

1. ALL EXCAVATIONS OF MORE THAN A FEW FEET SHOULD BE SHEETED AND BRACED OR LAID BACK TO PREVENT SLOUGHING IN OF THE SIDES. ALL PREVAILING EXCAVATION CODES SHOULD BE OBSERVED IN DURING THE CONSTRUCTION.
2. SUBPUMPING AND SUMP-PUMP-TYPE DEWATERING MAY BE REQUIRED IN EXCAVATIONS OR LOW AREAS DURING WET WEATHER OR IF GROUNDWATER IS ENCOUNTERED.
3. SUBGRADES SHOULD BE KEPT FROM FREEZING DURING CONSTRUCTION.
4. WATER, SNOW, AND ICE SHOULD NOT BE ALLOWED TO COLLECT AND SETTLE IN EXCAVATIONS OR LOW AREAS OF THE SUBGRADE.
5. SOME OBSTACLES, INCLUDING OLD FOUNDATIONS OR BUILDING RUBBLE AND POSSIBLY BOULDERS, MAY BE ENCOUNTERED IN EXCAVATIONS.
6. THE USE OF HYDRAULICALLY-OPERATED RIPPERS, PNEUMATIC TOOLS, OR DRILLING AND BLASTING MAY BE REQUIRED TO REMOVE LARGE BOULDERS AND OTHER OBSTACLES.
7. THE DESIGN ENGINEER OF RECORD OR GEOTECHNICAL ENGINEER SHOULD BE CALLED TO THE SITE TO OBSERVE AND ACCEPT THE FOUNDATION SUBGRADE CONDITIONS. A QUALIFIED TESTING LABORATORY SHOULD BE RETAINED TO MONITOR THE PLACEMENT OF CONTROLLED FILL.
8. WORKSMANSHIP AND MATERIALS SHALL CONFORM TO MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES UNLESS OTHERWISE SPECIFIED.
9. GRAVEL BASE MATERIALS (12" MAX. LIFTS) TO BE COMPACTED TO 95% OF THE LABORATORY MAXIMUM AASHTO MODIFIED PROCTOR DENSITY.

- ROAD SHALL BE CLOSED TO THROUGH TRAFFIC DURING THE CONSTRUCTION PHASE. PROPER DETOUR SIGNAGE, ROAD CLOSURE SIGNAGE, AND BARRICADES SHALL BE INSTALLED PRIOR TO CONSTRUCTION. IF REQUIRED, TEMPORARY JERSEY BARRIERS AND FENCING SHALL BE CONSIDERED INCIDENTAL.
2. IF REQUIRED DURING CURB INSTALLATION, DEWATERING OPERATIONS SHALL BE PUMPED INTO A STAKED SILT FENCED AND STRAW BALE RINGED DEWATERING AREA AND A SILTATION BAG NEAR THE CONSTRUCTION STAGING AREA. CONTRACTOR SHALL SUBMIT A MA PE STAMPED DEWATERING PLAN PRIOR TO EXISTING BRIDGE DEMOLITION. ALL DEWATERING, SHEETING & SHORING WILL BE CONSIDERED INCIDENTAL WORK.
3. LOAM, SEED, & STRAW MULCH ALL DISTURBED AREAS.
4. PROTECT STREAM, WETLANDS, TREES, & UTILITIES.
5. BORINGS WERE LOCATED USING A STEEL TAPE FROM EXISTING SITE CONDITIONS.
6. TEMPORARY UTILITY RELOCATION(S) AND/OR SUPPORT(S) SHALL BE CONSIDERED INCIDENTAL WORK AT NO ADDITIONAL COMPENSATION. CONTRACTOR SHALL COORDINATE WITH PUBLIC AND PRIVATE UTILITY COMPANIES.
7. IF REQUIRED, CRANE FOR SETTING STRUCTURES SHALL BE CONSIDERED INCIDENTAL.
8. FINAL BRIDGE PLANS AND CALCULATIONS TO BE PREPARED BY THE MANUFACTURER AND SHALL CONFORM TO AASHTO HL 93 LIVE LOADS. MASS P.E. STAMPED MANUFACTURERS PLANS AND CALCULATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION AT NO ADDITIONAL COMPENSATION. ANY REVISIONS TO APPROVED PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
9. WORK WITHIN THE STREAM SHALL COMPLY WITH ACOE OR UNLESS OTHERWISE PERMITTED.
10. SEE EROSION CONTROLS AND GRADING PLAN. CONTRACTOR SHALL PROVIDE EROSION CONTROL THROUGH COMPLETION OF THE PROJECT.
11. REVIEW SOIL SAMPLE CONDITIONS BELOW BRIDGE FOOTINGS WITH GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION.
12. VERIFY SOILS CONDITIONS AND PROVIDE DESIGN FOR TEMPORARY EARTH SUPPORT SYSTEM IF REQUIRED. CONTRACTOR SHALL SUBMIT A MA P.E. STAMPED EARTH SUPPORT PLAN TO THE ENGINEER FOR APPROVAL. DESIGN SHALL MEET THE REQUIREMENTS OF MASSDOT BRIDGE MANUAL.
13. CRUSHED STONE SHALL BE WRAPPED IN FILTER FABRIC.
14. IF REQUIRED, ANY EARTH SUPPORT(S) UTILIZED WITHIN THE LIMITS OF THE CULVERT SHALL BE STEEL SHEETING AND LEFT IN PLACE PER MASSDOT BRIDGE MANUAL. ANY EARTH SUPPORT(S) SHALL BE CONSIDERED INCIDENTAL WORK OR PAID FOR UNDER SEPARATE ITEMS IF SPECIFIED IN THE SPECIAL PROVISIONS.

A. PROTECTION OF WETLANDS, WATER QUALITY, AND STORMWATER MANAGEMENT

1. WORK PROPOSED ON THIS PLAN INCLUDES AREAS WHICH ARE SUBJECT TO REGULATION UNDER THE MASS. WETLANDS PROTECTION ACT (WPA), FEDERAL CLEAN WATERS ACT (CWA), NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AND/OR OTHER STATUTES AND REGULATIONS PERTAINING TO WETLANDS, WATER QUALITY, AND STORMWATER MANAGEMENT.
2. CONTRACTOR SHALL PERFORM ALL PROPOSED WORK IN COMPLIANCE WITH THE APPROVED WETLANDS PERMIT (ORDER OF CONDITIONS OR DETERMINATION OF APPLICABILITY AS APPLICABLE).
3. CONTRACTOR SHALL INSTALL, MONITOR, MAINTAIN AND REPLACE, WHENEVER NECESSARY, ALL EROSION AND SEDIMENTATION CONTROL MEASURES REQUIRED TO CONTROL STORMWATER RUNOFF, EROSION AND SEDIMENTATION FROM THE WORK, AND TO PREVENT SEDIMENTS FROM ALTERING ANY WETLANDS OR WATERCOURSES. REFER TO PLANS, SPECIFICATIONS AND PERMITS FOR MINIMUM REQUIREMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL MEASURES WHEREVER NECESSARY TO CONTROL SITE RUNOFF.
4. CONTRACTOR SHALL DISPOSE OF ANY UNSUITABLE OR EXCESS EARTH MATERIALS EXCAVATED FROM THE SITE ("SPOIL MATERIAL") IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. UNLESS AN ON-SITE SPOIL AREA IS SPECIFIED, CONTRACTOR SHALL DISPOSE OF EXCESS CLEAN EARTH MATERIAL OFF-SITE IN AN UPLAND AREA OUTSIDE ANY WETLAND BUFFER ZONES OR RESOURCE AREAS.
5. CONTRACTOR SHALL DISPOSE OF ANY DEMOLITION DEBRIS, CONSTRUCTION DEBRIS, WOOD WASTES, CONTAMINATED SOILS, HAZARDOUS MATERIALS AND OTHER SPECIAL WASTES IN STRICT ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.

B. WORK LIMITS

1. CONTRACTOR SHALL CONFINE ACTIVITIES TO THE WORK LIMITS SHOWN ON THE PLANS OR DIRECTED IN THE FIELD.
2. UNLESS OTHERWISE INDICATED, CONTRACTOR SHALL PROTECT ALL TREES, STRUCTURES, AND UTILITIES AGAINST DAMAGE, AND SHALL REPAIR OR REPLACE DAMAGED AREAS AT CONTRACTOR'S EXPENSE.
3. IN ORDER TO AVOID DAMAGING TREE ROOTS BY COMPACTING THE SOIL, CONTRACTOR SHALL NOT ALLOW EQUIPMENT OR VEHICLES TO OPERATE UNDER TREE CANOPIES EXCEPT WHERE NECESSARY TO CARRY OUT THE WORK.

C. SOIL CONDITIONS

1. DO NOT DISTURB EXISTING VEGETATED AREAS FAR IN ADVANCE OF CONSTRUCTION. LIMIT DISTURBANCE ONLY TO THE EXTENT AND DURATION REQUIRED FOR IMMINENT CONSTRUCTION ACTIVITIES. RETAIN AND PROTECT NATURAL VEGETATION AND VEGETATIVE FILTER STRIPS WHEREVER POSSIBLE.
2. TEMPORARY VEGETATION OR A HEAVY MAT OF WOOD CHIPS SHALL BE ESTABLISHED ON ALL EARTH STOCKPILES OR STRIPPED AREAS WHICH WILL BE BARE FOR MORE THAN TWO MONTHS AND LESS THAN 12 MONTHS. SUCH VEGETATION SHALL CONSIST OF A COMMERCIAL MIXTURE OF SEED MIXTURE WITH A HIGH PERCENTAGE OF ANNUAL RYEGRASS. PERMANENT HERACEOUS COVER SHALL BE ESTABLISHED ON AREAS WHICH WILL BE BARE MORE THAN 12 MONTHS.
3. A HEAVY MAT OF STRAW MULCH, WOOD CHIPS, EROSION CONTROL NETTING, MESH OR BLANKET MATTING SHALL BE USED ON DISTURBED AREAS IF VEGETATION CANNOT BE ESTABLISHED DUE TO SEASON OR ON-GOING CONSTRUCTION PROCESS, OR IF OTHERWISE REQUIRED.
4. SILT FENCE OR CAREFULLY POSITIONED STAKED STRAW BALES SHALL BE INSTALLED ALONG THE DOWNHILL EDGE OF DISTURBED EARTHWORK AREAS WHERE REQUIRED TO CONTROL EROSION AND SEDIMENTATION.
5. WATER COURSES, INCLUDING INTERMITTENT DRAINAGE SWALES, SHALL BE PROTECTED FROM SILTATION BY SILT FENCE BARRIERS OR CAREFULLY POSITIONED STAKED STRAW BALE CHECK DAMS.
6. SEDIMENT TRAPS SHALL BE CONSTRUCTED DOWNHILL OF DISTURBED AREAS AND UPSTREAM OF WATERCOURSES AND/OR WETLANDS. TRAPPED SEDIMENTS SHALL BE REMOVED FROM THE BASINS DURING THE CONSTRUCTION PERIOD BEFORE THEY BECOME 50% FULL TO PREVENT SEDIMENT FROM BEING TRANSPORTED DOWNHILL. DISPOSE OF SEDIMENTS IN ON-SITE UPLAND DISPOSAL AREAS, PROPERLY GRADED, SEEDDED AND MULCHED.
7. PERMANENT DRAINAGE CONTROL STRUCTURES SHALL BE INSTALLED AS EARLY AS POSSIBLE IN THE CONSTRUCTION PROCESS. DRAINS SHALL BE PROVIDED WITH DRAIN INLET SEDIMENT TRAPS AND/OR TRAPS.
8. DO NOT FUEL CONSTRUCTION EQUIPMENT OR STORE FUEL OR OTHER POTENTIAL CONTAMINANTS WITHIN 100 FEET OF WATER COURSES OR WETLANDS.
9. STRICTLY ADHERE TO ALL GENERAL AND SPECIAL CONDITIONS OF ANY WETLANDS PROTECTION ACT PERMITS, INCLUDING PLANS, DETAILS, CONSTRUCTION SEQUENCING OUTLINE, AND OTHER APPLICABLE REQUIREMENTS.

1. WETLANDS WERE DELINEATED BY FORESIGHT LAND SERVICES IN JANUARY 15 2020, AND FIELD SURVEYED BY FORESIGHT LAND SERVICES ON FEBRUARY 26, 2020.
2. TOPOGRAPHIC SURVEY WAS PERFORMED BY FORESIGHT LAND SERVICES ON FEBRUARY 26 AND APRIL 7 2020 USING ELECTRONIC TOTAL STATION WITH DATA COLLECTOR.
3. PLAN WAS COMPILED ON A PC-BASED COMPUTER USING AUTOCAD CIVIL 3D 2018.
4. CONTOURS ARE COMPUTER-GENERATED INTERPOLATIONS, EDITED TO GENERALLY CONFORM TO FIELD OBSERVATIONS.
5. CONTOUR INTERVAL IS 10 FEET TO 100 FEET. CONTRACTOR SHALL VERIFY CRITICAL ELEVATIONS AND GRADES IN THE FIELD PRIOR TO CONSTRUCTION.
5. HORIZONTAL DATUM IS BASED UPON NAD83.
6. VERTICAL DATUM IS BASED UPON NAVD88. TEMPORARY BENCHMARK WAS ESTABLISHED ON SITE, TBM A, RAILROAD SPIKE, ELEV = 164.00.
7. THE LOCATIONS AND INFORMATION ABOUT UNDERGROUND PIPES, UTILITIES OR OTHER STRUCTURES ARE COMPILED FROM AVAILABLE RECORD DATA AND VISIBLE FIELD EVIDENCE AND ARE NOT REPRESENTED AS BEING EXACT OR COMPLETE. PRIOR TO BEGINNING EXCAVATION, THE EXCAVATOR SHALL HAVE ADEQUATE ADVANCE NOTICE TO THE CITY ENGINEER, THE MUNICIPAL AND/OR STATE PUBLIC WORKS DEPARTMENT, AND PRIVATE UTILITY COMPANIES, TO ALLOW FOR FIELD LOCATION OF FACILITIES IN THE VICINITY.
8. IF CONTRACTOR OBSERVES ANY FIELD CONDITIONS WHICH VARY SIGNIFICANTLY FROM AND IS SHOWN ON RECORD PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND ENGINEER FOR RESOLUTION OF THE CONFLICTING INFORMATION.
9. THE CONTRACTOR SHALL RECORD THE MEASUREMENTS, DEPTHS, DIMENSIONS, MATERIALS, FIELD CONDITIONS AND OTHER PERTINENT DATA ABOUT ALL UNDERGROUND UTILITIES ENCOUNTERED DURING THE WORK, BOTH EXISTING AND CONSTRUCTED. CONTRACTOR SHALL SUBMIT RECORD DRAWINGS WITH THIS INFORMATION TO THE OWNER AND ENGINEER PRIOR TO COMPLETION OF THE WORK.
10. CONTRACTOR SHALL IMMEDIATELY REPORT AND MAKE TO THE OWNER, PIPES, UTILITIES, OR STRUCTURES TO THE OWNER AND ENGINEER, AND OBTAIN DIRECTIONS AS TO REPAIR, REPLACEMENT OR ABANDONMENT.

GRAVEL SUBBASE (MHD M1.03 Type c)	PROC. GRAVEL BASE (MHD M1.03.1)	HOT MIX ASPHALT (MHD M3.11.03)	
		BINDER COURSE	TOP COURSE
8"	4"	N/A	N/A

TRAVELED WAY - WIDTH VARIES
(PER PLANS)

CROWN AND SLOPE PER PLANS
(2% MIN. CROSS PITCH U.N.O.)

PROCESSED GRAVEL BASE

GRAVEL SUBBASE

PREPARED COMPACTED SUBGRADE

NOTES:

1. PREPARE SUBGRADE IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT FOR THE PROJECT IF APPLICABLE; REMOVE AND REPLACE ANY UNSUITABLE MATERIAL; PROOF ROLL IN PRESENCE OF ENGINEER; COMPACT.
2. INSTALL ROAD STABILIZATION GEOTEXTILE WHERE SPECIFIED OR AS DIRECTED BY THE ENGINEER.

Diagram illustrating the cross-section of a road base construction, showing the following layers and dimensions:

- Top Layer:** 8" to 12" THICK ANGULAR ROCKS (LIMESTONE SPALLS, TAILINGS, OR TRAP ROCK AS PER SPECIFICATIONS)
- Second Layer:** CRUSHED STONE BEDDING (OVER GEOTEXTILE WHERE DIRECTED)
- Dimensions:**
 - $W2$: Width of the top layer on either side of the centerline.
 - $W1$: Width of the second layer on either side of the centerline.
 - $D1$: Depth of the second layer.
 - $6"$: Thickness of the second layer.
 - $VARIES$: Dimension indicating the variable width of the top layer.

SIDESLOPE "D1"	DEPTH WIDTH "W1"	BOTTOM WIDTH "W2"	BACKSLOPE
2 : 1	12"	VARIES	2'
3 : 1	12"	VARIES	3'
4 : 1	12"	VARIES	4'

3210
4/2/
REV#

32702
10/19/
REV#

GEOTEXTILE (FILTER FABRIC)
(SEE SPECIFICATIONS)

Diagram illustrating the trench installation details. The flow direction is indicated by an arrow labeled "FLOW". The trench is lined with filter fabric, and the installation is secured by posts or stakes. The diagram shows the trench structure, the filter fabric lining, and the placement of posts or stakes to secure the fabric.

Diagram illustrating a cross-section of a foundation structure, likely a straw bale wall. The diagram shows a vertical wall made of straw bales. A stake is driven through the wall into the ground. A wedge of compacted soil is shown on the left side of the wall, with an arrow indicating the direction of flow. A 6-inch by 6-inch trench is shown at the base of the wall, with fabric lapped in and covered with tamped backfill. The toe of the straw bale is shown existing in the ground, and the native soil is indicated on the right side.

Labels in the diagram include:

- WEDGE OF COMPACTED SOIL
- FLOW
- STAKE
- STRAWBALE WITH
- 6" x 6" TRENCH WITH FABRIC LAPPED IN AND COVERED WITH TAMPED BACKFILL
- TOE STRAW EXISTING
- NATIVE SOIL

CROSS SECTION

	SEDIMENT CONTROL
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PERCENT PASSING	SIZE (IN)	ACCEPTABLE RANGE (IN)
D95	51.4	45–55
D84	31.4	25–35
D50	9.9	8–12
D30	5.3	4–6
D20	3.7	3.2–4.0
D16	2.7	2.2–3.0
D10	1.6	1.2–1.8
D5	0.9	0.7–1.1

*USE 10% FINES, 20% M1.03.0 TYPE A, AND 70% NATURAL STREAMBED MATERIAL AS SPECIFIED ABOVE. CONFIRM FINAL GRADATION WITH TOWN & ENGINEER.

CONTROL SECTION/DETAIL
 FOR INFORMATION ONLY.
 CONTRACTOR TO PROVIDE
 FINAL WATER CONTROL PLAN
 & DETAILS TO ENGINEER &
 CONSERVATION COMMISSION
 FOR APPROVAL.

EXISTING STREAM BED

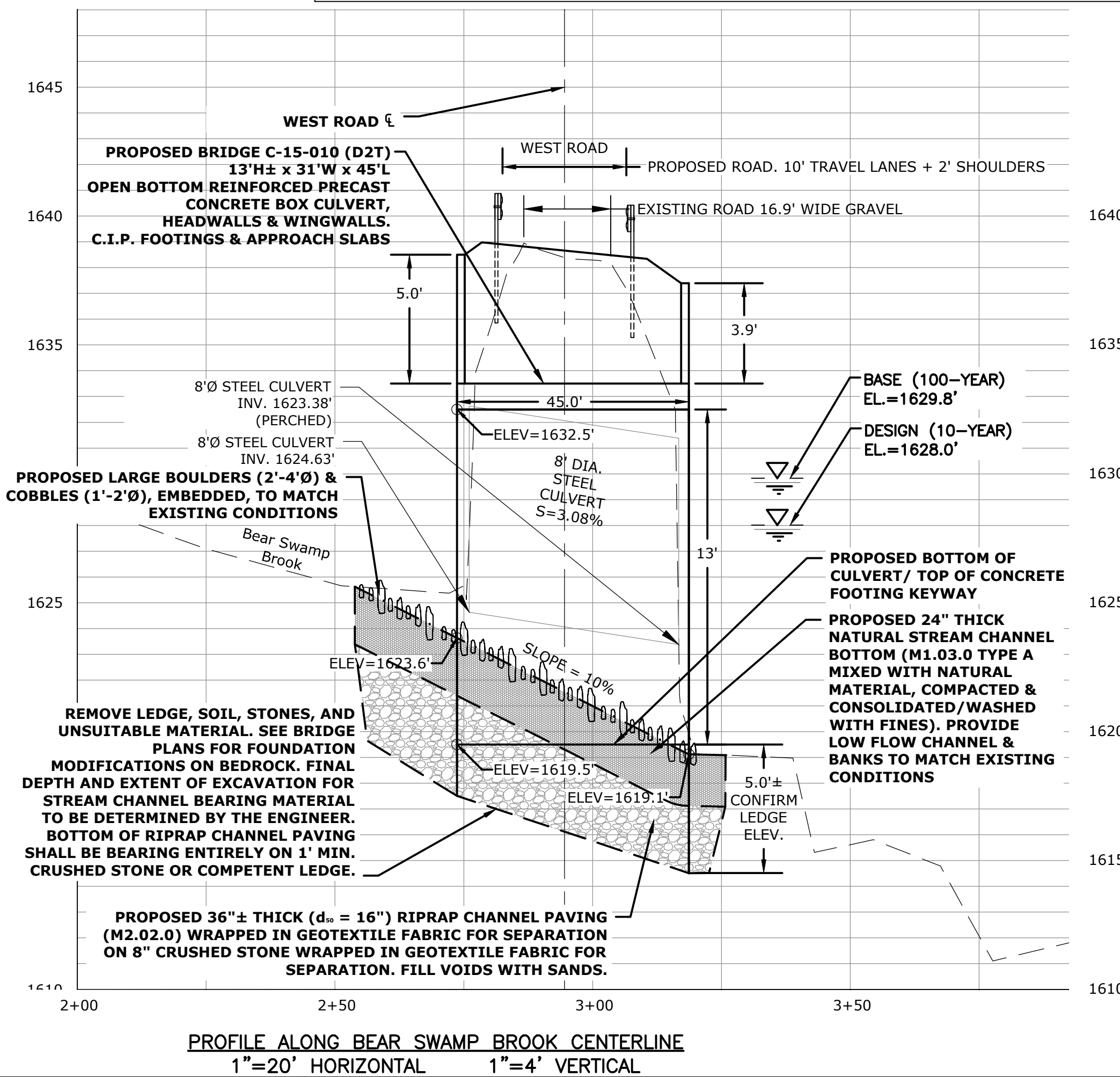
JERSEY BARRIER
 OR CONCRETE BLOCK

SECURE POLY
 TO BARRIER
 6 MIL. POLY

EXTEND 6 MIL. POLY AND SAND BAGS
 UPSTREAM AS NEEDED TO ACHIEVE SEAL

SAND BAGS

BOTTOM OF BARRIERS TO BE LEVELED
 WITH SAND BAGS AS NEEDED



C-1 STREAM PROFILE, NOTES & SITE WORK DETAILS

C-2 GRADING & EROSION CONTROL PLAN

SEE STRUCTURAL PLANS SHEETS 1 TO 9 BRIDGE NO. C-15-010 (D2T)
PLANS APPROVED 6/24/2026 BY JBD CONSULTING ENGINEERS, INC.
CALCULATIONS AND GEOTECHNICAL REPORT BY JBD CONSULTING
ENGINEERS, INC. FOR ADDITIONAL INFORMATION AND MASSDOT
CHAPTER 85 APPROVAL

NO.	DATE	REVISION/ISSUE	BY

PROJECT TITLE
*WEST ROAD CULVERT REPLACEMENT
TOWN OF CLARKSBURG
WEST ROAD OVER BEAR SWAMP BROOK
CLARKSBURG, MA*

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