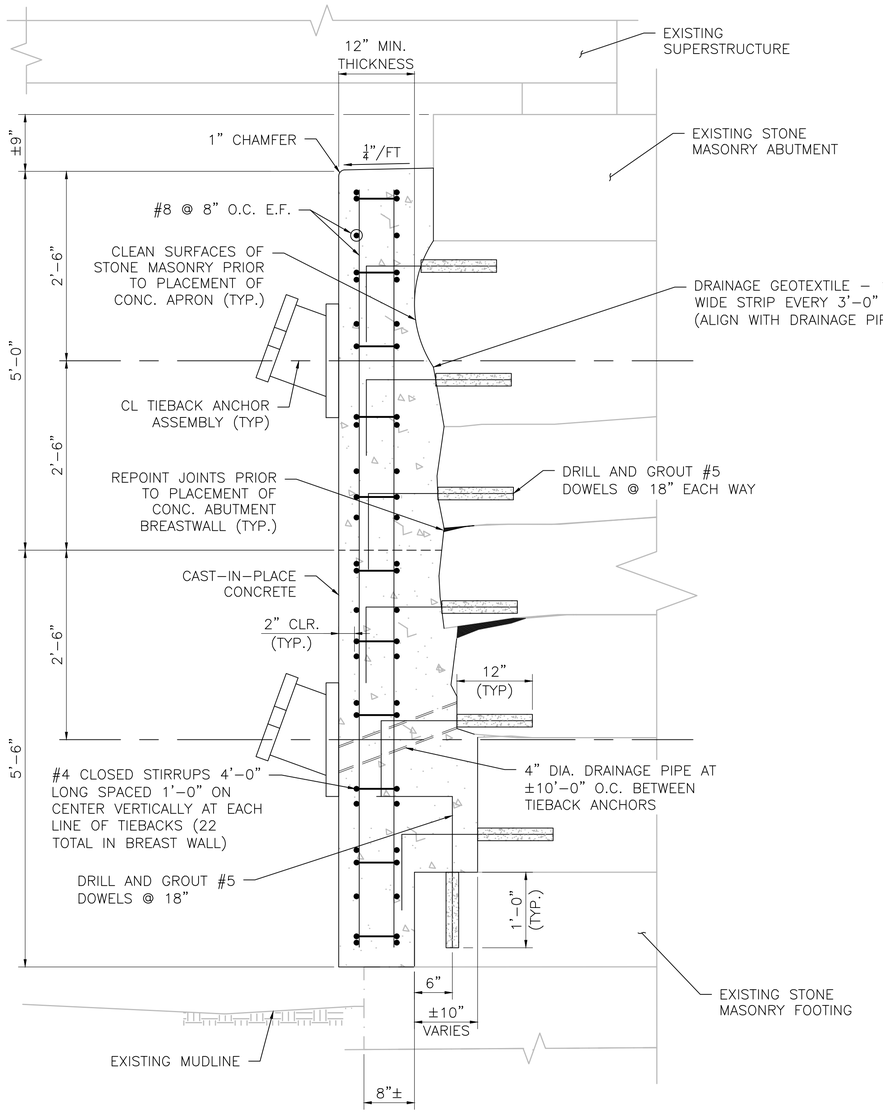


*THE NEW PEDESTALS SHALL HAVE THE SAME DIMENSIONS AS THE EXISTING PEDESTALS EXCEPT THE TWO NEW PEDESTALS ON SOUTH ABUTMENT SHALL BE INCREASED BY 1" THICKNESS. SEE SPECIAL PROVISIONS FOR REQUIREMENTS.

SOUTH ABUTMENT ELEVATION – PROPOSED REPAIRS

SCALE: $\frac{1}{4}$" = 1'–0"



SECTION B – B

SCALE: 1" = 1'–0"

NOTES:

1. TIE–BACK ANCHORS ARE TO BE DESIGNED BY CONTRACTOR. SEE SPECIAL PROVISIONS.
2. CONCRETE SHALL BE 5,000 PSI HIGH PERFORMANCE CONCRETE.
3. REINFORCING BARS SHALL CONFIRM TO ASTM A615, GRADE 60, EPOXY COATED BARS.
4. THE CONTRACTOR SHALL PROVIDE ANCHORAGE TO SECURE THE CAST–IN–PLACE WALL TEMPORARILY DURING CONSTRUCTION, UNTIL ANCHOR PRESTRESS FORCES ARE LOCKED–OFF.
5. ANCHORHEAD ASSEMBLY SHALL BE GALVANIZED IN CONFORMANCE WITH ASTM A123. GALVANIZING SHALL BE REMOVED OR BLOCKED OUT AS NECESSARY TO ACCOMMODATE FIELD WELDS. FIELD WELDS AND ADJACENT AREAS SHALL BE TOUCHED–UP IN CONFORMANCE WITH ASTM A780.
6. DESIGN OF ALL STRUCTURAL STEEL NOT EXPLICITLY DIMENSIONED IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. TIE BACKS SHALL BE ANCHORED INTO COHESIONLESS SOIL OR INTO BEDROCK. IF ANCHOR DESIGN CALCULATIONS INDICATE THAT A BOND LENGTH IN BEDROCK SHORTER THAN 15 FEET IS REQUIRED, THEN THE BOND LENGTH SHALL BE INCREASED TO 15 FEET.
8. ANCHORS SHALL BE PROOF TESTED TO 133% OF THE DESIGN LOAD.
9. FOR TIEBACK ANCHORS WITH BOND LENGTH IN BEDROCK, THE FIRST TIEBACK ANCHOR INSTALLED SHALL BE PERFORMANCE TESTED TO 133% OF THE SINGLE TIEBACK ANCHOR DESIGN LOAD. IF THE TIEBACKS ARE DESIGNED WITH BOND LENGTH IN COHESIONLESS SOIL, THE FIRST TWO TIEBACKS SHALL BE PERFORMANCE TESTED TO 133% OF THE SINGLE TIEBACK ANCHOR DESIGN LOAD. ALL THE PRODUCTION ANCHORS NOT PERFORMANCE TESTED SHALL BE PROOF TESTED TO 133% OF THE SINGLE TIEBACK DESIGN LOAD.
10. TIE–BACKS SHALL BE LOCKED OFF AT 75% OF THE SINGLE TIE–BACK DESIGN LOAD.
11. THE DESIGN HORIZONTAL UNIT LOAD IS 15,500 POUNDS PER LINEAR FOOT FOR THE BREAST WALL AND 4,600 POUNDS PER LINEAR FOOT FOR THE APRON. ANCHORS SHALL BE DESIGNED TO WITHSTAND THE HORIZONTAL LOAD. THE MINIMUM NUMBER OF ANCHORS SHALL BE AS SHOWN ON THE DRAWINGS.
12. THE CONTRACTOR SHALL FIELD MEASURE AND VERIFY, PRIOR TO FABRICATION AND CONSTRUCTION OF ANY COMPONENT OF THE TIE–BACK WALL SYSTEM, THAT THE ANCHORS ARE CONSTRUCTIBLE GIVEN THE SPATIAL REQUIREMENTS OF THE CONTRACTORS EQUIPMENT, THE ANGLES AND ELEVATIONS SHOWN FOR INSTALLING THE ANCHORS, AND CONSTRAINTS CAUSED BY THE EXISTING SITE LAYOUT.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK PROPOSED SOUTH ABUTMENT REHABILITATION

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

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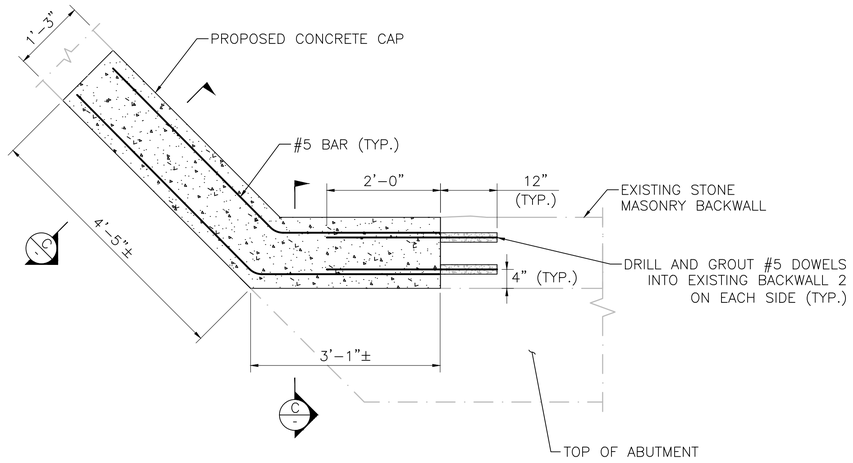
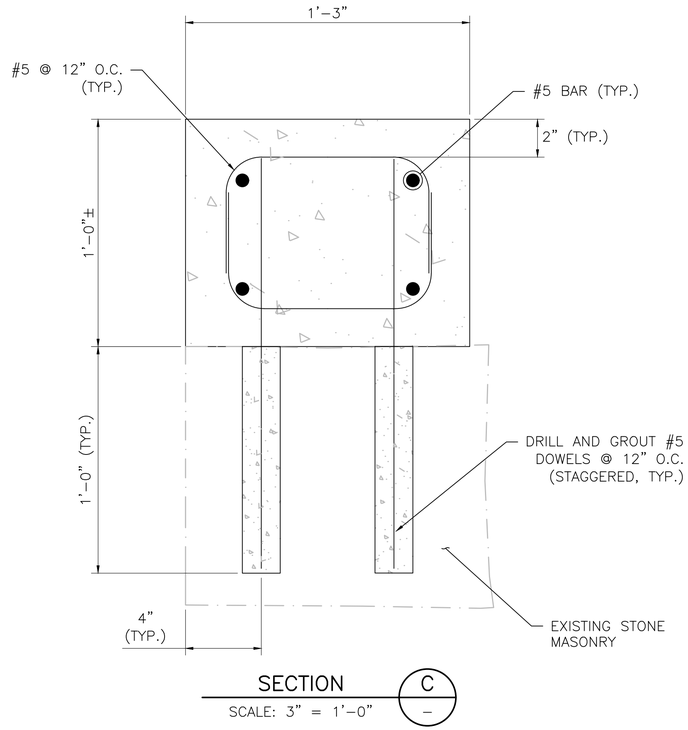


PROPOSED CONCRETE CAP – PLAN

SCALE: $\frac{3}{4}$" = 1'-0"



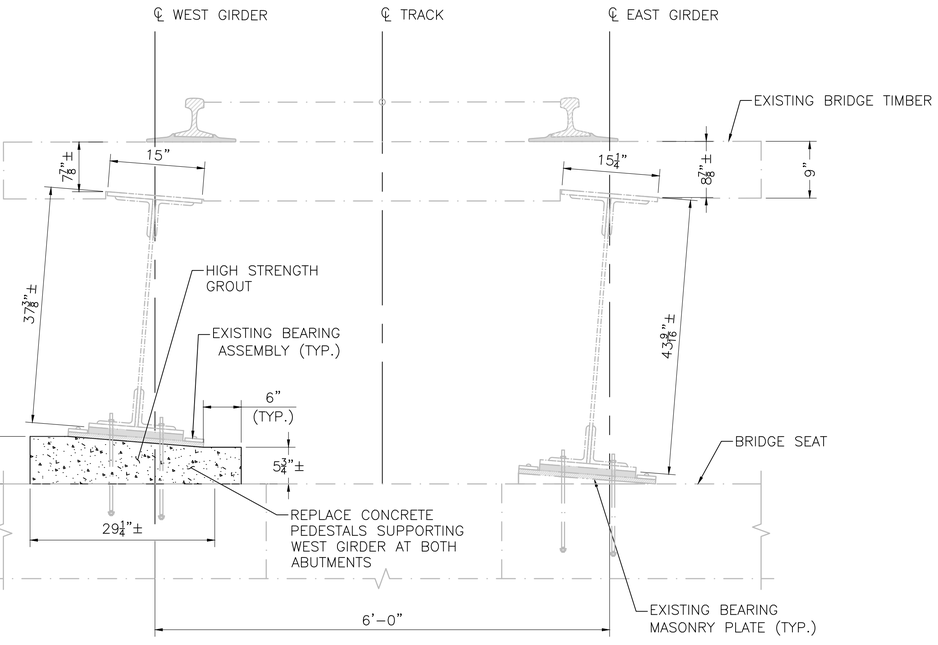
SECTION C –

SCALE: 3" = 1'-0"

SOUTHEAST PEDESTAL

SCALE: NTS

REPLACE EXISTING PEDESTALS SUPPORTING EAST GIRDER AT SOUTH ABUTMENT. SEE SPECIAL PROVISIONS FOR REQUIREMENTS.



EXISTING BRIDGE CROSS SECTION

SCALE: 1" = 1'-0"

(NORTH ABUTMENT SHOWN SOUTH ABUTMENT SIMILAR EXCEPT BOTH BEARINGS SHALL BE REPLACED AND NEW PEDESTALS SHALL BE 1.5" THICKER THAN EXISTING)

NOTE: STEEL CROSS FRAME AND STEEL TIE SPACER BARS ARE NOT SHOWN.

SOUTHWEST PEDESTAL

SCALE: NTS

REPLACE EXISTING PEDESTALS SUPPORTING WEST GIRDER AT BOTH ABUTMENTS. SEE SPECIAL PROVISIONS FOR REQUIREMENTS.

NORTHWEST PEDESTAL

SCALE: NTS

NOTE: PHOTOGRAPHS ARE TAKEN FROM THE INSPECTION REPORT DATED FEBRUARY 2015 AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THEY DO NOT NECESSARILY REPRESENT THE CURRENT CONDITION OF THE PEDESTALS.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 77.28 OVER MOUNT WASHINGTON BROOK
TYPICAL DETAILS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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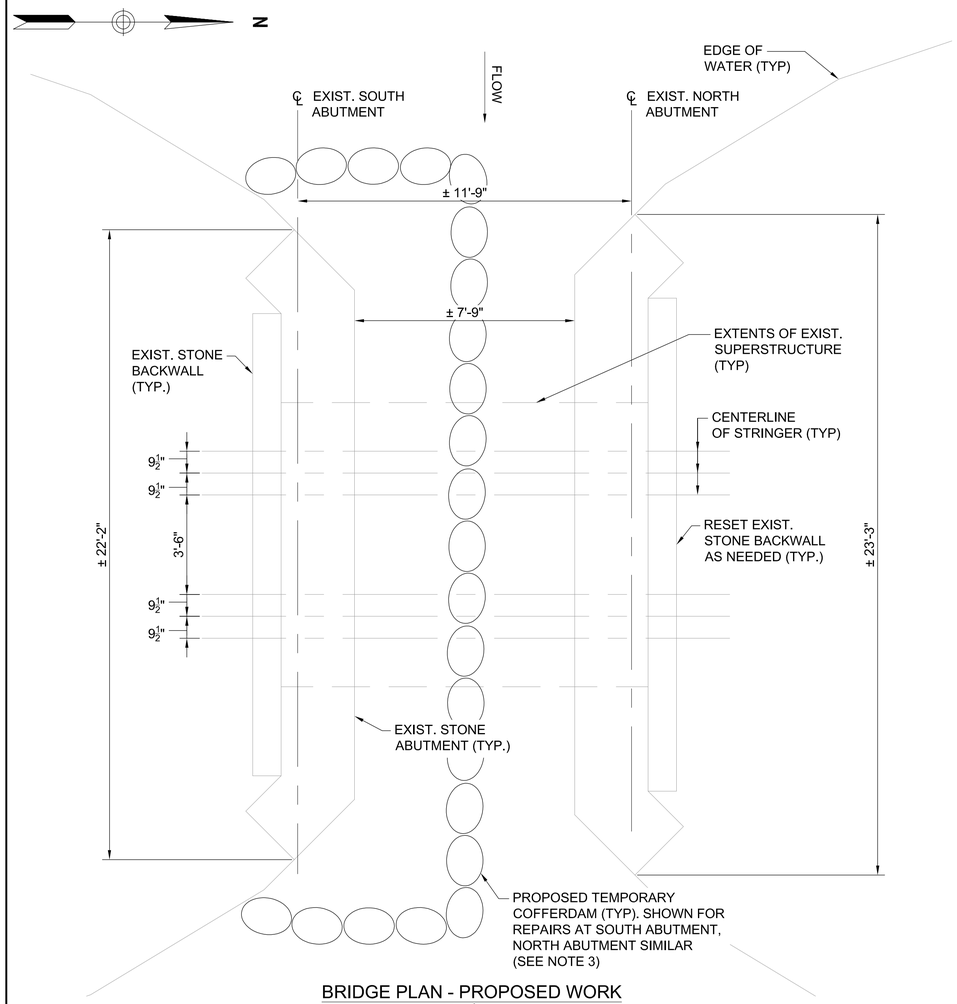
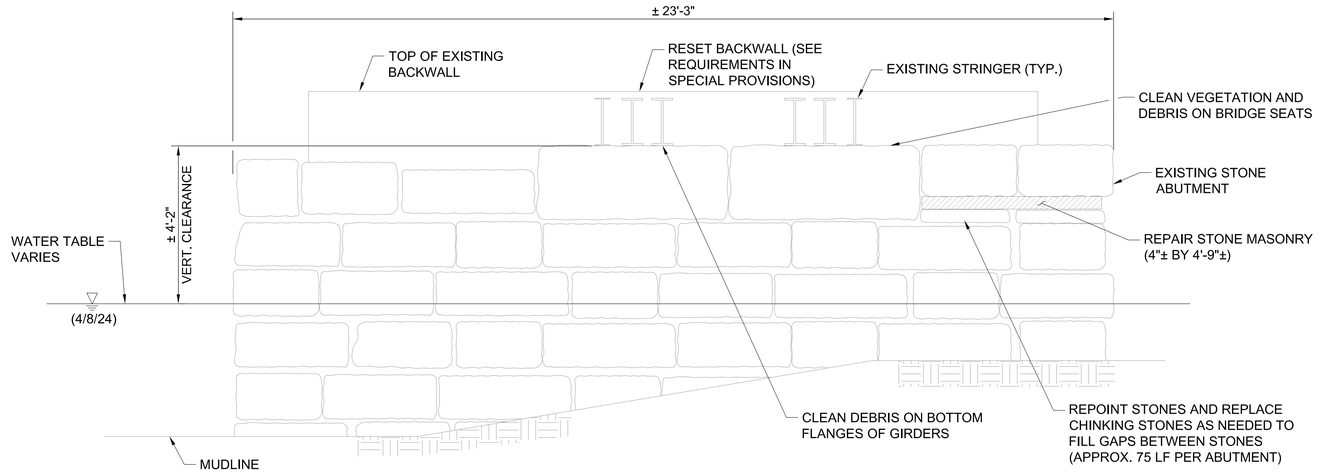
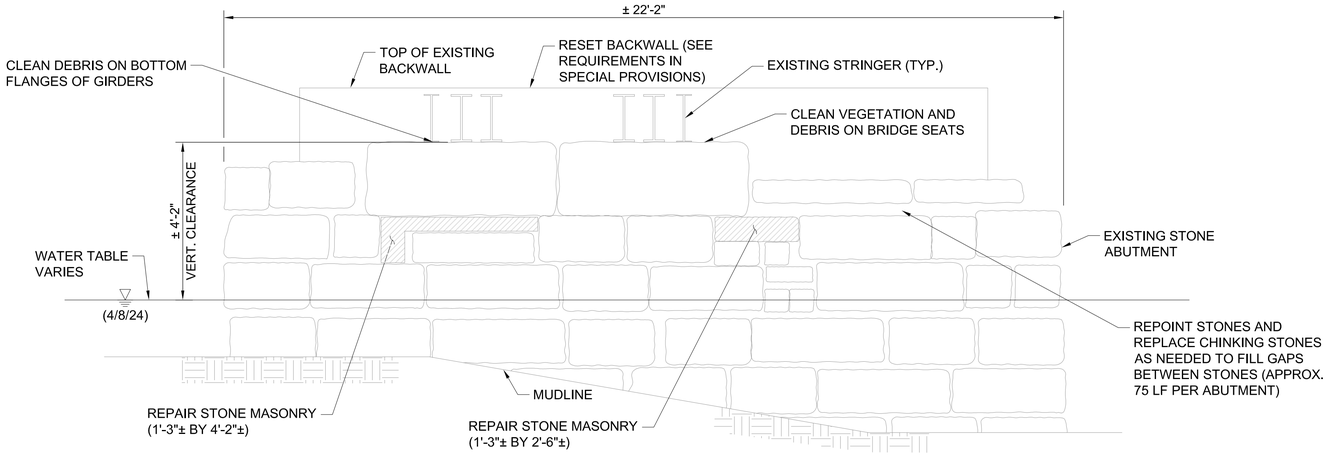
DATE: 6/20/25	BMH	BMH	SLB	SHEET: S-406	



BRIDGE PLAN - PROPOSED WORK
SCALE: $\frac{3}{8}$" = 1'-0"



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



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

SCOPE OF WORK:

THE GENERAL SCOPE OF WORK AT BRIDGE 80.72 INCLUDES:

1. CLEAN AND DISPOSE OF DEBRIS, TREE BRANCHES, AND BRUSH UNDER BRIDGE WITHIN 20' OF THE CENTERLINE OF TRACK.
2. INSTALLING TEMPORARY COFFERDAM AND DEWATERING.
3. CLEAN SURFACES AND RE-POINT STONE JOINTS AND REPLACE MISSING CHINKING STONES AS NEEDED (APPROX. 75 LF PER ABUTMENT).
4. REPAIR STONE MASONRY (APPROX. 2 SY)
5. RESET MISALIGNED STONE BACKWALL.
6. CLEARING AND THINNING AROUND ABUTMENTS.
7. CLEAN VEGETATION AND DEBRIS ON BRIDGE SEATS.

BRIDGE 80.72 NOTES:

1. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES, AND SEE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. TEMPORARY COFFERDAM TO BE DESIGNED AND INSTALLED BY CONTRACTOR. TEMPORARY COFFERDAM SHALL BE DESIGNED AND INSTALLED TO MAINTAIN WATER FLOW.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 80.72 OVER UNNAMED STREAM
ABUTMENT PLAN & ELEVATIONS

HDR, INC.
99 HIGH STREET, SUITE 2300
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(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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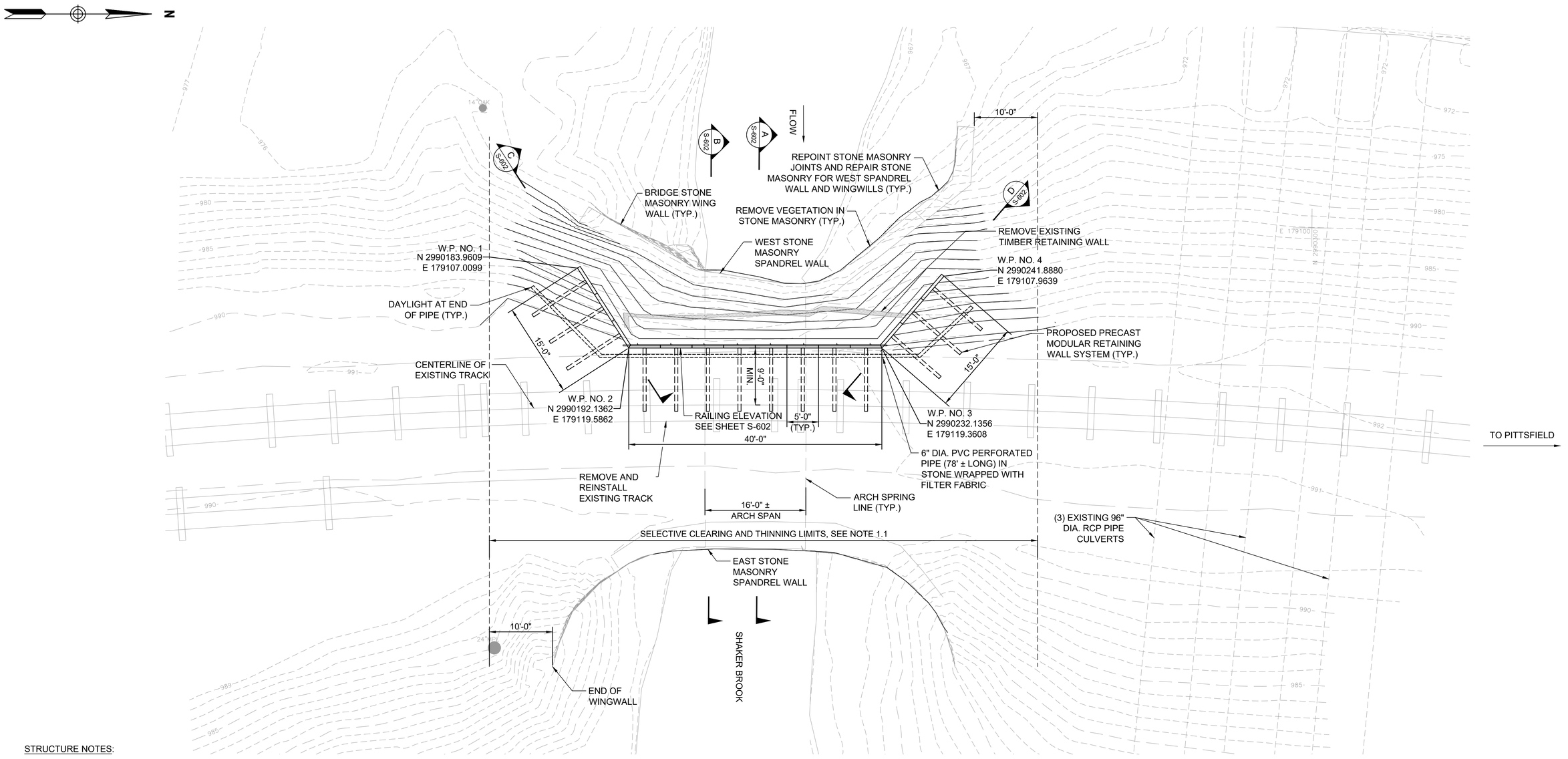

PLAN

SCALE: 1/8" = 1'-0"

STRUCTURE NOTES:

1. SCOPE OF WORK - THE GENERAL SCOPE OF WORK AT THIS BRIDGE INCLUDES:
   - 1.1. SELECTIVE CLEARING AND THINNING ON BRIDGE AND AT BRIDGE APPROACHES WITHIN LIMITS AS SHOWN ON THE PLAN. ROOTS OF BRUSH AND TREES WITHIN THE LIMITS SHALL BE REMOVED AND THE AREAS SHALL BE RESTORED WITH LOAM AND SEED.
   - 1.2. CLEARING AND DISPOSING OF DEBRIS, BRUSH AND TREE BRANCHES UNDER BRIDGE WITHIN 30' FROM CENTERLINE OF TRACK.
   - 1.3. TEMPORARY REMOVAL OF EXISTING TRACK.
   - 1.4. EXCAVATION AND DEMOLITION OF TIMBER RETAINING WALL.
   - 1.5. INSTALLATION OF PRECAST MODULAR RETAINING WALL SYSTEM AND BACKFILL.
   - 1.6. REINSTALLATION OF TRACK AND SURFACING.
   - 1.7. REMOVE VEGETATION IN STONE MASONRY.
   - 1.8. REPOINTING STONE MASONRY JOINTS AND STONE MASONRY REPAIR IN EXISTING WEST SPANDREL WALLS.
2. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES AND OTHER REQUIREMENTS IN SPECIAL PROVISIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF PROPOSED MODULAR RETAINING WALL SYSTEM. CALCULATIONS AND SHOP DRAWINGS FOR THE WALL SHALL BE STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS AND SUBMITTED FOR REVIEW AND APPROVAL. SEE REQUIREMENTS IN ITEM 995.5 REHABILITATION OF BRIDGE 85.32 IN SPECIAL PROVISIONS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.32 OVER SHAKER BROOK
BRIDGE PLAN

HDR, INC.
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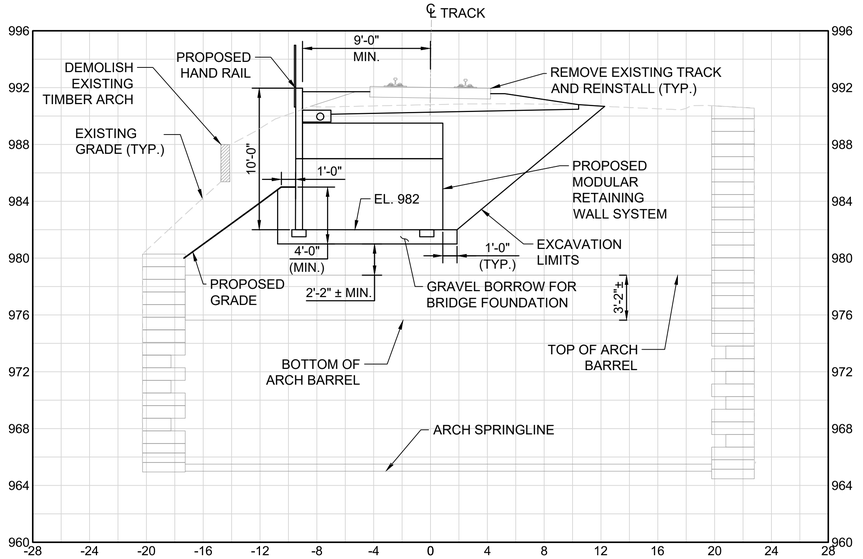
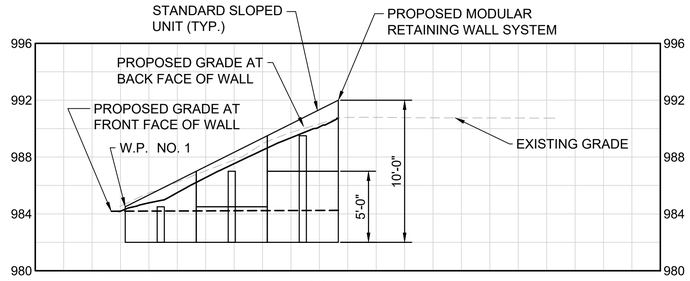
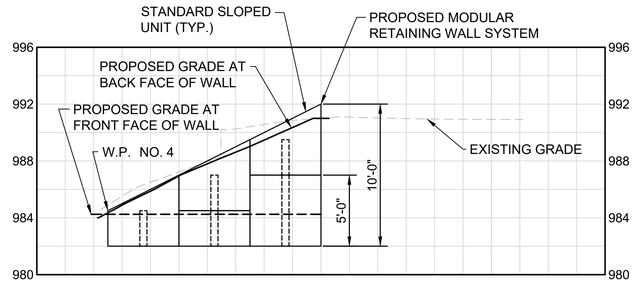


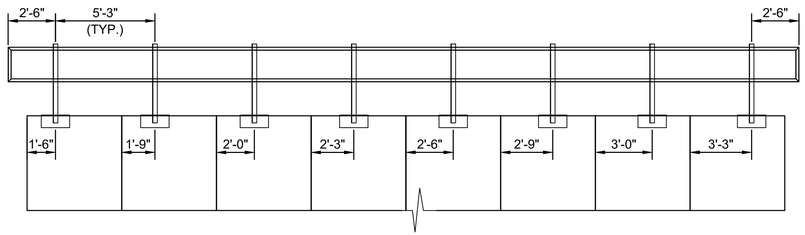
SECTION A
SCALE: $\frac{3}{16}$" = 1'–0" S–601



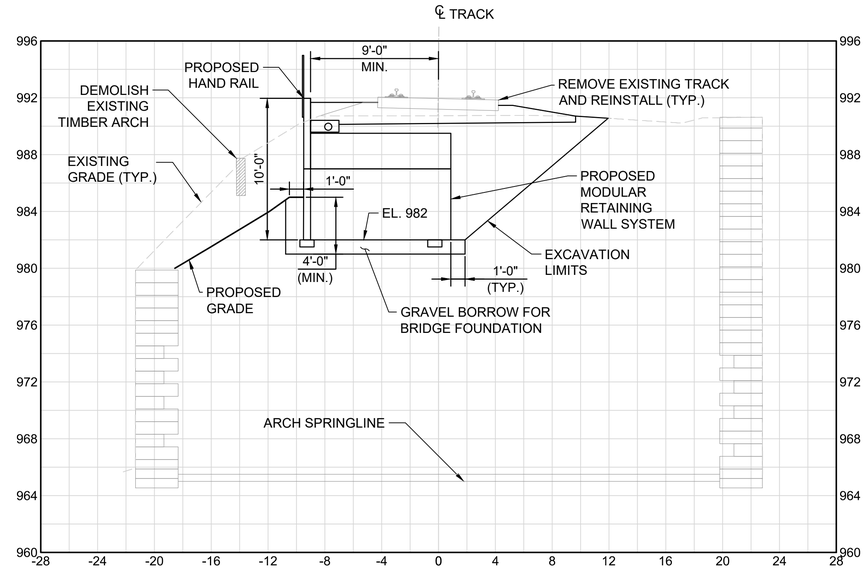
SECTION C
SCALE: $\frac{3}{16}$" = 1'–0" S–601



SECTION D
SCALE: $\frac{3}{16}$" = 1'–0" S–601



RAILING ELEVATION
SCALE: $\frac{1}{4}$" = 1'–0"



SECTION B
SCALE: $\frac{3}{16}$" = 1'–0" S–601

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.32 OVER SHAKER BROOK
SECTIONS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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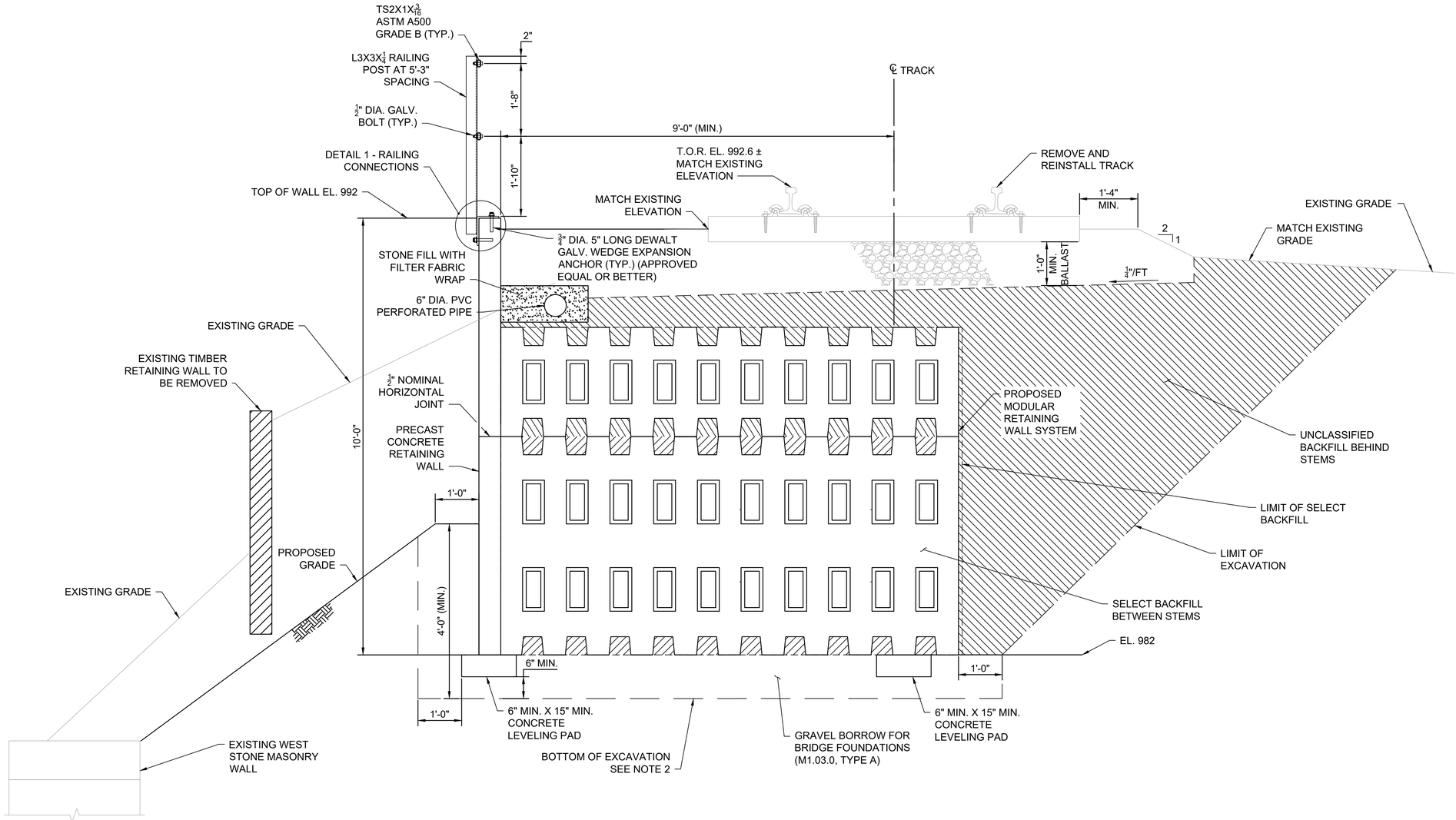
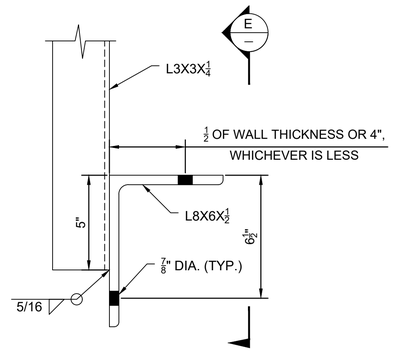


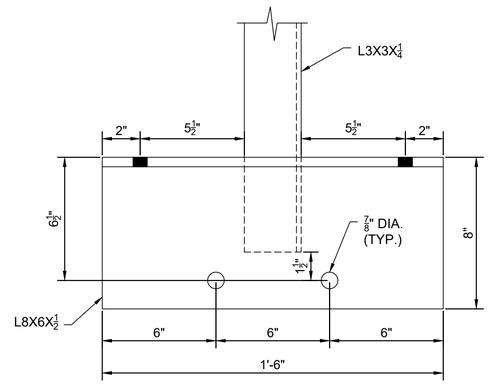
WALL DETAIL

SCALE: 3/4" = 1'–0"



RAILING CONNECTION DETAIL 1

SCALE: 3" = 1'–0"



RAILING CONNECTION SECTION E

SCALE: 3" = 1'–0"

NOTES:

1. SEE ITEM 995.5 IN SPECIAL PROVISIONS FOR REQUIREMENTS FOR DESIGN, FABRICATION AND INSTALLATION OF PROPOSED MODULAR RETAINING WALL SYSTEM, AS WELL AS EXCAVATION, BACKFILL AND MONITORING CONTROLS DURING WORK NEAR THE ARCH BRIDGE.
2. PROOF-ROLL THE FOUNDATION SUBGRADE ALONG THE ENTIRE WALL LENGTH PRIOR TO CONSTRUCTION OF THE WALL. A GEOTECHNICAL ENGINEER MUST INSPECT AND APPROVE THE EXCAVATED FOUNDATION SUBGRADE TO ENSURE THAT THE FOUNDATION SUBGRADE CAN SUPPORT THE BEARING PRESSURE IN THE WALL DESIGN CALCULATIONS PROVIDED BY THE CONTRACTOR. ANY SOFT OR UNSUITABLE MATERIALS IDENTIFIED BY INSPECTION SHALL BE REMOVED AND REPLACED WITH COMPACTED STRUCTURAL BACKFILL AS DIRECTED BY THE ENGINEER. CONTRACTOR TO PROVIDE SUFFICIENT DEWATERING SO THAT THE EXCAVATIONS ARE DRY ENOUGH FOR INSPECTION, TESTING AND CONSTRUCTION.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.32 OVER SHAKER BROOK
WALL DETAIL

HDR, INC.
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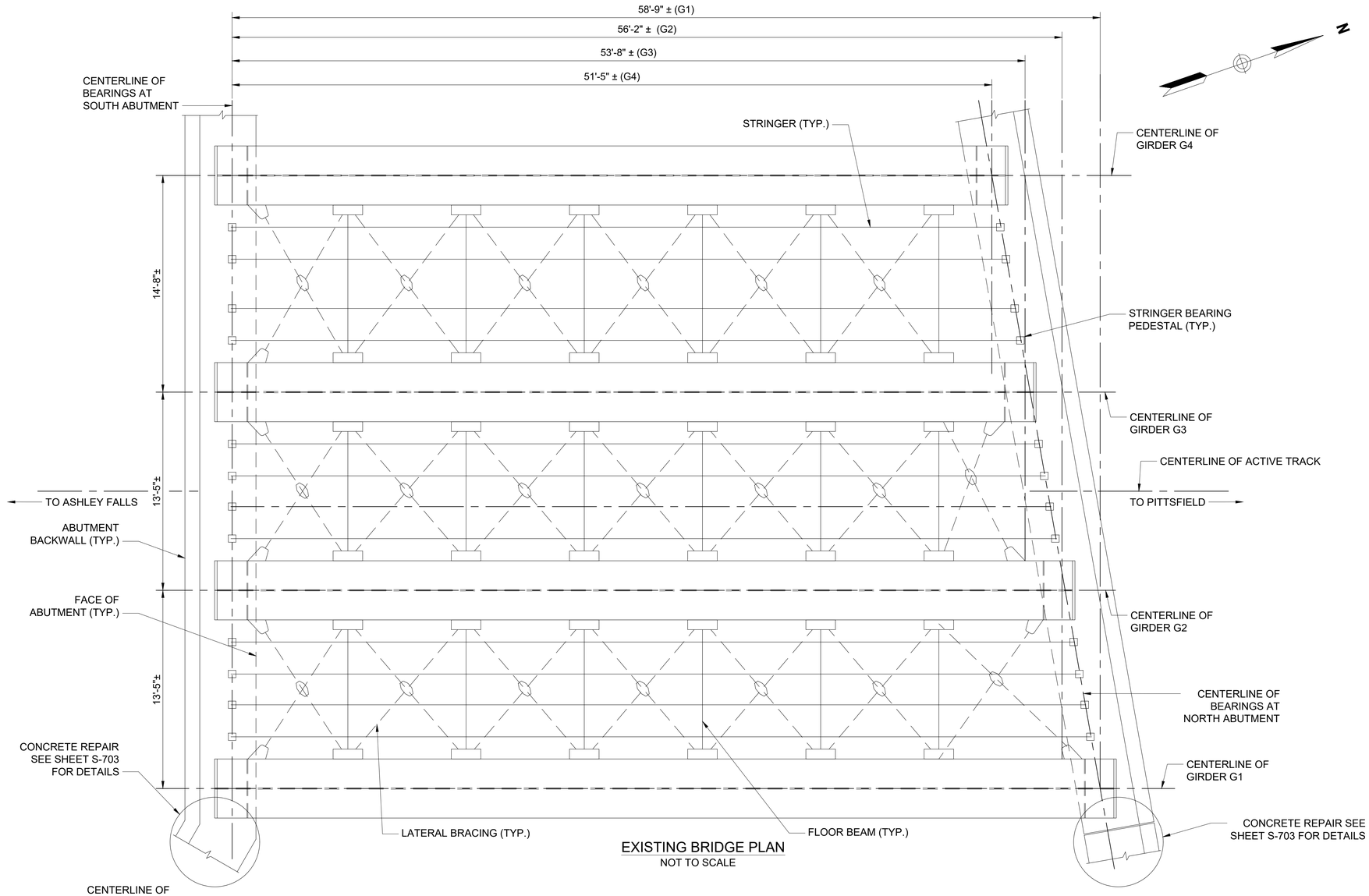
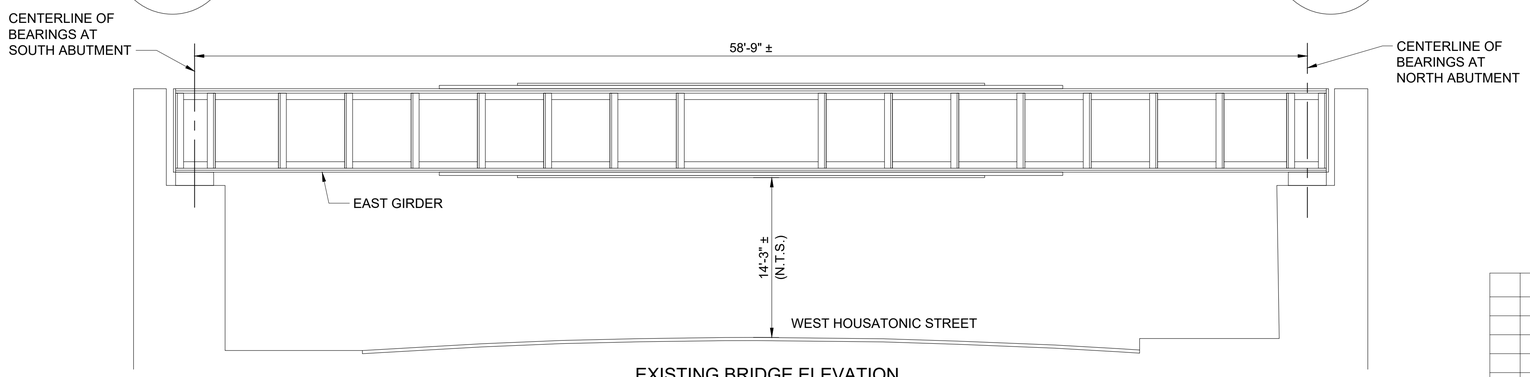


EXISTING BRIDGE PLAN
NOT TO SCALE



EXISTING BRIDGE ELEVATION
NOT TO SCALE

SCOPE OF WORK:

THE GENERAL SCOPE OF WORK AT THIS BRIDGE INCLUDES:

1. SELECTIVE CLEARING AND THINNING ON BRIDGE AND AT BRIDGE APPROACHES.
2. REMOVE VEGETATIONS AND DEBRIS FROM BRIDGE SEATS AND BOTTOM FLANGE OF GIRDERS AT ABUTMENTS.
3. REPAIR BRIDGE SEATS FOR EAST GIRDER AS SHOWN IN THE PLANS.
4. REPOINTING STONE MASONRY JOINTS IN ABUTMENTS AND WINGWALLS.
5. REPAIR BEAM SEATS UNDER STRINGERS DURING AN EXTENDED WEEKEND TRACK CLOSURE.

STRUCTURE NOTES:

1. SEE SHEET S-100 FOR STRUCTURAL GENERAL NOTES.
2. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF PITTSFIELD AND THE OWNERS OF BUILDING ADJACENT TO THE RAILROAD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT PEDESTRIANS AND VEHICULAR TRAFFIC FROM HIS CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN AND POLICE DEPARTMENT FOR POLICE DETAIL AND TEMPORARY TRAFFIC MANAGEMENT FOR THE BRIDGE WORK. THE CONTRACTOR IS RESPONSIBILE FOR EXECUTION OF TRAFFIC MANAGEMENT PLAN IN DOCUMENT A00905 OF THE SPECIFICATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES FOR TEMPORARY RELOCATION AND REINSTALLATION OF EXISTING WIRES AND CABLES ON THE SOUTH ABUTMENT.

NOTE:
BRIDGE PLAN AND ELEVATION ARE SCHEMATICALLY SHOWN FOR THE PURPOSES OF ORIENTATION AND LOCATING REPAIRS. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND DETAILS AS NEEDED TO COMPLETE THE WORK.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.52 OVER WEST HOUSATONIC STREET
EXISTING PLAN AND ELEVATION

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
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(617) 357-7700

massDOT Massachusetts Department of Transportation Rail & Transit Division

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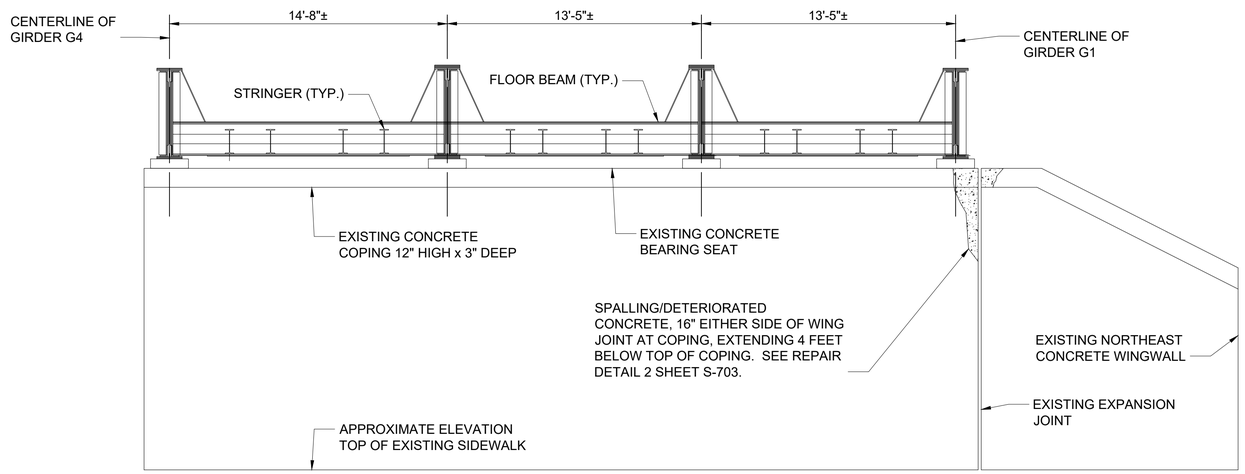
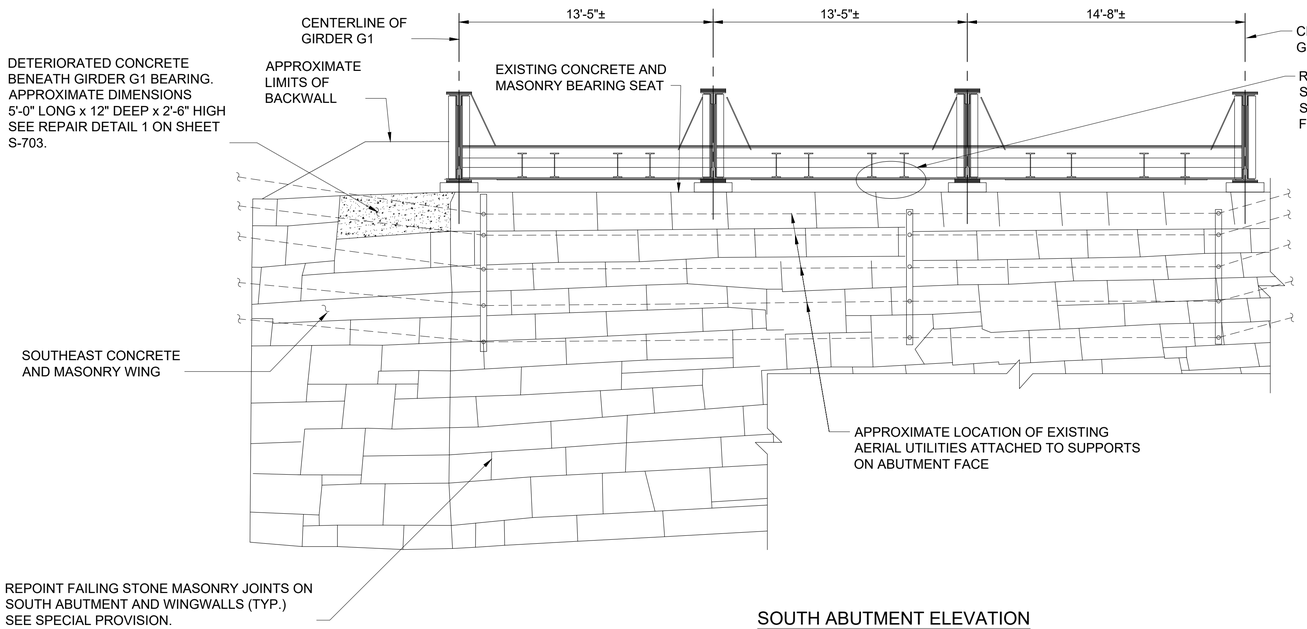
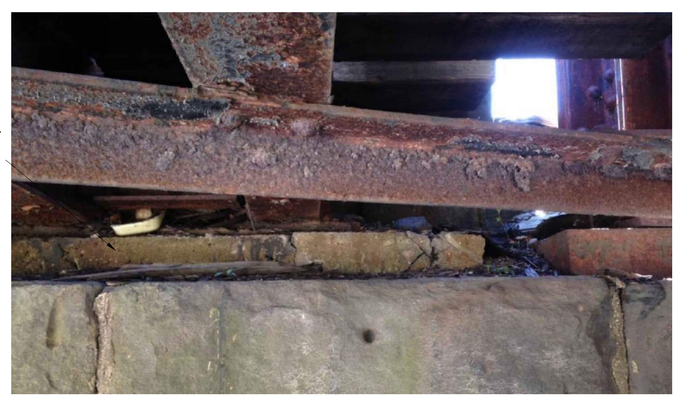


NORTH ABUTMENT ELEVATION
NOT TO SCALE



SOUTH ABUTMENT ELEVATION
NOT TO SCALE



MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.52
OVER WEST HOUSATONIC STREET
NORTH & SOUTH ABUTMENT ELEVATIONS

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

HDR, INC.
99 HIGH STREET, SUITE 2300
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massDOT Massachusetts Department of Transportation Rail & Transit Division

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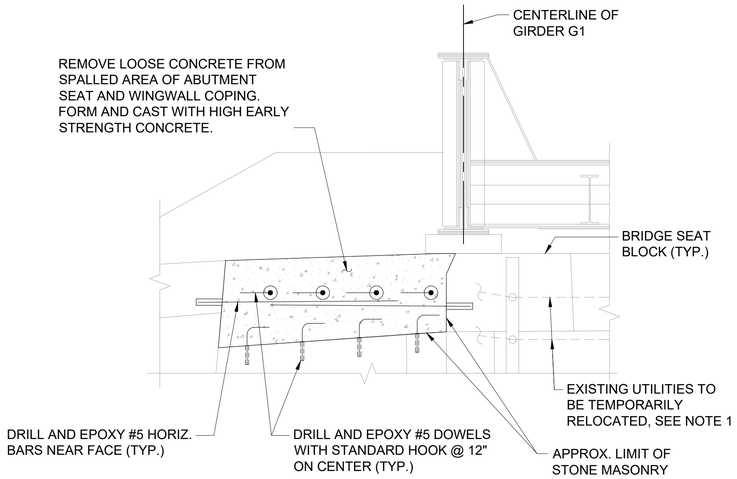
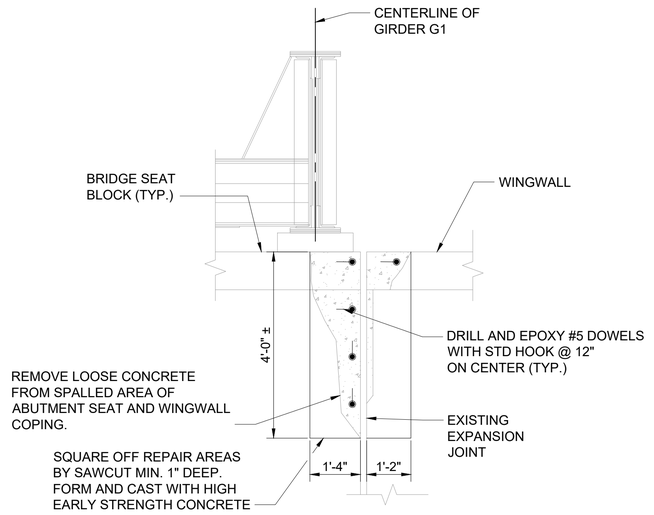
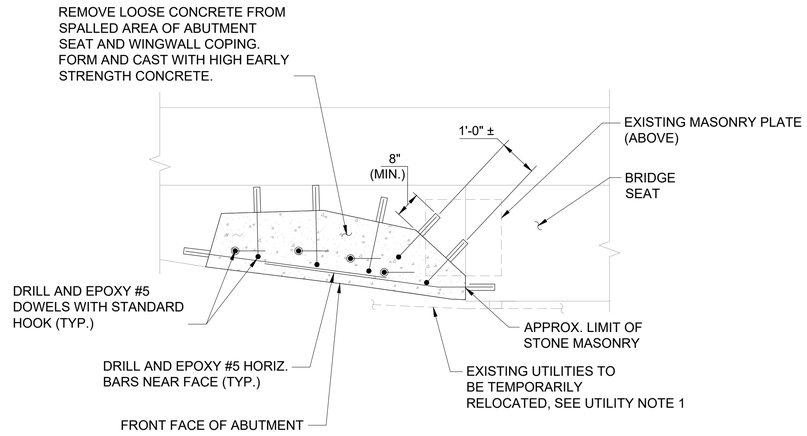


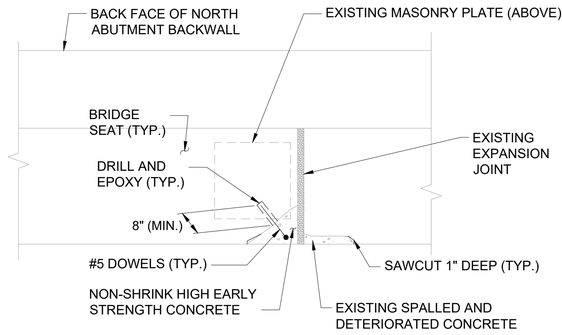
DETAIL 1 (ELEVATION)
SOUTH ABUTMENT BRIDGE SEAT REPAIRS
SCALE: $\frac{1}{2}$" = 1'-0"



DETAIL 2 (ELEVATION)
NORTH ABUTMENT BRIDGE SEAT REPAIRS
SCALE: $\frac{1}{2}$" = 1'-0"



DETAIL 1 (PLAN)
SOUTH ABUTMENT BRIDGE SEAT REPAIRS
SCALE: $\frac{1}{2}$" = 1'-0"



DETAIL 2 (PLAN)
NORTH ABUTMENT BRIDGE SEAT REPAIRS
SCALE: $\frac{1}{2}$" = 1'-0"

UTILITY NOTE:

1. THERE ARE EXISTING UTILITIES AT THE SOUTH ABUTMENT THAT MUST BE RELOCATED TEMPORARILY IN ORDER TO PROVIDE CLEARANCE TO COMPLETE THE REHABILITATION OF THE BEARING SEAT AREA. CONTRACTOR TO COORDINATE WITH UTILITY OWNERS TO PROVIDE TEMPORARY SUPPORT AWAY FROM THE WORK AREA.

CONCRETE REPAIR NOTES:

1. SAWCUT EDGES OF REPAIR AREA. REMOVE DETERIORATED CONCRETE. CLEAN SURFACES THAT WILL BE IN CONTACT WITH NEW CONCRETE.
2. DRILL HOLES FOR DOWELS NOT MORE THAN 24 HOURS BEFORE INSTALLING DOWELS.
3. APPLY EPOXY BONDING COMPOUND TO STONE SURFACES IMMEDIATELY PRIOR TO PLACING CONCRETE.
4. FORM AND POUR CONCRETE.
5. CONCRETE FOR BRIDGE SEAT REPAIRS SHALL BE NON-SHRINK HIGH EARLY STRENGTH CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. THE MIX SHALL BE APPROVED BY MASSDOT AND USED IN PREVIOUS MASSDOT PROJECTS.

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.

MASSDOT BERKSHIRE LINE CIVIL IMPROVEMENTS
CONTRACT NO. 129534

REHABILITATION OF BRIDGE 85.52 OVER WEST HOUSATONIC STREET PROPOSED REPAIRS & REHABILITATION

HDR, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378
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massDOT Massachusetts Department of Transportation Rail & Transit Division

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