KLAUS ANDERSON ROAD
JOHNSON BROOK RESTORATION
PERMIT SET

SOUTHWICK · MASSACHUSETTS

JUNE 3, 2020

PREPARED FOR

TOWN OF SOUTHWICK
454 COLLEGE HIGHWAY
SOUTHWICK, MA 01077

FUSS & O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

COMMONWEALTH OF MASSACHUSETTS
STUART H. HARRIS
STRUCTURAL
38323
REGISTERED PROFESSIONAL ENGINEER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
06/23/2020

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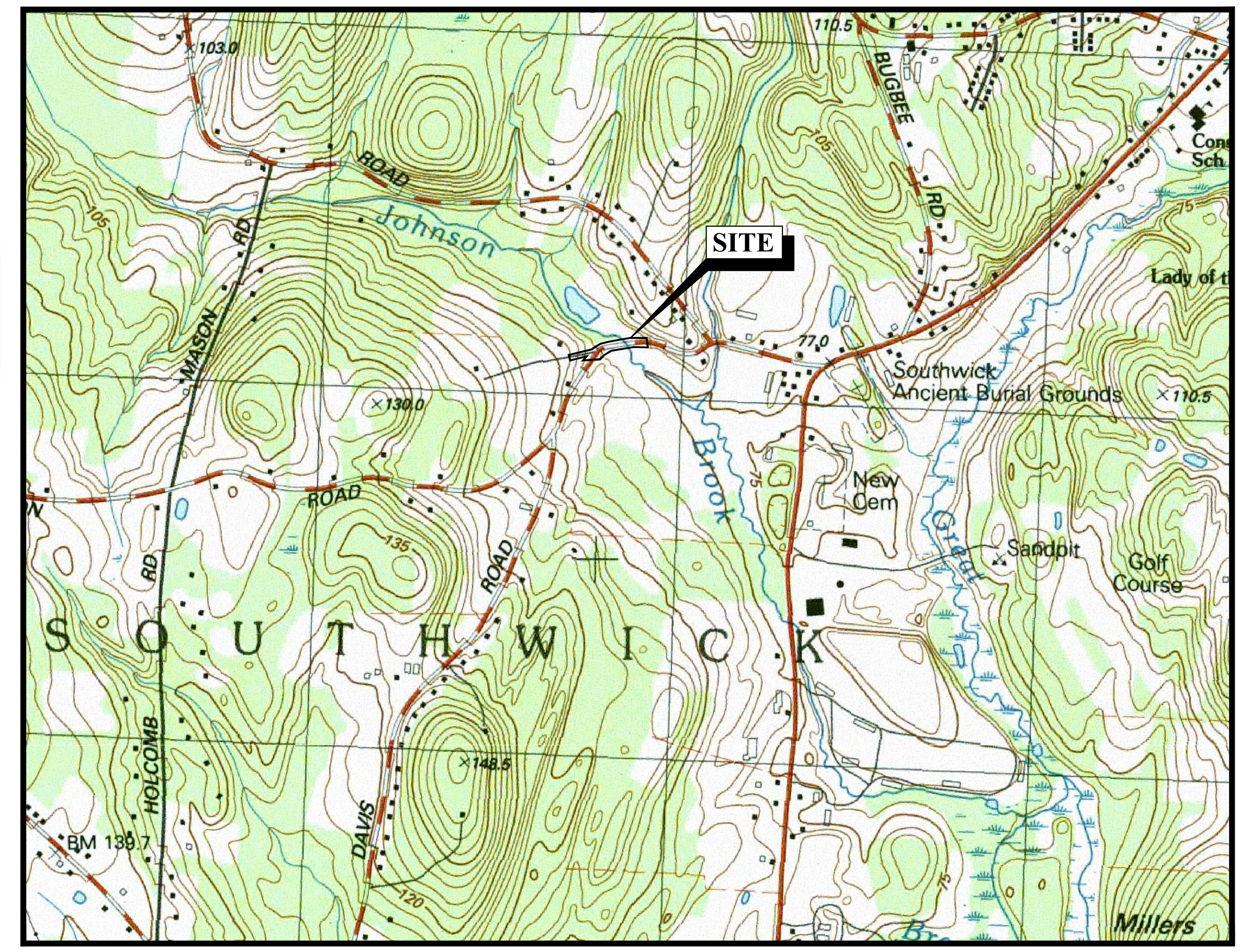

LOCATION MAP
SCALE: 1" = 1000'

PROJ. No.: 20090409.S30
DATE: 06/03/2020

GI-001

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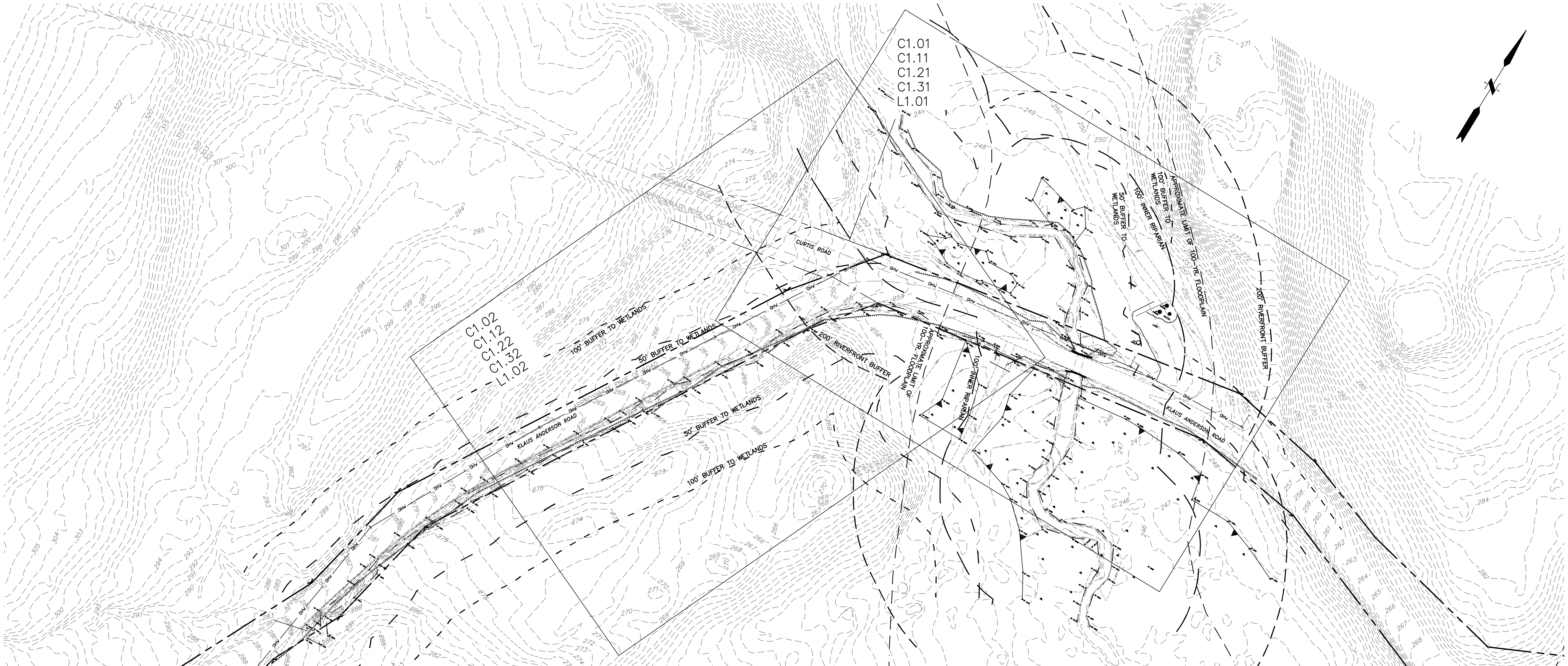

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING TREE LINE
- WETLAND
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF THE 100-YR. FLOODPLAIN
- APPROXIMATE EDGE OF ROAD
- EDGE OF ROAD
- APPROXIMATE PROPERTY LINE
- OVER HEAD WIRE
- DRAINAGE PIPE
- GUARDRAIL
- UTILITY POLE
- SIGN

MAP REFERENCE

1. EXISTING CONDITIONS DEPICTED ON THIS PLAN ARE BASED ON:
   1.a A PLAN ENTITLED: PLAN OF LAND IN SOUTHWICK, MASSACHUSETTS, SURVEYED FOR THE TOWN OF SOUTHWICK, REVISED THROUGH SEPTEMBER 17, 2019, PREPARED BY HERITAGE SURVEYS, INC., REGISTERED PROFESSIONAL LAND SURVEYORS, COLLEGE HIGHWAY & CLARK STREET, POST OFFICE BOX 1, SOUTHAMPTON, MASSACHUSETTS, JOB # 7953–190801, DWG # 795kl01, MAP #7953–190917.
   1.b INFORMATION FROM MASS GIS DATA RECEIVED FROM OLIVER GIS ON SEPTEMBER 4, 2019.
2. TOPOGRAPHIC ELEVATIONS ARE BASED ON 1988 N.A.V.D. SYSTEM.
3. GEOTECHNICAL DATA INCLUDING TEST PIT AND BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM (NAME OF GEOTECHNICAL ENGINEER).
4. WETLANDS WERE DELINEATED BY FUSS & O'NEILL SOIL SCIENTIST MICHAEL E. SOARES IN OCTOBER 2019.
5. SITE IS LOCATED WITHIN A ZONE A SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD PER "NFIP FLOOD RATE INSURANCE MAP, HAMPDEN COUNTY, MASSACHUSETTS" PANEL 366 OF 506, MAP NUMBER 25013C0366E, EFFECTIVE DATE JUNE 2013. GIVEN THAT A BASE FLOOD ELEVATION HAS NOT BEEN DETERMINED FOR THE AREA, APPROXIMATE LIMITS OF THE SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY THE 1–PERCENT ANNUAL CHANCE IS SHOWN BASED ON INTERPRETATION AND ASSUMED AT ELEVATION 243.

GENERAL NOTES

1. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SHOWN ON THE DRAWINGS TO SCALE OR TO THEIR ACTUAL DIMENSION OR LOCATION. COORDINATE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
2. DO NOT RELY SOLELY ON ELECTRONIC VERSIONS OF DRAWINGS, SPECIFICATIONS, AND DATA FILES THAT ARE PROVIDED BY THE ENGINEER. FIELD VERIFY LOCATION OF PROJECT FEATURES.
3. PERFORM NECESSARY CONSTRUCTION NOTIFICATIONS, APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK AS REQUIRED BY THE CONTRACT DOCUMENTS.
4. LOCATION OF UTILITIES SHOWN HEREON ARE THE RESULT OF SURFACE EVIDENCE AS LOCATED BY FIELD SURVEY, PLANS OF RECORD, INFORMATION FURNISHED BY THE RESPECTIVE UTILITY COMPANIES, AND OTHER AVAILABLE SOURCES. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION OF ALL UTILITIES WHICH MAY EXIST AT THIS TIME WITHIN THE PREMISES SURVEYED. LOCATIONS SHOULD BE VERIFIED BY THE RESPECTIVE UTILITY COMPANY BEFORE BEING RELIED UPON. ALL FIELD CHANGES MUST BE APPROVED BY THE ENGINEER.
5. LOCATION AND INVERTS OF EXISTING UTILITIES SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO CONSTRUCTION. ALL FIELD CHANGES MUST BE APPROVED BY THE ENGINEER.
6. FUSS & O'NEILL MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA. FUSS & O'NEILL FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. FUSS & O'NEILL HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL CALL DIG SAFE SYSTEMS FOR CLEARANCE.
7. REFER TO CONTRACT DOCUMENTS FOR GEOTECHNICAL REQUIREMENTS.

REGULATORY REQUIREMENTS

1. REVIEW AND APPROVALS – CHAPTER 85 SECTION 35: IN ACCORDANCE AND COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 85 SECTION 35 OF MASSACHUSETTS GENERAL LAWS, THE CONTRACTOR SHALL SUBMIT TO THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION ALL CONSTRUCTION DRAWINGS AND DESIGN CALCULATIONS THAT SHALL BE USED TO FABRICATE AND CONSTRUCT THE PRECAST RIGID FRAME STRUCTURE DENOTED ON THESE PLANS FOR REVIEW AND APPROVAL. THIS APPROVAL SHALL CONSTITUTE THE FINAL APPROVAL AS STIPULATED BY CHAPTER 85 SECTION 35 OF THE MASSACHUSETTS GENERAL LAWS.
2. REVISIONS TO THE APPROVED PLANS SHALL ALSO BE SUBMITTED TO FUSS & O'NEILL, INC. AND MASSDOT FOR APPROVALS.
3. THIS PROJECT DISTURBS AREAS LOCATED WITHIN DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) REGULATED AREAS AND REQUIRES THE FILING OF A NOTICE OF INTENT (NOI).
4. NOTIFY TOWN CONSERVATION COMMISSION A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.
5. FIELD INSPECTOR SHALL BE NOTIFIED 48 HOURS PRIOR TO CONSTRUCTION.
6. POST DEP SIGN NUMBER ASSIGNED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
7. CONTRACTOR SHALL FLAG ALL TREES TO BE REMOVED FOR REVIEW AND APPROVAL BY TOWN PRIOR TO REMOVING TREES.
8. APPROVED PLANS SHALL BE ON SITE AT ALL TIMES.
9. WITHIN LOCAL RIGHTS–OF–WAY, PERFORM THE WORK IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS.
10. THE CONTRACTOR IS RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. PERFORM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
11. DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
12. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND OR IS A PHASE OF A LARGER PROJECT THAT DISTURBS MORE THAN AN ACRE AND REQUIRES THE COMPLETION OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND THE FILING OF A CONSTRUCTION GENERAL PERMIT (CGP). THE SWPPP SHALL REMAIN ON SITE AT ALL TIMES. THE CONTRACTOR IS RESPONSIBLE FOR THE FILING OF THE CGP.
13. CALL DIG–SAFE 811 OR 1–888–DIG–SAFE A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

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COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
06/23/2020

SCALE:
HORZ.: 1" = 60'
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HORZ.:
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60 30 0 60
GRAPHIC SCALE

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TOWN OF SOUTHWICK

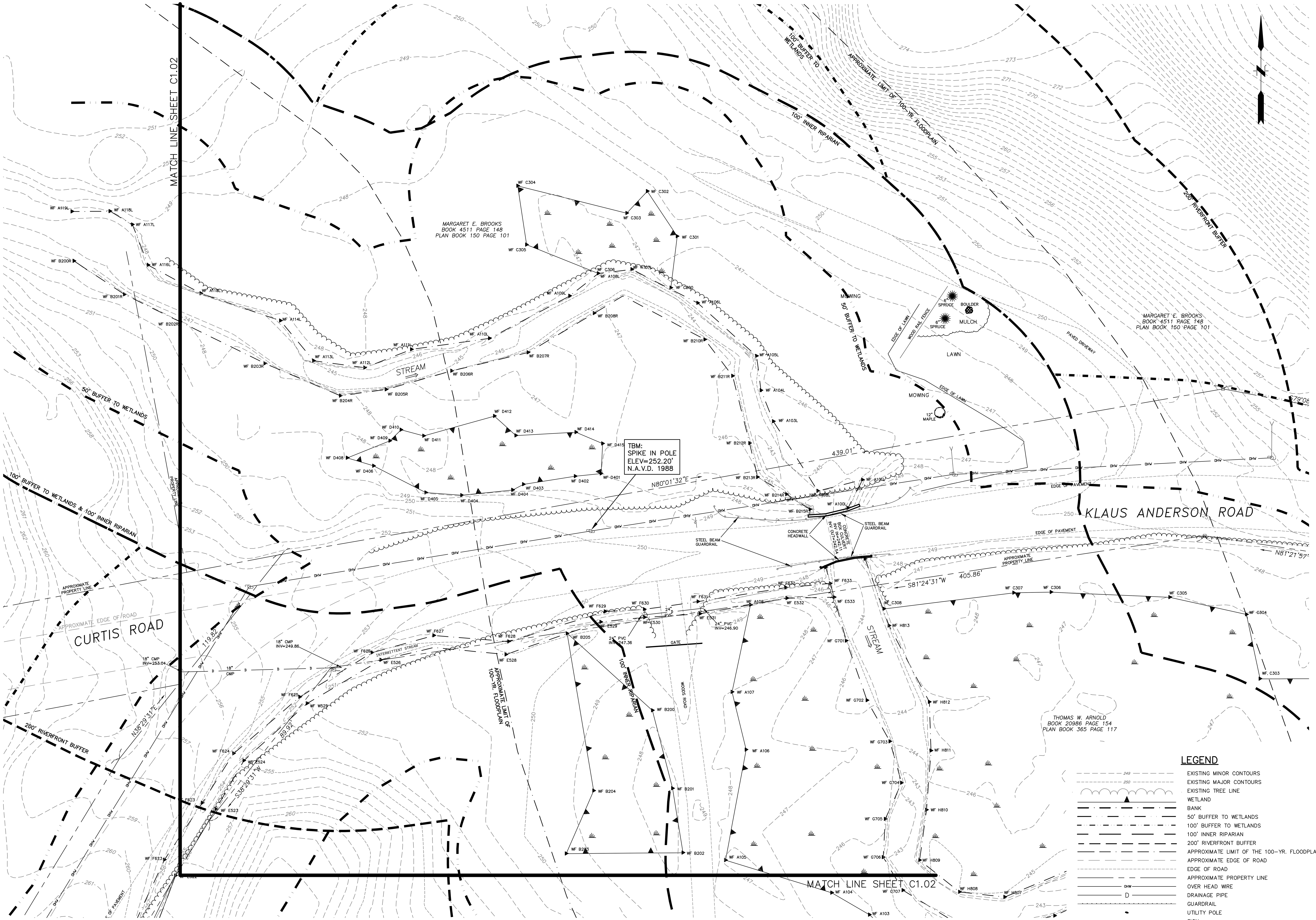
OVERALL SHEET LAYOUT KEY

JOHNSON BROOK RESTORATION

SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C1.00



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DANIEL F. DELANY
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TOWN OF SOUTHWICK
EXISTING CONDITIONS PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C1.01

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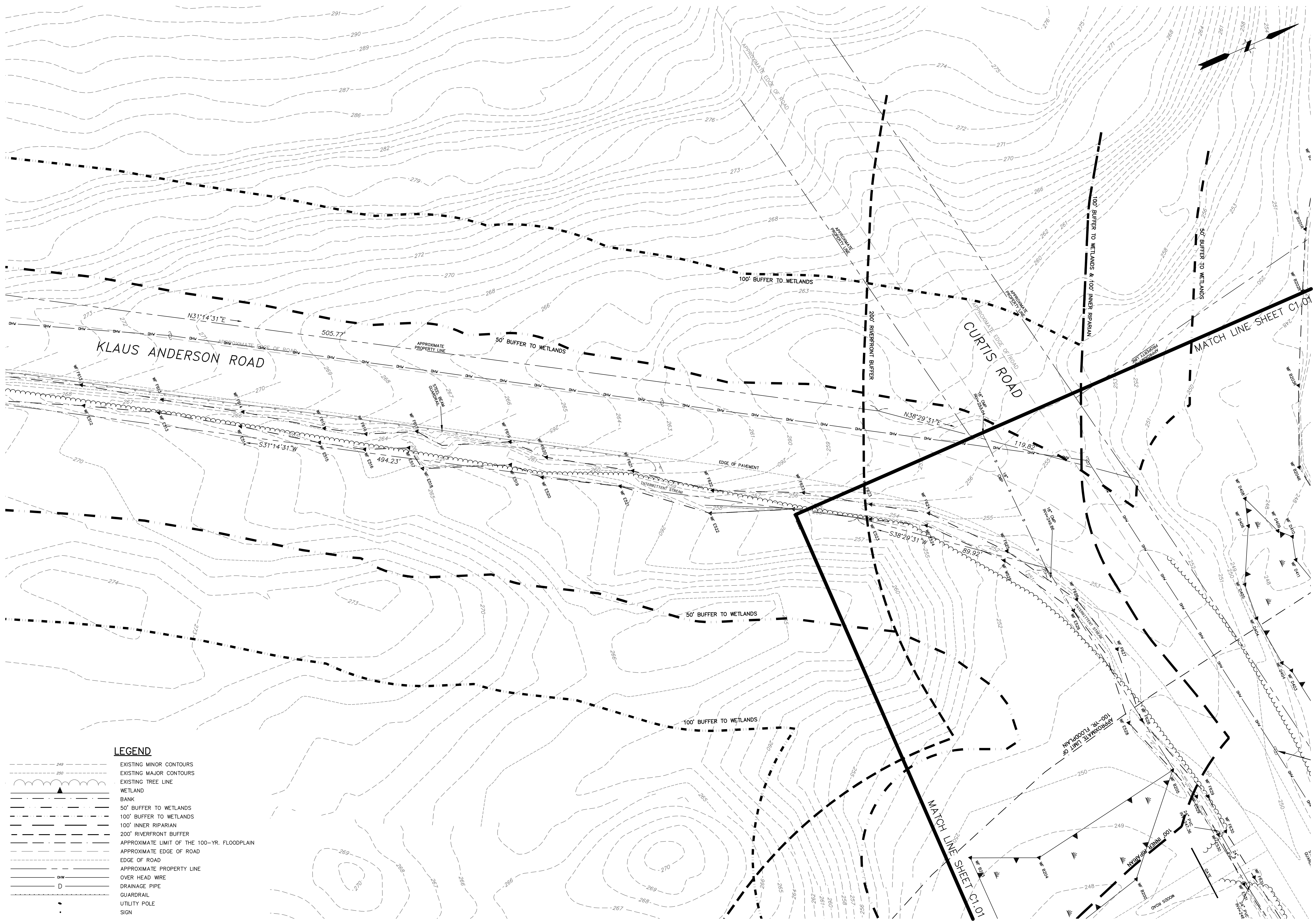

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06/23/2020

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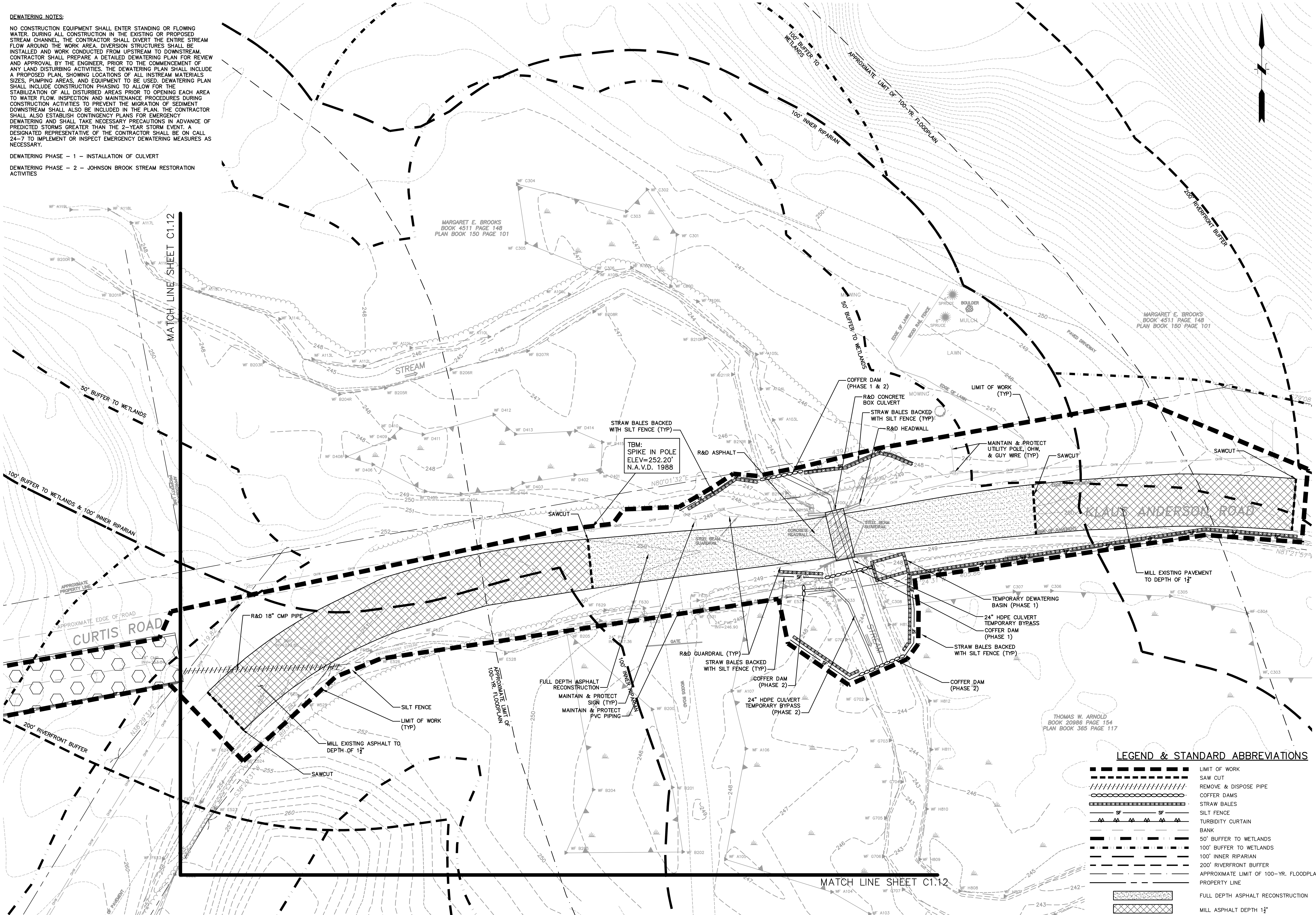
C1.02

DEWATERING NOTES:

NO CONSTRUCTION EQUIPMENT SHALL ENTER STANDING OR FLOWING WATER. DURING ALL CONSTRUCTION IN THE EXISTING OR PROPOSED STREAM CHANNEL, THE CONTRACTOR SHALL DIVERT THE ENTIRE STREAM FLOW AROUND THE WORK AREA. DIVERSION STRUCTURES SHALL BE INSTALLED AND WORK CONDUCTED FROM UPSTREAM TO DOWNSTREAM. CONTRACTOR SHALL PREPARE A DETAILED DEWATERING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER, PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBING ACTIVITIES. THE DEWATERING PLAN SHALL INCLUDE A PROPOSED PLAN, SHOWING LOCATIONS OF ALL INSTREAM MATERIALS SIZES, PUMPING AREAS, AND EQUIPMENT TO BE USED. DEWATERING PLAN SHALL INCLUDE CONSTRUCTION PHASING TO ALLOW FOR THE STABILIZATION OF ALL DISTURBED AREAS PRIOR TO OPENING EACH AREA TO WATER FLOW. INSPECTION AND MAINTENANCE PROCEDURES DURING CONSTRUCTION ACTIVITIES TO PREVENT THE MIGRATION OF SEDIMENT DOWNSTREAM SHALL ALSO BE INCLUDED IN THE PLAN. THE CONTRACTOR SHALL ALSO ESTABLISH CONTINGENCY PLANS FOR EMERGENCY DEWATERING AND SHALL TAKE NECESSARY PRECAUTIONS IN ADVANCE OF PREDICTED STORMS GREATER THAN THE 2-YEAR STORM EVENT. A DESIGNATED REPRESENTATIVE OF THE CONTRACTOR SHALL BE ON CALL 24-7 TO IMPLEMENT OR INSPECT EMERGENCY DEWATERING MEASURES AS NECESSARY.

DEWATERING PHASE – 1 – INSTALLATION OF CULVERT

DEWATERING PHASE – 2 – JOHNSON BROOK STREAM RESTORATION ACTIVITIES



LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- SAW CUT
- REMOVE & DISPOSE PIPE
- COFFER DAMS
- STRAW BALES
- SILT FENCE
- TURBIDITY CURTAIN
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN
- PROPERTY LINE
- FULL DEPTH ASPHALT RECONSTRUCTION
- MILL ASPHALT DEPTH 1½"
- REMOVE & DISPOSE CONCRETE
- R&D REMOVE AND DISPOSE
- OHW OVER HEAD WIRE

REFER TO SHEET C1.12 FOR GENERAL SITE PREPARATION NOTES

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS DANIEL F. DELANY CIVIL NO. 43477 REGISTERED PROFESSIONAL ENGINEER
06/23/2020

SCALE: HORZ.: 1" = 20' VERT.:
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TOWN OF SOUTHWICK
SITE PREPARATION, EROSION & SEDIMENT CONTROL, AND DEWATERING PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
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C1.11

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GENERAL NOTES:

EARTHWORK

1. CALL DIG-SAFE 811 OR 1-888-DIG-SAFE A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.
2. STOP WORK IN THE VICINITY OF SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA. IMMEDIATELY NOTIFY THE OWNER SO THAT APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN. RESUME WORK IN THE IMMEDIATE VICINITY ONLY UPON DIRECTION BY THE OWNER.
3. CONTRACTOR SHALL PROTECT ALL SLOPES, VEGETATION, PAVING, WALKS, AND IMPROVEMENTS OUTSIDE THE AREAS TO BE AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.
4. REFER TO EROSION AND SEDIMENTATION CONTROL DETAILS FOR EROSION AND SEDIMENTATION CONTROL NOTES.
5. WATER AND CALCIUM CHLORIDE MUST BE AVAILABLE AT ALL TIMES FOR DUST CONTROL.
6. WATER IS AVAILABLE MON-FRI, 8AM-4PM AT THE DPW AT TO COST TO THE CONTRACTOR. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH DPW.

DEMOLITION

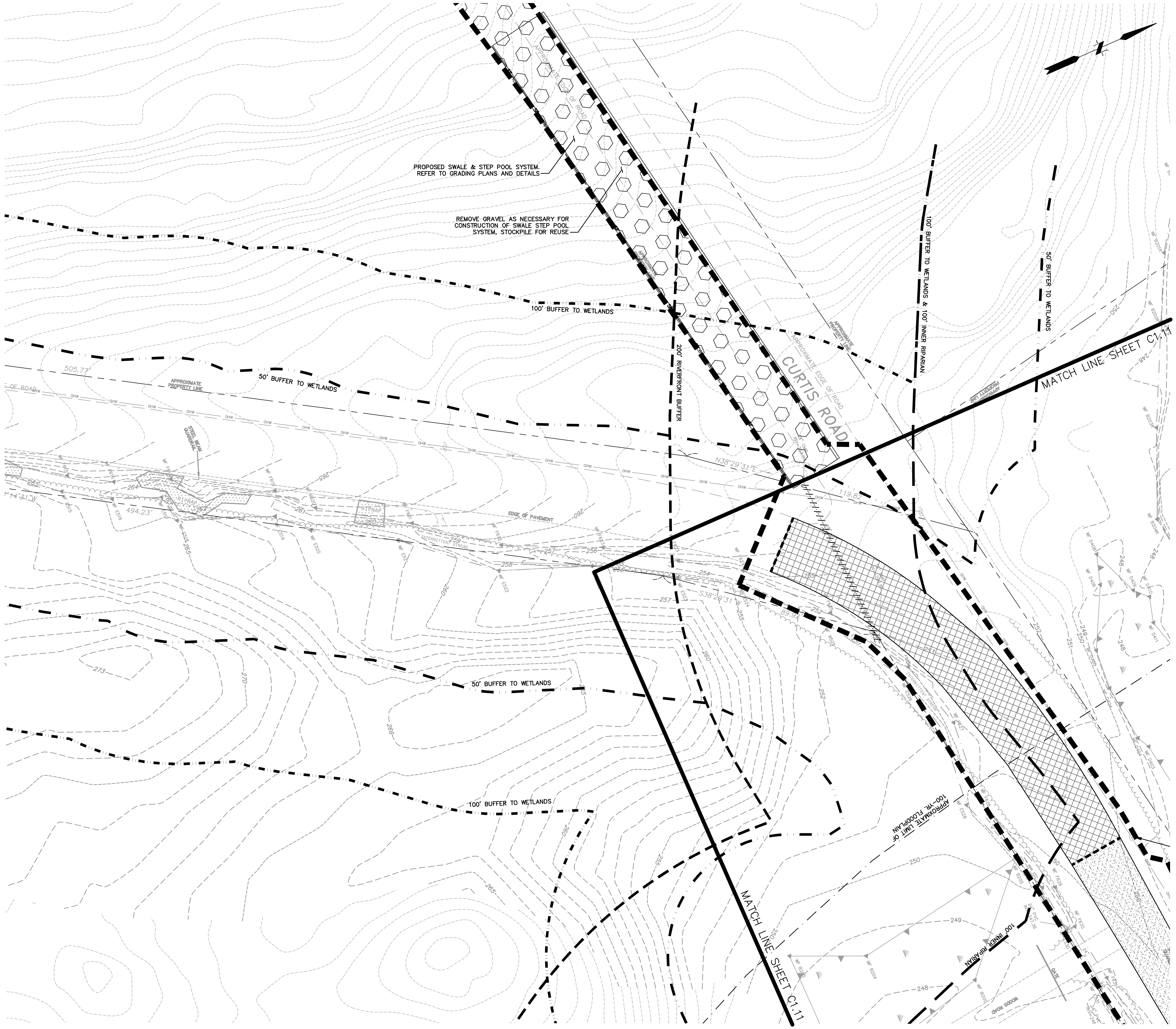
1. THE DEMOLITION PLAN IS PROVIDED FOR INFORMATION ONLY AND MAY NOT INDICATE ALL ITEMS REQUIRED TO BE DEMOLISHED. PERFORM A PRE-BID SITE INSPECTION. COORDINATE DEMOLITION OF UNIDENTIFIED UTILITIES OR STRUCTURES WITH OWNER. DEMOLISH STRUCTURES, SITE IMPROVEMENTS, UTILITIES, ETC. AS REQUIRED TO CONSTRUCT PROPOSED FACILITY AND UTILITY SERVICES.
2. TREES, BRUSH AND STUMPS REMOVED BY CLEARING & GRUBBING OPERATIONS AND/OR SELECTIVE CLEARING SHALL BE TRANSPORTED OFF THE PROJECT SITE TO AN APPROVED DISPOSAL LOCATION EXCEPT FOR ITEMS TO BE REUSED FOR ROOTWADS..
3. ITEMS TO BE STOCKPILED ON-SITE FOR REUSE OR TO BE RELOCATED SHALL BE PROTECTED FROM CONSTRUCTION OPERATIONS. IF DAMAGED DURING CONSTRUCTION THEY SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COST TO THE OWNER.

SELECTIVE CLEARING

1. CONTRACTOR TO COORDINATE THE SELECTION OF TWELVE (12) OF TREES TO BE REMOVED AND REUSED AS ROOTWADS WITHIN RECONSTRUCTED STREAM CHANNEL WITH THE TOWN.
2. TREES SELECTED FOR ROOTWADS SHALL BE REMOVED WITH THE ROOT BALL AND MEET THE FOLLOWING CRITERIA:
   - 2.1. DIAMETER AT BREAST HEIGHT BETWEEN 10" – 24"
   - 2.2. LOG LENGTH OF 10'–15'
   - 2.3. ROOT BALL FAN DIAMETER BETWEEN 30" – 60"
   - 2.4. STORE FOR REUSE PER DETAILS & AS DIRECTED BY DESIGNER AND OWNER.

WORK RESTRICTIONS

1. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.
2. WORK IS RESTRICTED TO THE HOURS OF 8AM TO 4PM, MONDAY THROUGH FRIDAY.
3. CONTRACTOR SHALL FLAG ALL TREES TO BE REMOVED FOR REVIEW AND APPROVAL BY TOWN PRIOR TO REMOVING ANY TREES.
4. MAINTAIN AND PROTECT ALL EXISTING UTILITY POLES ANT TRAFFIC SIGNS TO REMAIN.



LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- SAW CUT
- REMOVE & DISPOSE PIPE
- COFFER DAMS
- STRAW BALES
- SILT FENCE
- TURBIDITY CURTAIN
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN
- PROPERTY LINE
- FULL DEPTH ASPHALT RECONSTRUCTION
- MILL ASPHALT DEPTH $1\frac{1}{2}$"
- REMOVE & DISPOSE CONCRETE
- R&D — REMOVE AND DISPOSE
- OHW — OVER HEAD WIRE

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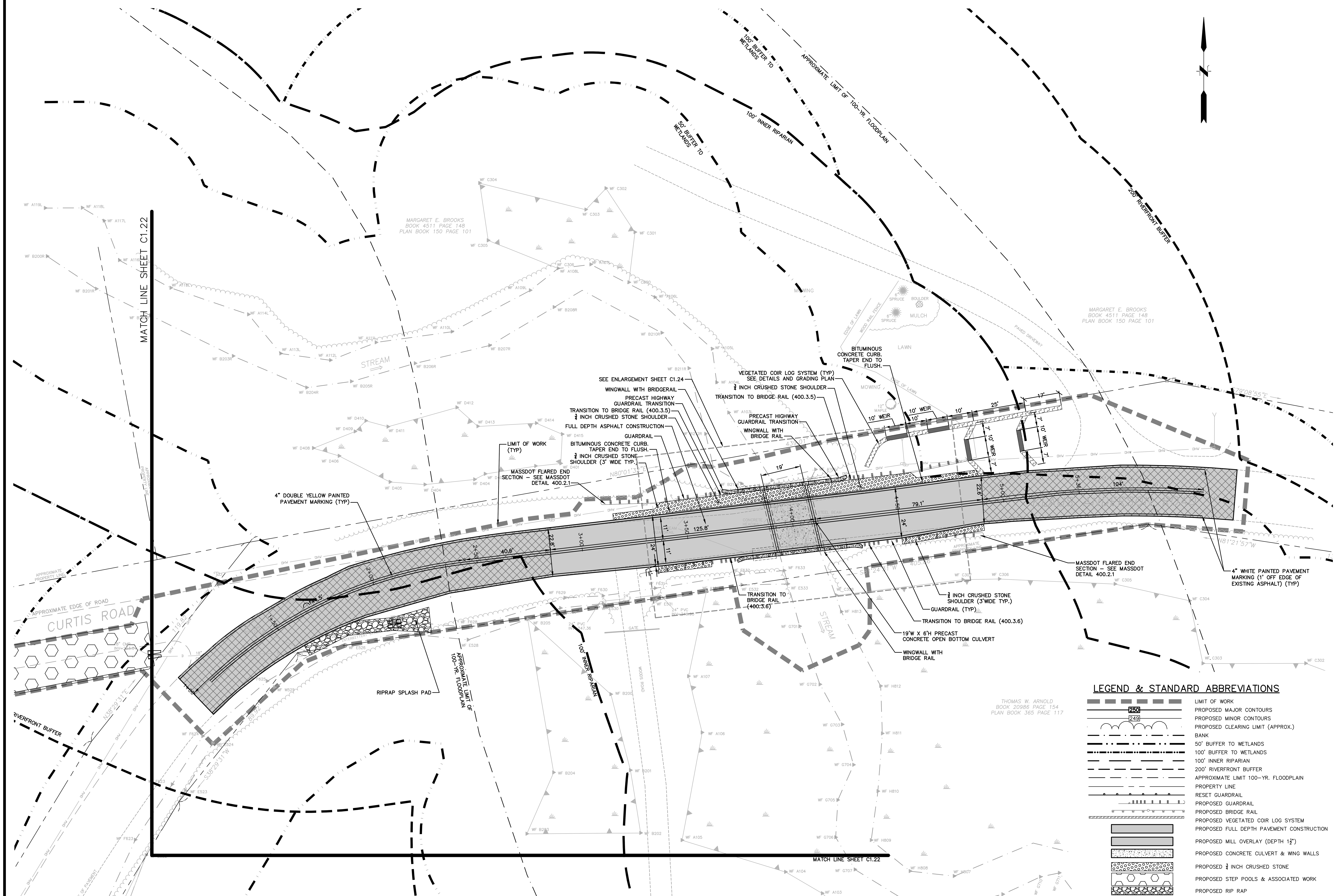

LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED CLEARING LIMIT (APPROX.)
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT 100-YR. FLOODPLAIN
- PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED FULL DEPTH PAVEMENT CONSTRUCTION
- PROPOSED MILL OVERLAY (DEPTH 1½")
- PROPOSED CONCRETE CULVERT & WING WALLS
- PROPOSED ¾ INCH CRUSHED STONE
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED RIP RAP
- PROPOSED REINFORCED CONCRETE CULVERT END

SEE SHEET C1.22 FOR GENERAL NOTES

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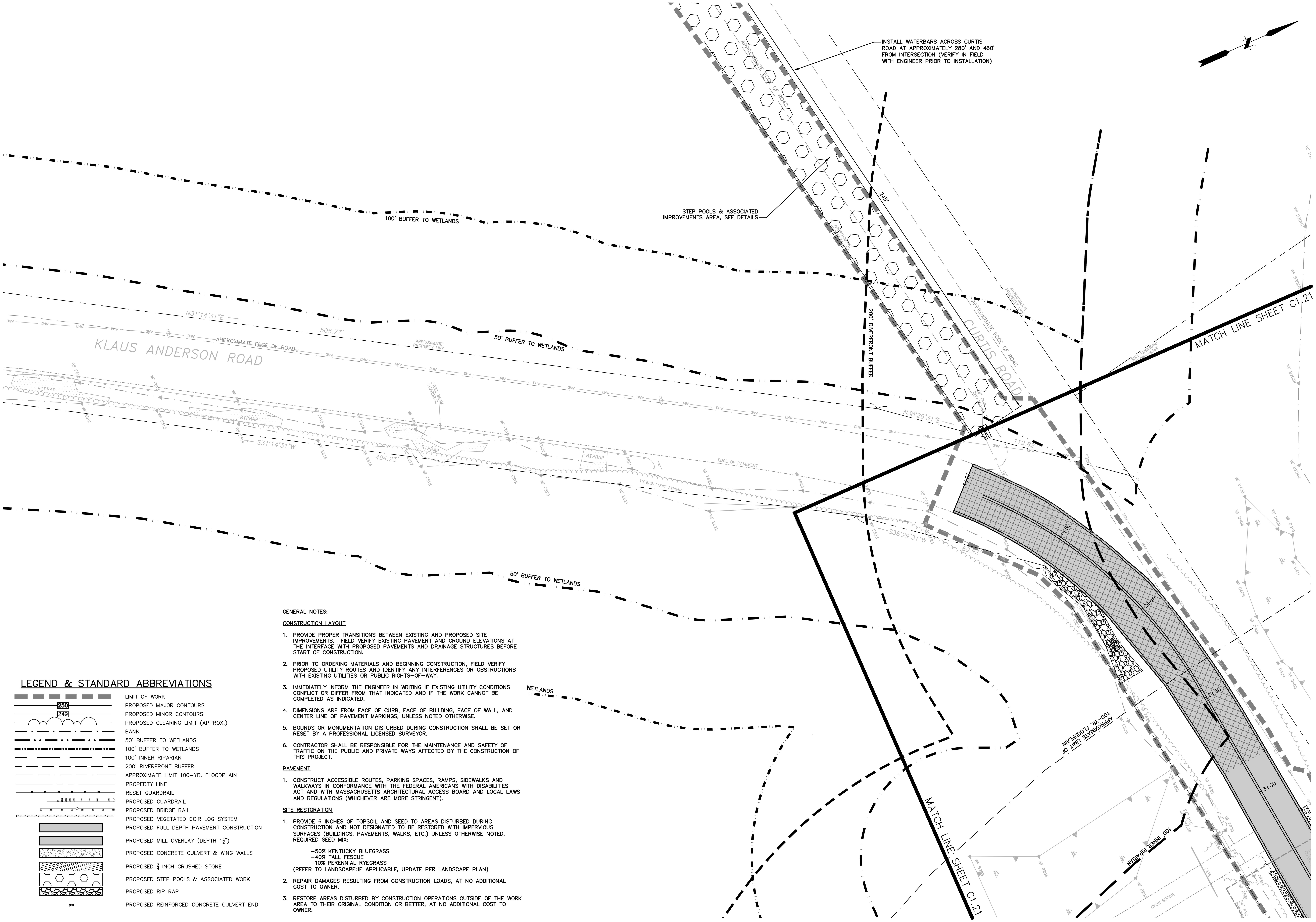
TOWN OF SOUTHWICK
SITE LAYOUT PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/02/2020

C1.21



LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- 250 PROPOSED MAJOR CONTOURS
- 249 PROPOSED MINOR CONTOURS
- PROPOSED CLEARING LIMIT (APPROX.)
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT 100-YR. FLOODPLAIN
- PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED FULL DEPTH PAVEMENT CONSTRUCTION
- PROPOSED MILL OVERLAY (DEPTH $1\frac{1}{2}$")
- PROPOSED CONCRETE CULVERT & WING WALLS
- PROPOSED $\frac{3}{4}$ INCH CRUSHED STONE
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED RIP RAP
- PROPOSED REINFORCED CONCRETE CULVERT END

GENERAL NOTES:

CONSTRUCTION LAYOUT

1. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS. FIELD VERIFY EXISTING PAVEMENT AND GROUND ELEVATIONS AT THE INTERFACE WITH PROPOSED PAVEMENTS AND DRAINAGE STRUCTURES BEFORE START OF CONSTRUCTION.
2. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, FIELD VERIFY PROPOSED UTILITY ROUTES AND IDENTIFY ANY INTERFERENCES OR OBSTRUCTIONS WITH EXISTING UTILITIES OR PUBLIC RIGHTS-OF-WAY.
3. IMMEDIATELY INFORM THE ENGINEER IN WRITING IF EXISTING UTILITY CONDITIONS CONFLICT OR DIFFER FROM THAT INDICATED AND IF THE WORK CANNOT BE COMPLETED AS INDICATED.
4. DIMENSIONS ARE FROM FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS NOTED OTHERWISE.
5. BOUNDS OR MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND SAFETY OF TRAFFIC ON THE PUBLIC AND PRIVATE WAYS AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.

PAVEMENT

1. CONSTRUCT ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).

SITE RESTORATION

1. PROVIDE 6 INCHES OF TOPSOIL AND SEED TO AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED TO BE RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) UNLESS OTHERWISE NOTED. REQUIRED SEED MIX:
   - -50% KENTUCKY BLUEGRASS
   - -40% TALL FESCUE
   - -10% PERENNIAL RYEGRASS

   (REFER TO LANDSCAPE: IF APPLICABLE, UPDATE PER LANDSCAPE PLAN)
2. REPAIR DAMAGES RESULTING FROM CONSTRUCTION LOADS, AT NO ADDITIONAL COST TO OWNER.
3. RESTORE AREAS DISTURBED BY CONSTRUCTION OPERATIONS OUTSIDE OF THE WORK AREA TO THEIR ORIGINAL CONDITION OR BETTER, AT NO ADDITIONAL COST TO OWNER.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 45477
06/23/2020

SCALE: HORZ.: 1" = 20' VERT.:
DATUM: HORZ.: VERT.:
20 10 0 20
GRAPHIC SCALE

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TOWN OF SOUTHWICK
SITE LAYOUT PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/02/2020

C1.22

File Path: J:\DWG\P2017\0390\G11\Civil\Plan\20170390G11_STP01.dwg Layout: C1.22 Plotted: Fri, June 12, 2020 - 5:48 PM User: mtrombley
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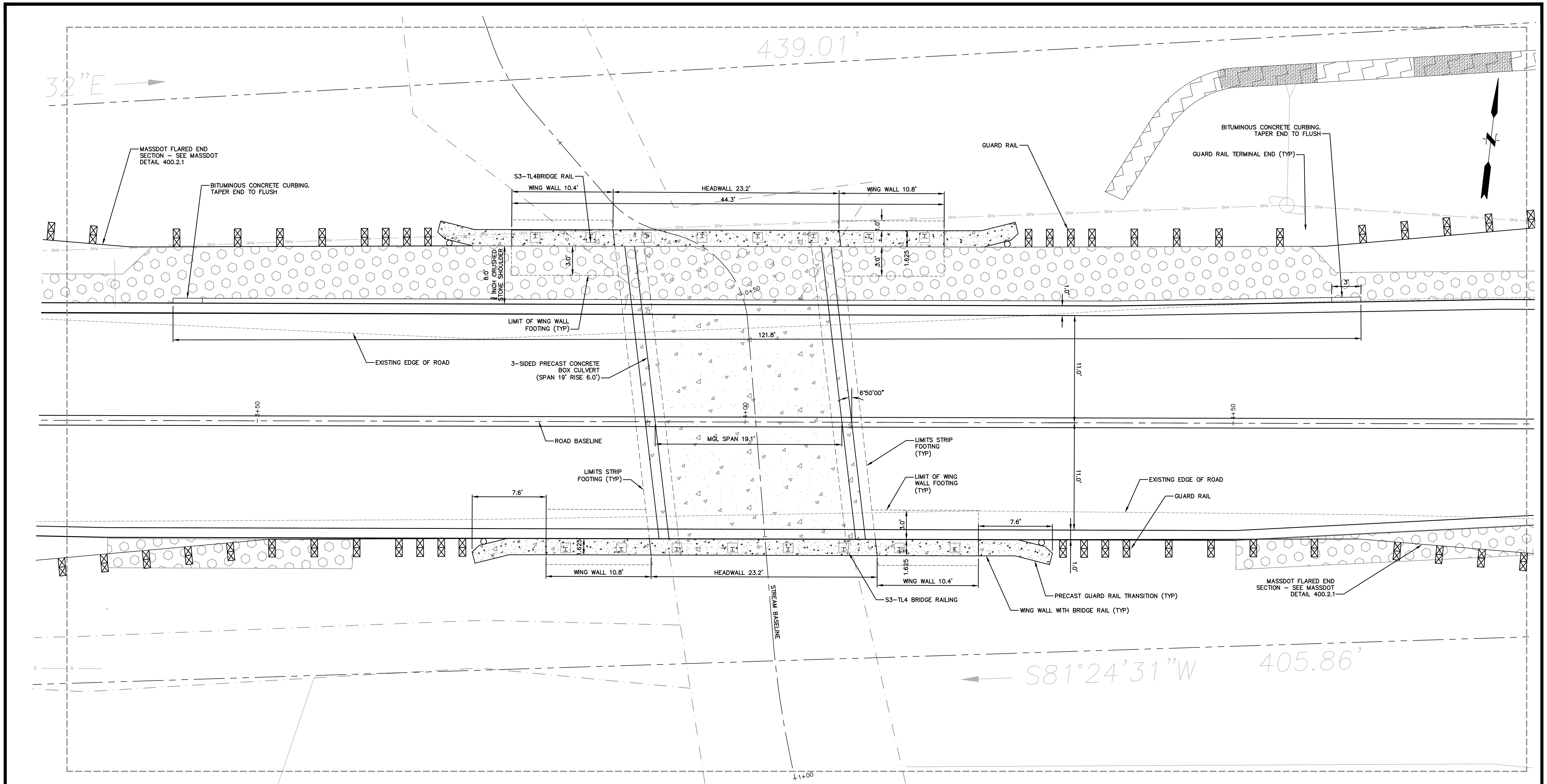

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/02/2020

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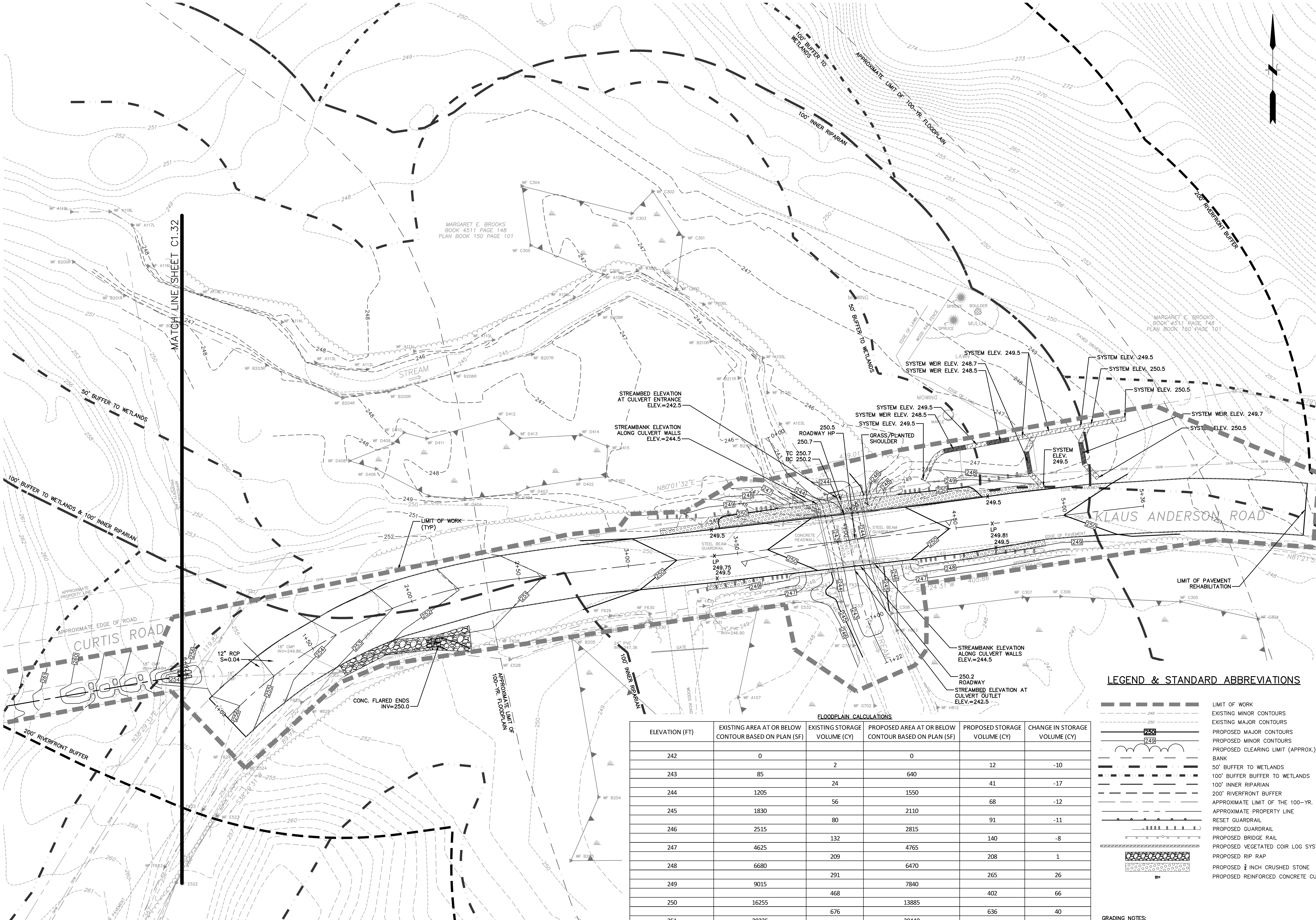

FLOODPLAIN CALCULATIONS

ELEVATION (FT)	EXISTING AREA AT OR BELOW CONTOUR BASED ON PLAN (SF)	EXISTING STORAGE VOLUME (CY)	PROPOSED AREA AT OR BELOW CONTOUR BASED ON PLAN (SF)	PROPOSED STORAGE VOLUME (CY)	CHANGE IN STORAGE VOLUME (CY)
242	0		0		
		2		12	-10
243	85		640		
		24		41	-17
244	1205		1550		
		56		68	-12
245	1830		2110		
		80		91	-11
246	2515		2815		
		132		140	-8
247	4625		4765		
		209		208	1
248	6680		6470		
		291		265	26
249	9015		7840		
		468		402	66
250	16255		13885		
		676		636	40
251	20235		20440		
		763		767	-4
100 YEAR FLOOD ELEVATION	20960		20960		
			NET CHANGE IN STORAGE		71

LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED CLEARING LIMIT (APPROX.)
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF THE 100-YR. FLOOD PLAIN
- APPROXIMATE PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED RIP RAP
- PROPOSED ¾ INCH CRUSHED STONE
- PROPOSED REINFORCED CONCRETE CULVERT END

GRADING NOTES:

1. PROPOSED GRADING WITHIN JOHNSON BROOK AND ROADSIDE STREAM TO BE DONE IN ACCORDANCE WITH THE MICROTOPOGRAPHY DETAIL ON SHEET C5.02.
2. REFER TO SHEET C1.32 FOR ADDITIONAL NOTES.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 45477
06/23/2020

SCALE: HORZ.: 1" = 20'
VERT.:
DATUM: HORZ.:
VERT.:
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GRAPHIC SCALE

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TOWN OF SOUTHWICK
GRADING & DRAINAGE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C1.31

File Path: J:\DWG\P2017\0390\G11\Civil\Plan\20170390G11_GRA01.dwg Layout: C1.31 Plotted: Fri, June 19, 2020 - 11:21 AM User: mtrombley
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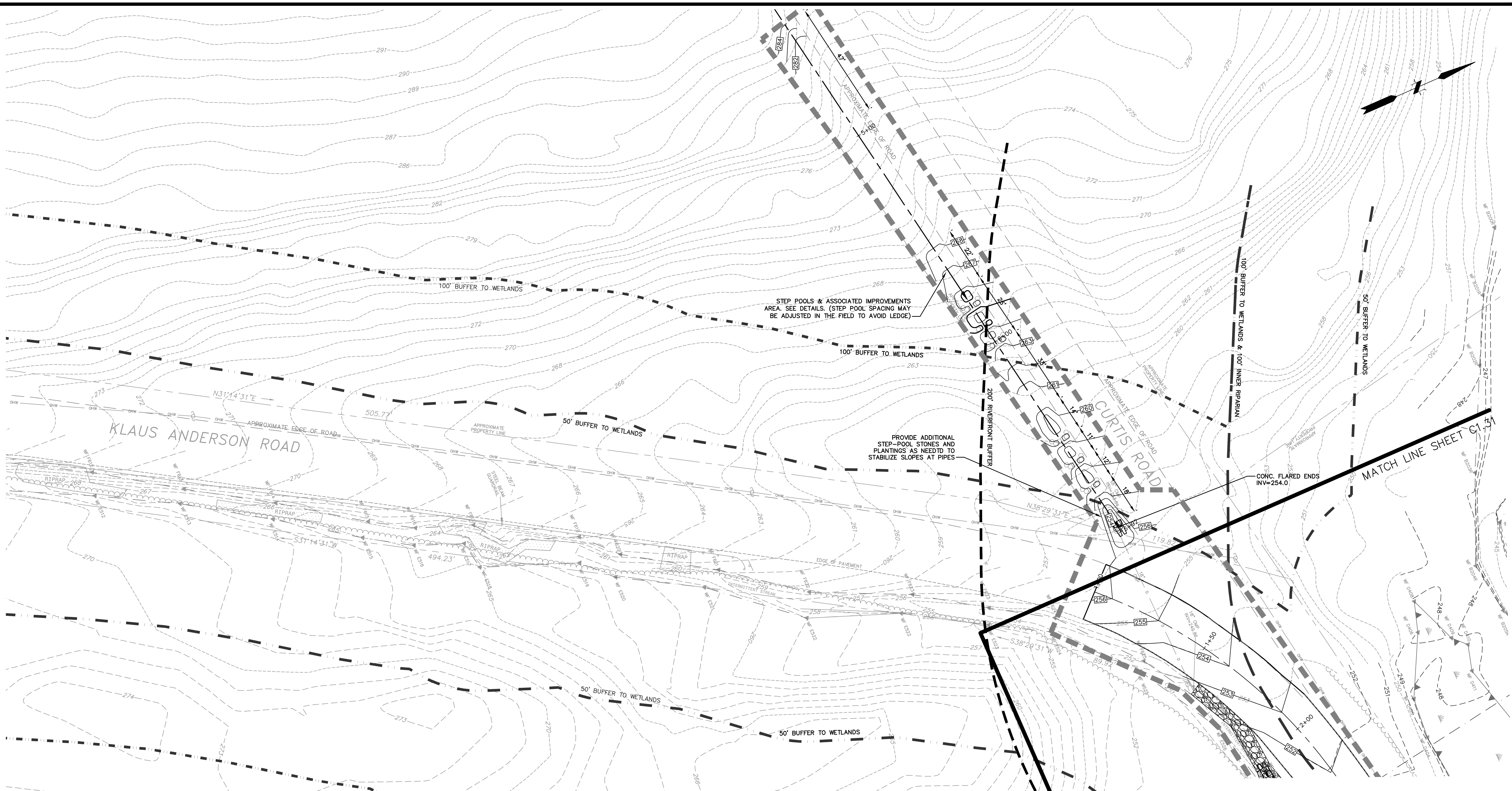

EARTHWORK

1. CALL DIG-SAFE 811 OR 1-888-DIG-SAFE A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.
2. STOP WORK IN THE VICINITY OF SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA. IMMEDIATELY NOTIFY THE OWNER SO THAT APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN. RESUME WORK IN THE IMMEDIATE VICINITY ONLY UPON DIRECTION BY THE OWNER.
3. CONTRACTOR SHALL PROTECT ALL SLOPES, VEGETATION, PAVING, WALKS, AND IMPROVEMENTS OUTSIDE THE AREAS TO BE AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.
4. REFER TO EROSION AND SEDIMENTATION CONTROL DETAILS FOR EROSION AND SEDIMENTATION CONTROL NOTES.
5. CONTRACTOR SHALL FLAG ALL TREES TO BE REMOVED FOR REVIEW AND APPROVAL BY TOWN PRIOR TO REMOVING ANY TREES.
6. WATER MUST BE AVAILABLE AT ALL TIMES FOR DUST CONTROL.

CONSTRUCTION LAYOUT

1. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS. FIELD VERIFY EXISTING PAVEMENT AND GROUND ELEVATIONS AT THE INTERFACE WITH PROPOSED PAVEMENTS AND EXISTING SITE FEATURES BEFORE START OF CONSTRUCTION.
2. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, FIELD VERIFY PROPOSED UTILITY ROUTES AND IDENTIFY ANY INTERFERENCES OR OBSTRUCTIONS WITH EXISTING UTILITIES OR PUBLIC RIGHTS-OF-WAY.
3. IMMEDIATELY INFORM THE ENGINEER IN WRITING IF EXISTING UTILITY CONDITIONS CONFLICT OR DIFFER FROM THAT INDICATED AND IF THE WORK CANNOT BE COMPLETED AS INDICATED.
4. BOUNDS OR MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND SAFETY OF TRAFFIC ON THE PUBLIC AND PRIVATE WAYS AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.

SITE RESTORATION

1. REPAIR DAMAGES RESULTING FROM CONSTRUCTION LOADS, AT NO ADDITIONAL COST TO OWNER.
2. RESTORE AREAS DISTURBED BY CONSTRUCTION OPERATIONS OUTSIDE OF THE WORK AREA TO THEIR ORIGINAL CONDITION OR BETTER, AT NO ADDITIONAL COST TO OWNER.
3. BIODEGRADABLE EROSION CONTROL MATTING TO BE PLACED ON ALL SLOPES 3:1 AND GREATER.

LEGEND & STANDARD ABBREVIATIONS

LIMIT OF WORK
249 EXISTING MINOR CONTOURS
250 EXISTING MAJOR CONTOURS
250 PROPOSED MAJOR CONTOURS
249 PROPOSED MINOR CONTOURS
PROPOSED CLEARING LIMIT (APPROX.)
BANK
50' BUFFER TO WETLANDS
100' BUFFER BUFFER TO WETLANDS
100' INNER RIPARIAN
200' RIVERFRONT BUFFER
APPROXIMATE LIMIT OF THE 100-YR. FLOOD PLAIN
APPROXIMATE PROPERTY LINE
RESET GUARDRAIL
PROPOSED GUARDRAIL
PROPOSED BRIDGE RAIL
PROPOSED VEGETATED COIR LOG SYSTEM
PROPOSED RIP RAP
PROPOSED $\frac{3}{4}$ INCH CRUSHED STONE
PROPOSED REINFORCED CONCRETE CULVERT END

GRADING NOTES:

1. PROPOSED GRADING WITHIN JOHNSON BROOK AND ROADSIDE STREAM TO BE DONE IN ACCORDANCE WITH THE MICROTOPOGRAPHY DETAIL ON SHEET C5.02.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS DANIEL F. DELANY CIVIL NO. 43477 REGISTERED PROFESSIONAL ENGINEER
06/23/2020

SCALE: HORZ.: 1" = 20' VERT.:
DATUM: HORZ.: VERT.:
20 10 0 20
GRAPHIC SCALE

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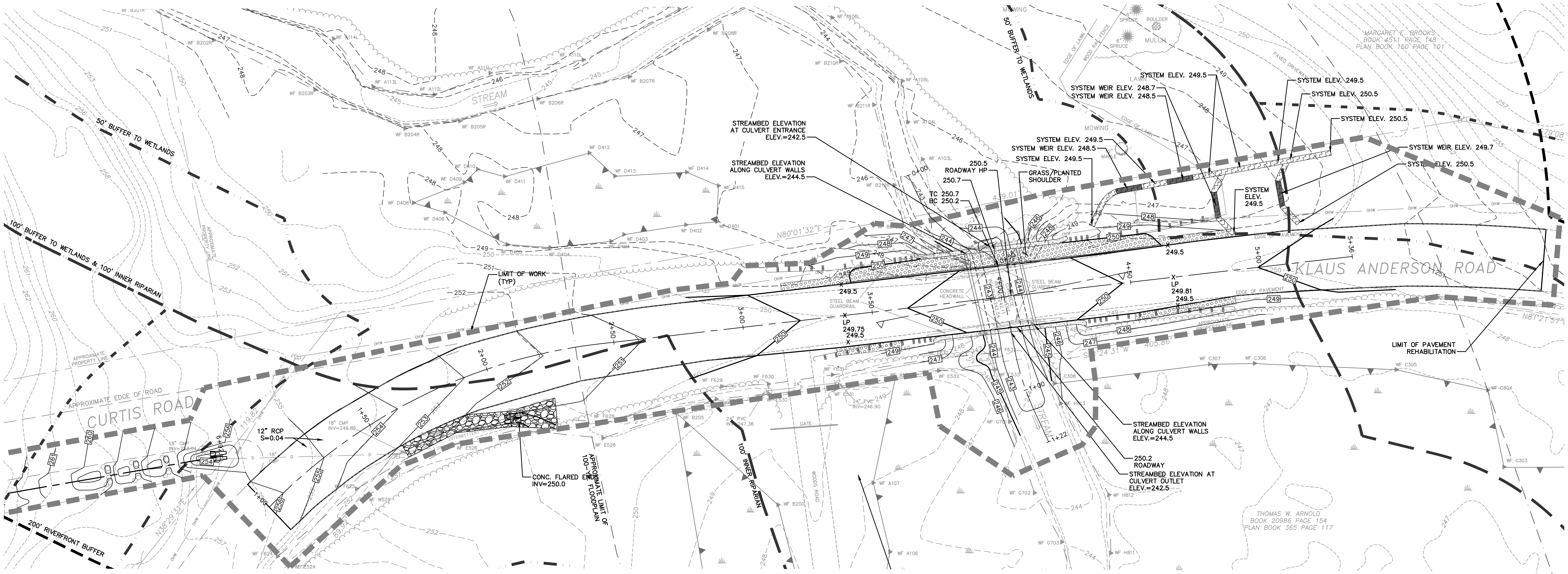
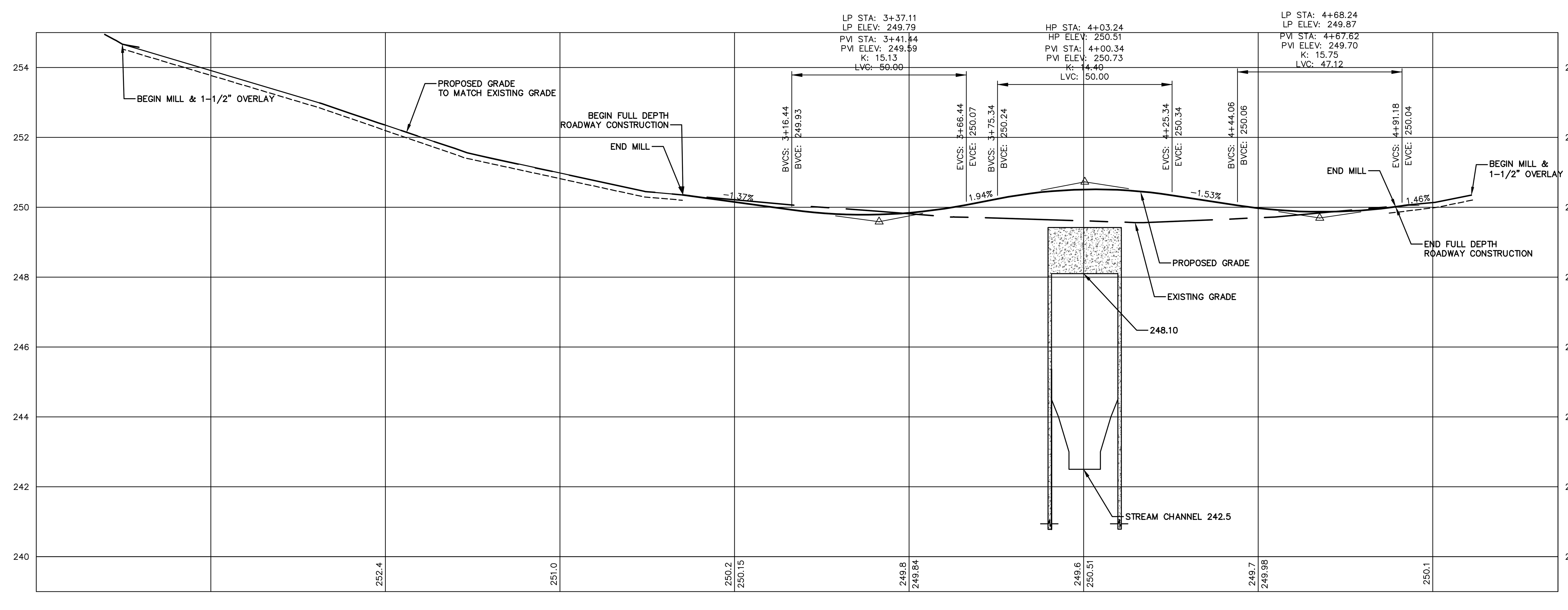
TOWN OF SOUTHWICK
GRADING & DRAINAGE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C1.32





ROADWAY PROFILE STA 1+00 – 5+36
SCALE: H: 1"=20'
V: 1"=2'

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
No. 45477
06/23/2020

SCALE: HORZ.: 1" = 20'
VERT.:
DATUM: HORZ.:
VERT.:
GRAPHIC SCALE 20 10 0 20

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TOWN OF SOUTHWICK
ROADWAY PLAN AND PROFILE
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C1.41

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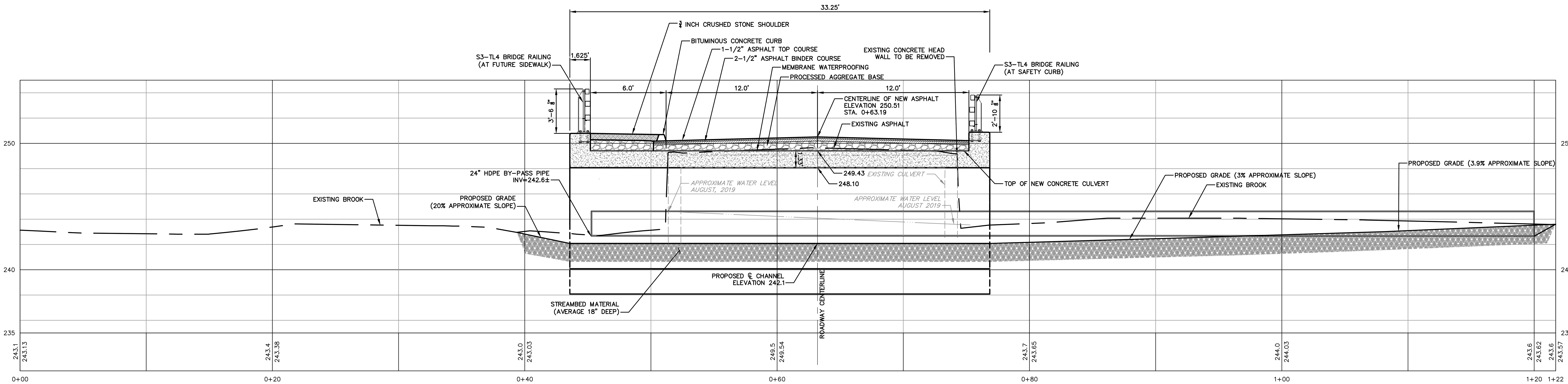
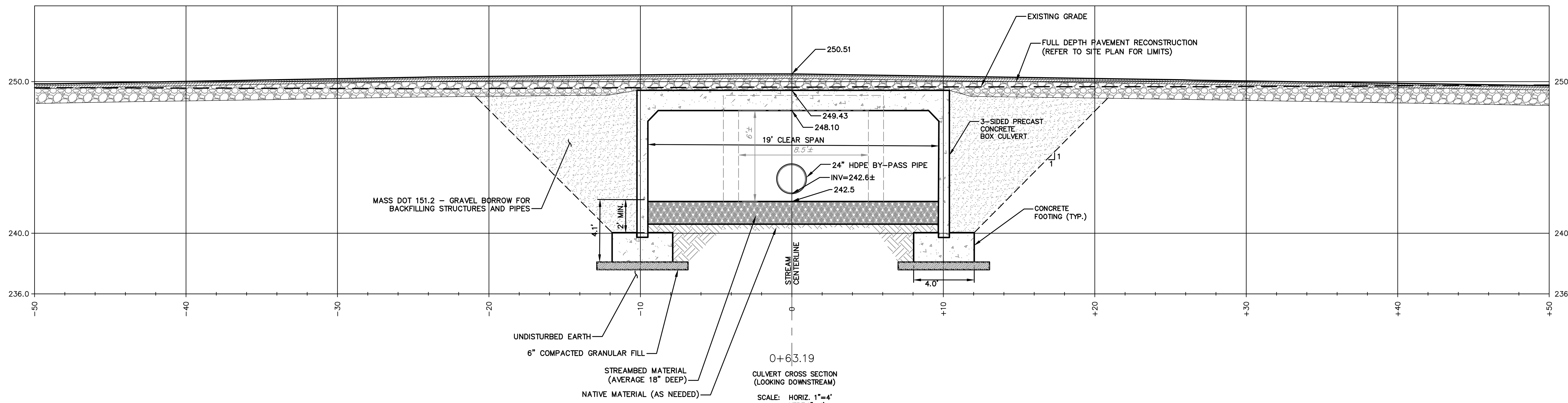


JOHNSON BROOK PROFILE STA 0+00 – 1+22
SCALE: H: 1"=4'
V: 1"=4'

STREAMBED MATERIAL

1. STREAMBED MATERIAL SHALL CONSIST OF NATURAL FIELD ROCK OR NATURAL RIVER ROCK OR CRUSHED ROCK.
2. STREAMBED MATERIAL MAY BE SALVAGED DURING EXCAVATION OF THE EXISTING STREAMBED.
3. EXCAVATED MATERIALS SHALL BE SAMPLED TO DETERMINE THEIR GRADATION.
4. ALL OFF-SITE STREAMBED MATERIALS SHALL CONFORM TO THE SAME GRADATION AS THE NATIVE MATERIAL.
5. EXCAVATE STREAM CHANNEL AND CONTOUR STREAM BANKS AS SHOWN ON PLANS.
6. PLACE STREAMBED SIMULATION MATERIAL ON A PREPARED SURFACE TO FORM A WELL-GRADED, UNIFORMLY DENSE, COMPACT, LOW PERMEABILITY MASS, SIMILAR IN APPEARANCE AND TEXTURE TO THE NATURAL STREAMBED.
7. PLACE STREAM SIMULATION ROCK IN ONE OR MORE LAYERS WITH A LAYER DEPTH LESS THAN 1 ½ TIMES THE MAXIMUM DIMENSION OF THE STREAM SIMULATION ROCK.
8. FILL VOIDS BY MACHINE OR HAND TAMPING BEFORE PLACING NEXT LIFT.
9. COMPACT BED MATERIALS BY MECHANICAL MEANS SUCH AS PLATE COMPACTORS, LOADERS, ETC.
10. STREAMBED MATERIAL SHALL BE INSTALLED TO A MINIMUM DEPTH OF 18 INCHES IN RESTORED AREAS.



0+63.19
CULVERT CROSS SECTION
(LOOKING DOWNSTREAM)
SCALE: HORIZ. 1"=4'
VERT.1"=4'

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE: HORZ.: 1"=4' VERT.: 1"=4'
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 20 10 0 20

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TOWN OF SOUTHWICK
STREAM PROFILE & CROSS SECTION
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 05/07/2020

C1.42

File Path: J:\DWG\P2017\0390\G11\Civil\Plan\20170390G11_PRO01.dwg Layout: C1.42 Plotted: Fri, June 12, 2020 - 6:26 PM User: mtrombley
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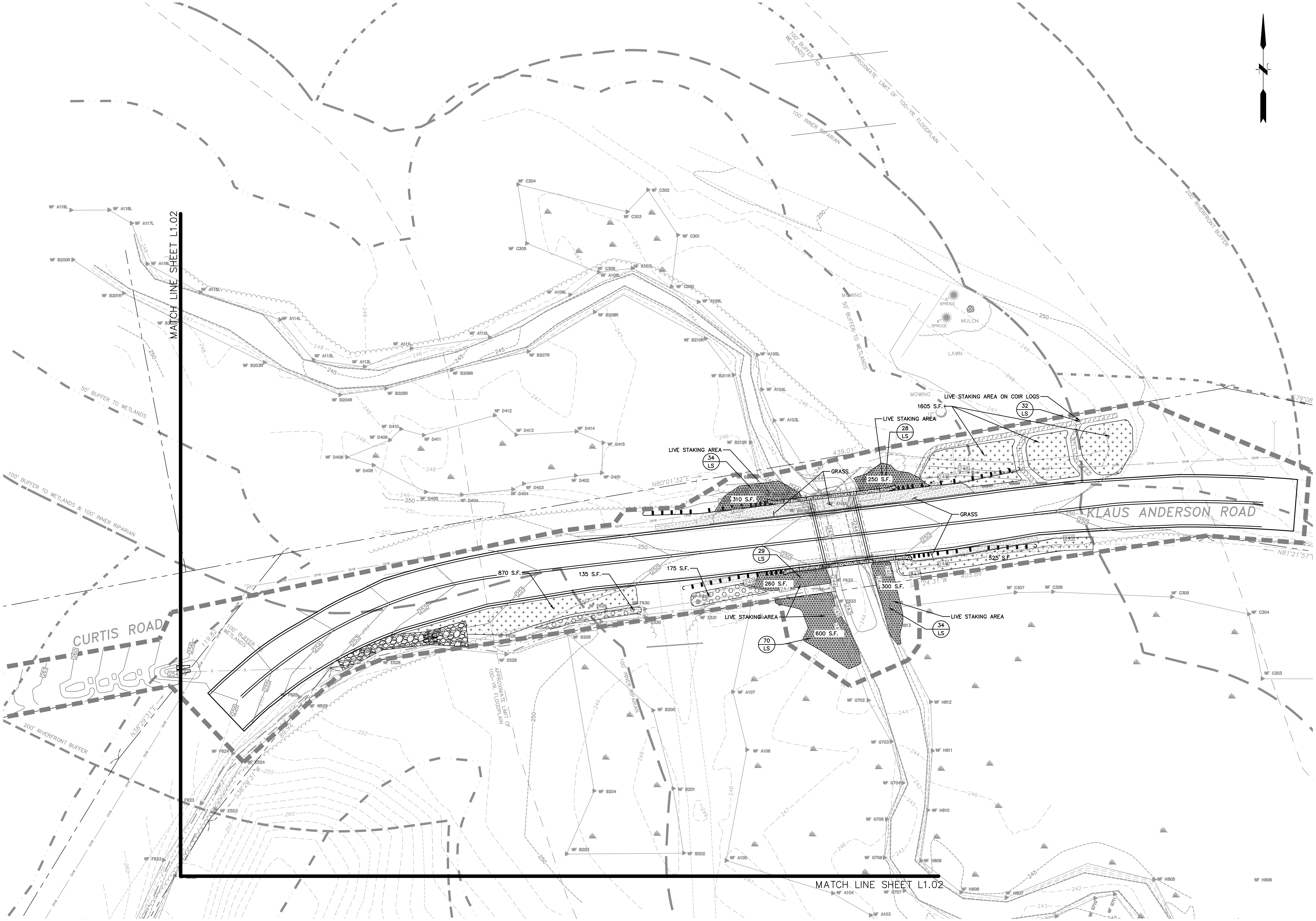

REFER TO SHEET L1.03 FOR PLANT LIST AND LEGEND

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 45477
06/23/2020

SCALE: HORZ.: 1" = 20'
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DATUM: HORZ.:
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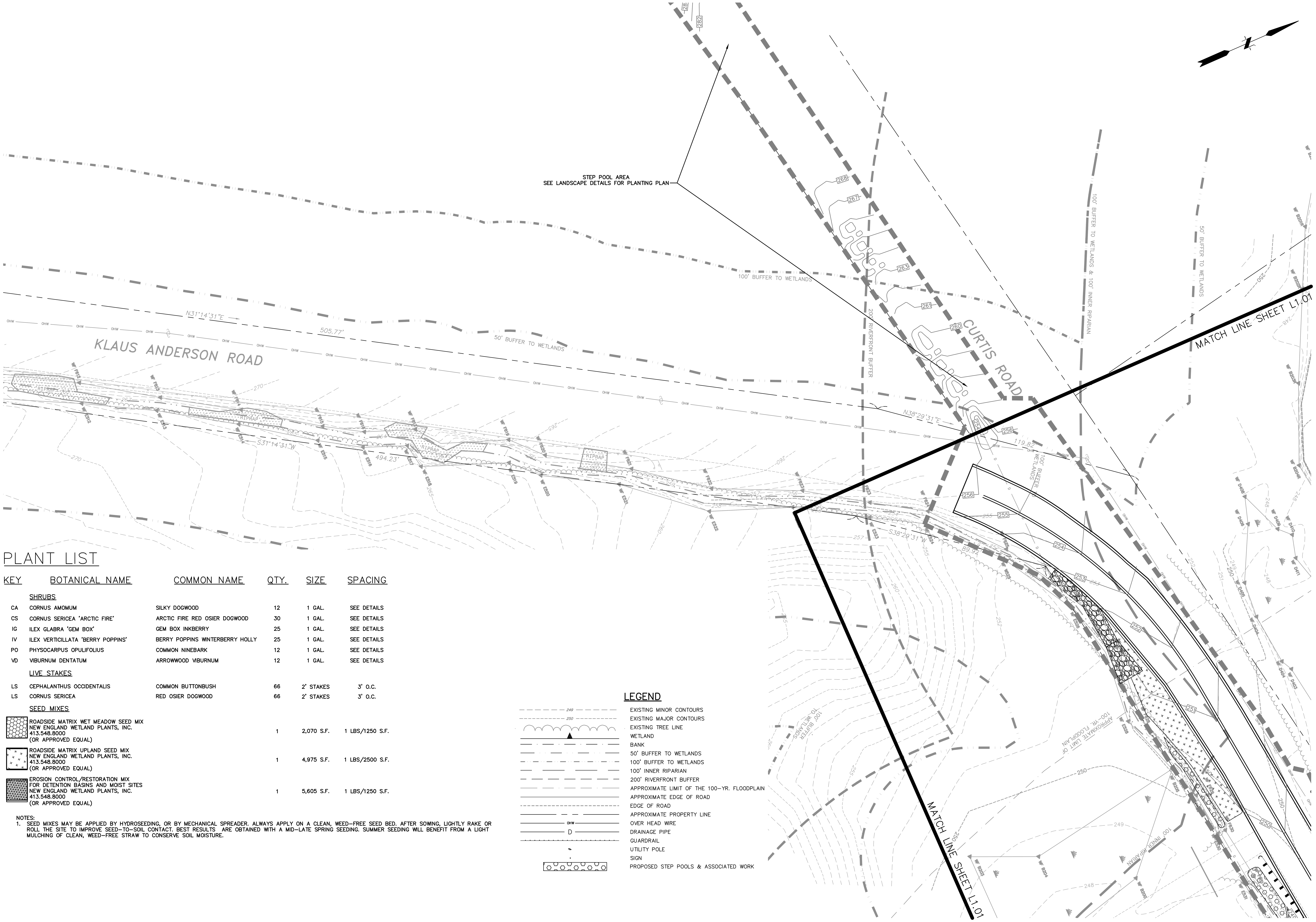
TOWN OF SOUTHWICK
SITE LANDSCAPE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/02/2020

L1.01



PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING
	SHRUBS				
CA	CORNUS AMOMUM	SILKY DOGWOOD	12	1 GAL.	SEE DETAILS
CS	CORNUS SERICEA 'ARCTIC FIRE'	ARCTIC FIRE RED OSIER DOGWOOD	30	1 GAL.	SEE DETAILS
IG	ILEX GLABRA 'GEM BOX'	GEM BOX INKBERRY	25	1 GAL.	SEE DETAILS
IV	ILEX VERTICILLATA 'BERRY POPPINS'	BERRY POPPINS WINTERBERRY HOLLY	25	1 GAL.	SEE DETAILS
PO	PHYSOCARPUS OPULIFOLIUS	COMMON NINEBARK	12	1 GAL.	SEE DETAILS
VD	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	12	1 GAL.	SEE DETAILS
	LIVE STAKES				
LS	CEPHALANTHUS OCCIDENTALIS	COMMON BUTTONBUSH	66	2' STAKES	3' O.C.
LS	CORNUS SERICEA	RED OSIER DOGWOOD	66	2' STAKES	3' O.C.
	SEED MIXES				
	ROADSIDE MATRIX WET MEADOW SEED MIX NEW ENGLAND WETLAND PLANTS, INC. 413.548.8000 (OR APPROVED EQUAL)		1	2,070 S.F.	1 LBS/1250 S.F.
	ROADSIDE MATRIX UPLAND SEED MIX NEW ENGLAND WETLAND PLANTS, INC. 413.548.8000 (OR APPROVED EQUAL)		1	4,975 S.F.	1 LBS/2500 S.F.
	EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES NEW ENGLAND WETLAND PLANTS, INC. 413.548.8000 (OR APPROVED EQUAL)		1	5,605 S.F.	1 LBS/1250 S.F.

NOTES:
1. SEED MIXES MAY BE APPLIED BY HYDROSEEDING, OR BY MECHANICAL SPREADER. ALWAYS APPLY ON A CLEAN, WEED-FREE SEED BED. AFTER SOWING, LIGHTLY RAKE OR ROLL THE SITE TO IMPROVE SEED-TO-SOIL CONTACT. BEST RESULTS ARE OBTAINED WITH A MID-LATE SPRING SEEDING. SUMMER SEEDING WILL BENEFIT FROM A LIGHT MULCHING OF CLEAN, WEED-FREE STRAW TO CONSERVE SOIL MOISTURE.

LEGEND

- 249 — EXISTING MINOR CONTOURS
- 250 — EXISTING MAJOR CONTOURS
- EXISTING TREE LINE
- WETLAND
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF THE 100-YR. FLOODPLAIN
- APPROXIMATE EDGE OF ROAD
- EDGE OF ROAD
- APPROXIMATE PROPERTY LINE
- OHW — OVER HEAD WIRE
- D — DRAINAGE PIPE
- GUARDRAIL
- UTILITY POLE
- SIGN
- PROPOSED STEP POOLS & ASSOCIATED WORK

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
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06/23/2020

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VERT.:
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TOWN OF SOUTHWICK

SITE LANDSCAPE PLAN

JOHNSON BROOK RESTORATION

SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/02/2020

L1.02

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EROSION & SEDIMENT CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO STUMP REMOVAL AND CONSTRUCTION. STABILIZATION OF ALL REGRADED AND SOIL STOCKPILE AREAS WILL BE INITIATED AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.

2. SEDIMENT REMOVED FROM EROSION CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS PLAN. ALL STRAW BALES OR SILT FENCE RETAINING SEDIMENT OVER 6" HIGH SHALL HAVE THE SEDIMENT REMOVED AND ALL DAMAGED EROSION CONTROLS REMOVED AND REPLACED.

3. THE CONTRACTOR WILL BE ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER TOWN AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY. THE OWNER SHALL BE RESPONSIBLE FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

4. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST AND WIND EROSION THROUGHOUT THE LIFE OF HIS CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, SPRINKLING OF WATER ON EXPOSED SOILS AND HAUL ROADS. CONTRACTOR SHALL CONTROL DUST TO PREVENT A HAZARD TO TRAFFIC ON ADJACENT ROADWAYS.

5. IF FINAL GRADING IS TO BE DELAYED FOR MORE THAN THIRTY (30) DAYS AFTER LAND DISTURBANCES CEASE, TEMPORARY VEGETATION OR MULCH SHALL BE USED TO STABILIZE SOILS. OUTSIDE OF THE GROWING SEASON, ONLY WOOD MULCH SHALL BE USED.

6. STRAW BALES SHALL BE USED ONLY AS A TEMPORARY MEASURE. WHERE CONTROL MEASURES WILL BE REQUIRED FOR LONGER THAN SIXTY (60) DAYS, FILTER FABRIC SHALL BE USED.

7. CONTRACTOR SHALL SUBMIT A DETAILED DEWATERING PHASING PLAN FOR REVIEW AND APPROVAL, PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBING ACTIVITIES.

8. WHERE DEWATERING IS NECESSARY, THERE SHALL NOT BE A DISCHARGE DIRECTLY INTO WETLANDS OR WATERCOURSES. PROPER METHODS AND DEVICES SHALL BE UTILIZED TO THE EXTENT PERMITTED BY LAW, SUCH AS PUMPING WATER INTO A TEMPORARY SEDIMENTATION BASIN, PROVIDING SURGE PROTECTION AT THE INLET AND THE OUTLET OF PUMPS, FLOATING THE INTAKE OF THE PUMP, OR OTHER METHODS TO MINIMIZE AND RETAIN THE SUSPENDED SOLIDS. IF A PUMPING OPERATION IS CAUSING TURBIDITY PROBLEMS, SAID OPERATION SHALL CEASE UNTIL SUCH TIME AS FEASIBLE MEANS OF CONTROLLING TURBIDITY ARE DETERMINED AND IMPLEMENTED. THE CONTRACTOR MUST SUBMIT HIS DESIGN ALONG WITH THE LOCATIONS OF THE BASIN TO THE TOWN PRIOR TO CONSTRUCTION.

9. INSPECTION – A CERTIFIED PROFESSIONAL EROSION AND SEDIMENT CONTROL PERSONAL OR ENGINEER SHALL INSPECT ALL DISTURBED AREAS OF THE CONSTRUCTION ACTIVITY THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE EVERY WEEK AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.25 INCH OR GREATER. INSPECTION REPORTS SHALL BE SUBMITTED TO THE OWNER WEEKLY, AND TO THE INLAND WETLANDS AGENT AND THE PLANNING & ZONING COMMISSION MONTHLY. WHERE SITES HAVE BEEN FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH FOR THREE MONTHS. CONTROLS SHALL BE CLEANED, REPAIRED, AND OR REPLACED AS REQUIRED. ANY DAMAGED CONTROLS SHALL BE REPAIRED IMMEDIATELY.

10. PERFORM CONSTRUCTION SEQUENCING IN SUCH A MANNER TO CONTROL EROSION AND TO MINIMIZE THE TIME THAT EARTH MATERIALS ARE EXPOSED BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED.

OPERATION & MAINTENANCE PLAN DURING CONSTRUCTION

AN OPERATION AND MAINTENANCE (O&M) PLAN DURING CONSTRUCTION FOR STORMWATER CONTROLS IS DESCRIBED AS FOLLOWS:

1. OWNER SHALL BE RESPONSIBLE FOR ALL OPERATION AND MAINTENANCE OF THE SITE.

2. NO EARTHWORK ACTIVITIES SHALL COMMENCE UNTIL SILT FENCE HAS BEEN INSTALLED. SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS.

3. AREAS LEFT EXPOSED TO EROSION FOR MORE THAN SEVEN DAYS SHALL BE ROUGH GRADED AND TEMPORARILY STABILIZED. AREAS DISTURBED BUT INACTIVE FOR MORE THAN THIRTY DAYS SHALL BE TEMPORARILY SEEDED.

4. BIODEGRADABLE EROSION CONTROL MATTING 3:1.

5. EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED UNTIL SUCCESSFUL ESTABLISHMENT OF GROUND COVER.

6. NO STAGING OF MATERIALS OR LAY DOWN AREAS SHALL BE LOCATED WITHIN ANY BORDERING VEGETATED WETLAND OR BANK AREAS.

7. PAVED AREAS SHALL BE KEPT FREE OF SEDIMENT, AND SHALL BE CLEANED PERIODICALLY AS REQUIRED BY CONSTRUCTION ACTIVITIES.

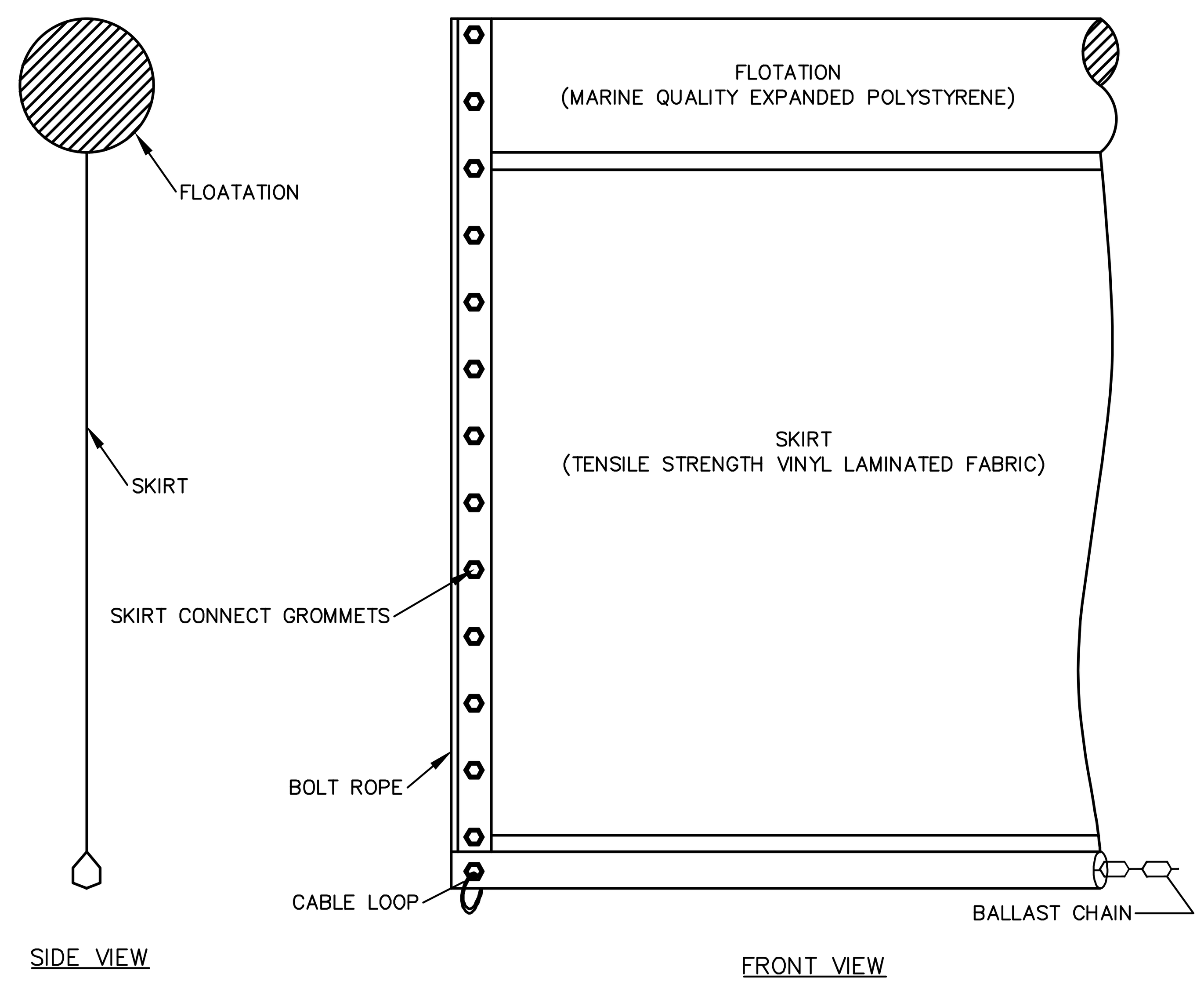
8. CATCH BASINS SHALL BE PERIODICALLY INSPECTED FOR THE ACCUMULATION OF SEDIMENT. ALL CATCH BASINS WITHIN THE PROJECT SHALL BE CLEANED AT THE END OF THE PROJECT.

9. TEMPORARY SOIL STOCKPILES SHALL BE LOCATED WITHIN AREAS CONSISTING OF FORMERLY PAVED OR DEVELOPED SURFACES AND WILL BE MOVED AS NECESSARY TO ACCOMMODATE ONGOING WORK.

10. SEDIMENT STOCKPILES SHALL HAVE A SIDE SLOPE OF NO GREATER THAN 2:1. ALL STOCKPILES SHALL BE ROUGH GRADED OR MAINTAIN A ROUGHENED SURFACE TO PREVENT EROSION. STOCKPILES THAT ARE NOT TO BE USED WITHIN 7 DAYS SHALL BE SEEDED AFTER FORMATION OF STOCKPILE AS TO PREVENT EROSION. A STRAW BALE AND SILT FENCE BARRIER SHALL BE INSTALLED AROUND STOCKPILE AREA APPROXIMATELY 10 FEET FROM TOE OF SLOPE.

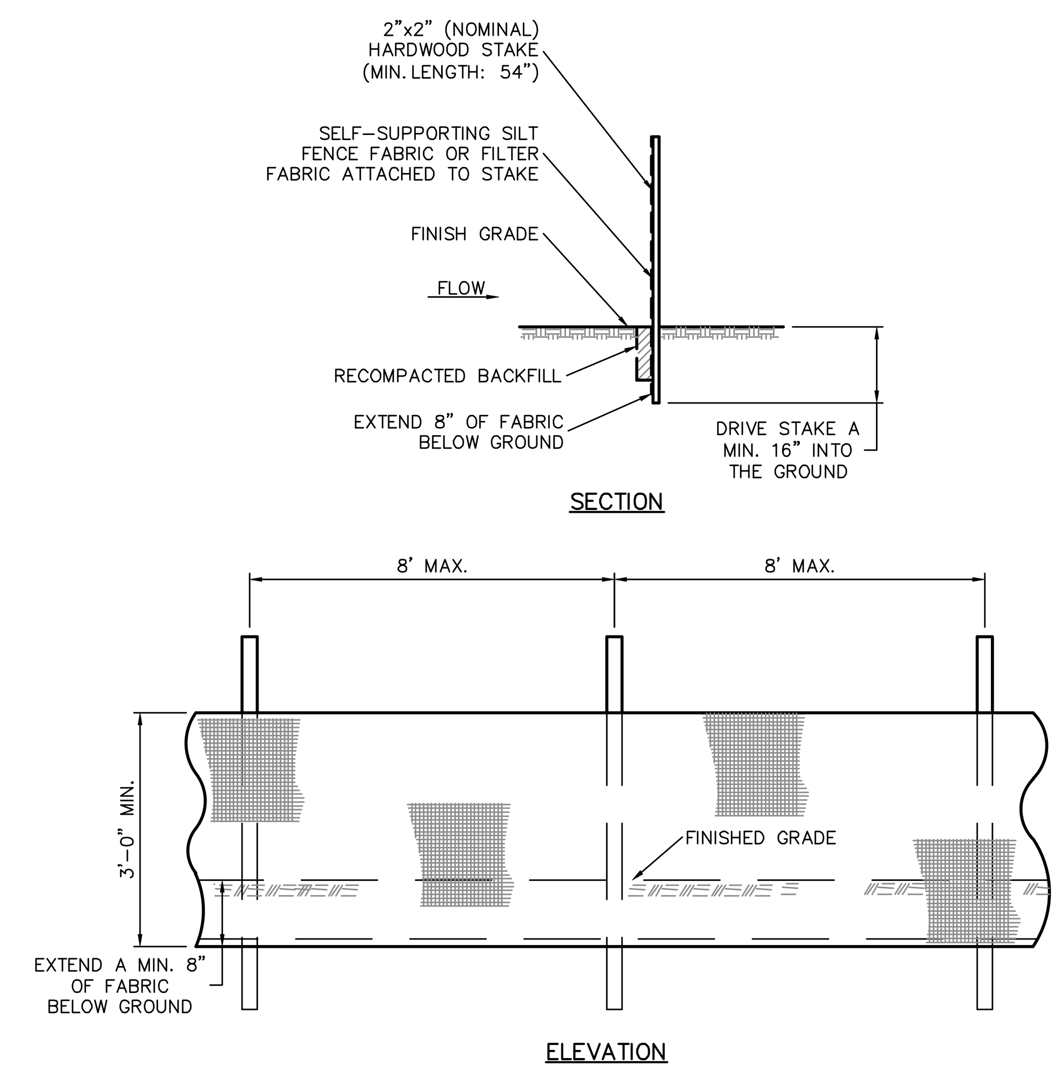
11. THE CONTRACTOR IS RESPONSIBLE TO INSPECT AND REPAIR EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED TO PREVENT DAMAGE OR SEDIMENTATION.

12. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROL MEASURES. CLEAN SEDIMENT AND DEBRIS FROM TEMPORARY MEASURES AND FROM PERMANENT STORM DRAINAGE SYSTEMS.



TURBIDITY CURTAIN DETAIL

SCALE: N.T.S.



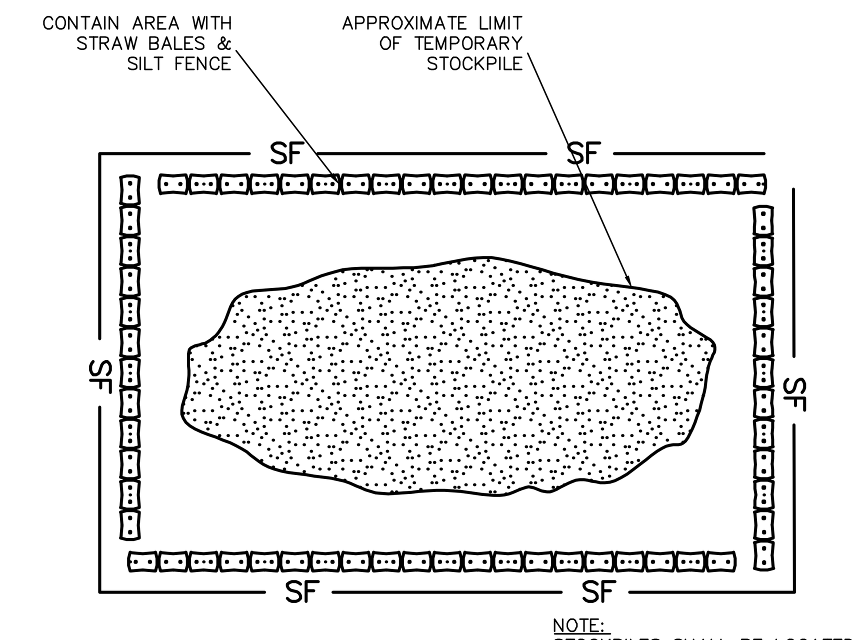
SILT FENCE NOTES:

1.) INSTALL SILT FENCE & WOOD STAKES AS RECOMMENDED BY MANUFACTURER.

2.) SYNTHETIC FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE FILAMENTS AND SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE SPECIFICATIONS.

SILT FENCE

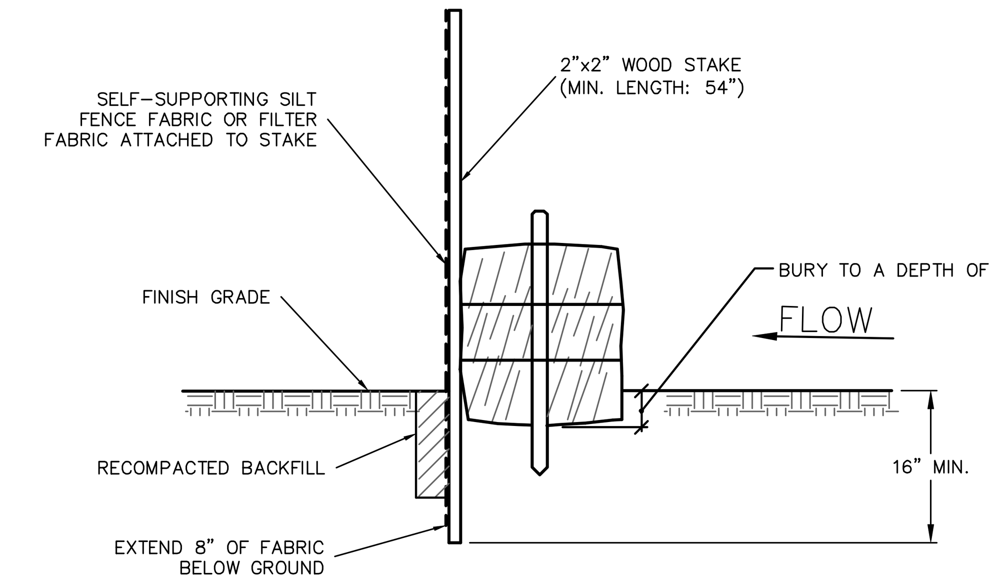
SCALE: N.T.S.



NOTE:
STOCKPILES SHALL BE LOCATED WITHIN CONSTRUCTION FENCE LIMITS

TEMPORARY SOIL STOCKPILE

SCALE: N.T.S.



SILT FENCE BACKED W/ STRAW BALES

SCALE: N.T.S.

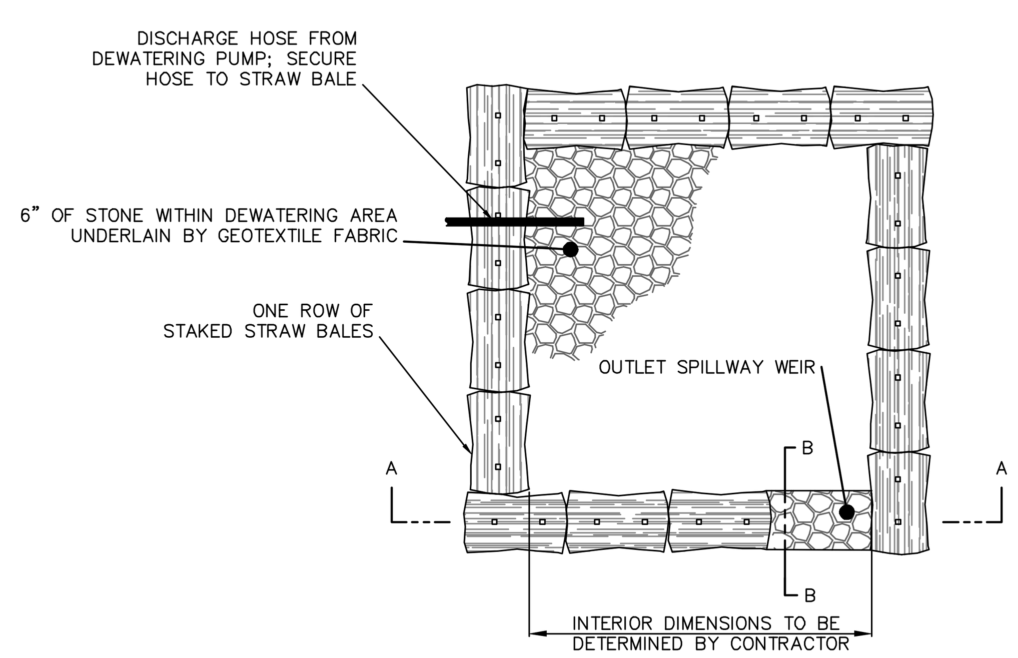
POST-CONSTRUCTION OPERATION & MAINTENANCE

1) STEP POOLS

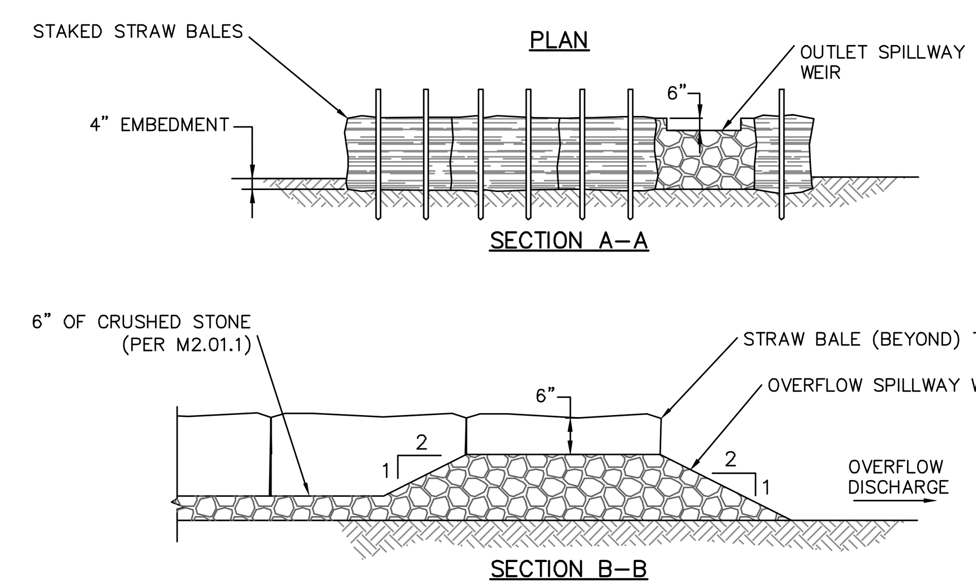
A) INSPECT FOR PLANT SURVIVAL AND PROVIDE TEMPORARY IRRIGATION AS NEEDED UNTIL PLANTS MATURE
B) INSPECT AFTER EVERY RAINFALL EVENT IN THE FIRST SIX MONTHS; INSPECT SEMI-ANNUALLY AND AFTER SIGNIFICANT RAIN EVENTS (E.G. >0.5 INCH) THEREAFTER.
I) INSPECT FOR EVIDENCE OF EROSION; RESTORE AS NECESSARY. UTILIZE ORIGINAL DESIGN MATERIAL AND VEGETATION
II) INSPECT INFLOW FOR CLOGGING AND REMOVE ANY SEDIMENT AND/OR DEBRIS
III) FOR STEP POOLS, CHECK THAT OUTFLOWS FROM EACH POOL ARE IN GOOD CONDITION AND DEVOID OF EROSION OR BLOCKAGES; REPAIR AS NECESSARY
IV) CHECK THAT POOLS DEWATER WITHIN 48 HOURS AFTER STORMS
V) CHECK STRUCTURAL STABILITY OF WEIRS, RIFFLES, POOLS, COIR BERMS
VI) REMOVE ACCUMULATED SEDIMENT EACH SPRING
VII) ENSURE THAT SURROUNDING DRAINAGE AREA IS STABLE AND FREE OF SEDIMENT AND DEBRIS
VIII) INSPECT FOR PLANT HEALTH/SURVIVAL AND REPLACE DEAD OR DYING VEGETATION TO MAINTAIN PERCENT COVER AS DESIGNED IN SITE PLANS. DEVELOP A REINFORCEMENT PLANTING PLAN IF THE VEGETATION GENERATES A VEGETATIVE COVER OF LESS THAN 50% WITHIN THE FIRST TWO YEARS OF OPERATION.
C) IN SPRING: CUT BACK AND REMOVE PREVIOUS YEAR'S PLANT MATERIAL AND ACCUMULATED LEAVES
D) AS NEEDED AFTER FIRST YEAR OF MAINTENANCE:
I) PRUNE AND WEED TO MAINTAIN APPEARANCE
II) REMOVE TRASH AND DEBRIS
III) REPAIR ANY STRUCTURAL DAMAGE TO WEIRS, RIFFLES, POOLS, OR TIE-IN TO DOWNSTREAM CHANNEL
IV) DO NOT DUMP OR STORE SNOW IN THE STRUCTURE.

2) ROAD-STREAM CROSSING

A) INSPECT FOR PLANT SURVIVAL AND PROVIDE TEMPORARY IRRIGATION AS NEEDED UNTIL PLANTS MATURE
B) INSPECT AFTER EVERY RAINFALL EVENT IN THE FIRST SIX MONTHS; INSPECT SEMI-ANNUALLY AND AFTER SIGNIFICANT RAIN EVENTS (E.G. >0.5 INCH) THEREAFTER.
I) CHECK FOR SCOUR OR EXCESSIVE EROSION OF STREAMBANKS AND STREAM CROSSINGS. REPAIR TO MATCH ORIGINAL GRADES AS NECESSARY. UTILIZE ORIGINAL DESIGN MATERIAL
II) REMOVE DEBRIS THAT COULD CAUSE DAMAGE TO THE STRUCTURE OR ANY BLOCKAGES THAT ARE ALTERING THE FLOW IN A MANNER THAT MAY DAMAGE THE STRUCTURE OR CAUSE BANK EROSION.
III) REPAIR DAMAGE CAUSED BY VEHICLES, EROSION, WILDLIFE, ETC. THAT AFFECT THE INTEGRITY OF THE STRUCTURE OR ADJACENT STREAMBANKS.
IV) INSPECT FOR PLANT HEALTH/SURVIVAL AND REPLACE DEAD OR DYING NATIVE VEGETATION TO MAINTAIN PERCENT COVER AS DESIGNED IN SITE PLANS. DEVELOP A REINFORCEMENT PLANTING PLAN IF THE VEGETATION GENERATES A VEGETATIVE COVER OF LESS THAN 50% WITHIN THE FIRST TWO YEARS OF OPERATION.
C) CONDUCT AN ANNUAL VISUAL INSPECTION OF THE STRUCTURE; FOLLOW-UP ON ANY DEFICIENCIES NOTED BY THE TOWN OR BY MASSDOT INSPECTIONS
D) REMOVE BURROWING ANIMALS IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.
E) DO NOT APPLY FERTILIZER.
F) IMPLEMENT LOW-IMPACT PEST MANAGEMENT CONTROLS IF PEST-CONTROL IS NECESSARY. EXAMPLES INCLUDE REMOVAL BY HAND, VACUUM, OR SPRAYING WATER.
G) DO NOT DUMP OR STORE SNOW WITHIN THE STRUCTURE.
H) DO NOT DRIVE VEHICLES AND HEAVY CONSTRUCTION EQUIPMENT INTO THE STRUCTURE.
I) DO NOT OBSTRUCT ACCESS TO AND AROUND THE INFRASTRUCTURE. ACCESS IS REQUIRED FOR MAINTENANCE PURPOSES.



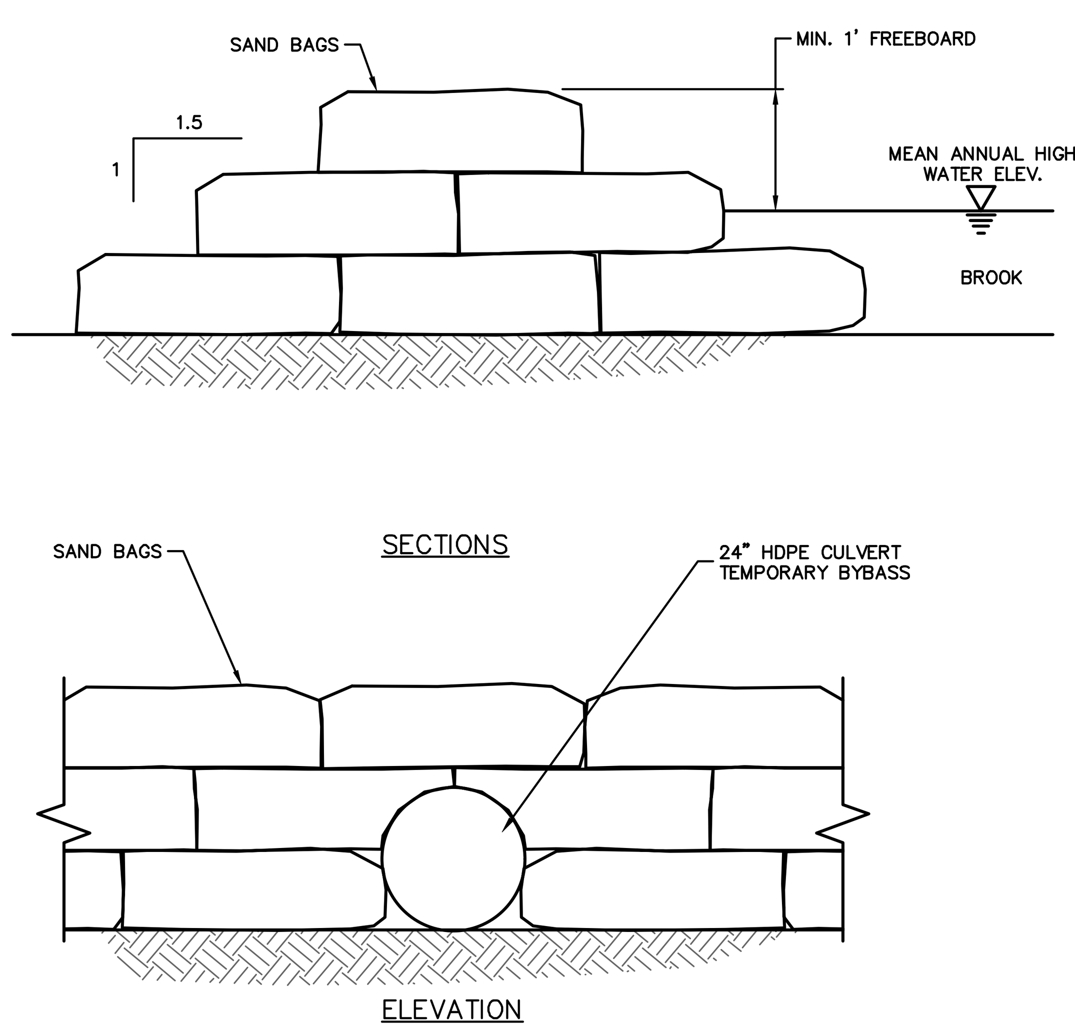
SIZING FORMULA:
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16



NOTES:
1. STRAW BALES FOR EROSION CONTROL SHALL CONFORM TO SECTION 767 OF THE STANDARD SPECIFICATIONS INCLUDING MATERIALS AND CONSTRUCTION METHODS.
2. BALES OF STRAW SHALL BE FASTENED WITH WIRE AND HAVE A MINIMUM SIZE OF 1'x1.5'x3'.
3. STONE SHALL CONSIST OF 1-1/2 INCH STONE CONFORMING TO SUBSECTION M2.01.1 OF THE STANDARD SPECIFICATIONS.
4. FILTER FABRIC SHALL CONFORM TO A TYPE I FABRIC AS INCLUDED WITHIN SECTION M9.50.0 OF THE STANDARD SPECIFICATIONS.

CONSTRUCTION DEWATERING DISCHARGE SETTLING BASIN

SCALE: N.T.S.



TEMPORARY COFFER DAM

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SOUTHWICK MASSACHUSETTS

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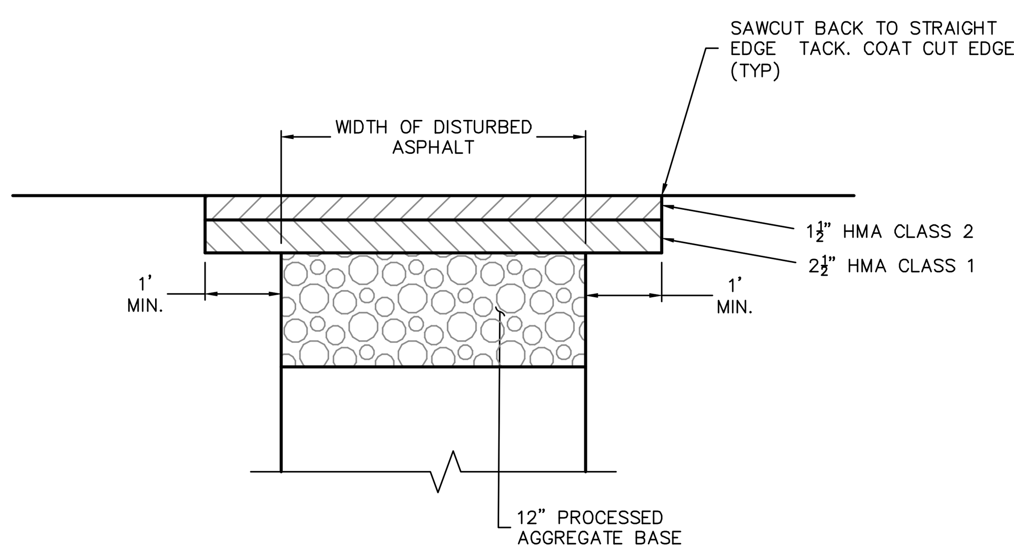
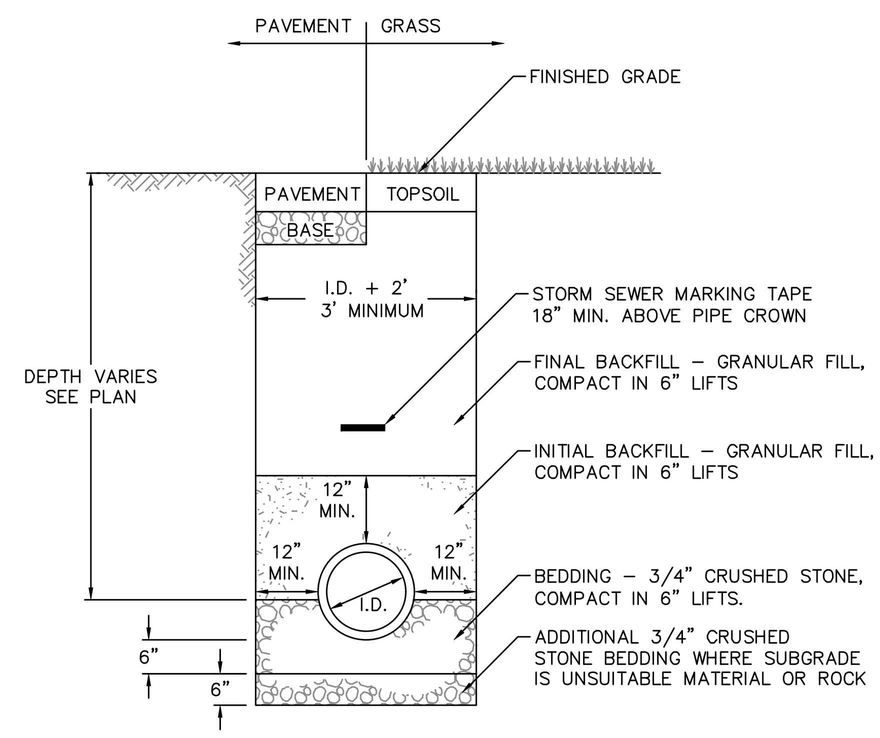
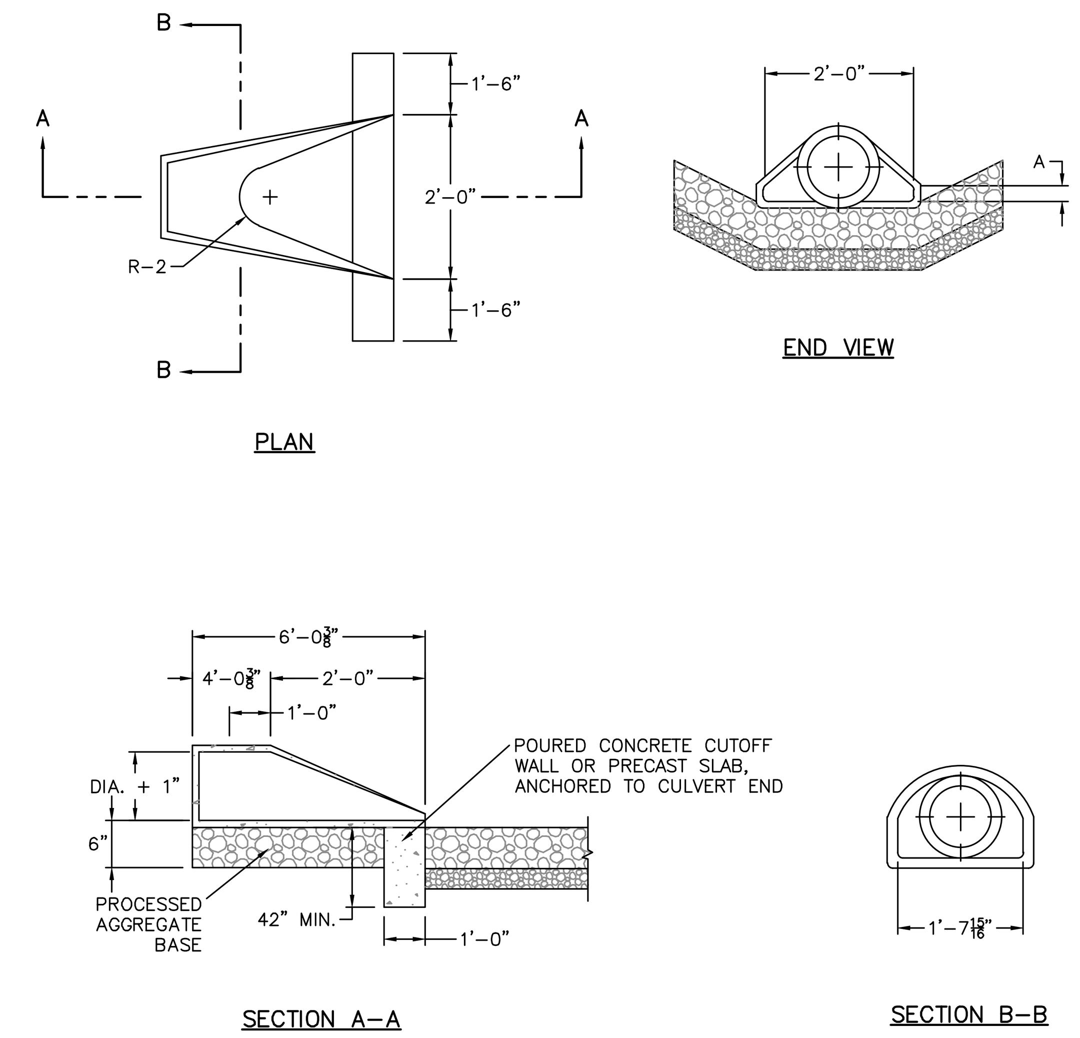


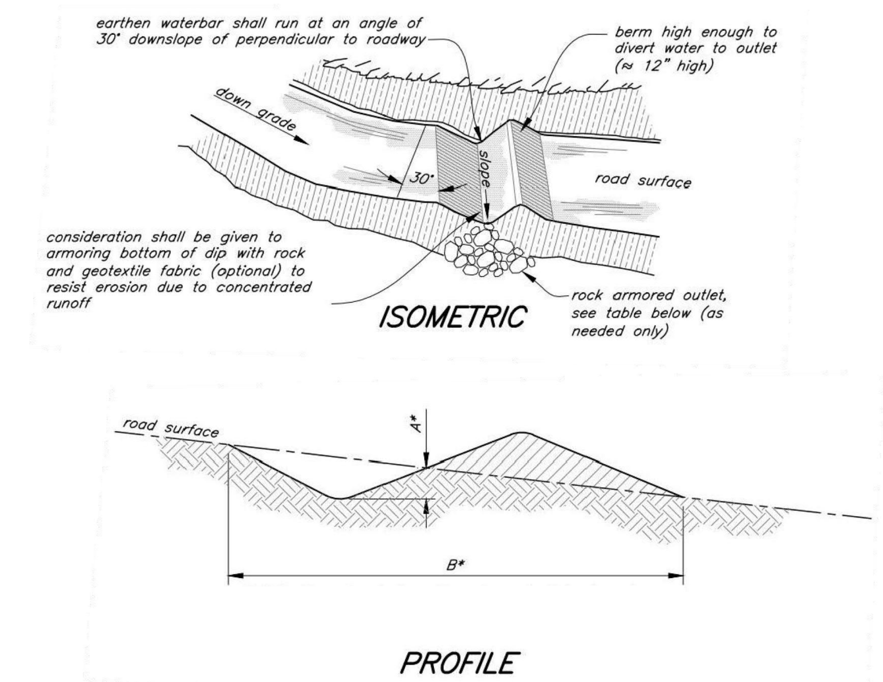
FULL DEPTH PAVEMENT RECONSTRUCTION
SCALE: N.T.S.



STORMWATER DRAINAGE TRENCH
SCALE: N.T.S.



CONCRETE CULVERT FLARED END
SCALE: N.T.S.

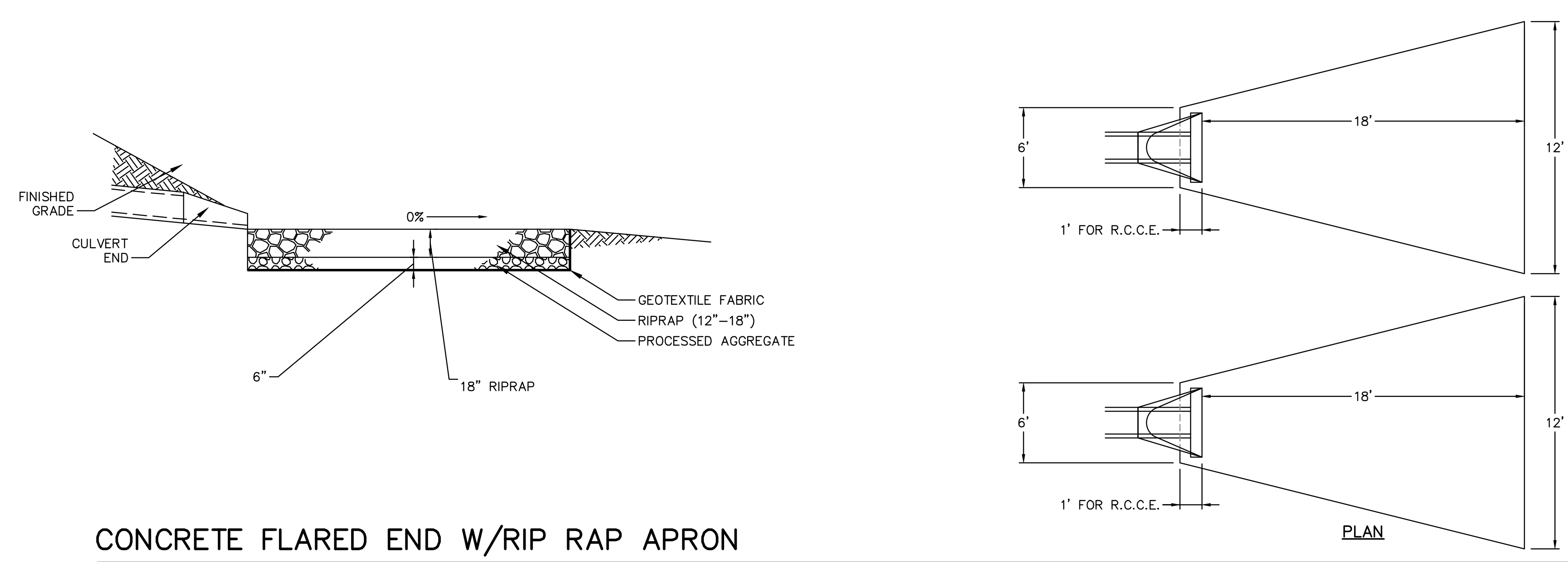


DIMENSIONS	
A	12"
B	12"

NOTES

1. INSTALL WATERBARS AT 200' MAXIMUM SPACING FOR ENTIRE LENGTH OF DRIVE. INSTALL ADDITIONAL WATERBARS AS NEEDED.
2. ARMOR ROCK SHALL BE 12" THICK NSA R-3 (D50=6") STONE INSTALLED WITH FS-2 FILTER STONE BASE. ROCK ARMORED OUTLET SHALL BE EXTENDED 5' BEYOND FILL SLOPES.

WATERBAR
NOT TO SCALE



CONCRETE FLARED END W/RIP RAP APRON
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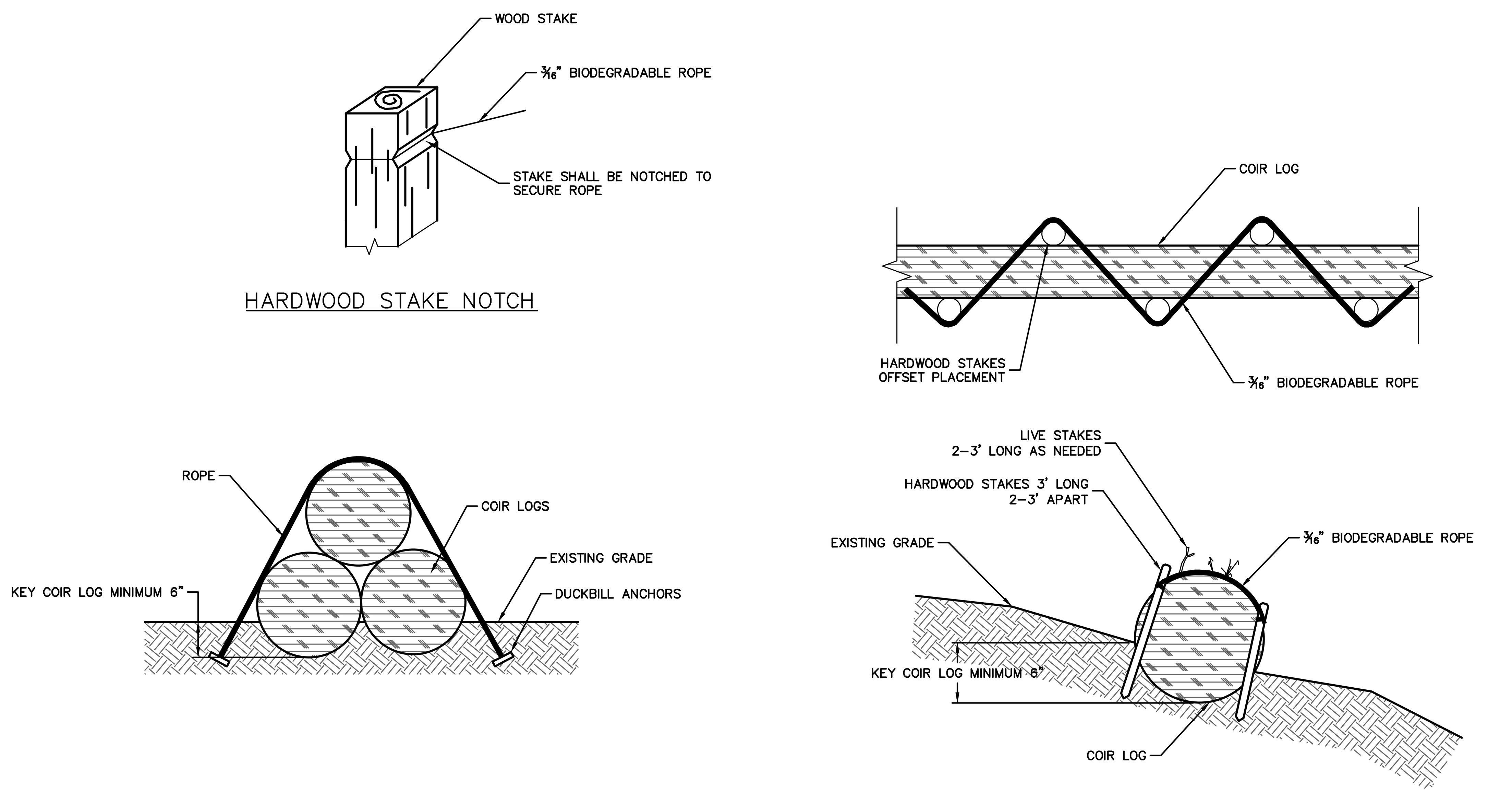
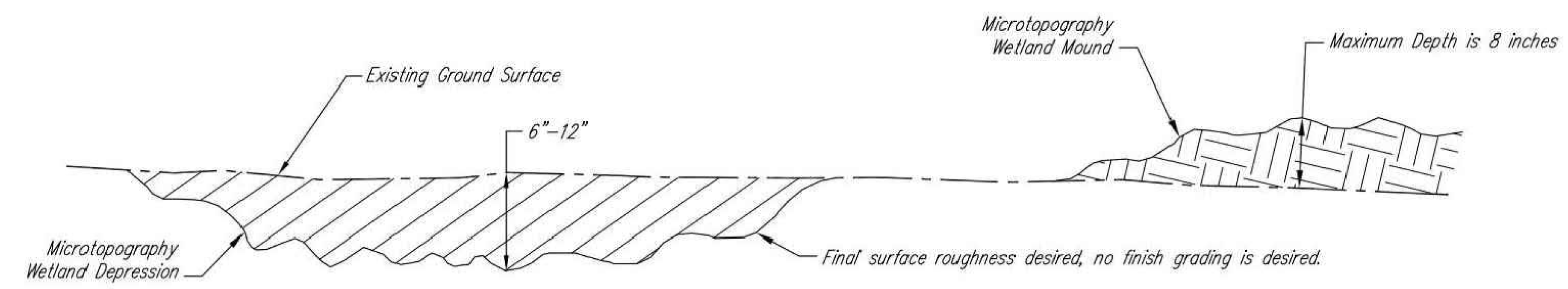


VEGETATED COIR LOG SYSTEM (FOR USE IN WEIR SYSTEM)

SCALE: N.T.S.

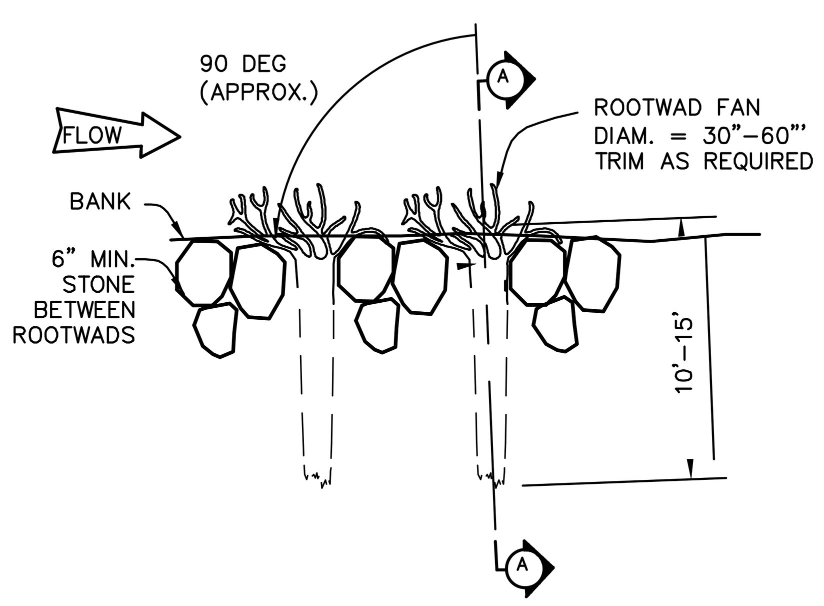


NOTES:

1. CUSTOMIZE SHAPES TO FIT EXISTING LANDSCAPE CONDITIONS IN A RANDOM ORDER. EXCAVATION AND MOUND AREAS ARE TO BE IRREGULAR IN SHAPE AND VARY IN DEPTH (SEE TYPICAL CROSS SECTION FOR EXAMPLE). LENGTH AND WIDTH RATIO OF DEPRESSION AND MOUND SHAPES SHALL NOT EXCEED 2:1.
2. MINIMUM TOPSOIL DEPTH IN AREAS FOR MICROTOPOGRAPHY SHALL BE 8 INCHES. WHERE THERE IS INSUFFICIENT TOPSOIL, SALVAGING AND SPREADING WILL BE REQUIRED TO ENSURE A MINIMUM LAYER OF 2 INCHES TOPSOIL THROUGHOUT THE DEPRESSION.
3. PROPOSED GRADING WITHIN JOHNSON BROOK AND ROADSIDE STREAM TO BE DONE IN ACCORDANCE WITH THIS DETAIL.

TYPICAL MICROTOPOGRAPHY CROSS SECTION

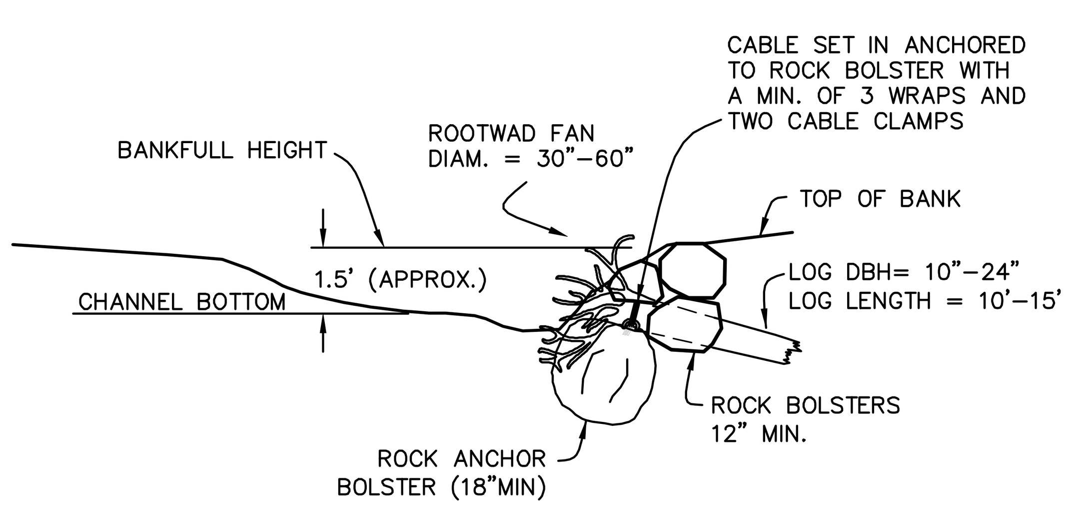
SCALE: N.T.S.



PLAN VIEW

NOTES:

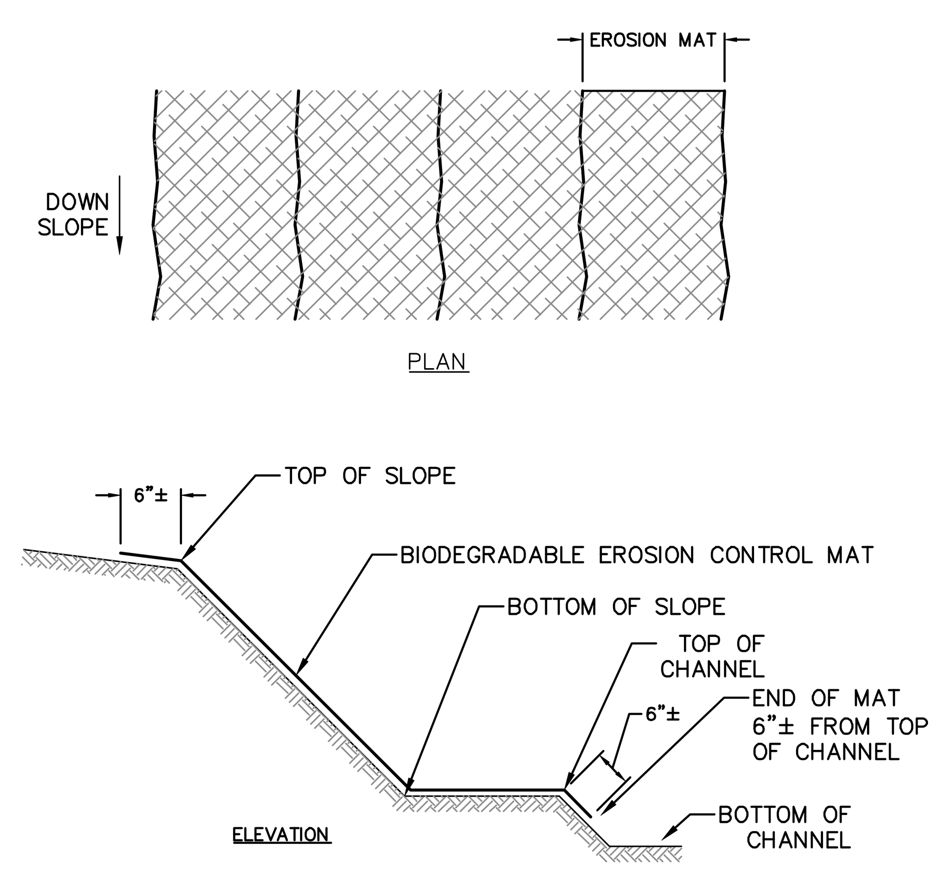
1. ROOTWAD TRUNKS SHALL BE BURRIED IN CHANNEL BANK WITH ONLY THE ROOTWAD FAN EXPOSED.
2. LOGS SHALL BE 10"-24" DIAMETER AT BREAST HEIGHT, 15' LONG WITH 30"-60"ø MIN. ROOTWAD FAN. EMBED LOGS INTO BANK.
3. MATERIAL EXCAVATED FROM EXISTING CHANNEL BANK SHALL BE BACKFILLED AND COMPACTED TO FORM A FIRM SURFACE.
4. ROOTWAD LOGS ARE TO BE PROCURED FROM ON SITE INVASIVE SPECIES AS SELECTED BY OWNER AND DESIGNER.



SECTION A

ROOTWAD REVETMENT

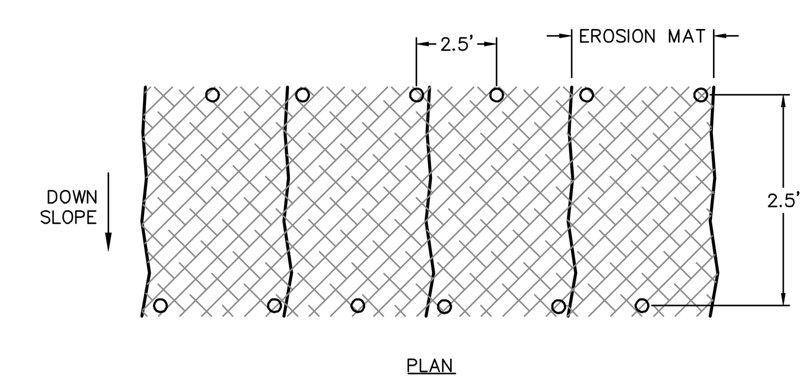
N.T.S.



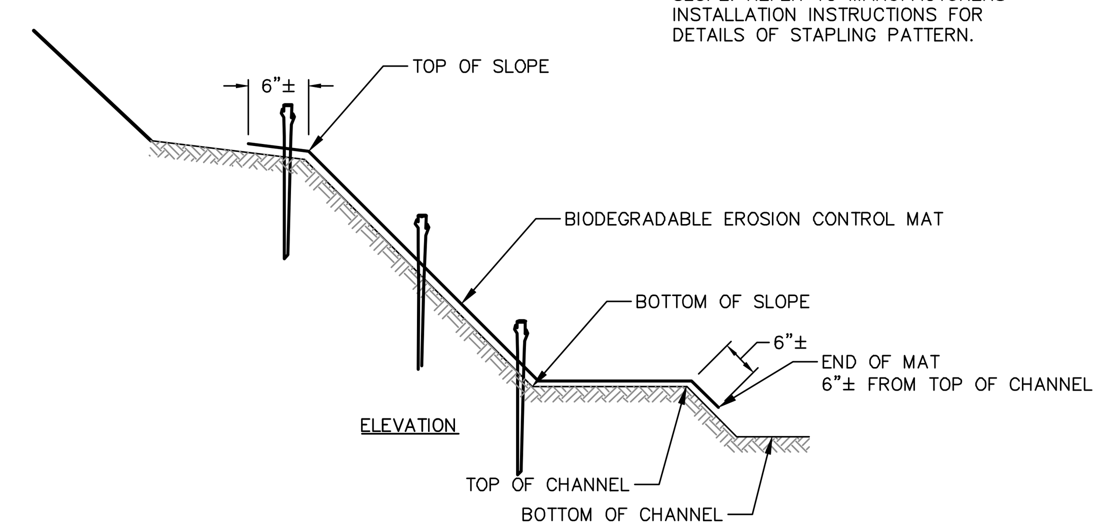
NOTE:
1. MATS SHALL BE STAPLED TO SLOPE. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR DETAILS OF STAPLING PATTERN.
2. BIODEGRADABLE EROSION CONTROL MAT SHALL BE ABLE TO WITHSTAND 10 FPS WATER VELOCITIES AND 4.46 PSF SHEAR STRESS. FABRIC EMBEDMENT 3.0 FT.
3. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR DETAILS ON INSTALLATION INCLUDING STAPLING PATTERN, OVERLAPPING DETAILS, EDGE EMBEDMENT, AND ANCHOR DETAILS. TO BE INSTALLED ON SLOPES 3:1 OR GREATER.

BIODEGRADABLE EROSION CONTROL MAT

SCALE: N.T.S.



NOTE:
MATS SHALL BE STAPLED TO SLOPE. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR DETAILS OF STAPLING PATTERN.



BIODEGRADABLE EROSION CONTROL MAT WITH LIVE STAKES (FOR SLOPES STEEPER THAN 3:1)

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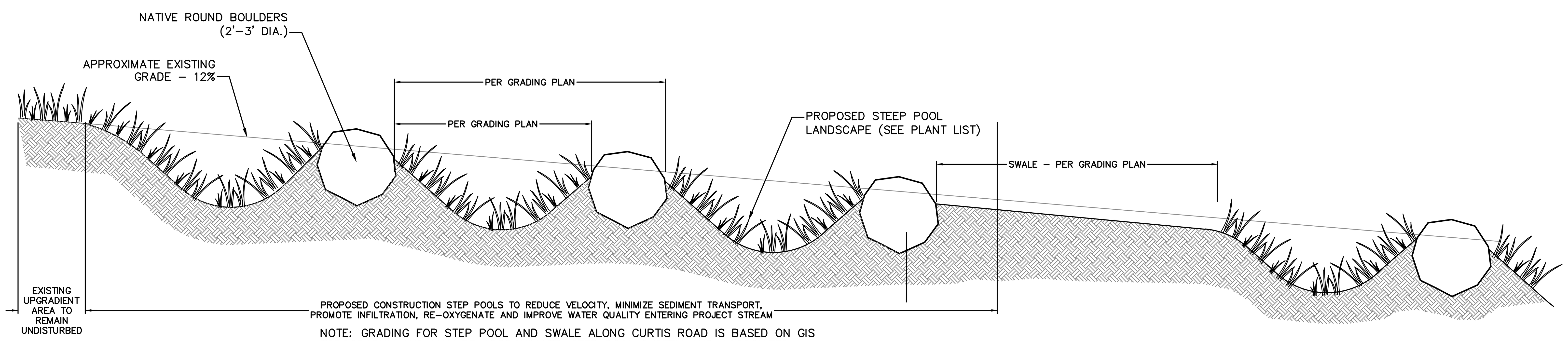
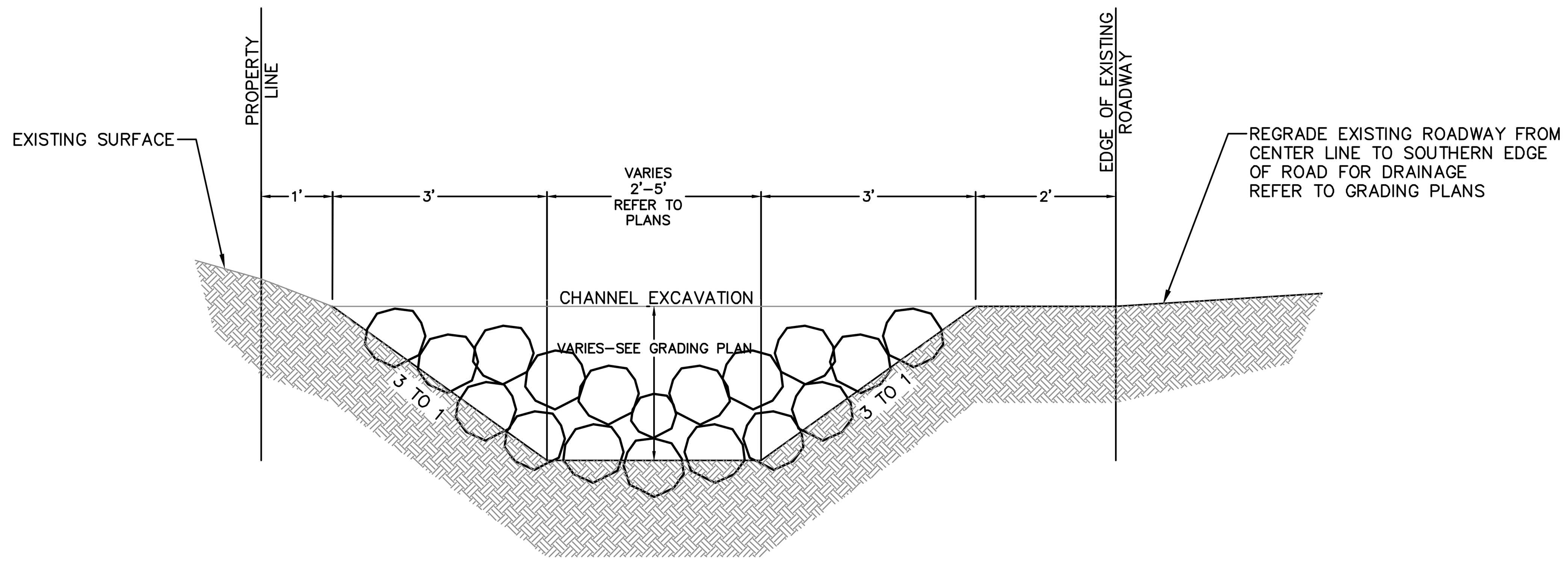
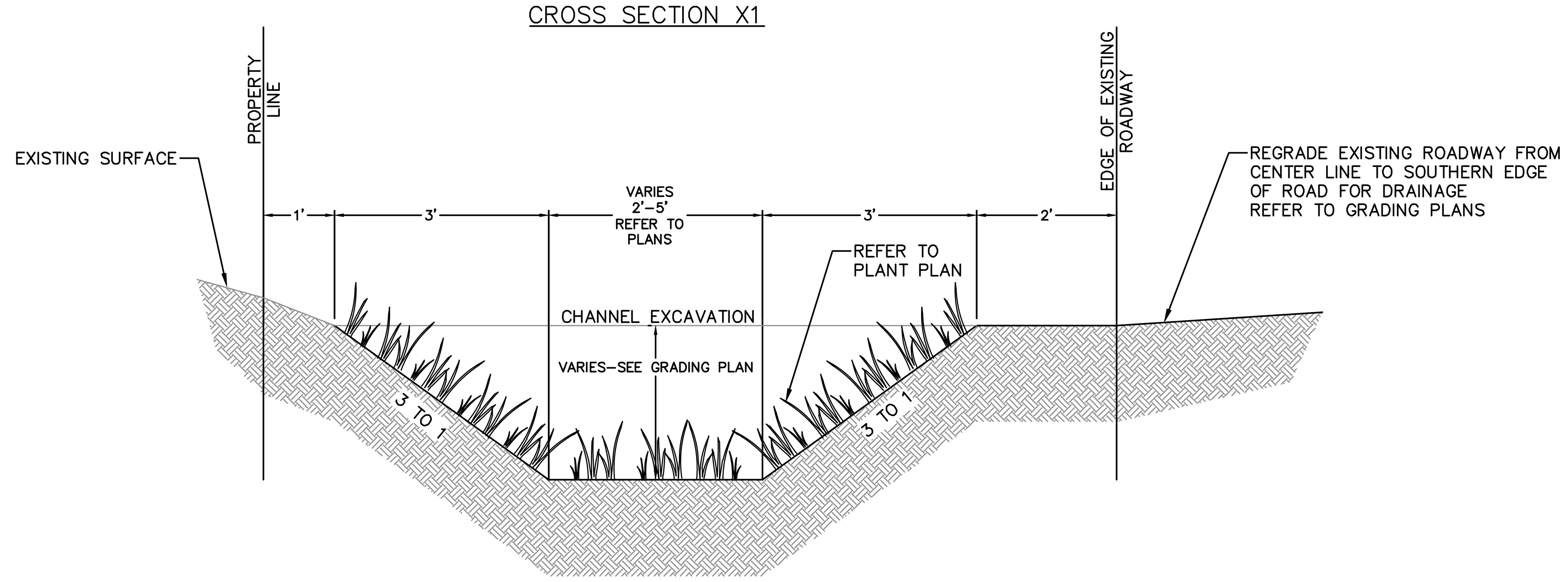


NOTE: GRADING FOR STEP POOL AND SWALE ALONG CURTIS ROAD IS BASED ON GIS TOPOGRAPHY AND MAY BE APPROXIMATE. STEP POOL SYSTEM AND ASSOCIATED GRADING TO BE REVISED TO MATCH FIELD CONDITIONS IF NECESSARY. COORDINATE WITH ENGINEER.

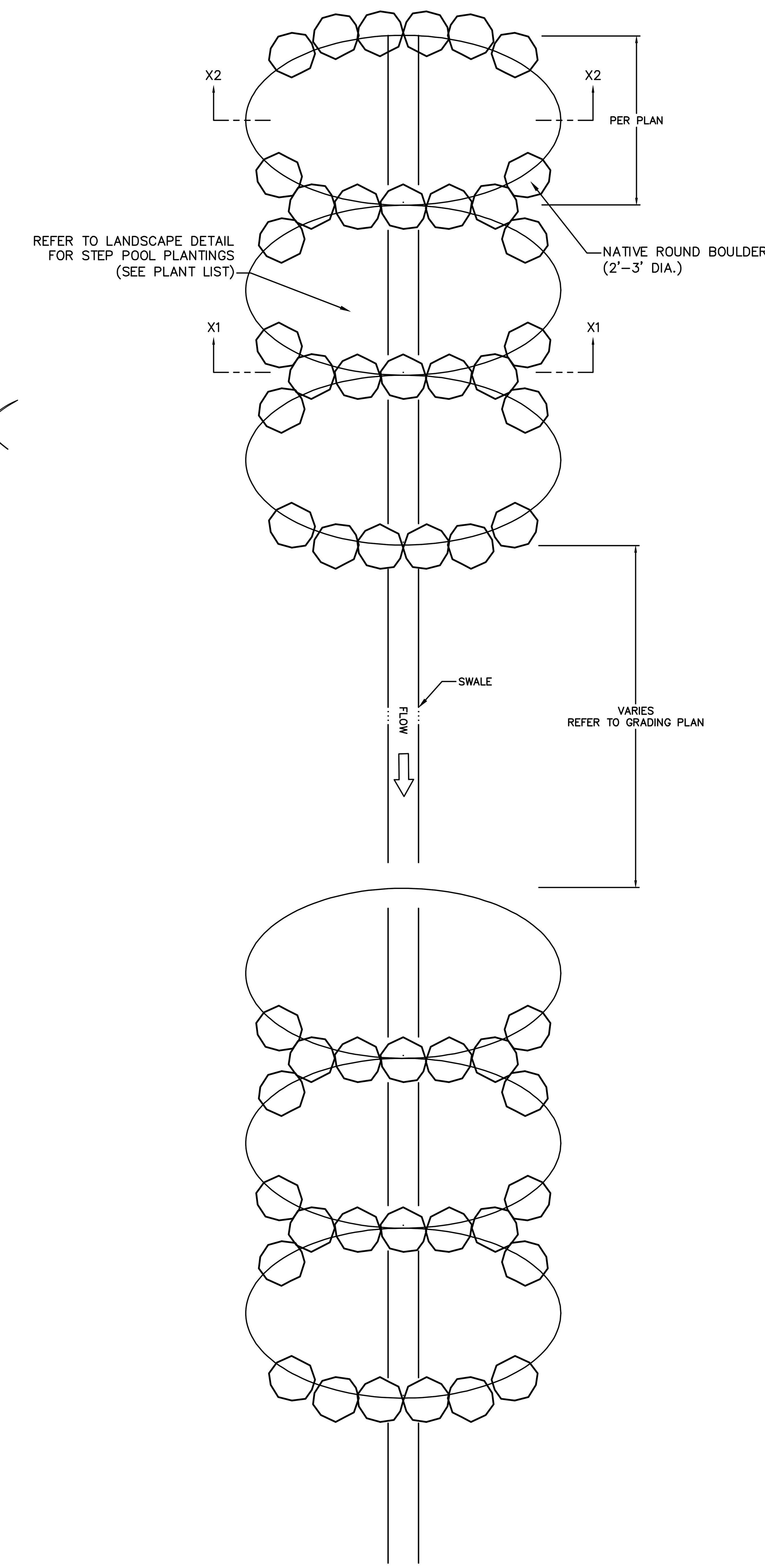
TYPICAL PROFILE



CROSS SECTION X1



CROSS SECTION X2



PLAN VIEW

STEP POOLS & ASSOCIATED IMPROVEMENTS – TYPICAL CROSS SECTION

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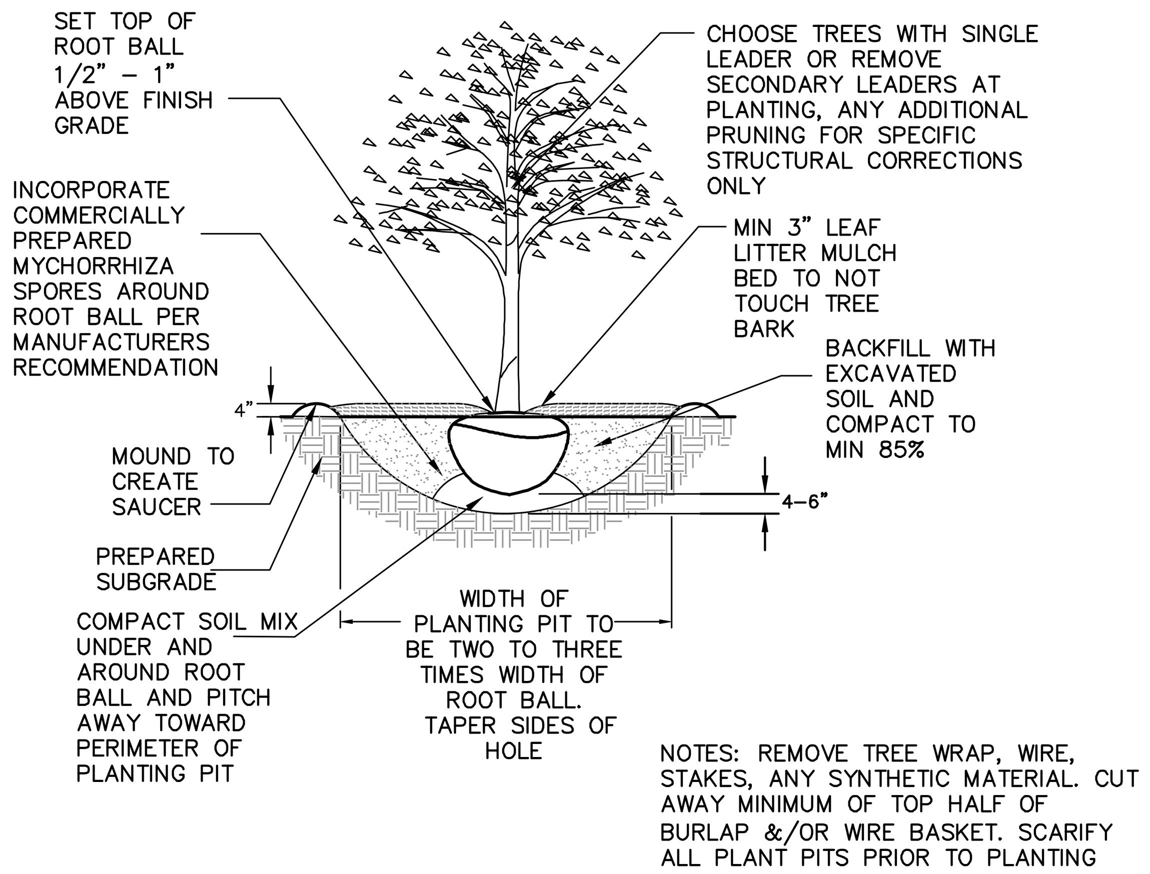
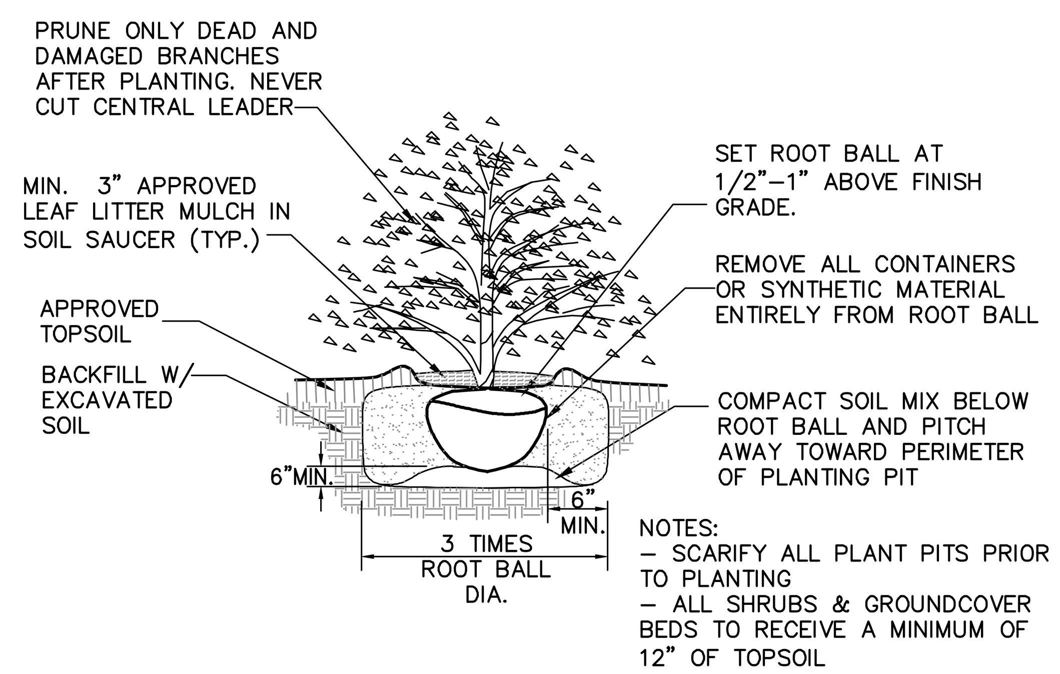
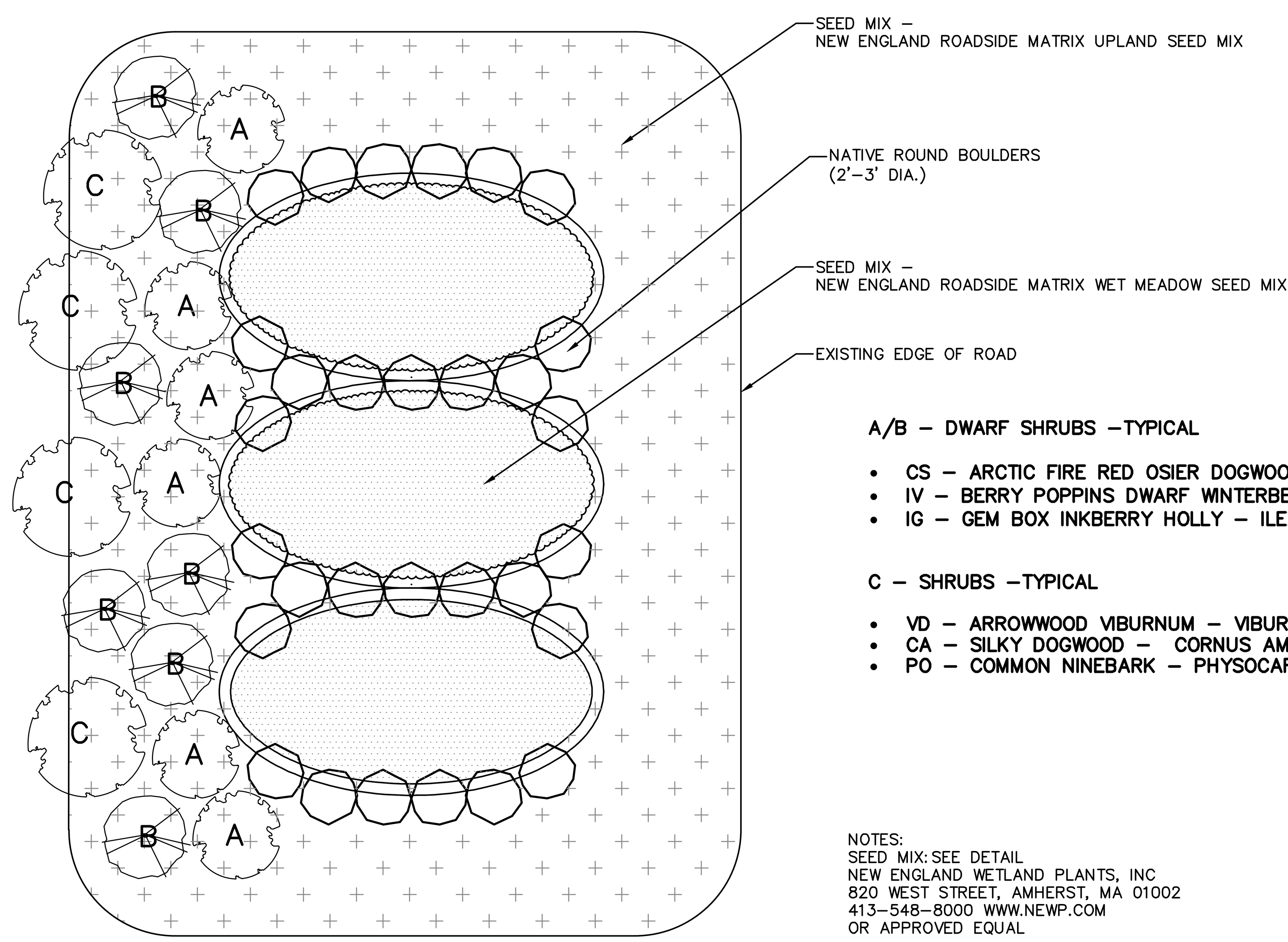


TREE PLANTING
N.T.S.



SHRUB PLANTING
N.T.S.



A/B - DWARF SHRUBS -TYPICAL

- CS - ARCTIC FIRE RED OSIER DOGWOOD - CORNUS SERICEA 'ARCTIC FIRE'
- IV - BERRY POPPINS DWARF WINTERBERRY HOLLY - ILEX VERTICILLATA 'BERRY POPPINS'
- IG - GEM BOX INKBERRY HOLLY - ILEX GLABRA 'GEM BOX'

C - SHRUBS -TYPICAL

- VD - ARROWWOOD VIBURNUM - VIBURNUM DENTATUM
- CA - SILKY DOGWOOD - CORNUS AMOMUM
- PO - COMMON NINEBARK - PHYSOCARPUS OPULIFOLIUSPERENNIALS

NOTES:
SEED MIX: SEE DETAIL
NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
413-548-8000 WWW.NEWP.COM
OR APPROVED EQUAL

STEP POOL - TYPICAL PLANTING
SCALE: N.T.S.

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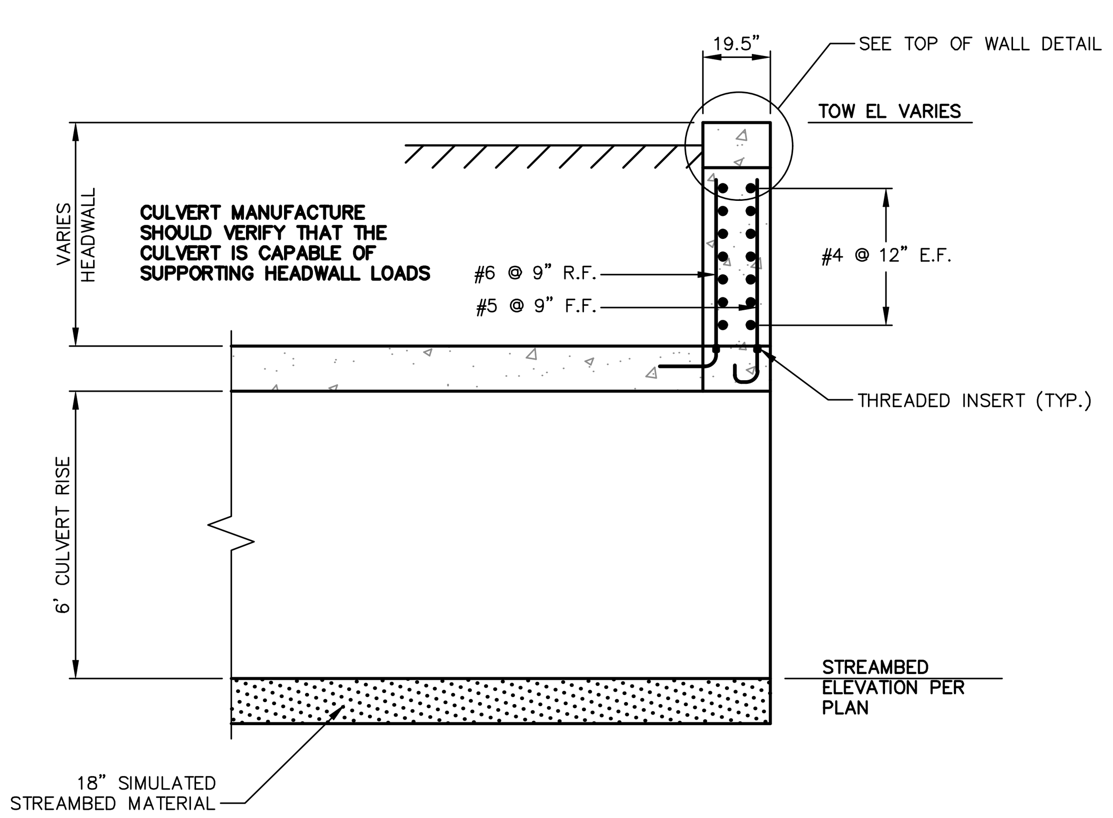
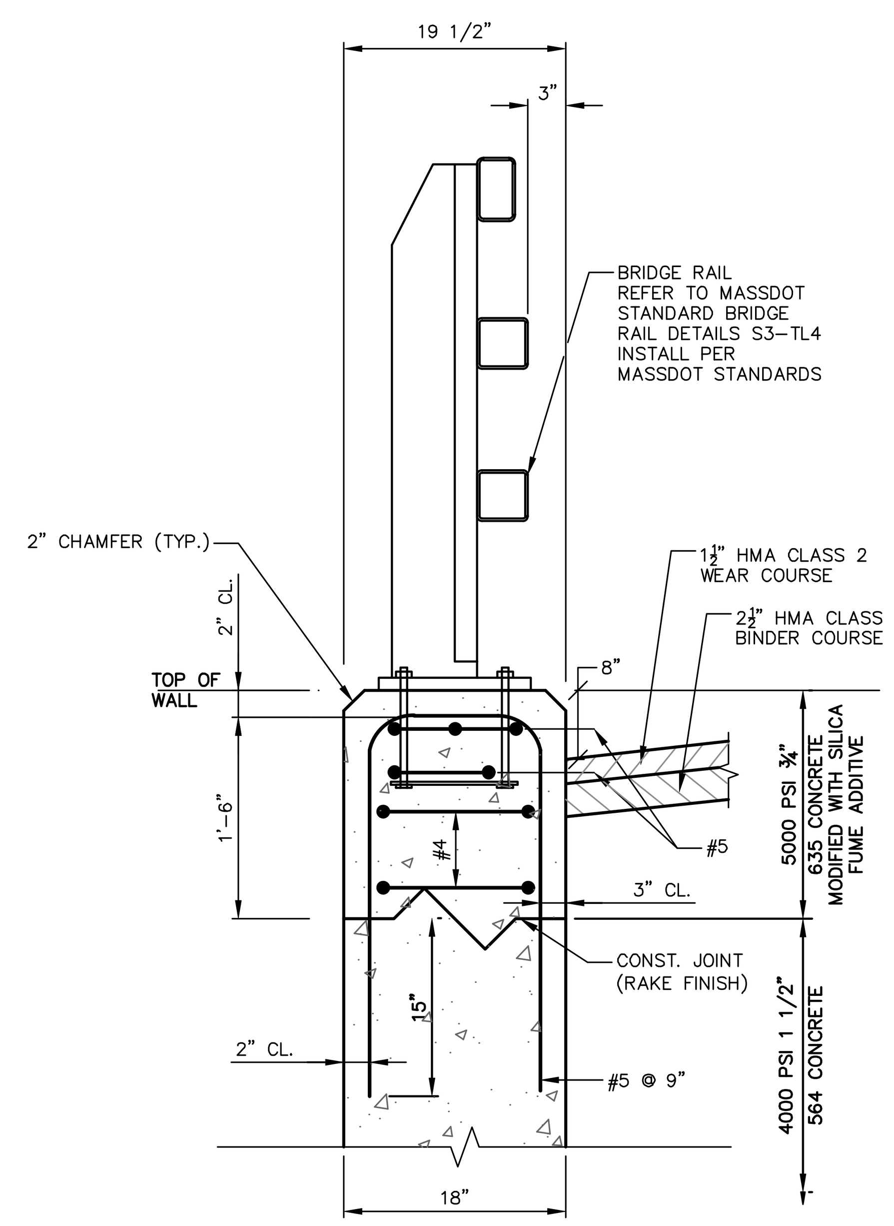


SECTION THRU CULVERT AT WALL

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



TOP OF WALL DETAIL

SCALE: 1" = 1'-0"

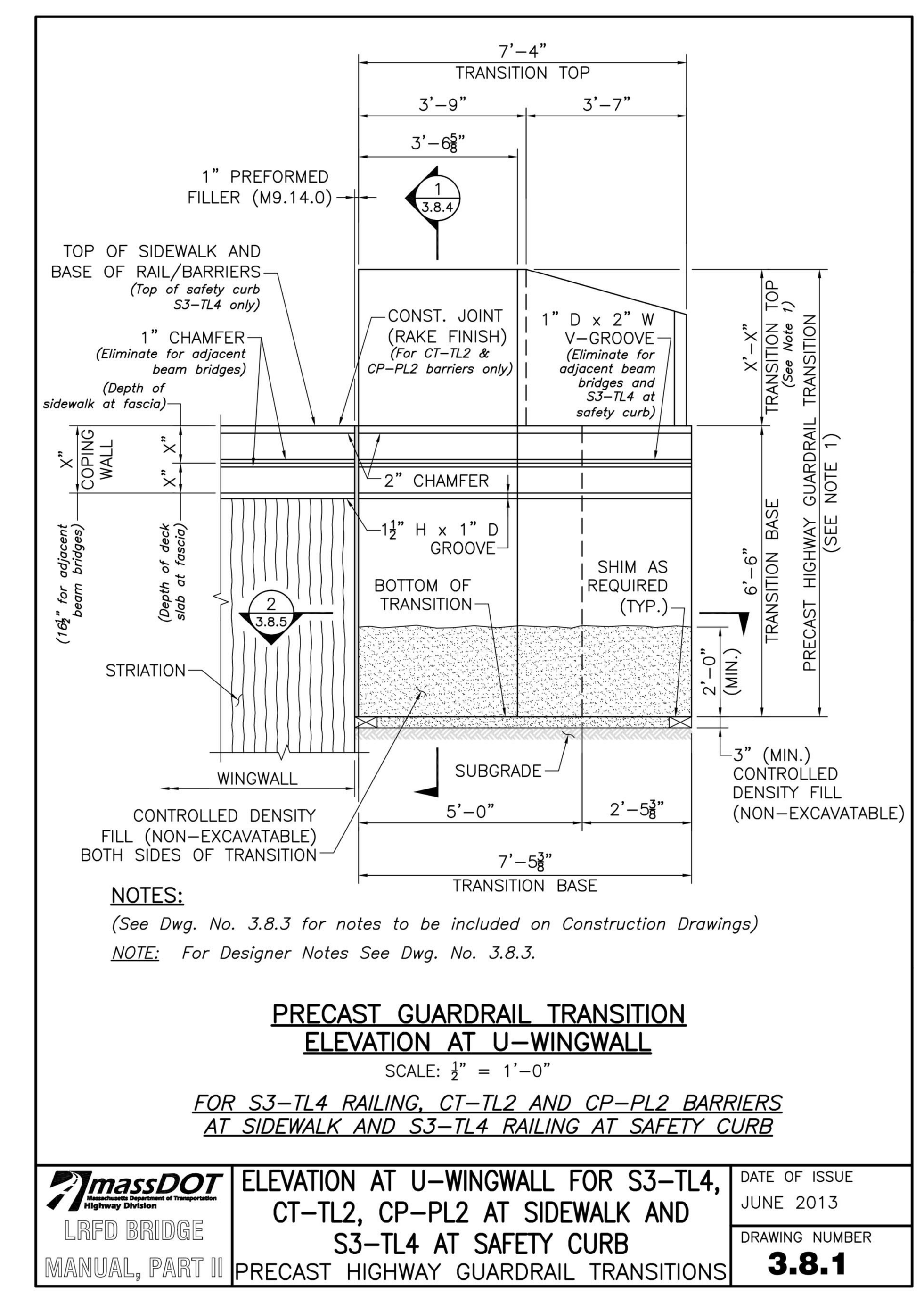
MASSDOT CONCRETE WALL NOTES:

1. THE DESIGN MUST BE MADE IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIAL LRFD BRIDGE DESIGN SPECIFICATION WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2016, FOR HL-93 LOADING.

2. THE DESIGN MUST BE MADE IN ACCORDANCE WITH 1988 MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES.

3. CONCRETE SHALL BE AIR ENTRAINED WITH A DESIGN STRENGTH OF 4000 PSI 1.5", 565, UNLESS OTHERWISE NOTED.

4. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:
   a. MODIFICATION CONDITION #4 BARS #5 BARS
      - NONE 21" 26"
      - 12" OF CONCRETE BELOW BAR 29" 36"
      - COATED BARS, COVER < 3db, OR 31" 39" CLEAR SPACING < 6db
      - COATED BARS, ALL OTHER CASES 25" 31"
      - CONDITION 2. AND 3. 35" 44"
      - CONDITION 2. AND 4. 34" 43"
   b. IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.



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JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
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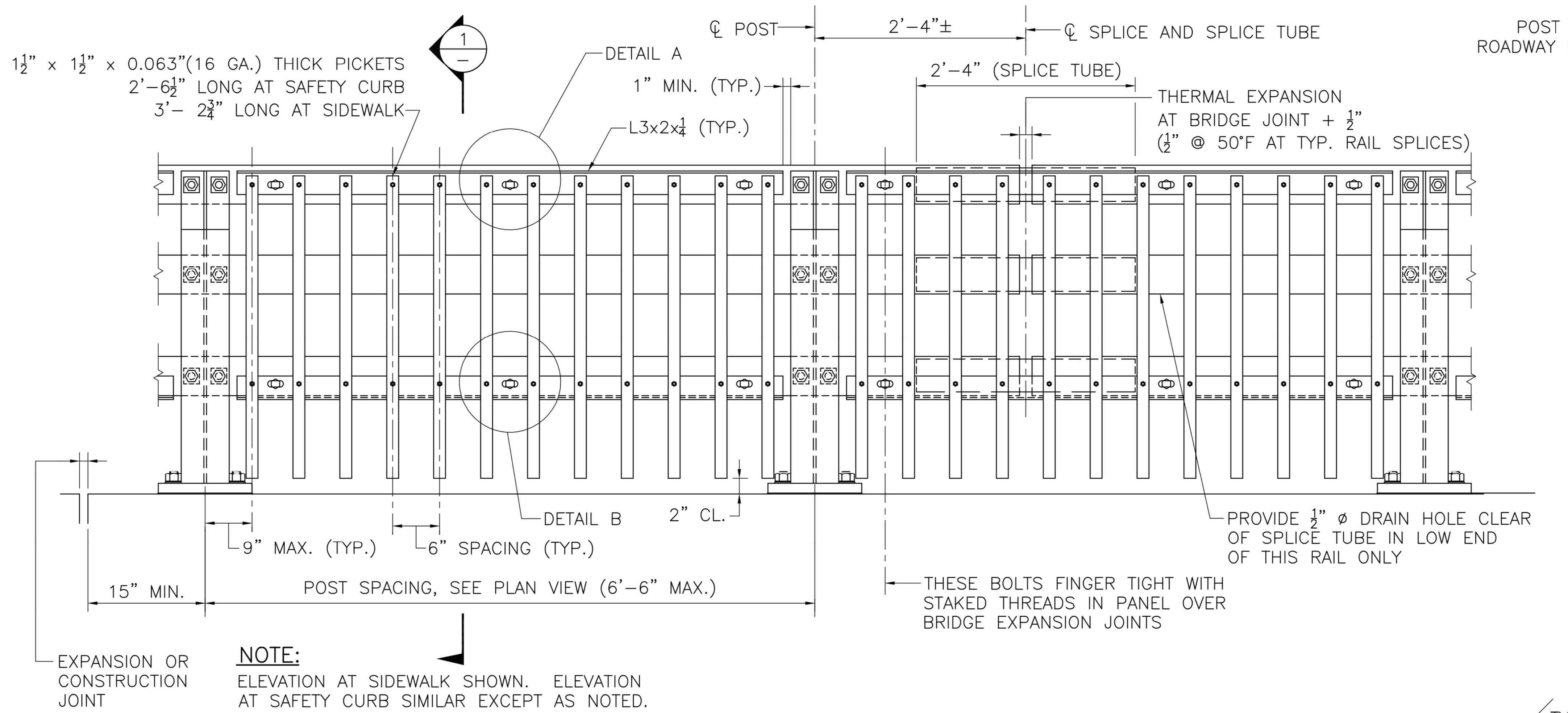

BRIDGE RAILING ELEVATION
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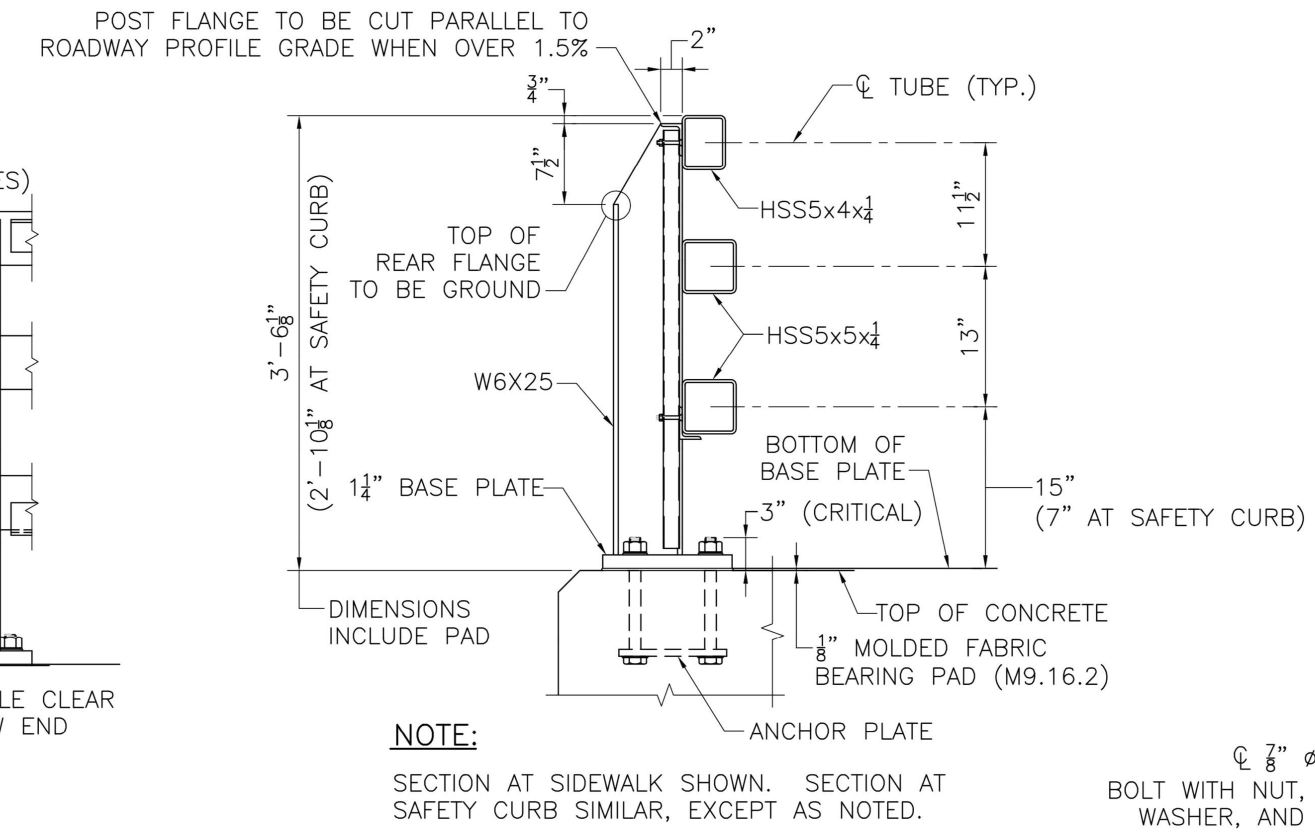
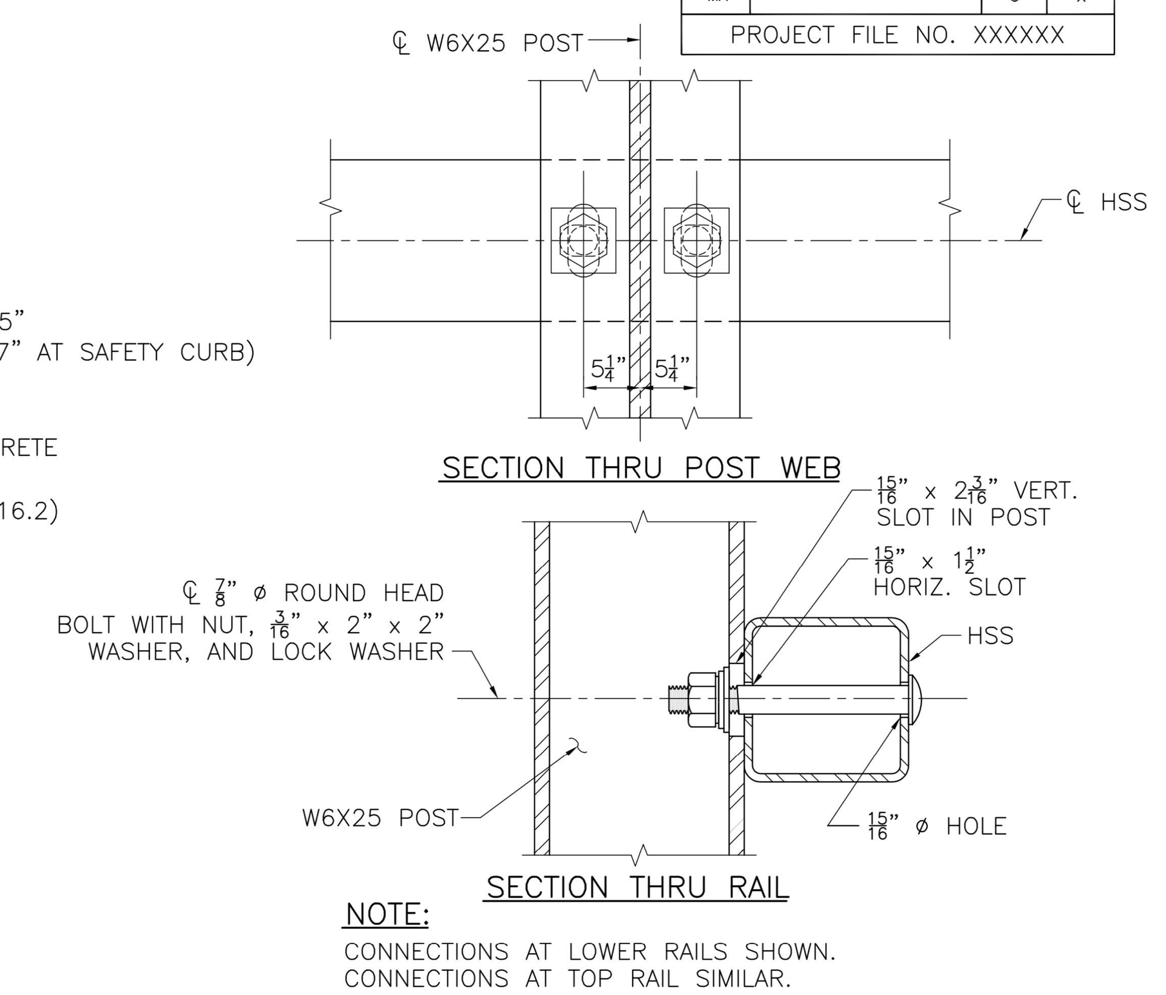


SECTION 1
SCALE: 1" = 1'-0"



TYPICAL RAIL TO POST CONNECTIONS
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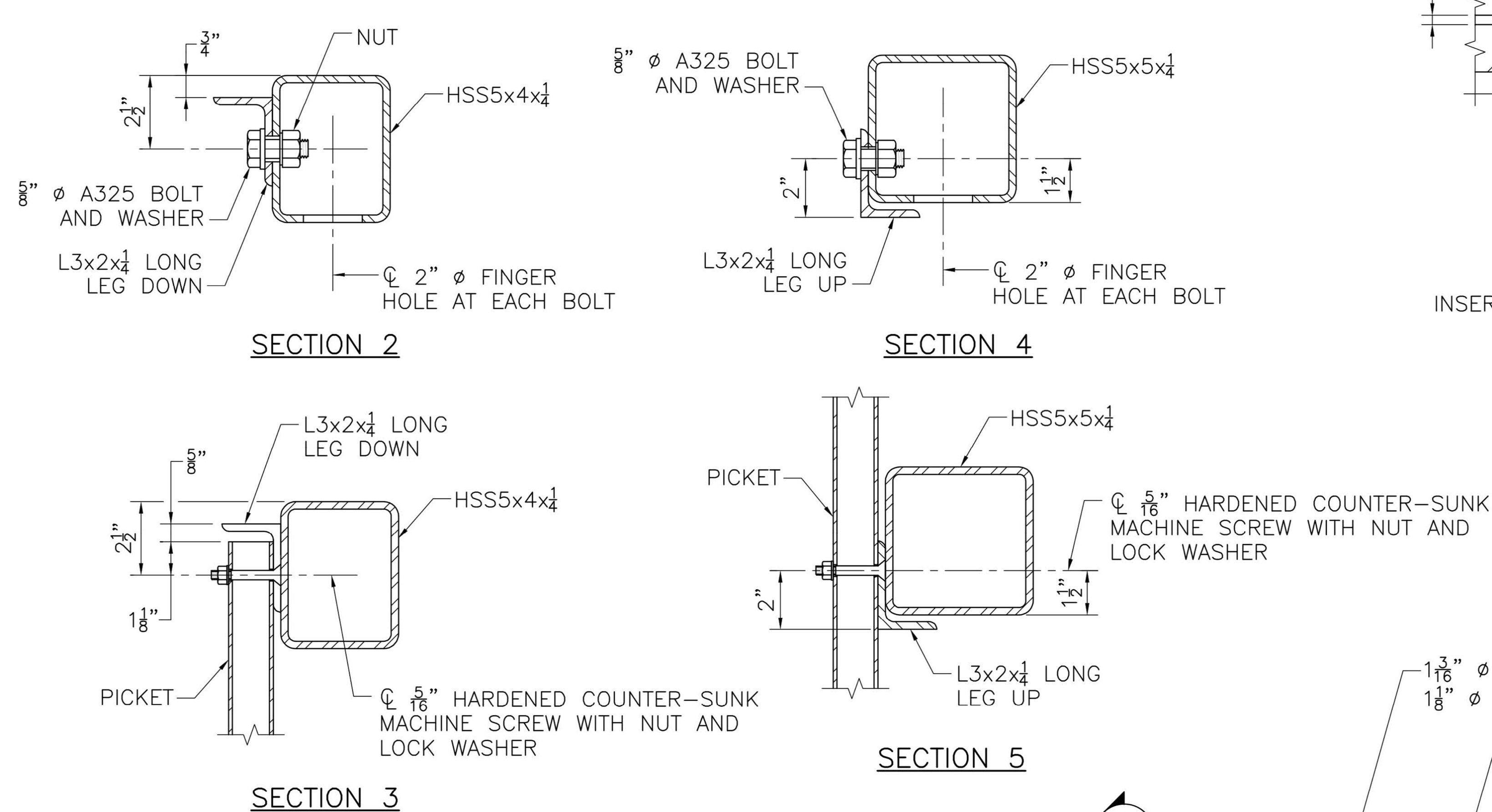
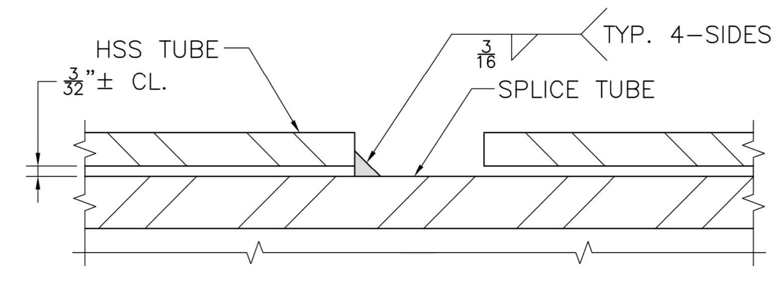
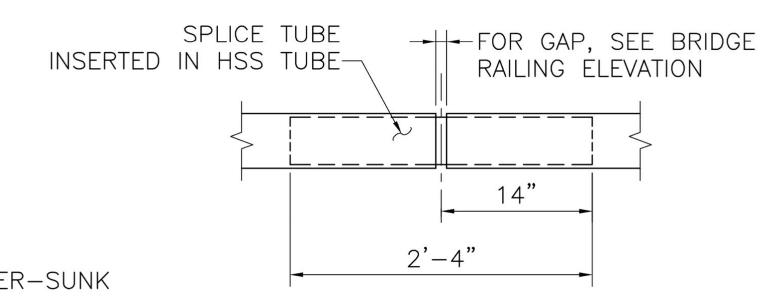




SPLICE DETAIL
FULL SIZE



TYPICAL SPLICE
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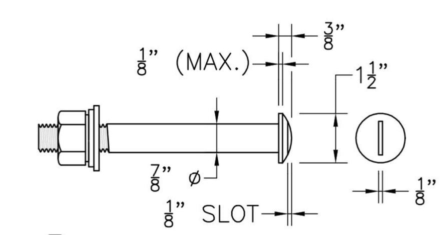
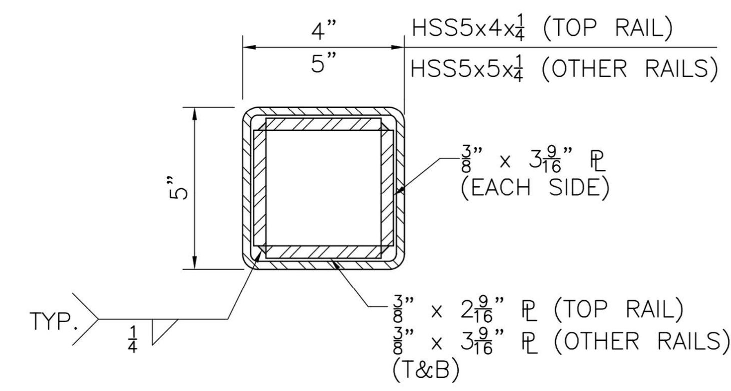
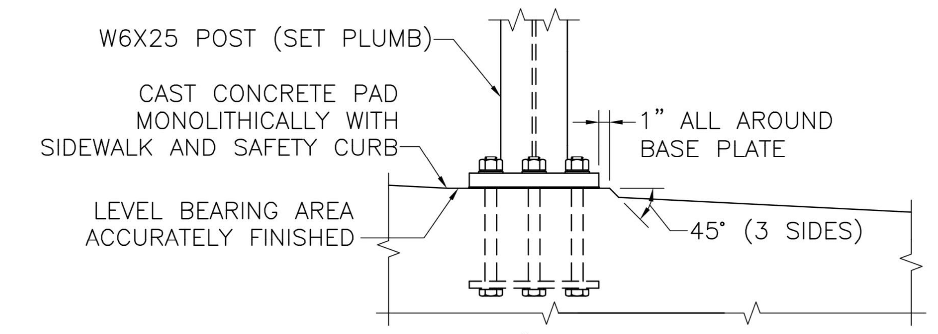


⅞" ø ROUND HEAD BOLT
SCALE: 3" = 1'-0"



SPLICE TUBE DETIALS
SCALE: 3" = 1'-0"



SETTING OF POSTS (PROFILE GRADE OVER 1.5%)
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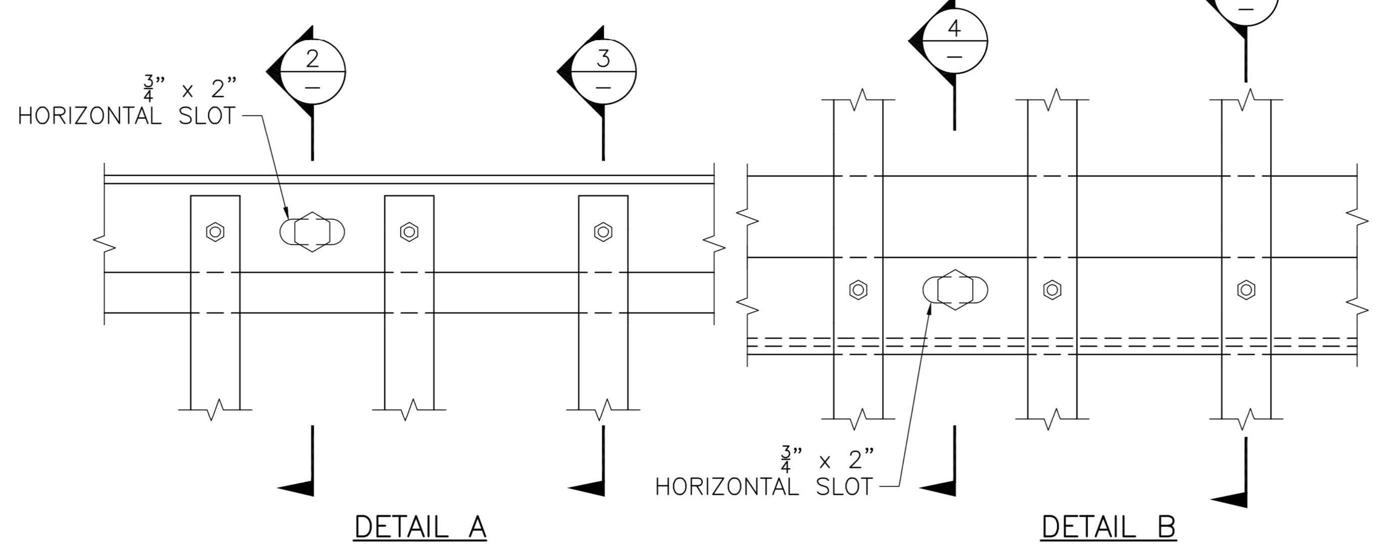
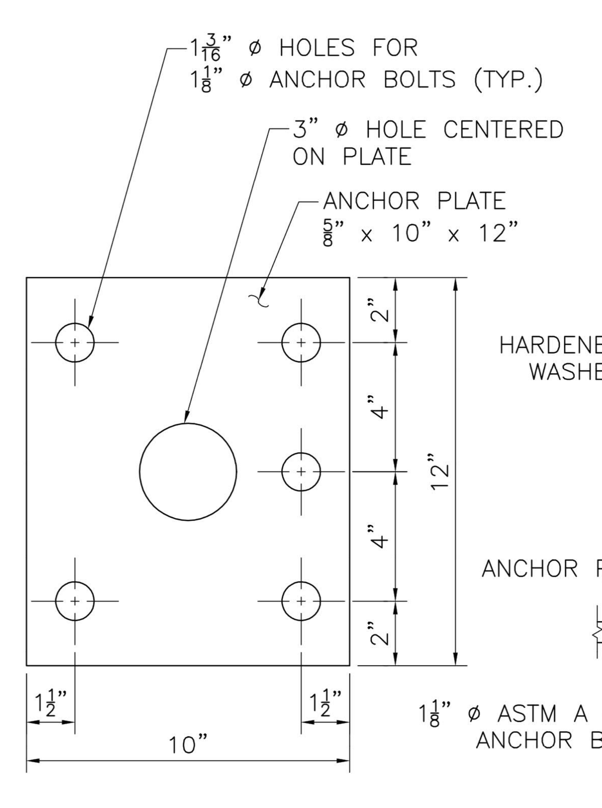
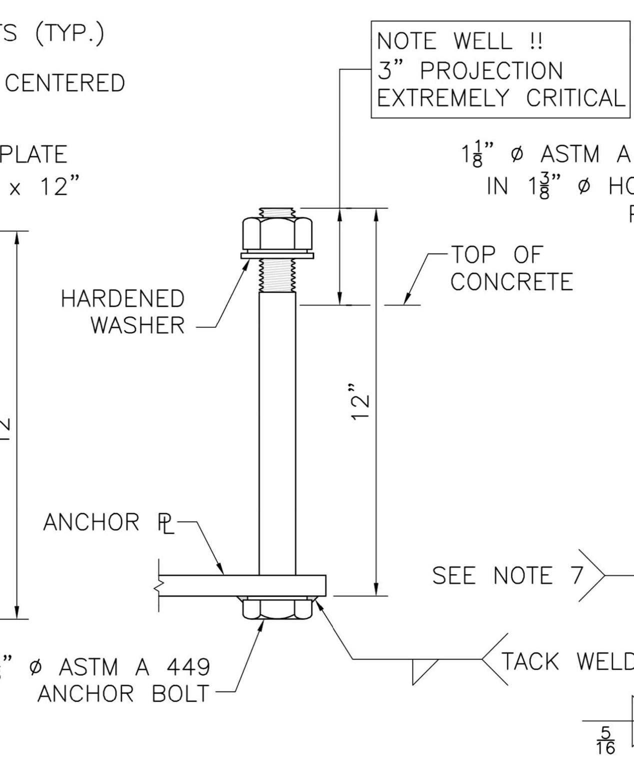


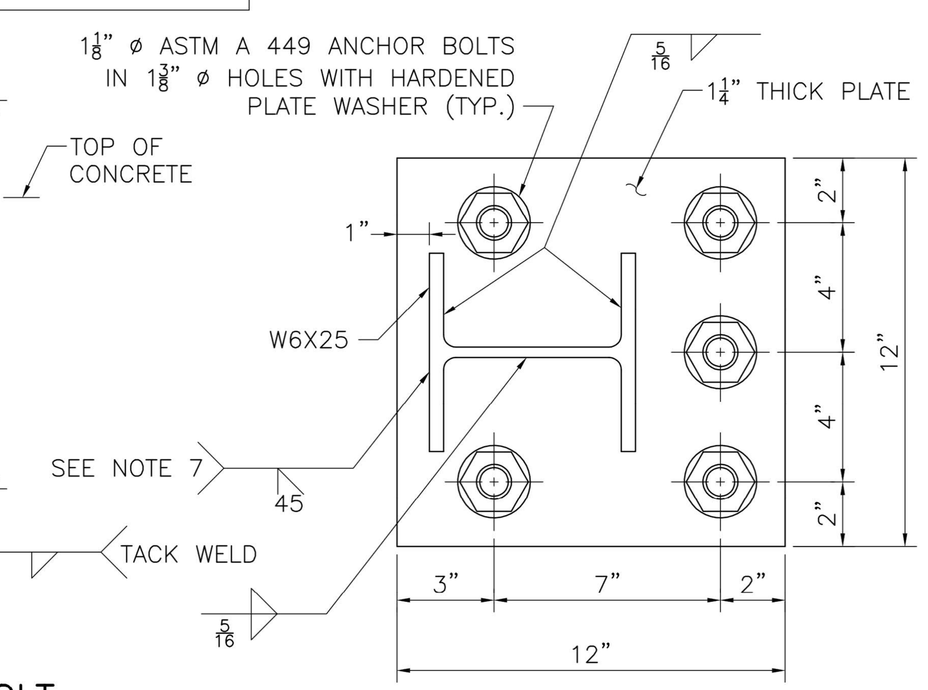
TYPICAL PICKET TO RAIL DETAILS
SCALE: 3" = 1'-0"



ANCHOR PLATE
SCALE: 3" = 1'-0"



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



BASE PLATE
SCALE: 3" = 1'-0"

S3-TL4 BRIDGE RAILING

RAILING NOTES:

1. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500 WITH A CERTIFIED Fy = 50 KSI MINIMUM. THE MINIMUM HORIZONTAL BENDING RADII OF THE HSS TUBING SHALL BE 8 FEET. PICKET CARRIER ANGLES, ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 36. PICKET TUBING SHALL CONFORM TO ASTM A 513 WITH Fy = 36 KSI MIN. OR A 500 GRADE B.
2. ALL STEEL (EXCEPT THE ⅝" ANCHOR PLATE AND FASTENERS) SHALL BE GALVANIZED AND PAINTED DARK BRONZE (FEDERAL STD. 595B COLOR NO. 10045). ANCHOR PLATE SHALL BE GALVANIZED ONLY. HEADS OF ⅞" ø ROUND HEAD BOLTS SHALL BE PAINTED TO MATCH RAIL.
3. ANCHOR BOLTS SHALL BE SET WITH TEMPLATES. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN AFTER STEEL IS IN PLACE.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN THE PANELS OVER EXPANSION JOINT.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADES LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
7. POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK-GOUGED ON BACK SIDE EXCEPT AT WEB. WELD IS THE SAME ON BOTH FLANGES.
8. ⅞" ø ROUND HEAD BOLTS SHALL CONFORM TO THE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 164.

INFORMATION ON THIS SHEET IS TAKEN FROM MASS DOT S3-TL4 BRIDGE RAILING DETAIL 2013 IN ITS ENTIRETY

CITY/TOWN
STREET/ROUTE # OR NAME

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	6	X

PROJECT FILE NO. XXXXXX

No.	DATE	DESCRIPTION	DESIGNER REVIEWER

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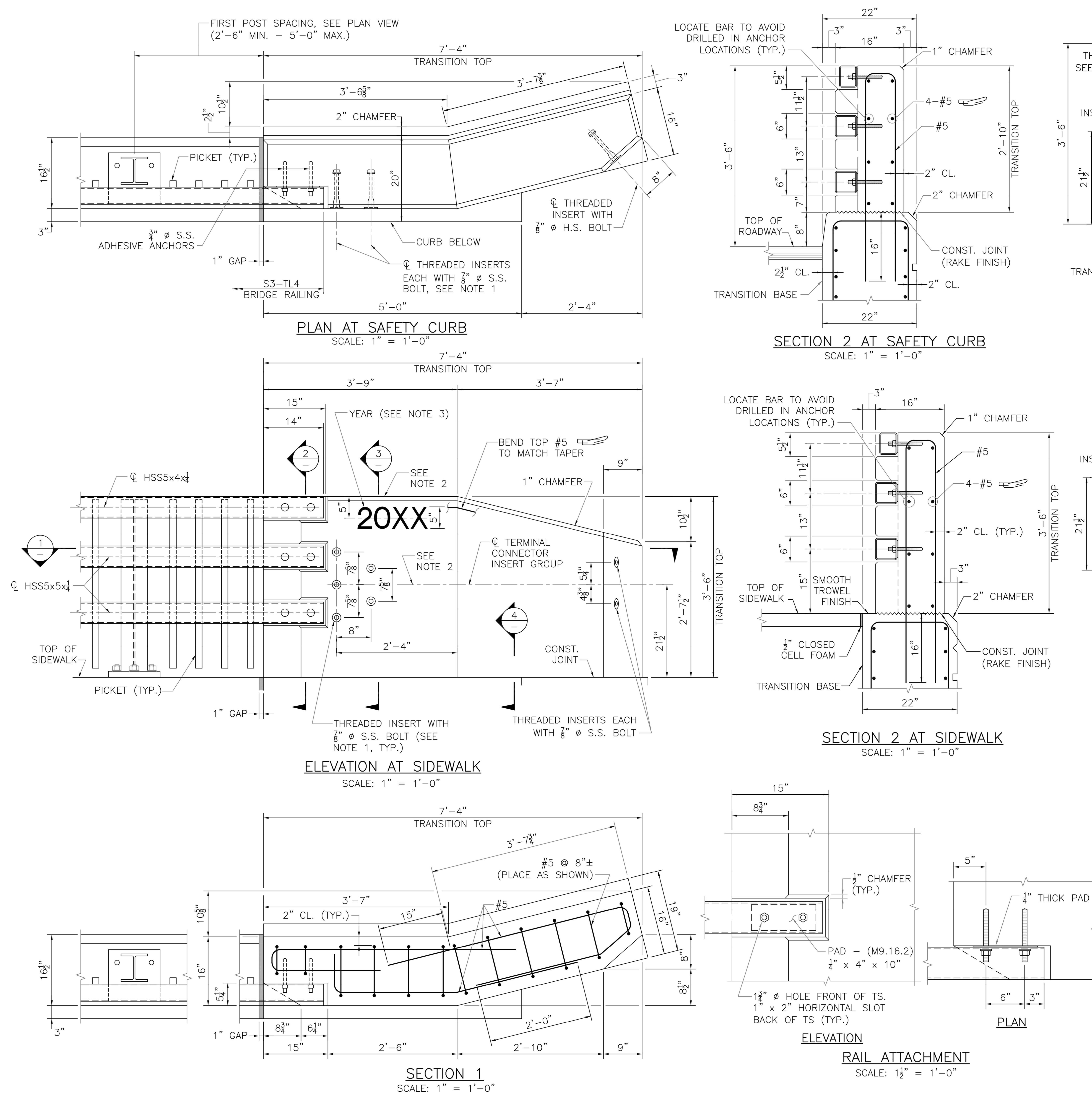

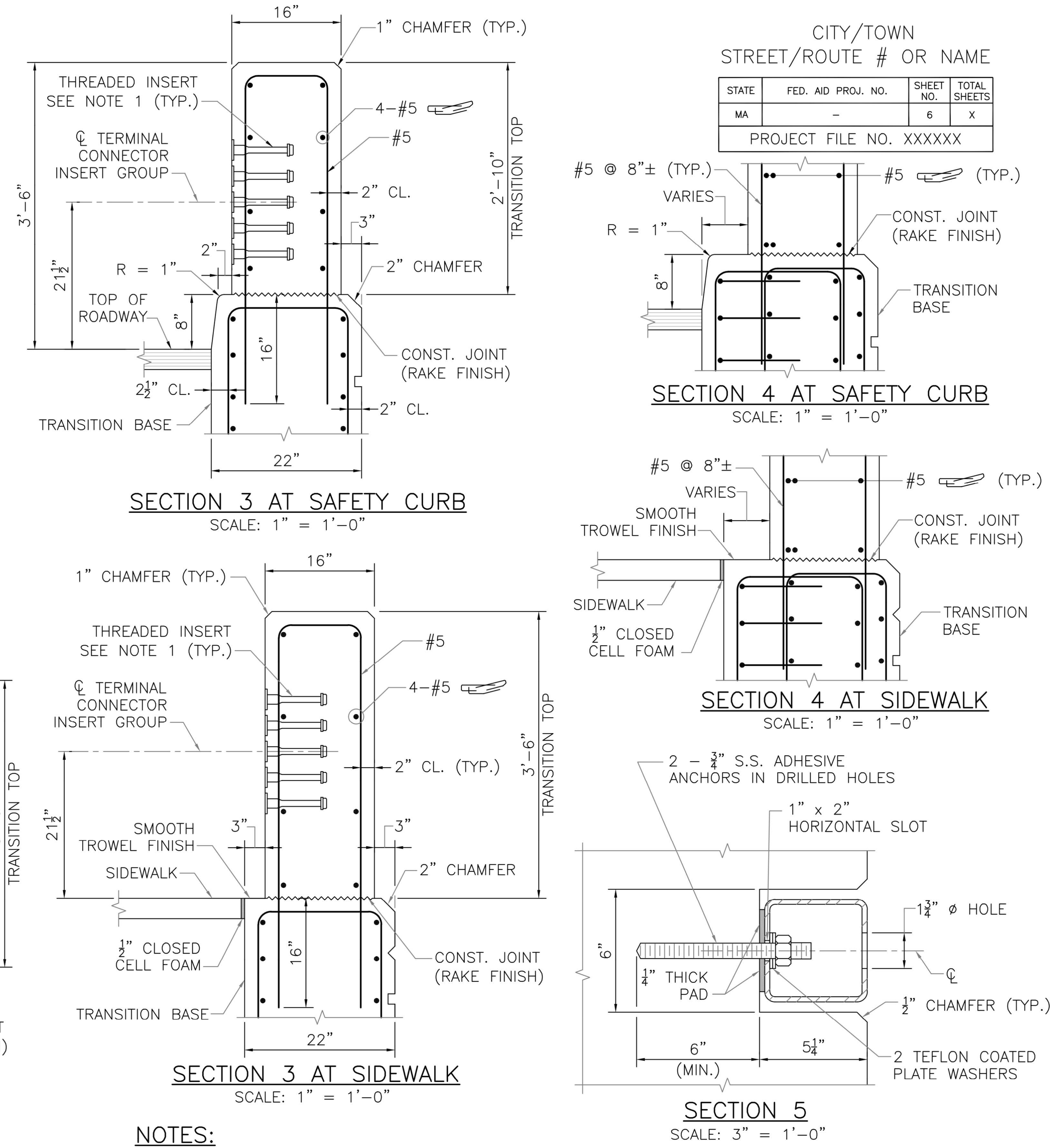

NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING A NOMINAL SHEAR RESISTANCE OF 20 KIPS PER ⅞" Ø S.S. BOLT. S.S. BOLTS SHALL BE ⅞" Ø x 1½" LONG FULLY THREADED AISI TYPE 304N STAINLESS STEEL. INSERTS FOR ⅞" S.S. BOLTS SHALL BE GALVANIZED AND CAST INTO THE TRANSITION.
2. FOR AN APPROACH GRADE UP TO 3%, THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SQUARE TO THE POST.

   FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF CURB SHALL FOLLOW THE APPROACH GRADE. THE HEIGHT OF THE TRANSITION TOP SHALL VARY PROVIDED THAT THE MINIMUM DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE MET. THE BOTTOM OF THE TRANSITION BASE SHALL BE SET LEVEL WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SLOPED TO FOLLOW THE APPROACH GRADE.
3. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
4. ALL CONCRETE FOR THE PRECAST HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾", 685 HP CEMENT CONCRETE.
5. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE TRANSITION CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST TRANSITION IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH A NON-SHRINK GROUT THAT MATCHES THE COLOR OF THE TRANSITION CONCRETE WHEN CURED AND THE FILLED POCKETS SHALL BE RUBBED WITH A CORUNDUM STONE TO BLEND OUT THE JOINTS.

TOP OF PRECAST HIGHWAY GUARDRAIL TRANSITION FOR S3-TL4 RAILING

INFORMATION ON THIS SHEET IS TAKEN FROM MASS DOT PRECAST HIGHWAY GUARDRAIL TRANSITION FOR S3-TL4 RAILING DETAIL 2013 IN ITS ENTIRETY

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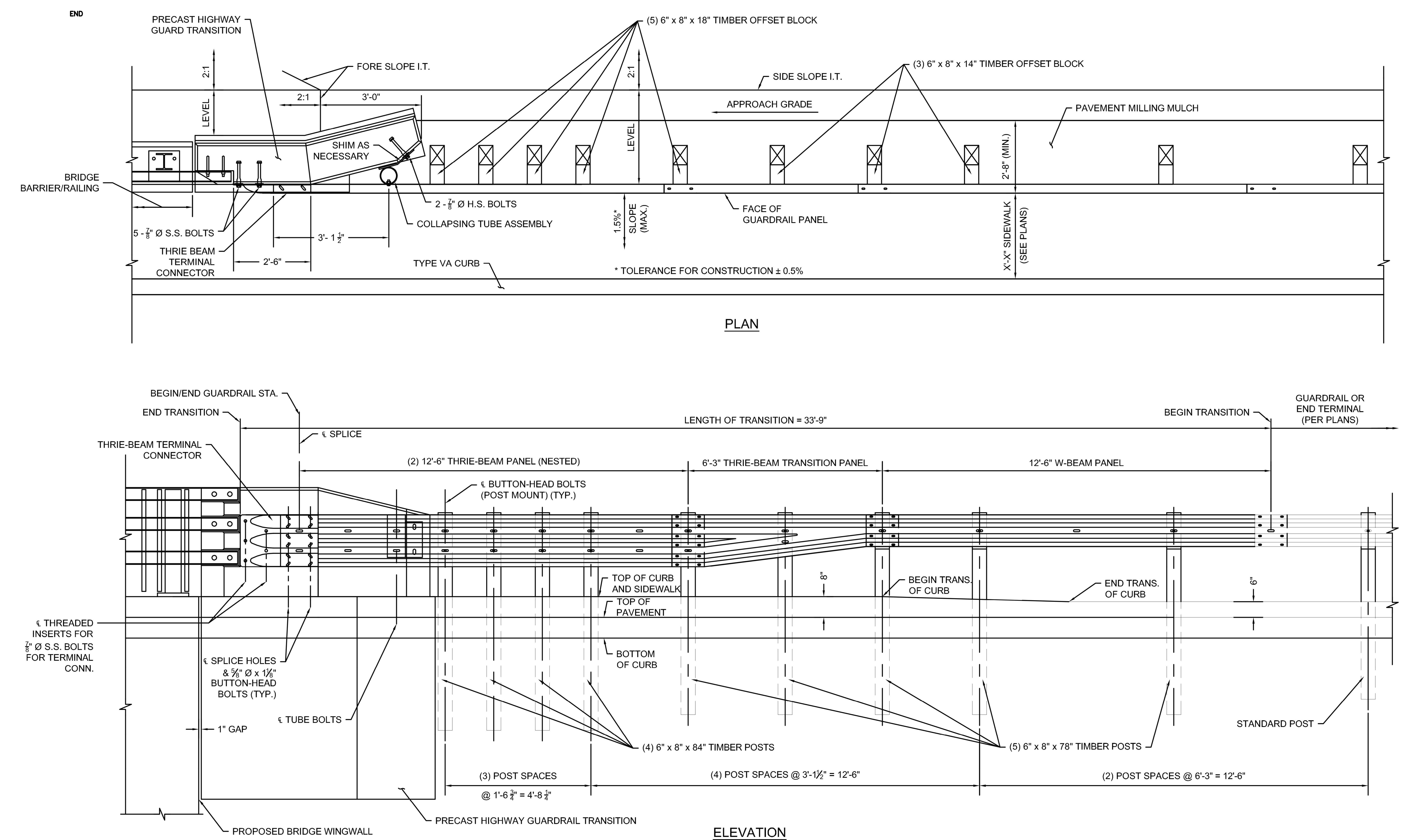

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CONSTRUCTION STANDARDS
SECTION 400

TRANSITION TO BRIDGE RAIL (BACK OF SIDEWALK)

DATE OF ISSUE	DRAWING NUMBER
OCTOBER 2017	400.3.5

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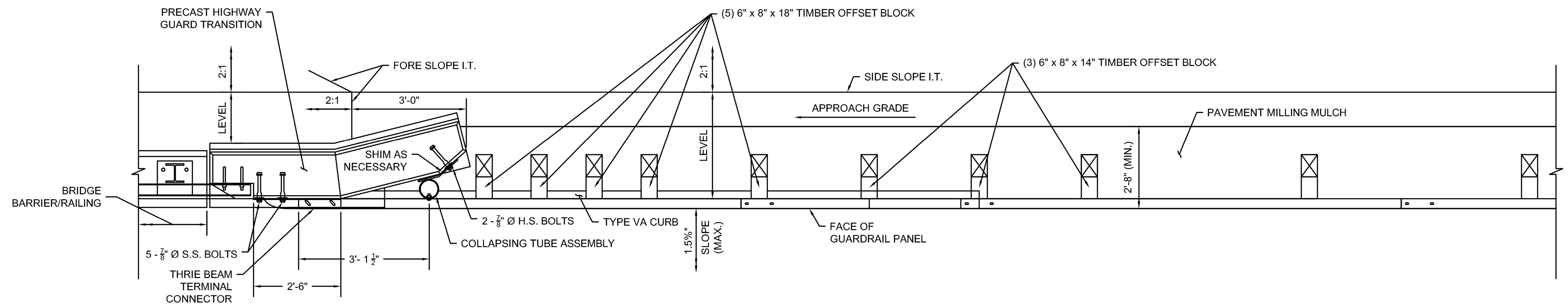
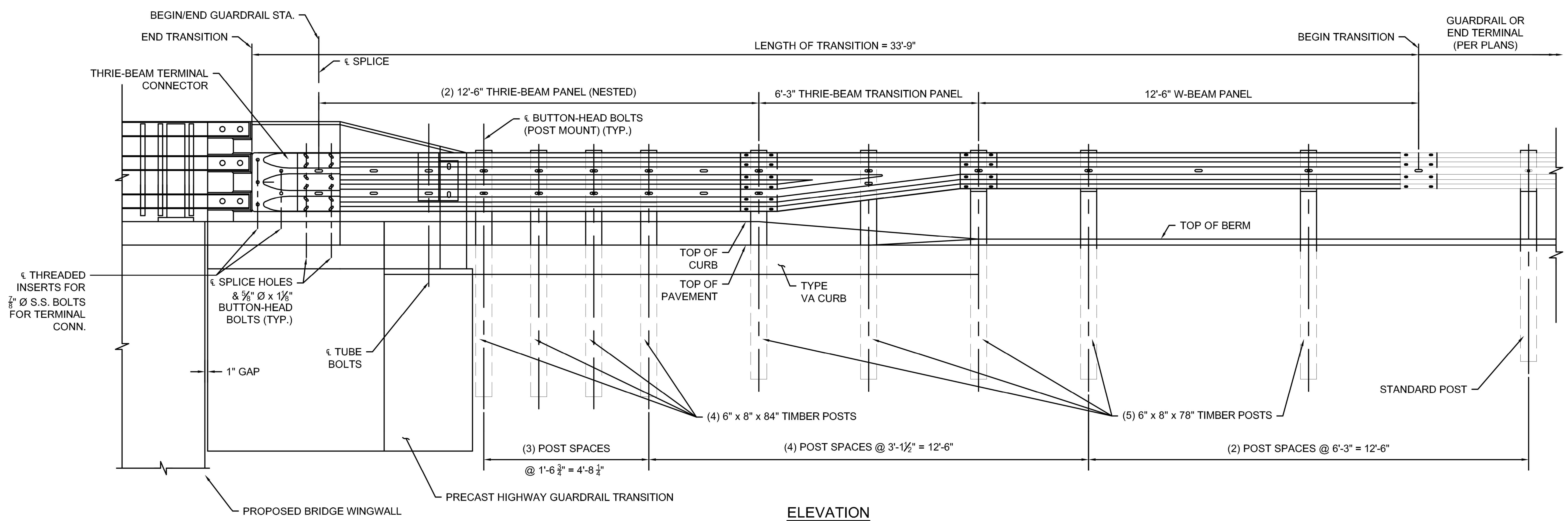


PLAN



ELEVATION

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CONSTRUCTION STANDARDS
SECTION 400

TRANSITION TO BRIDGE RAIL (FACE OF CURB)

DATE OF ISSUE: OCTOBER 2017

DRAWING NUMBER: 400.3.6

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COMMONWEALTH OF MASSACHUSETTS STUART H. HARRIS STRUCTURAL 38323 REGISTERED PROFESSIONAL ENGINEER

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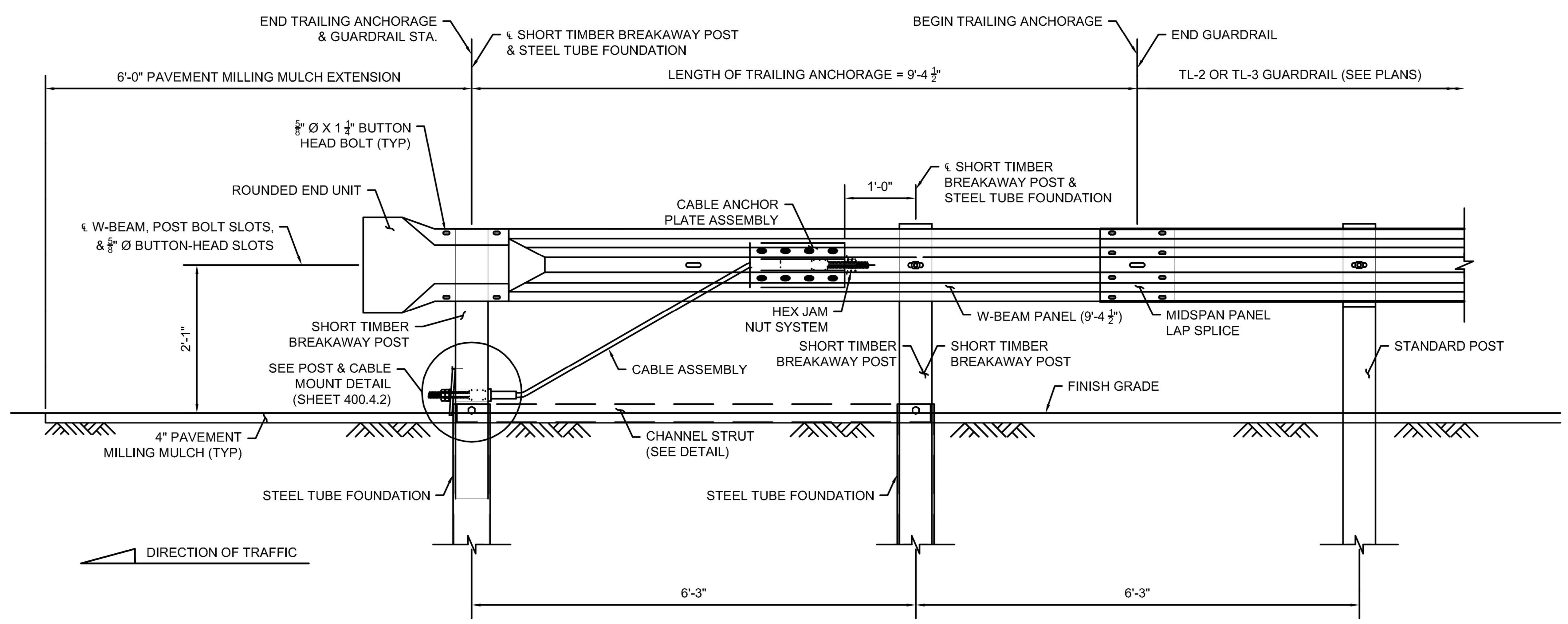

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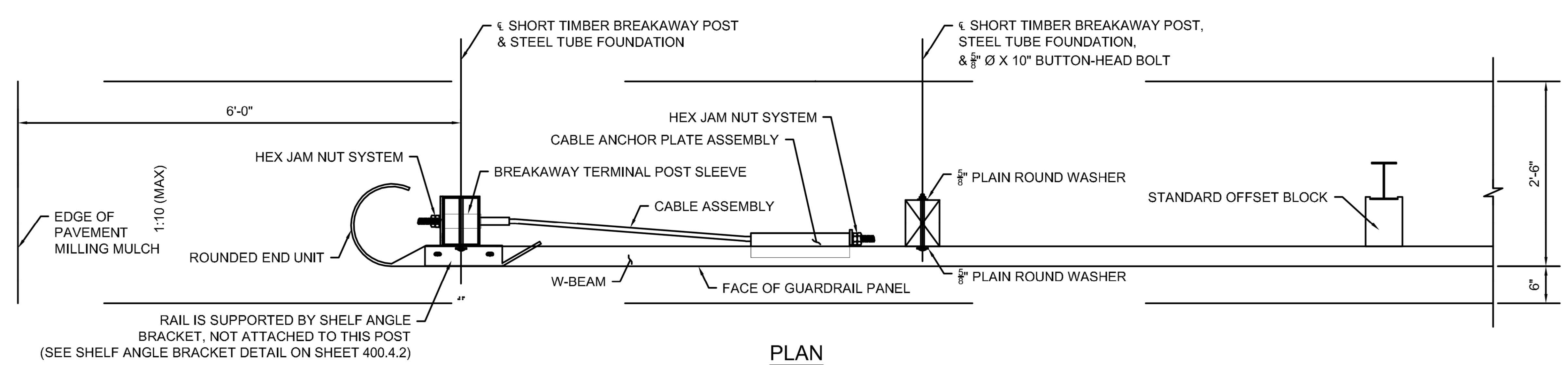
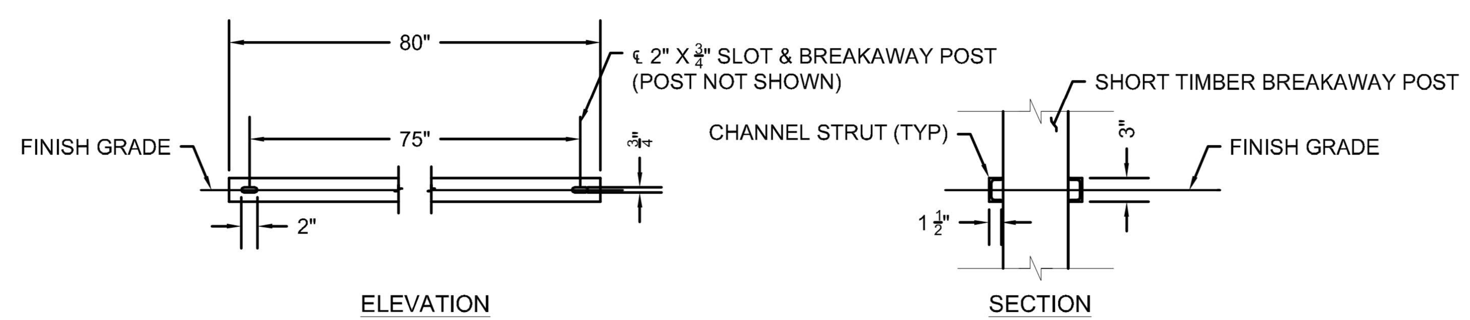


PLAN



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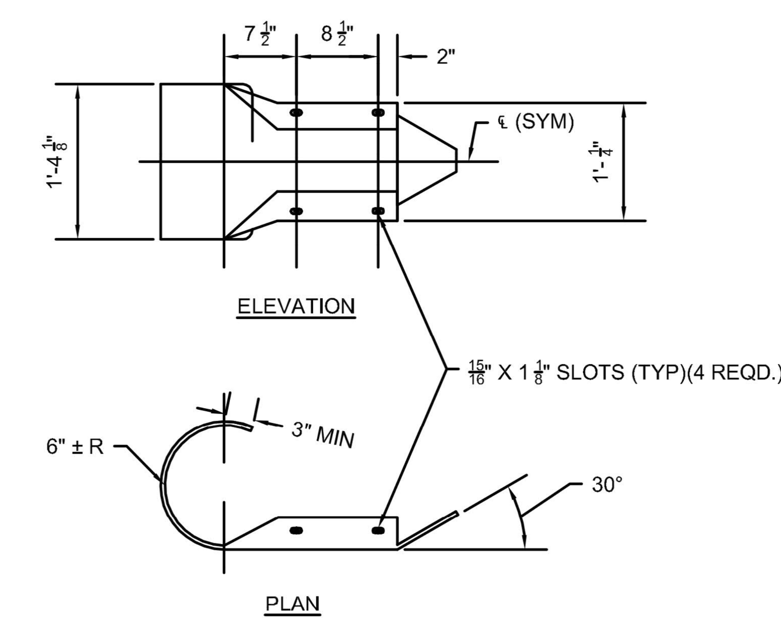

ROUNDED END UNIT

NOTES:

1. FOR ADDITIONAL DETAILS, SEE 400.4.2.
2. LAP THE ROUNDED END UNIT OVER THE FACE OF THE W-BEAM PANEL.
3. INSTALL STEEL TUBE FOUNDATIONS BY ONE OF THE FOLLOWING METHODS:

A. EXCAVATE, INSTALL TUBE, BACKFILL, AND SUITABLY COMPACT MATERIALS; OR

B. DRIVE THE TUBE USING A DUMMY TIMBER POST TO PREVENT DAMAGE TO THE SHORT BREAKAWAY POST.

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CONSTRUCTION STANDARDS
SECTION 400

TRAILING ANCHORAGE

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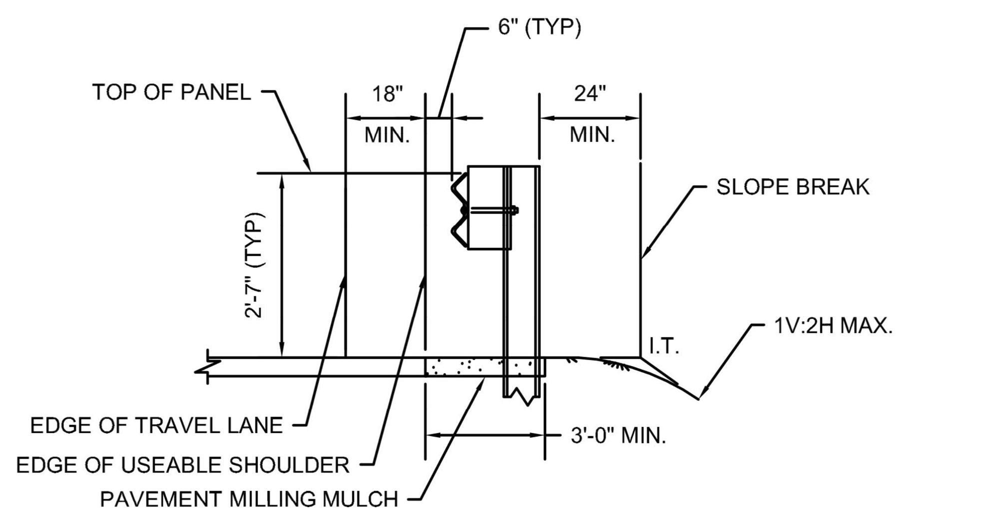
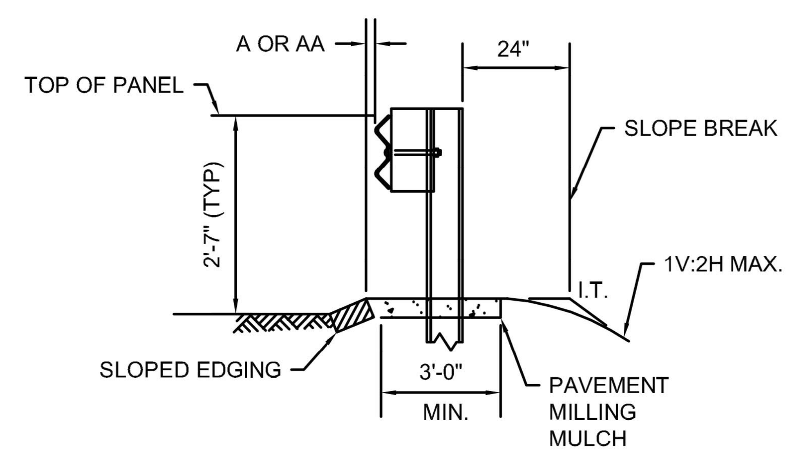
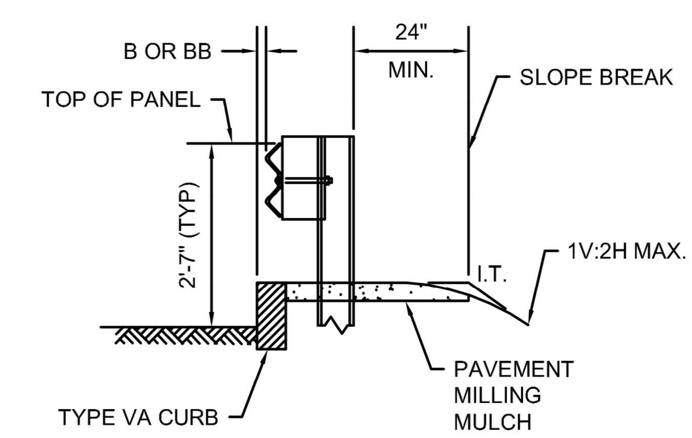


FLUSH WITH ROADWAY



SLOPED EDGING
(TYPE A BERM SIMILAR)

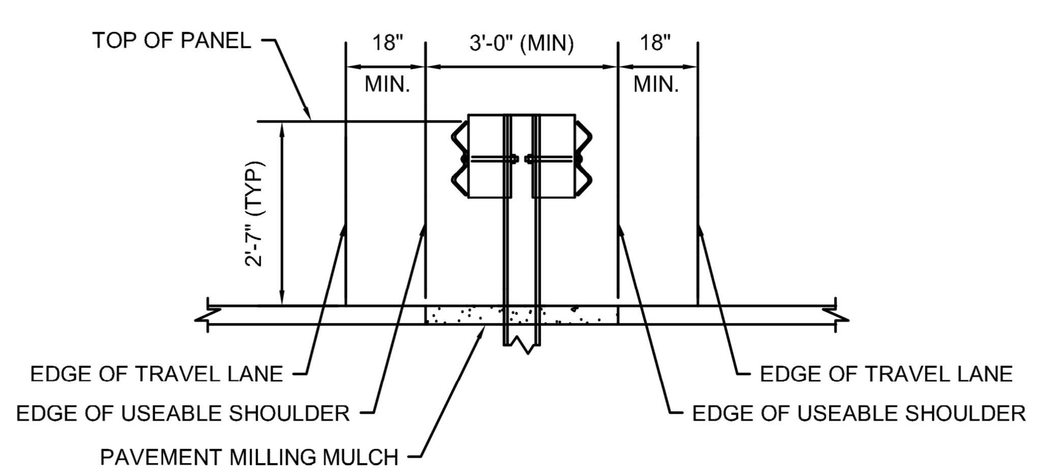
	TL-2	TL-3
A (AT FACE)	0" TO 6"	0" TO 6"
AA (OFFSET)	6'-0" (MIN)	N/A (SEE NOTE 5)



TYPE VA CURB
(HMA CURB SIMILAR)

	TL-2	TL-3
B (AT FACE)	0" TO 6"	0" TO 6"
BB (OFFSET)	6'-0" (MIN)	N/A (SEE NOTE 5)

DOUBLE FACED:



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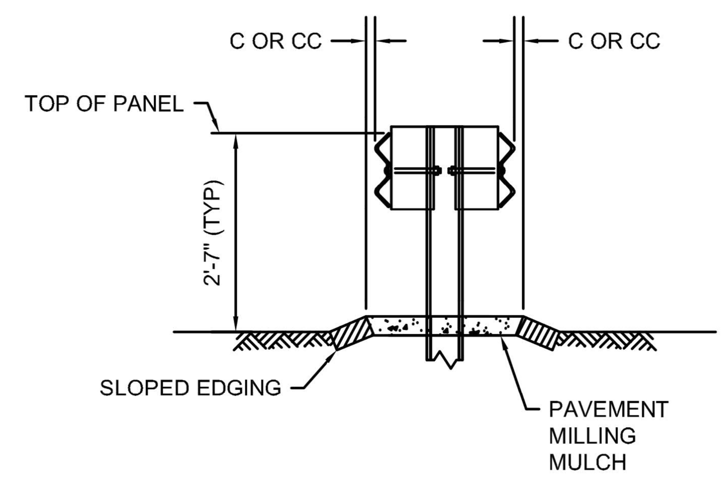
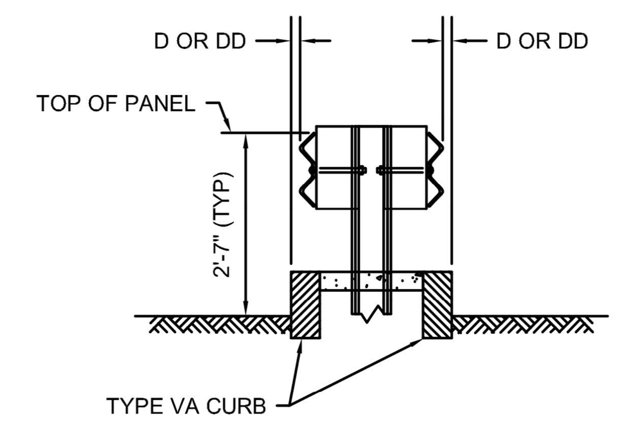


SLOPED EDGING
(TYPE A BERM SIMILAR)

	TL-2	TL-3
C (AT FACE)	0" TO 10"	0" TO 10"
CC (OFFSET)	6'-0" (MIN)	13'-0" (MIN)



TYPE VA CURB
(HMA CURB SIMILAR)

	TL-2	TL-3
D (AT FACE)	0" TO 10"	0" TO 10"
DD (OFFSET)	6'-0" (MIN)	N/A (SEE NOTE 5)

NOTES:

1. TYPE VA CURB PER E 106.3.0.
2. HMA CURB PER E 106.2.0.
3. SLOPED EDGING PER E 106.5.0.
4. TYPE A BERM PER E 106.1.0.
5. TL-3 GUARDRAIL SHALL NOT BE OFFSET FROM VERTICAL CURB AND SINGLE FACED TL-3 GUARDRAIL SHALL NOT BE OFFSET FROM SLOPED EDGING UNLESS OTHERWISE SHOWN IN THE PLANS OR THESE STANDARDS.
6. IN ORDER TO FACILITATE DESIGN AND CONSTRUCTION, THE OFFSET FROM THE CURB TO FACE OF GUARDRAIL DOES NOT HAVE TO BE SYMMETRICAL BETWEEN SIDES. ONE SIDE MAY BE LOCATED AT THE FACE OF CURB AND THE OPPOSITE MAY BE OFFSET.

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CONSTRUCTION STANDARDS
SECTION 400

GUARDRAIL SECTIONS

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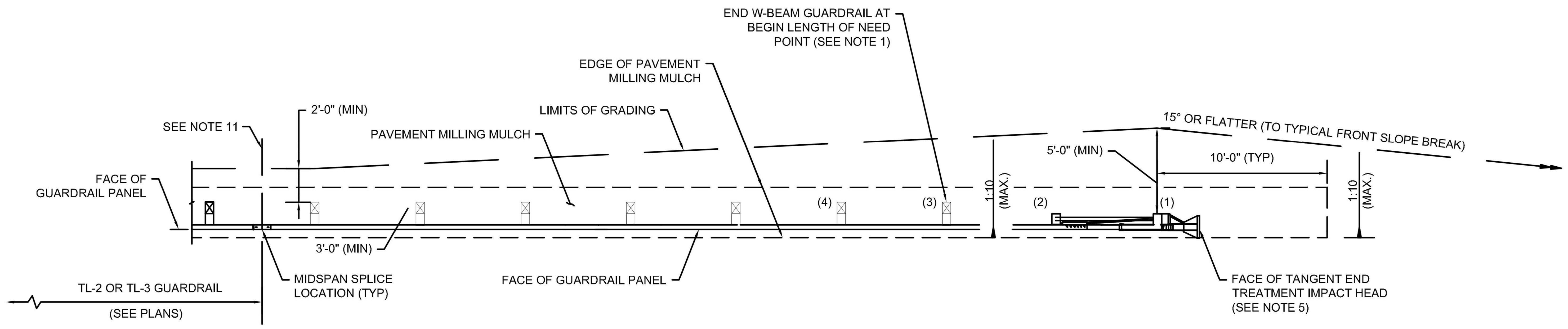
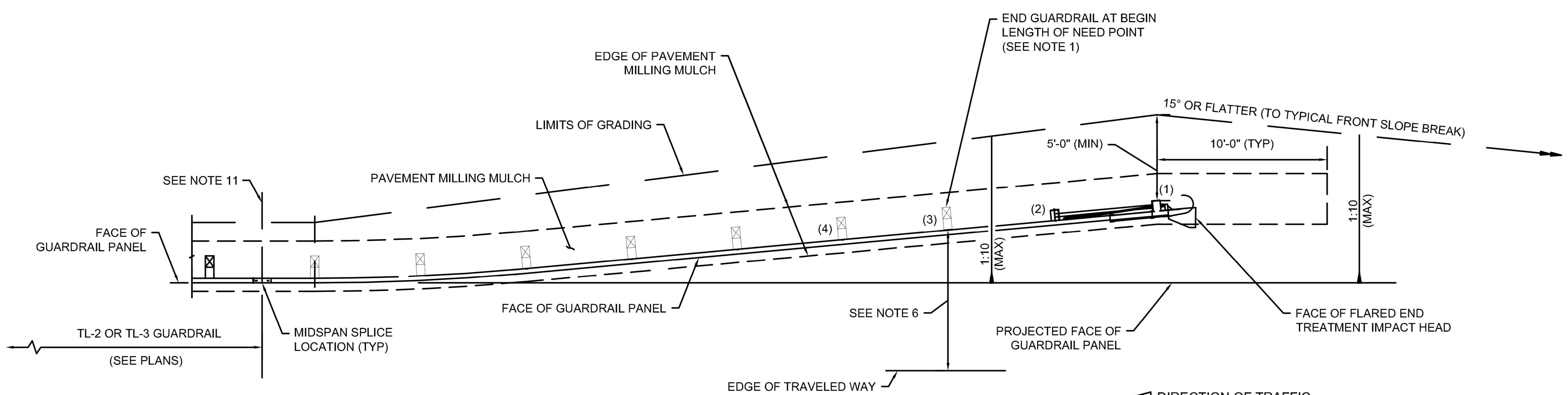


TANGENT END TREATMENT SEGMENT - PLAN

DIRECTION OF TRAFFIC

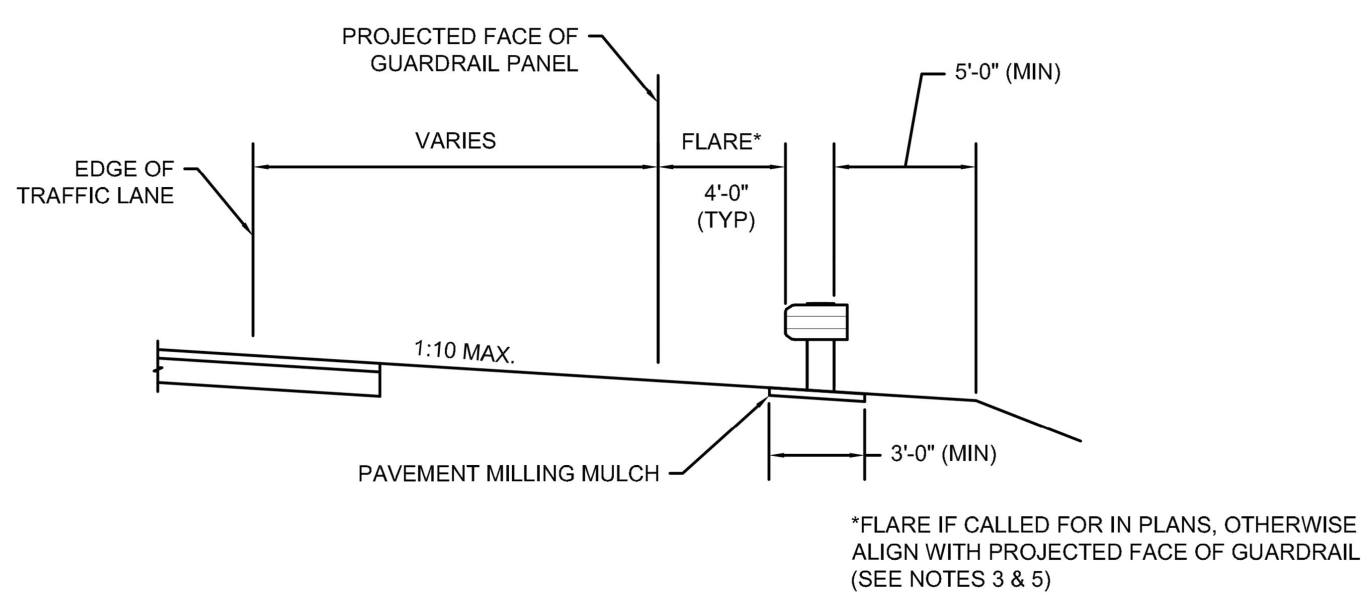


DIRECTION OF TRAFFIC

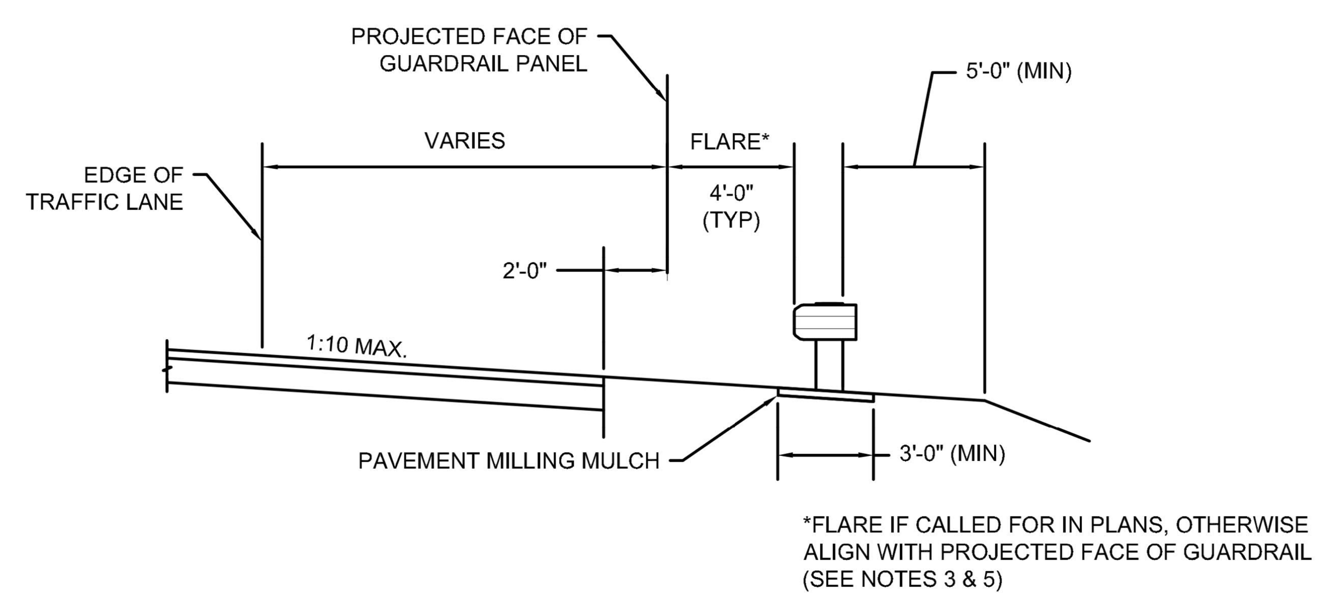
FLARED END TREATMENT SEGMENT - PLAN

NOTES:

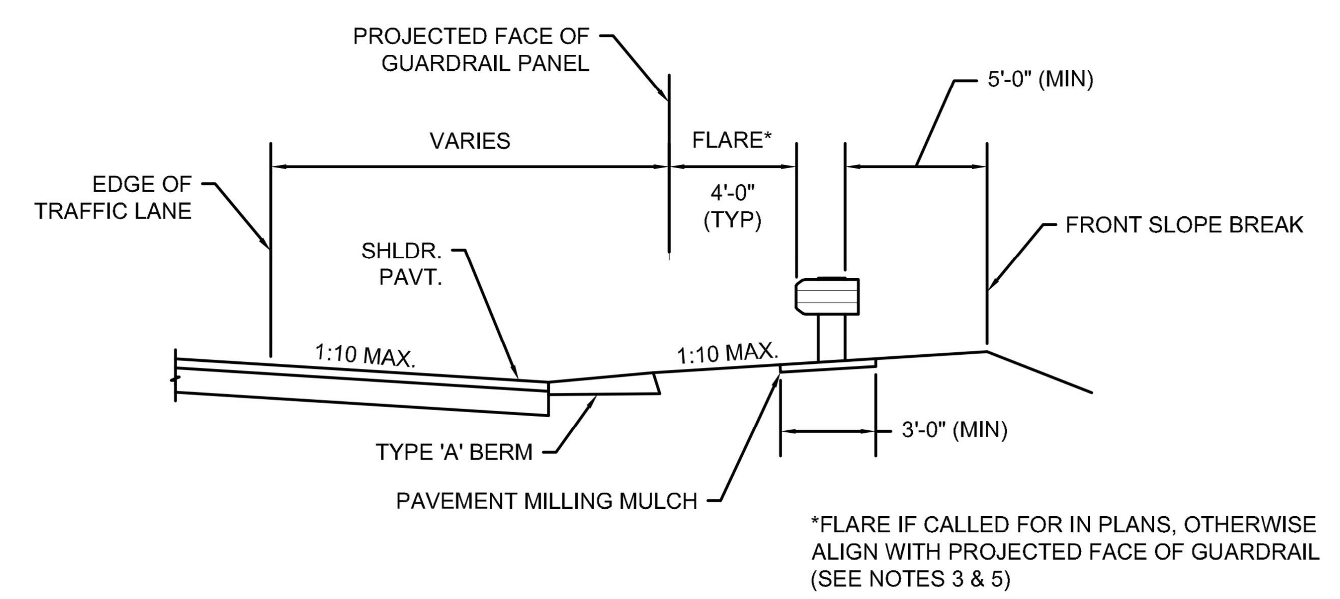
1. INSTALL GUARDRAIL AT STATION AND OFFSET SHOWN IN THE PLANS. THE END OF THE GUARDRAIL SHOWN IN THE PLANS CORRESPONDS WITH THE BEGIN LENGTH OF NEED POINT FOR THE END TREATMENT (SHOWN AT POST 3 IN THESE STANDARDS, BUT MAY VARY BY MANUFACTURER).
2. PROPRIETARY END TREATMENTS MAY VARY IN SIZE AND SHAPE FROM WHAT IS DEPICTED IN THESE STANDARDS. HOWEVER, THE MAXIMUM SLOPES AND MINIMUM OFFSETS DIMENSIONED FROM THE POSTS SHOWN HEREIN SHALL STILL APPLY.
3. END TREATMENT TEST LEVEL AND TYPE (TANGENT OR FLARED) SHALL BE SPECIFIED IN THE PLANS.
4. CONSTRUCT TANGENT AND FLARED END TREATMENTS IN ACCORDANCE WITH THE MANUFACTURER'S UNIQUE DRAWING DETAILS, PROCEDURES, AND SPECIFICATIONS.
5. AT THE DISCRETION OF THE ENGINEER, THE FACE OF THE TANGENT END TREATMENT IMPACT HEAD MAY BE OFFSET UP TO 2'-0" FROM THE PROJECTED FACE OF GUARDRAIL TO MINIMIZE NUISANCE HITS. THE OFFSET SHALL OCCUR OVER THE ENTIRE LENGTH OF THE END TREATMENT UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER.
6. LATERAL OFFSET OF FLARED END TREATMENT SHALL BE DETERMINED BY THE DESIGN ENGINEER FOLLOWING THE METHODOLOGY FOUND IN THE *ROADSIDE DESIGN GUIDE* AND SHOULD FALL WITHIN THE ALLOWABLE TOLERANCES SPECIFIED BY THE MANUFACTURER. LATERAL OFFSET SHALL BE MEASURED FROM THE EDGE OF TRAVELED WAY TO THE FACE OF THE GUARDRAIL AT POST #3.
7. END TREATMENTS SHALL NOT TERMINATE CURVED W-BEAM SEGMENTS.
8. END TREATMENT IMPACT HEAD DELINEATION SHALL CONFORM TO 601.63.
9. INSTALL GRADING AS SHOWN HEREIN UNDER SEPARATE PAY ITEMS.
10. SEE 400.2.2 FOR APPROACH TERMINAL GEOMETRY FOR GUARDRAIL INSTALLED ADJACENT TO CURB AND DOUBLE FACED GUARDRAIL.
11. MAINTAIN 2'-0" (MIN) OFFSET TO FRONT SLOPE BREAK DOWNSTREAM OF MIDSPAN SPLICE LOCATION AT ALL TIMES. IF, DOWNSTREAM OF THE SPLICE, GRADING CONSTRAINTS INHIBIT THIS MINIMUM OFFSET THEN USE DEEP STEEL POSTS AND TRANSITION TO A SLOPE BREAK CONDITION DESIGN PER THE DETAIL IN 400.1.5 UNTIL THE 2'-0" OFFSET CAN BE MET.



SECTION AT POST (1)
WITH UNPAVED SHOULDER



SECTION AT POST (1)
WITH FULLY PAVED SHOULDER



SECTION AT POST (1)
WITH TYPE 'A' BERM

massDOT Massachusetts Department of Transportation Highway Division	CONSTRUCTION STANDARDS SECTION 400	APPROACH GEOMETRY : SINGLE FACED	DATE OF ISSUE OCTOBER 2017	DRAWING NUMBER 400.2.1

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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TOWN OF SOUTHWICK
CONSTRUCTION DETAILS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: 06/03/2020

C5.12

File Path: J:\DWG\P2017\0390\G11\Civil\Details\20170390G11_DET02.dwg Layout: CD-512 Plotted: Fri, June 12, 2020 - 5:53 PM User: mtrombley
Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

SOIL BORING LOG

FUSS & O'NEILL

BORING NO.: **B-1** — Page 1 of 1

Project:	Klaus Anderson Road / Johnson Brook Road - Stream Crossing Redesign	**Project No.:**	20170390.G11
Location:	Southwick, MA	**Project Mgr:**	Julianne Busa
Client:	Town of Southwick, MA	**Field Eng. Staff:**	P. Grulke
Drilling Co.:	Seaboard Geotechnical and Environmental Drilling Services	**Date Started:**	December 4, 2019
Driller:	D. Griffin	**Date Finished:**	December 4, 2019

Elevation: 249.5 ft. **Vertical Datum:** NAVD 1988 **Boring Location:** (see boring location plan) **Coord.:** Not Surveyed **Horizontal Datum:**

Item	Casing	Sampler	Core Barrel
Type	HW	SS	NX
Length (ft)	5	2	5
Inside Dia. (in.)	4	1.375	2.155
Hammer Wt. (lb.)	140	140	-
Hammer Fall (in.)	30	30	-

Rig Make & Model: Mobile B-53
- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ Rubber Tire ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☑ Roller Bit
- ☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic ☐

Drilling Fluid: ☐ Bentonite ☐ Polymer ☑ Water ☐ None

Drill Rod Size: — **Casing Advance:** 4" I.D. FWC and roller bit from 0.3' to 10.1'

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
	SS-1 0.0'- 2.0'	6/24	15 10 9 6			0.3 Bituminous Concrete	-	-	-	-	
					FILL	Medium dense, gray to brown, fine to coarse SAND, some Gravel, little Silt					moist
	SS-2 2.0'- 4.0'	0/24	7 6 5 2		FILL	Same as above	-	-	-	-	moist
5						5.0					
	SS-3 5.0'- 7.0'	6/24	3 6 7 11		SM	Medium dense, red to brown, fine to coarse SAND, some Gravel, little Silt	-	-	-	-	moist
	SS-4 7.0'- 8.9'	0/23	4 6 6 50/5"		SM	Same as above, except occasional cobbles and boulders	-	-	-	-	moist
240 / 10						10.0					
	SS-5 10.0'- 10.1'	1/1	50/1"			10.1 Very dense, red, Weathered Arkose	-	-	-	-	
15											
230											

Water Level Data					Minor Constituent Proportions	Soil Density	Soil Consistency	Sample Type	Notes:
Date	Time	Elapsed Time (hr)	Depth in feet: Bottom of Hole	Depth in feet: Water	And 35 - 50%	Very Loose 0 - 4	Very Soft 0 - 2	SS Split Spoon	Refusal at 9 feet on possible boulder. Boring offset 5 feet east.
					Some 20 - 35%	Loose 4 - 10	Soft 2 - 4	ST Shelby Tube	EOB at 10.1 feet
					Little 10 - 20%	Medium Dense 10 - 30	Medium Stiff 4 - 8	GS Grab Sample	
					Trace <10%	Dense 30 - 50	Stiff 8 - 15	ET Extruded Tube	
						Very Dense >50	Very Stiff 15 - 30		
							Hard >30		Boring No.: **B-1**

Field Test Legend: Dilatancy: N - None S - Slow R - Rapid; Toughness: L - Low M - Medium H - High; Plasticity: NP - Non-Plastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High VH - Very High

NOTES: Soil identifications and field tests based on visual-manual methods per ASTM D2488 and using the modified Burmister System

EX. C-1

SOIL BORING LOG

FUSS & O'NEILL

BORING NO.: **B-2** — Page 1 of 2

Project:	Klaus Anderson Road / Johnson Brook Road - Stream Crossing Redesign	**Project No.:**	20170390.G11
Location:	Southwick, MA	**Project Mgr:**	Julianne Busa
Client:	Town of Southwick, MA	**Field Eng. Staff:**	P. Grulke
Drilling Co.:	Seaboard Geotechnical and Environmental Drilling Services	**Date Started:**	December 4, 2019
Driller:	D. Griffin	**Date Finished:**	December 4, 2019

Elevation: 249.5 ft. **Vertical Datum:** NAVD 1988 **Boring Location:** (see boring location plan) **Coord.:** Not Surveyed **Horizontal Datum:**

Item	Casing	Sampler	Core Barrel
Type	HW	SS	NX
Length (ft)	5	2	5
Inside Dia. (in.)	4	1.375	1.875
Hammer Wt. (lb.)	140	140	-
Hammer Fall (in.)	30	30	-

Rig Make & Model: Mobile B-53
- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ Rubber Tire ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☑ Roller Bit
- ☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic ☐

Drilling Fluid: ☐ Bentonite ☐ Polymer ☑ Water ☐ None

Drill Rod Size: — **Casing Advance:** 4" I.D. FWC and roller bit from 0.3' to 11' then NX core barrel to 21'

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
	SS-1 0.0'- 2.0'	0/24	16 10 10 9			0.3 Bituminous Concrete	-	-	-	-	
					FILL	Medium dense, gray to brown, fine to coarse SAND, some Gravel, little Silt					moist
	SS-2 2.0'- 4.0'	1/24	7 6 5 4		FILL	Same as above	-	-	-	-	moist
5						5.0					
	SS-3 5.0'- 7.0'	9/24	3 4 9 3		SM	Medium dense, red to brown, fine to coarse SAND, some Gravel, little Silt	-	-	-	-	moist
	SS-4 7.0'- 9.0'	5/24	6 1 1 2		SM	Same as above, except very loose	-	-	-	-	moist
240 / 10											
	SS-5 10.0'- 11.9'	15/23	7 8 14 50/5"		SM	Same as above, except occasional Cobbles	-	-	-	-	moist
						11.0					
	R-1 11.0'- 16.0'	36/60				Very dense, red, Weathered Arkose	-	-	-	-	RQD=0%
15						16.0					
	R-2 16.0'- 21.0'	54/60				Slightly to moderately weathered, very close to close joint spacing, reddish brown, ARKOSE	-	-	-	-	RQD=23%
230											

Water Level Data					Minor Constituent Proportions	Soil Density	Soil Consistency	Sample Type	Notes:
Date	Time	Elapsed Time (hr)	Depth in feet: Bottom of Hole	Depth in feet: Water	And 35 - 50%	Very Loose 0 - 4	Very Soft 0 - 2	SS Split Spoon	E.O.B. at 21 feet
					Some 20 - 35%	Loose 4 - 10	Soft 2 - 4	ST Shelby Tube	
					Little 10 - 20%	Medium Dense 10 - 30	Medium Stiff 4 - 8	GS Grab Sample	
					Trace <10%	Dense 30 - 50	Stiff 8 - 15	ET Extruded Tube	
						Very Dense >50	Very Stiff 15 - 30		
							Hard >30		Boring No.: **B-2**

Field Test Legend: Dilatancy: N - None S - Slow R - Rapid; Toughness: L - Low M - Medium H - High; Plasticity: NP - Non-Plastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High VH - Very High

NOTES: Soil identifications and field tests based on visual-manual methods per ASTM D2488 and using the modified Burmister System

EX. C-2

SOIL BORING LOG
(continued)

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BORING NO.: **B-2** — Page 2 of 2

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Dilatancy	Toughness	Plasticity	Dry Strength	Remarks*
						21.0					
25											
220 / 30											
35											
210 / 40											
45											

NOTES:

PROJECT NO.: **20170390.G11** BORING NO.: **B-2**

NOTES: Soil identifications and field tests based on visual-manual methods per ASTM D2488 and using the modified Burmister System

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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DATUM: HORZ.: VERT.:
GRAPHIC SCALE 0

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PROJ. No.: 20170390.G11
DATE: 06/03/2020

C5.13

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