JOHNSON BROOK RESTORATION

KLAUS ANDERSON RD OVER JOHNSON BROOK · SOUTHWICK · MASSACHUSETTS

PROPOSED CULVERT REPLACEMENT

FEBRUARY 16, 2022

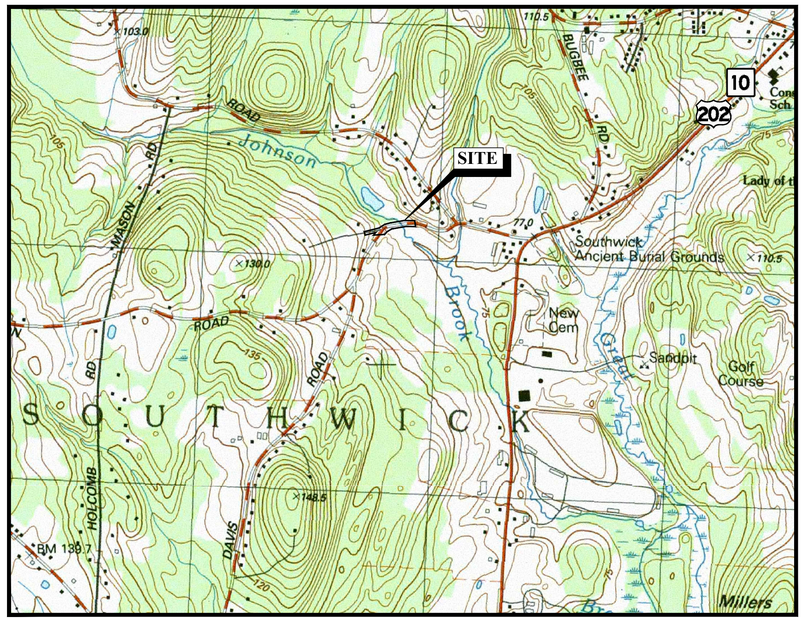
BID DOCUMENTS

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

SHEET INDEX



LOCATION MAP
SCALE: 1" = 1000'

BID ALTERNATES:

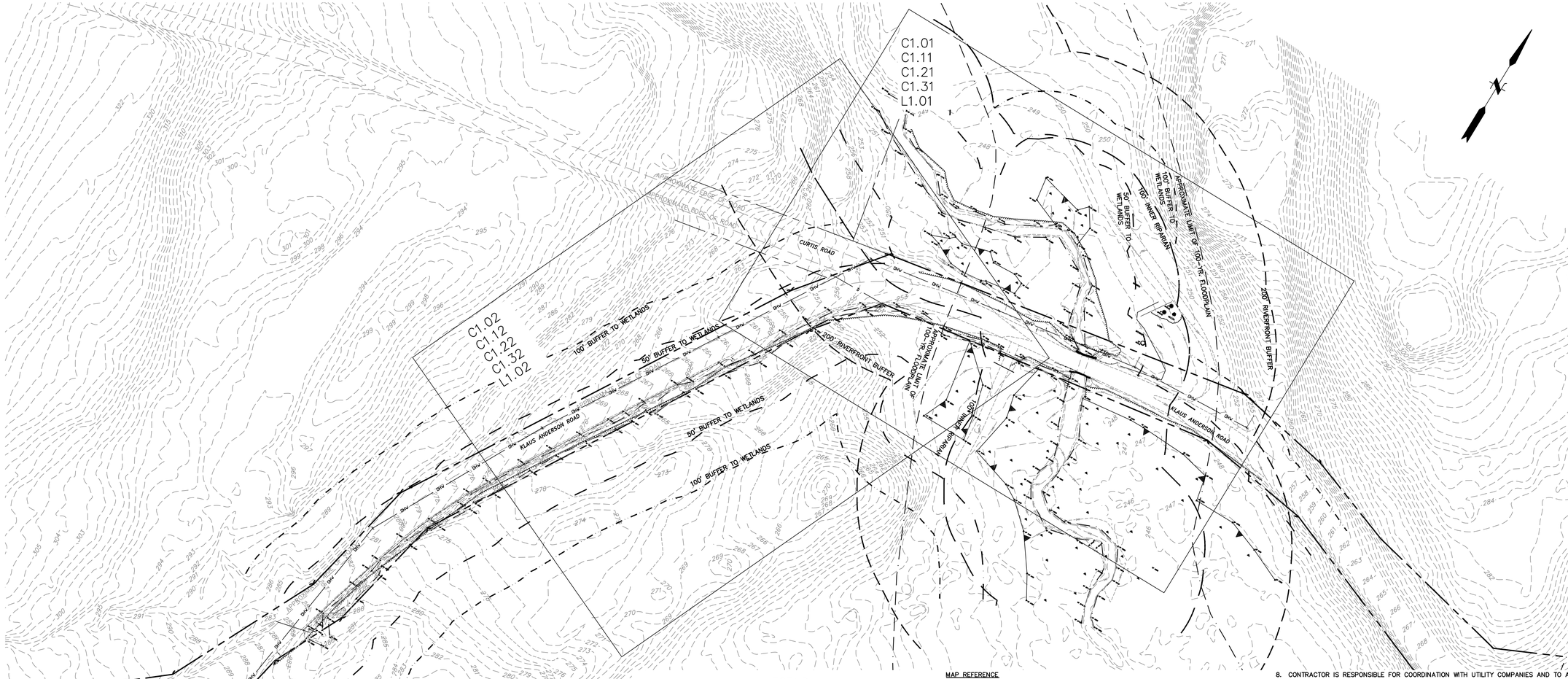
1. ALTERNATE 1 – DEDUCT STEP POOLS AND ASSOCIATED WORK ON CURTIS ROAD
2. ALTERNATE 2 – DEDUCT VEGETATED COIR LOG SYSTEM

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER

2/16/2022

PROJ. No.: 20180390.G14
DATE: FEBRUARY 2022

GI-001



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
- WETLAND FLAG

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 # 7954i01, MAP #7953-190917.
   - 1.b. INFORMATION FROM MASS GIS DATA RECEIVED FROM OLIVER GIS ON SEPTEMBER 4, 2019.
   - 1.c. PROPERTY LINES SHOWN ARE BOTH FROM SURVEY AND APPROXIMATE BASED ON MASS GIS. ACTUAL RIGHT OF WAY LINES WILL BE SURVEYED AND MARKED OUT BY OTHERS. CONTRACTOR TO COORDINATE WITH TOWN. PROPOSED WORK SHALL ONLY BE DONE WITHIN THE TOWN ROW EXCEPT AS SHOWN IMMEDIATELY AROUND JOHNSON BROOK CROSSING AND DIRECTED BY THE TOWN.
2. TOPOGRAPHIC ELEVATIONS ARE BASED ON 1988 N.A.V.D. SYSTEM.
3. GEOTECHNICAL DATA INCLUDING BORING LOCATIONS AND ELEVATIONS WERE DONE BY FUSS & O'NEILL IN DECEMBER 2019.
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 251.5 AT ROAD CROSSING.

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.
8. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES AND TO ADJUST OR RELOCATE OVERHEAD UTILITIES AS NEEDED FOR CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR PROPOSING A STAGING AREA LOCATION THAT CONFORMS TO THE ORDER OF CONDITIONS AND ALL APPLICABLE REGULATIONS.
10. CONTRACTOR MUST MAINTAIN VEHICULAR ACCESS FOR SCHOOL BUSES FOR THE REMAINDER OF THIS SCHOOL YEAR AND FOR THE START OF THE FALL 2022 SCHOOL YEAR. CONTRACTOR TO COORDINATE WITH TOWN.

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. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE ORDER OF CONDITIONS. COORDINATE WITH THE TOWN. THE ORDER OF CONDITIONS IS INCLUDED IN THE PROJECT SPECIFICATIONS.
5. CONTRACTOR IS RESPONSIBLE FOR DEWATERING PLAN AS INDICATED IN THE ORDER OF CONDITIONS SPECIAL CONDITION #24: BEFORE WORK STARTS A DEWATERING PLAN,(WESTERN REGION–BUREAU OF WATER RESOURCES–WETLANDS PROGRAM MINIMUM INFORMATION AND DOCUMENTATION FOR DEWATERING PLANS) DESIGNED ACCORDING TO STREAM SIMULATION: AN ECOLOGICAL APPROACH TO PROVIDING PASSAGE FOR AQUATIC ORGANISMS AT ROAD CROSSINGS (USDA FOREST SERVICE–NATIONAL TECHNOLOGY AND DEVELOPMENT PROGRAM 0877 1801–SDTDC, MAY 2008), SHALL BE SUBMITTED TO AND APPROVED BY THE COMMISSION. SEE C1.11 FOR ADDITIONAL DEWATERING NOTES.
6. CONTRACTOR TO PROVIDE AT LEAST 48 HOURS NOTICE FOR REQUESTS FOR ENGINEER SITE VISITS (E.G. PRECONSTRUCTION MEETINGS, CRITICAL CONSTRUCTION MILESTONE VISIT).
7. POST DEP SIGN NUMBER ASSIGNED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
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. CALL DIG-SAFE 811 OR 1-888-DIG-SAFE A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELISI, CIVIL, NO. 45477, COMMONWEALTH OF MASSACHUSETTS, REGISTERED PROFESSIONAL ENGINEER

2/16/2022

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

FUSS & O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
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TOWN OF SOUTHWICK
OVERALL SHEET LAYOUT KEY
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.00

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MATCH LINE SHEET C1.02

MARGARET E. BROOKS
BOOK 4511 PAGE 148
PLAN BOOK 150 PAGE 101

100' BUFFER TO WETLANDS

APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN

100' INNER RIPARIAN

200' RIVERFRONT BUFFER

MOWING

50' BUFFER TO WETLANDS

EDGE OF LAWN

WOOD RAIL FENCE

SPRUCE

BOULDER

MULCH

SPRUCE

LAWN

PAVED DRIVEWAY

MARGARET E. BROOKS
BOOK 4511 PAGE 148
PLAN BOOK 150 PAGE 101

12" MAPLE

MOWING

EDGE OF LAWN

439.01'

S79°0

TBM:
SPIKE IN POLE
ELEV=252.20'
N.A.V.D. 1988

N80°01'32"E

STREAM

50' BUFFER TO WETLANDS

100' BUFFER TO WETLANDS & 100' INNER RIPARIAN

APPROXIMATE PROPERTY LINE

APPROXIMATE EDGE OF ROAD

CURTIS ROAD

119.82'

N38°29'31"E

89.92'

S38°29'31"W

200' RIVERFRONT BUFFER

EDGE OF PAVEMENT

18" CMP
INV=253.04

18" CMP

18" CMP
INV=249.86

INTERMITTENT STREAM

APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN

100' INNER RIPARIAN

24" PVC
INV=247.36

GATE

WOODS ROAD

24" PVC
INV=246.90

STREAM

KLAUS ANDERSON ROAD

EDGE OF PAVEMENT

CONCRETE HEADWALL

CONCRETE HEADWALL
INV. IN=242.24
INV. OUT=242.14

STEEL BEAM GUARDRAIL

STEEL BEAM GUARDRAIL

APPROXIMATE PROPERTY LINE

S81°24'31"W 405.86'

N81°21'57

THOMAS W. ARNOLD
BOOK 20986 PAGE 154
PLAN BOOK 365 PAGE 117

MATCH LINE SHEET C1.02

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING TREE LINE
- WETLAND
- BANK
- 50' BUFFER TO WETLANDS
- 100' BUFFER TO WETLANDS
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- APPROXIMATE EDGE OF ROAD
- EDGE OF ROAD
- APPROXIMATE PROPERTY LINE
- OVER HEAD WIRE
- DRAINAGE PIPE
- GUARDRAIL
- UTILITY POLE
- SIGN
- WETLAND FLAG

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DANIEL F. DELANY
CIVIL
NO. 49477
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

2/16/2022

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

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

TOWN OF SOUTHWICK
EXISTING CONDITIONS PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
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C1.01

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C1.02

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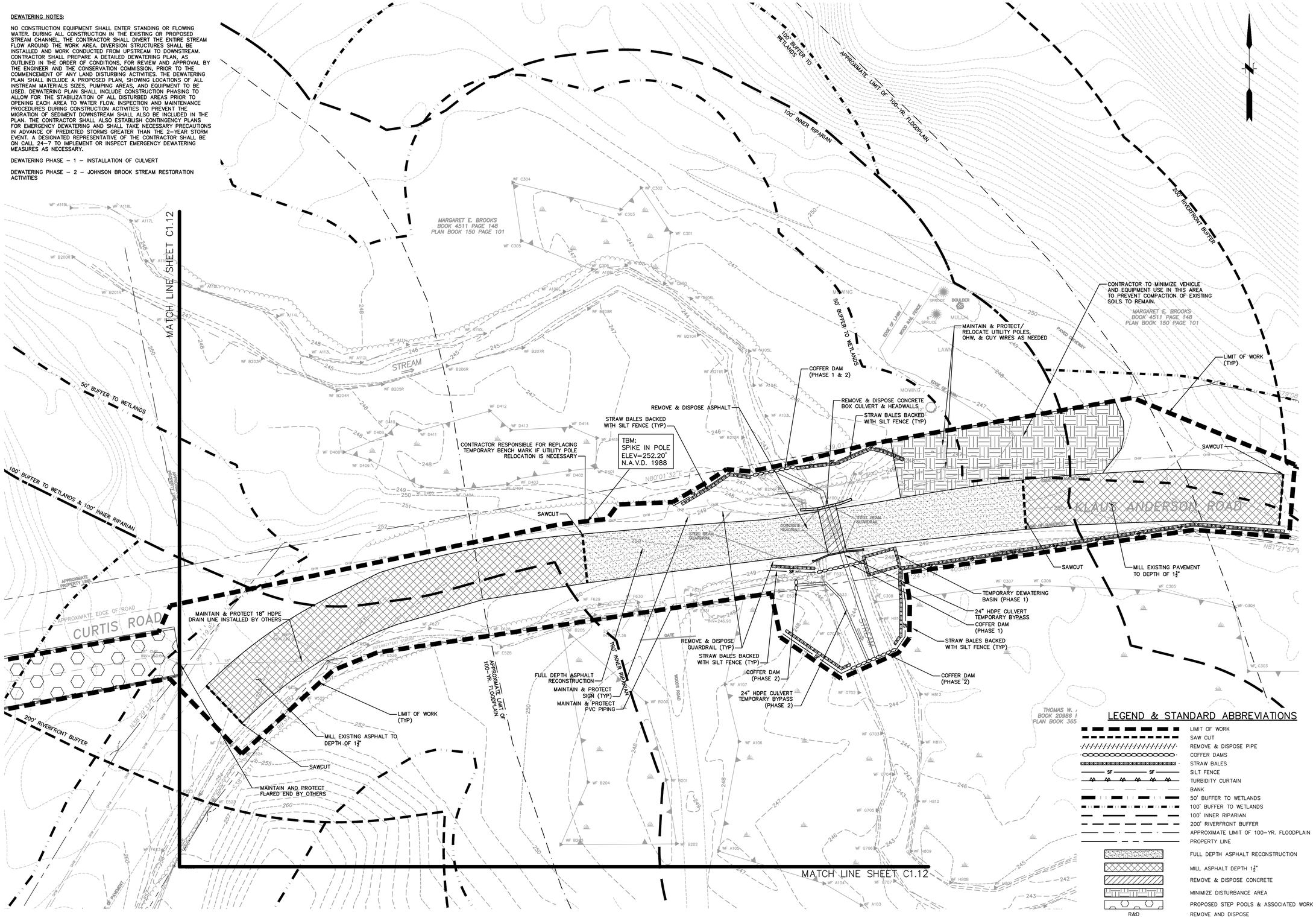
DEWATERING NOTES:

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, AS OUTLINED IN THE ORDER OF CONDITIONS, FOR REVIEW AND APPROVAL BY THE ENGINEER AND THE CONSERVATION COMMISSION, 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
SF SF	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
	MINIMIZE DISTURBANCE AREA
	PROPOSED STEP POOLS & ASSOCIATED WORK
R&D	REMOVE AND DISPOSE
OHW	OVER HEAD WIRE
TYP	TYPICAL

REFER TO SHEET C1.12 FOR GENERAL SITE PREPARATION NOTES

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TOWN OF SOUTHWICK
SITE PREPARATION, EROSION & SEDIMENT CONTROL, AND DEWATERING PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

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C1.11

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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. 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 NO COST TO THE CONTRACTOR. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH DPW.

DEMOLITION

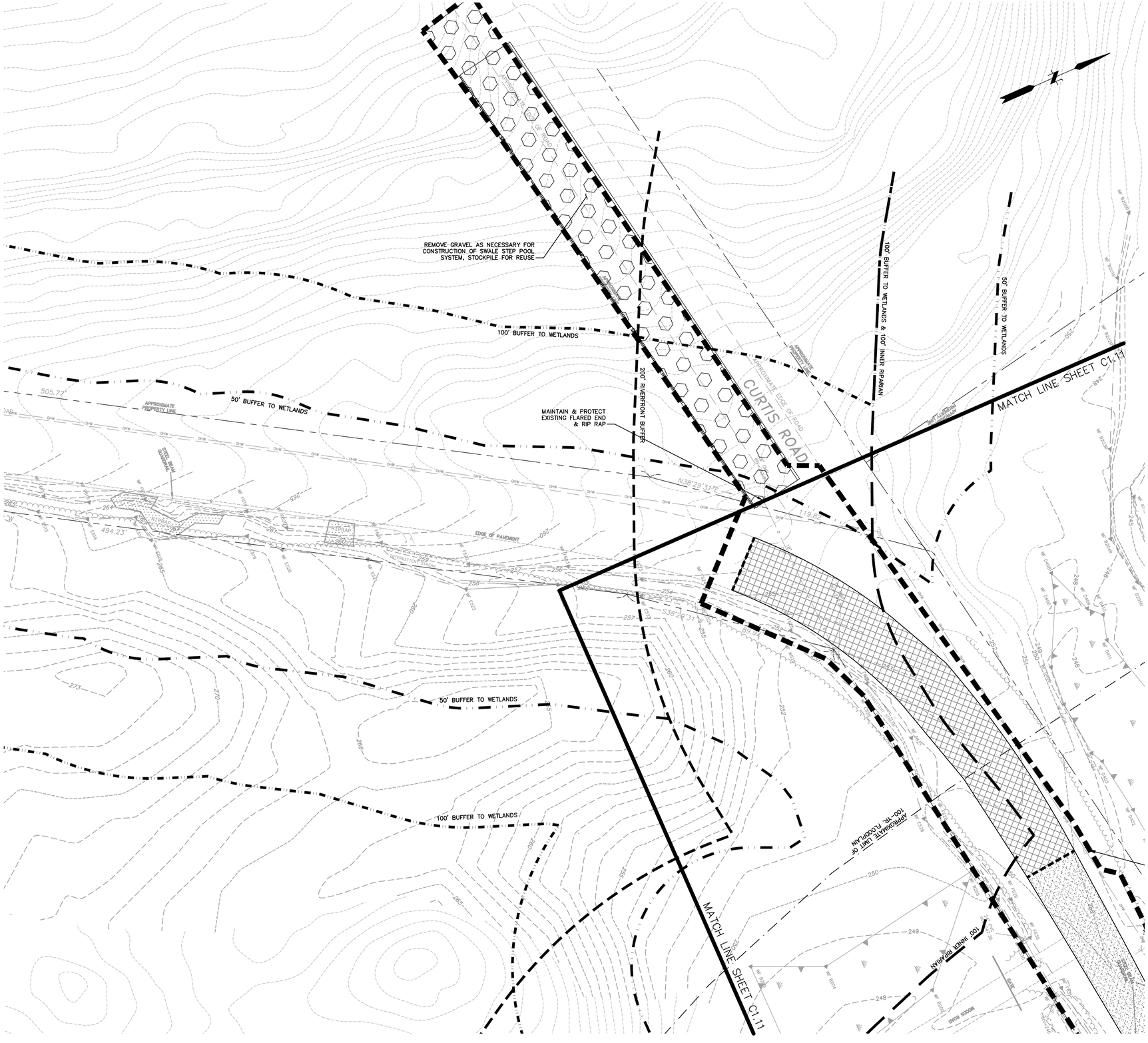
1. THE DEMOLITION PLAN IS PROVIDED FOR INFORMATION ONLY AND MAY NOT INDICATE ALL ITEMS REQUIRED TO BE DEMOLISHED. PERFORM A PRE-BID SITE INSPECTION. COORDINATE DEMOLITION OF UNIDENTIFIED UTILITIES OR STRUCTURES WITH OWNER. DEMOLISH STRUCTURES, SITE IMPROVEMENTS, UTILITIES, ETC. AS REQUIRED TO CONSTRUCT 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.
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 SHALL FLAG ALL TREES TO BE REMOVED OR TRIMMED TO INSTALL PROPOSED WORK. CONTRACTOR SHALL NOTIFY AND COORDINATE REVIEW AND APPROVAL WITH TOWN PRIOR TO ANY TREE TRIMMING OR REMOVAL.

WORK RESTRICTIONS

1. DO NOT CLOSE OR OBSTRUCT ROADWAYS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.
2. WORK IS RESTRICTED TO THE HOURS OF 8AM TO 4PM, MONDAY THROUGH FRIDAY.
3. MAINTAIN AND PROTECT ALL EXISTING UTILITY POLES AND TRAFFIC SIGNS TO REMAIN.
4. CONTRACTOR MUST MAINTAIN VEHICULAR ACCESS FOR SCHOOL BUSES FOR THE REMAINDER OF THIS SCHOOL YEAR AND FOR THE START OF THE FALL 2022 SCHOOL YEAR. CONTRACTOR TO COORDINATE WITH TOWN.



LEGEND & STANDARD ABBREVIATIONS

	LIMIT OF WORK
	SAW CUT
	REMOVE & DISPOSE PIPE
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R&D	REMOVE AND DISPOSE
OHW	OVER HEAD WIRE
TYP	TYPICAL

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C1.12

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MATCH LINE SHEET C1.22

MATCH LINE SHEET C1.22

SEE SHEET C1.22 FOR GENERAL NOTES

100' BUFFER TO WETLANDS

50' BUFFER TO WETLANDS

100' INNER RIPARIAN

APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN

200' RIVERFRONT BUFFER

MARGARET E. BROOKS
BOOK 4511 PAGE 148
PLAN BOOK 150 PAGE 101

THOMAS W. ARNOLD
BOOK 20986 PAGE 154
PLAN BOOK 365 PAGE 117

CURTIS ROAD

STREAM

WOODS ROAD

MAINTAIN & PROTECT FLARED END & RIP RAP
ADJUST RIP RAP AS NEEDED FOR STEP POOLS

2" CRUSHED WASHED STONE SHOULDER (3' WIDE TYP.)

MASSDOT FLARED END SECTION – SEE MASSDOT DETAIL 400.2.1

4" DOUBLE YELLOW PAINTED PAVEMENT MARKING (TYP)

LIMIT OF WORK (TYP)

RIP RAP SPLASH PAD & RIP RAP SLOPE PROTECTION

VEGETATED COIR LOG SYSTEM (TYP) SEE DETAILS AND GRADING PLAN (ALTERNATE 2)

TRANSITION TO BRIDGE RAIL (400.3.6)

PRECAST HIGHWAY GUARDRAIL TRANSITION

WINGWALL WITH BRIDGE RAIL

SEE ENLARGEMENT SHEET STR-1

WINGWALL WITH BRIDGERAIL

PRECAST HIGHWAY GUARDRAIL TRANSITION

TRANSITION TO BRIDGE RAIL (400.3.6)

FULL DEPTH ASPHALT CONSTRUCTION

GUARDRAIL

CONCRETE SIDEWALK SEE CIVIL DETAIL

START VA CURB

CONCRETE SIDEWALK AT CULVERT SEE STR FOR DETAIL

END VA CURB

TRANSITION TO BRIDGE RAIL (400.3.6)

19'W X 6'H PRECAST CONCRETE OPEN BOTTOM CULVERT

WINGWALL WITH BRIDGE RAIL

CONCRETE SIDEWALK SEE CIVIL DETAIL

2 INCH CRUSHED STONE SHOULDER (3'WIDE TYP)

GUARDRAIL (TYP)

TRANSITION TO BRIDGE RAIL (400.3.6)

MASSDOT FLARED END SECTION – SEE MASSDOT DETAIL 400.2.1

4" WHITE PAINTED PAVEMENT MARKING (1' OFF EDGE OF EXISTING ASPHALT) (TYP)

APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN

LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- PROPOSED CLEARING LIMIT (APPROX.)
- BANK
- WETLAND
- 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 & SIDEWALK
- PROPOSED 2" CRUSHED WASHED STONE
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED RIP RAP
- PROPOSED REINFORCED CONCRETE FLARED END
- TYPICAL WETLAND FLAG (TYP ▶ WF B200)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

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

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

TOWN OF SOUTHWICK
SITE LAYOUT PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.21

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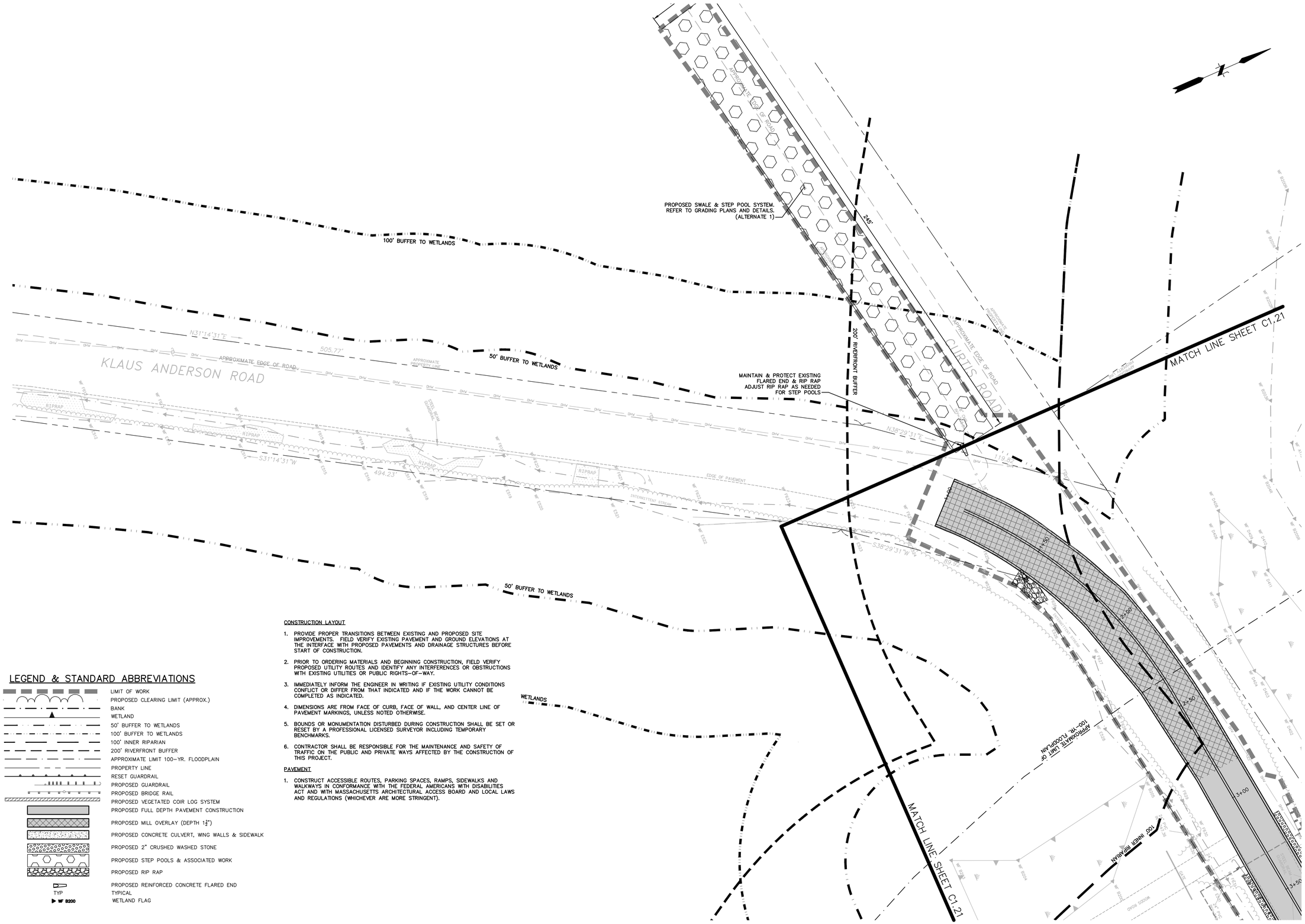

LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- PROPOSED CLEARING LIMIT (APPROX.)
- BANK
- WETLAND
- 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 & SIDEWALK
- PROPOSED 2" CRUSHED WASHED STONE
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED RIP RAP
- TYP — PROPOSED REINFORCED CONCRETE FLARED END TYPICAL
- WF B200 — WETLAND FLAG

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 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 INCLUDING TEMPORARY BENCHMARKS.
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).

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER

2/16/2022

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C1.22

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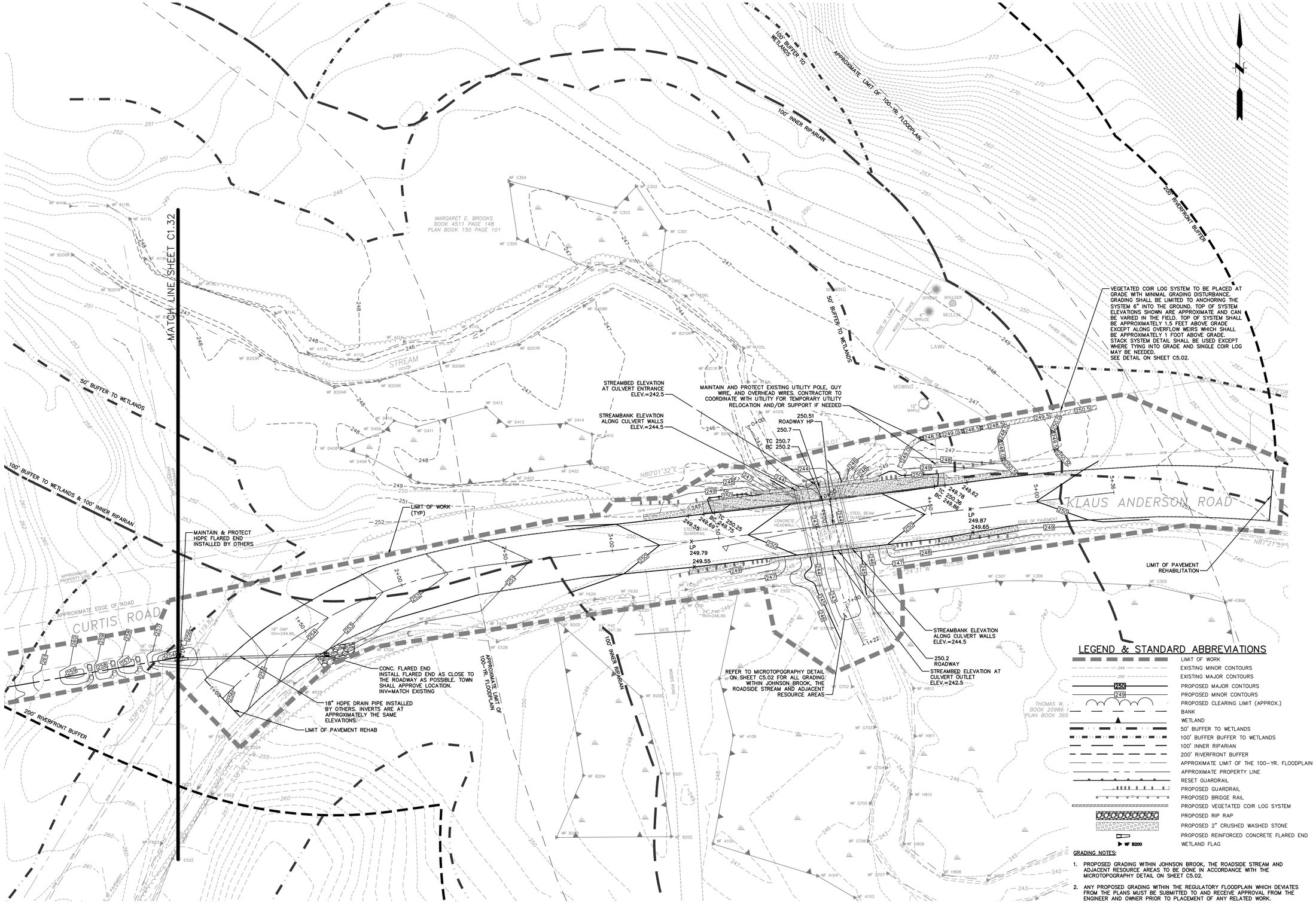

LEGEND & STANDARD ABBREVIATIONS

- LIMIT OF WORK
- 249 EXISTING MINOR CONTOURS
- 250 EXISTING MAJOR CONTOURS
- 250 PROPOSED MAJOR CONTOURS
- 249 PROPOSED MINOR CONTOURS
- PROPOSED CLEARING LIMIT (APPROX.)
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- WETLAND
- 50' BUFFER TO WETLANDS
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- APPROXIMATE LIMIT OF THE 100-YR. FLOODPLAIN
- APPROXIMATE PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED RIP RAP
- PROPOSED 2" CRUSHED WASHED STONE
- PROPOSED REINFORCED CONCRETE FLARED END
- WF B200 WETLAND FLAG

GRADING NOTES:

1. PROPOSED GRADING WITHIN JOHNSON BROOK, THE ROADSIDE STREAM AND ADJACENT RESOURCE AREAS TO BE DONE IN ACCORDANCE WITH THE MICROTOPOGRAPHY DETAIL ON SHEET C5.02.
2. ANY PROPOSED GRADING WITHIN THE REGULATORY FLOODPLAIN WHICH DEVIATES FROM THE PLANS MUST BE SUBMITTED TO AND RECEIVE APPROVAL FROM THE ENGINEER AND OWNER PRIOR TO PLACEMENT OF ANY RELATED WORK.
3. STEP POOLS ALONG CUTRIS ROAD ARE NOT WITHIN THE REGULATORY FLOODPLAIN AND ARE BASED ON GIS TOPOGRAPHY. REFER TO DETAIL.
4. REFER TO SHEET C1.32 FOR ADDITIONAL NOTES.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

COMMONWEALTH OF MASSACHUSETTS
DANIEL F. DELANY
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NO. 43477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

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

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.31

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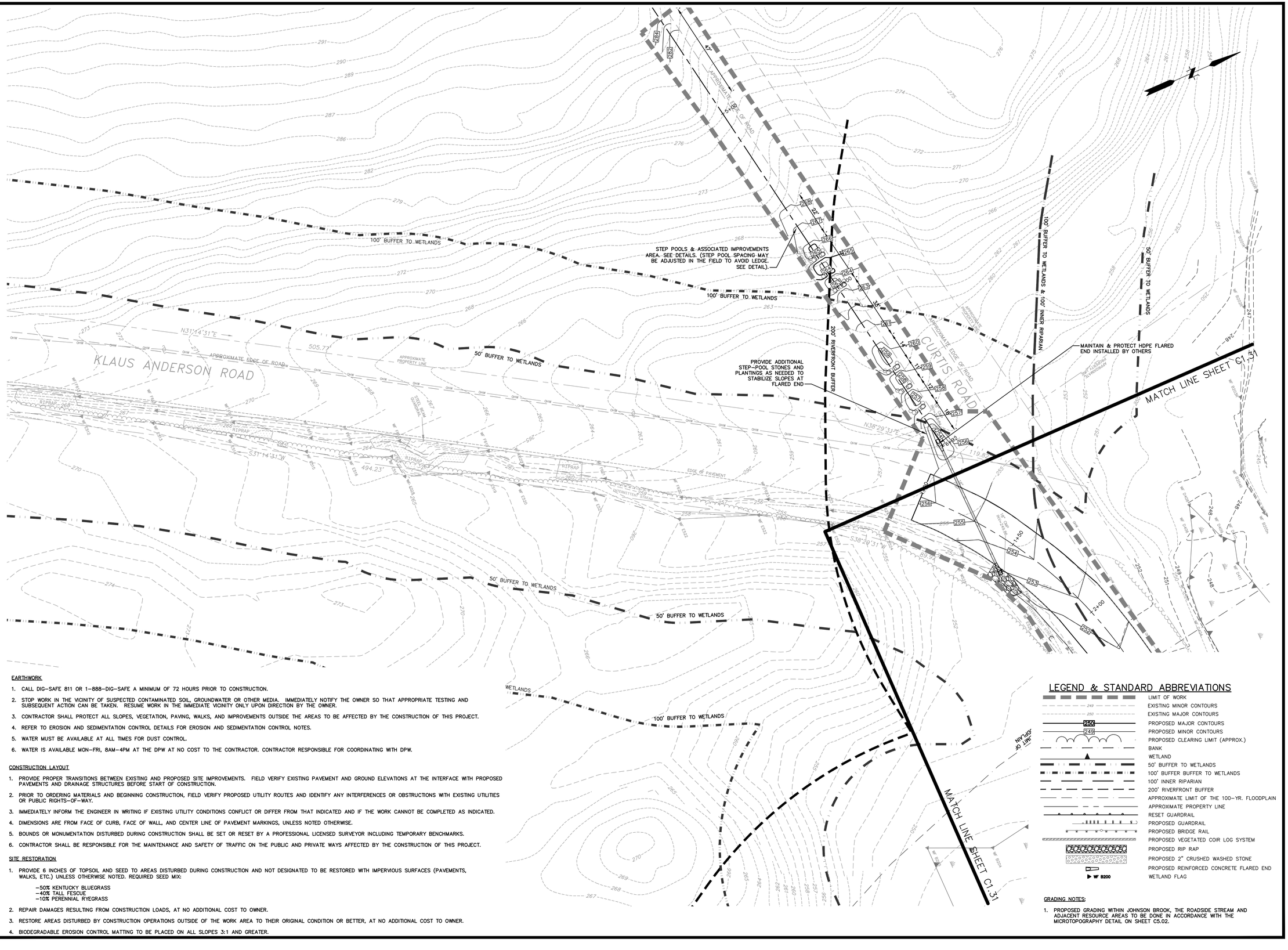

EARTHWORK

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. WATER MUST BE AVAILABLE AT ALL TIMES FOR DUST CONTROL.
6. WATER IS AVAILABLE MON-FRI, 8AM-4PM AT THE DPW AT NO COST TO THE CONTRACTOR. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH DPW.

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 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 INCLUDING TEMPORARY BENCHMARKS.
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.

SITE RESTORATION

1. PROVIDE 6 INCHES OF TOPSOIL AND SEED TO AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED TO BE RESTORED WITH IMPERVIOUS SURFACES (PAVEMENTS, WALKS, ETC.) UNLESS OTHERWISE NOTED. REQUIRED SEED MIX:
   - 50% KENTUCKY BLUEGRASS
   - 40% TALL FESCUE
   - 10% PERENNIAL RYEGRASS
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.
4. 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
- WETLAND
- 50' BUFFER TO WETLANDS
- 100' BUFFER BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF THE 100-YR. FLOODPLAIN
- APPROXIMATE PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED RIP RAP
- PROPOSED 2" CRUSHED WASHED STONE
- PROPOSED REINFORCED CONCRETE FLARED END
- WF B200 WETLAND FLAG

GRADING NOTES:

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

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANO, CIVIL, NO. 49477, REGISTERED PROFESSIONAL ENGINEER, COMMONWEALTH OF MASSACHUSETTS

2/16/2022

SCALE:
HORZ.: 1" = 20'
VERT.:
DATUM:
HORZ.:
VERT.:
0 20 40 GRAPHIC SCALE

FUSS & O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
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TOWN OF SOUTHWICK
GRADING & DRAINAGE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.32

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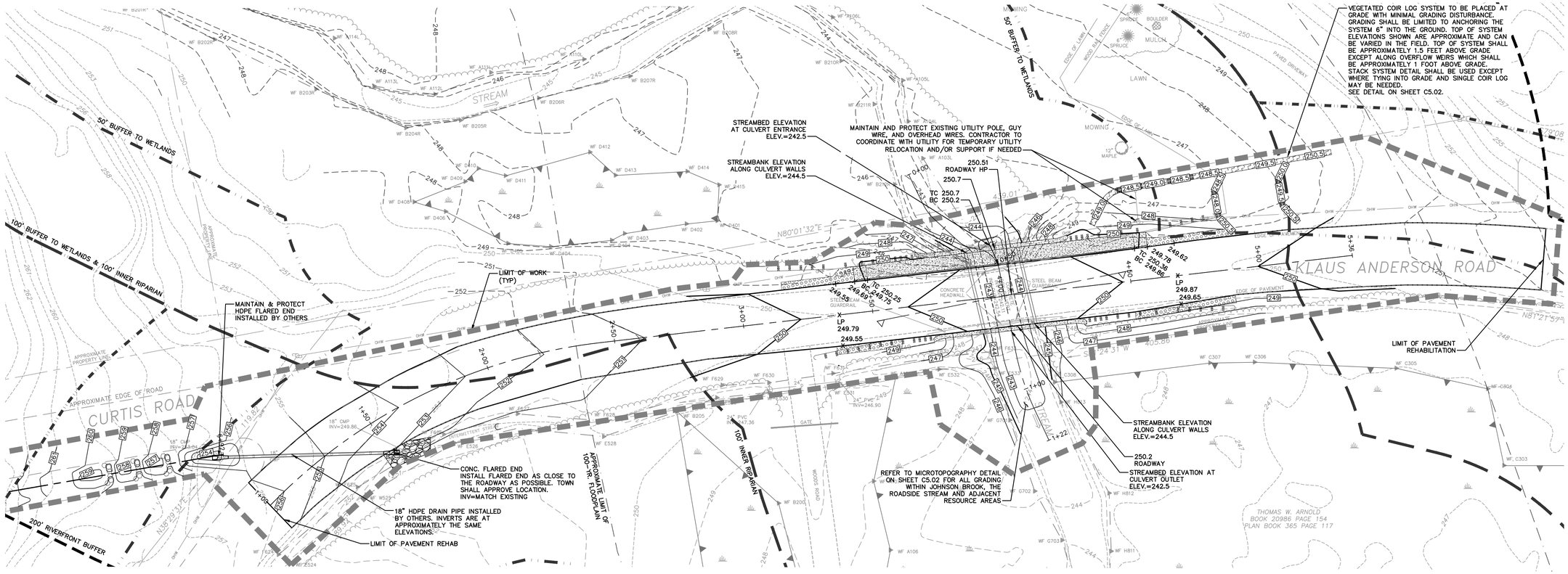

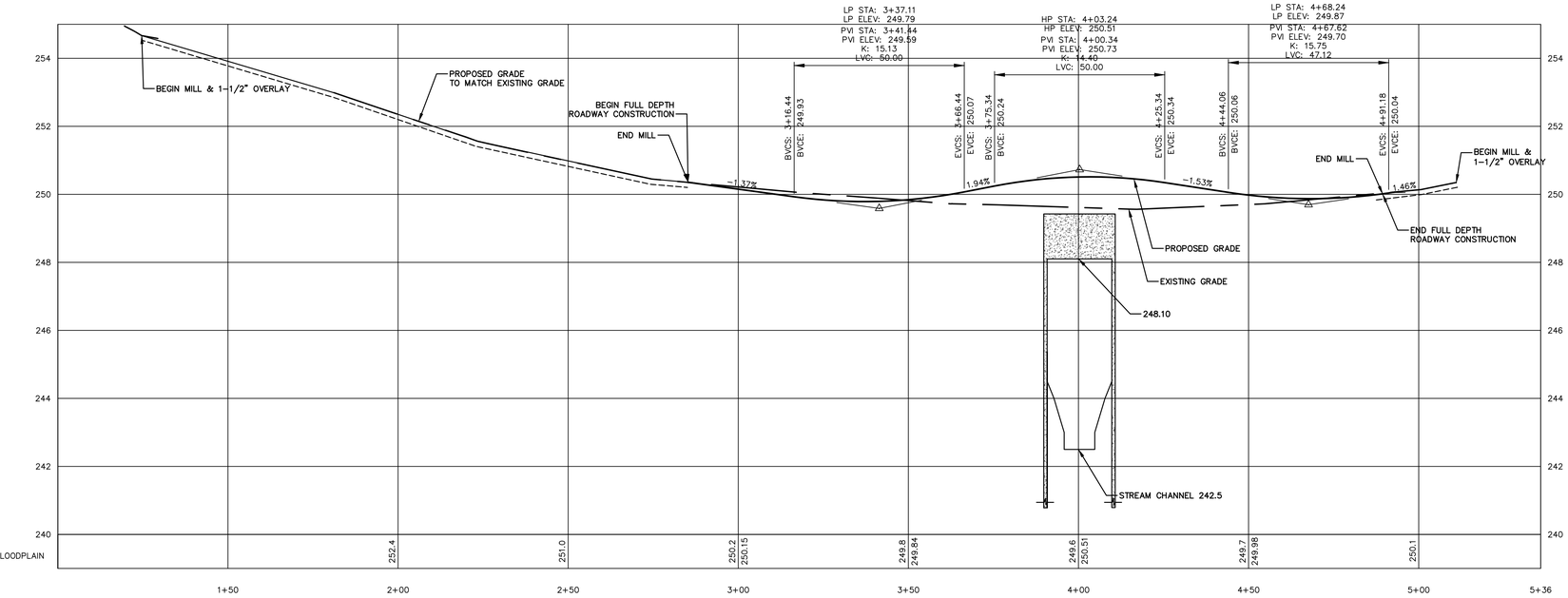

ROADWAY PROFILE STA 1+00 – 5+36
SCALE: H:1"=20'
V:1"=2'

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
- WETLAND
- 50' BUFFER TO WETLANDS
- 100' BUFFER BUFFER TO WETLANDS
- 100' INNER RIPARIAN
- 200' RIVERFRONT BUFFER
- APPROXIMATE LIMIT OF THE 100-YR. FLOODPLAIN
- APPROXIMATE PROPERTY LINE
- RESET GUARDRAIL
- PROPOSED GUARDRAIL
- PROPOSED BRIDGE RAIL
- PROPOSED VEGETATED COIR LOG SYSTEM
- PROPOSED RIP RAP
- PROPOSED 2" CRUSHED WASHED STONE
- PROPOSED REINFORCED CONCRETE FLARED END
- 1+00 WETLAND FLAG
- WF B200

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

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

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SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

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

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.41

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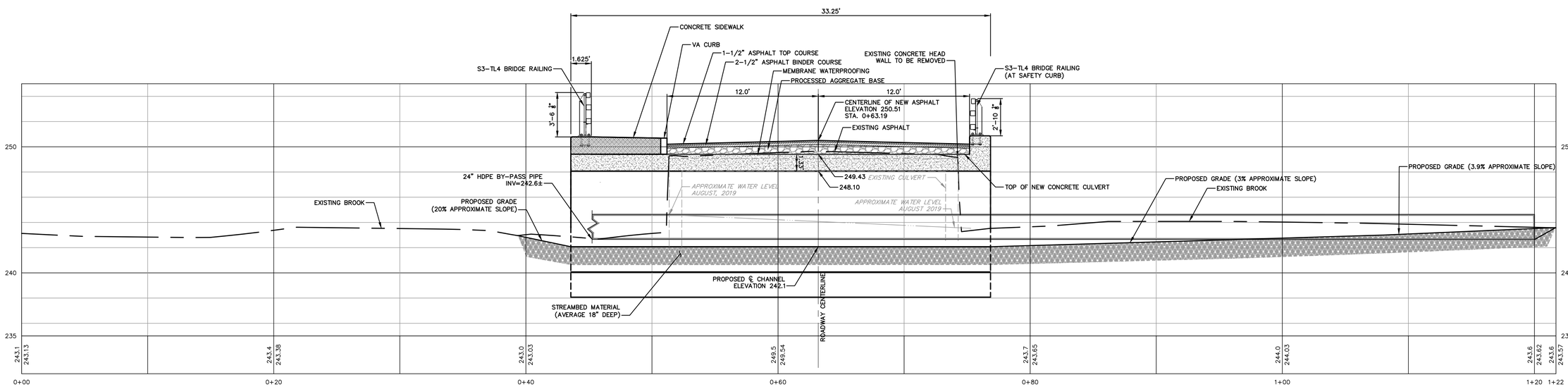

JOHNSON BROOK PROFILE STA 0+00 – 1+22
SCALE: H: 1"=4'
V: 1"=4'

LEGEND

- STREAM BED MATERIAL
- CONCRETE CULVERT
- CONCRETE SIDEWALK
- PROCESSED AGGREGATE BASE
- ASPHALT TOP COURSE
- ASPHALT BINDER COURSE

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.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 45477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

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

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TOWN OF SOUTHWICK
STREAM PROFILE
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C1.42

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MS VIEW:
LAYER STATE:

MATCH LINE SHEET L1.02

MATCH LINE SHEET L1.02

50' BUFFER TO WETLANDS

100' BUFFER TO WETLANDS & 100' INNER RIPARIAN

200' RIVERFRONT BUFFER

APPROXIMATE LIMIT OF 100-YR. FLOODPLAIN

100' INNER RIPARIAN

50' BUFFER TO WETLAND

200' RIVERFRONT BUFFER

APPROXIMATE PROPERTY LINE

APPROXIMATE EDGE OF ROAD

CURTIS ROAD

KLAUS ANDERSON ROAD

STREAM

WOODS ROAD

GATE

PAVED DRIVEWAY

EDGE OF LAWN

WOOD RAIL FENCE

LAWN

MULCH

SPRUCE

BOULDER

CONCRETE HEADWALL

STEEL BEAM GUARDRAIL

EDGE OF PAVEMENT

CONTRACTOR TO MAINTAIN AS MUCH EXISTING VEGETATION AS POSSIBLE BETWEEN COIR LOGS; ANY DISTURBED AREAS SHALL BE SEEDED WITH WET MEADOW SEED MIX.

LIVE STAKING AREA ON COIR LOGS

WET MEADOW SEED MIX AT AREA DISTURBED FOR GRADING APX. 1,390 S.F.

LIVE STAKING AREA

EROSION SEED MIX 230 S.F.

LIVE STAKING AREA 34 LS

EROSION SEED MIX 260 S.F.

GRASS

EROSION SEED MIX 250 S.F.

WET MEADOW SEED MIX 240 S.F.

UPLAND SEED MIX 920 S.F.

WET MEADOW SEED MIX 620 S.F.

GRASS

UPLAND SEED MIX 560 S.F.

EROSION SEED MIX 270 S.F.

LIVE STAKING AREA 34 LS

LIVE STAKING AREA

EROSION SEED MIX 500 S.F.

70 LS

28 LS

29 LS

32 LS

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
- WETLAND FLAG
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS

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.
2. BIODEGRADABLE EROSION CONTROL MATTING TO BE PLACED ON ALL SLOPES 3:1 OR GREATER. SEE DETAILS.

REFER TO SHEET L1.03 FOR PLANT LIST

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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2/16/2022

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TOWN OF SOUTHWICK
SITE LANDSCAPE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
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L1.01

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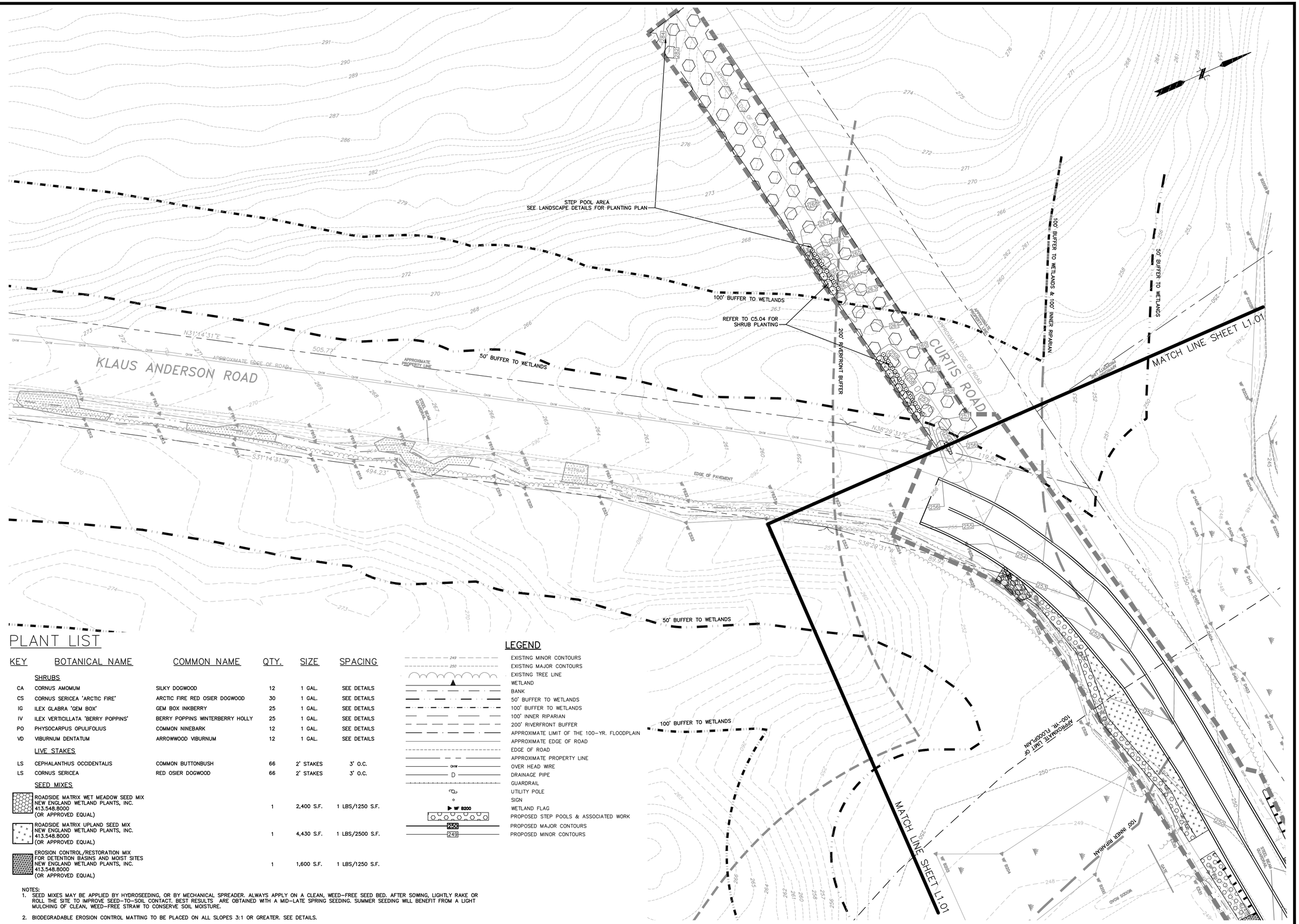

PLANT LIST

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	2,400 S.F.	1 LBS/1250 S.F.
	ROADSIDE MATRIX UPLAND SEED MIX NEW ENGLAND WETLAND PLANTS, INC. 413.548.8000 (OR APPROVED EQUAL)		1	4,430 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	1,600 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.
2. BIODEGRADABLE EROSION CONTROL MATTING TO BE PLACED ON ALL SLOPES 3:1 OR GREATER. SEE DETAILS.

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
- WETLAND FLAG
- PROPOSED STEP POOLS & ASSOCIATED WORK
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
CIVIL
NO. 40477
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
2/16/2022

SCALE:
HORZ.: 1" = 20'
VERT.:
DATUM:
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20 10 0 20
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FUSS & O'NEILL
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TOWN OF SOUTHWICK
SITE LANDSCAPE PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

L1.02

File Path: J:\DWG\P2017\0390\G1\Civil\Plan\20170390G11_LAND01.dwg Layout: L1.02 Plotted: Wed, February 16, 2022 - 1:58 PM User: jblack
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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 AS OUTLINED IN THE ORDER OF CONDITIONS FOR REVIEW AND APPROVAL BY THE ENGINEER AND CONSERVATION COMMISSION PRIOR TO THE COMENCEMENT 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 SHALL BE PLACED ON ALL SLOPES 3:1 OR GREATER.

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. 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.

9. 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.

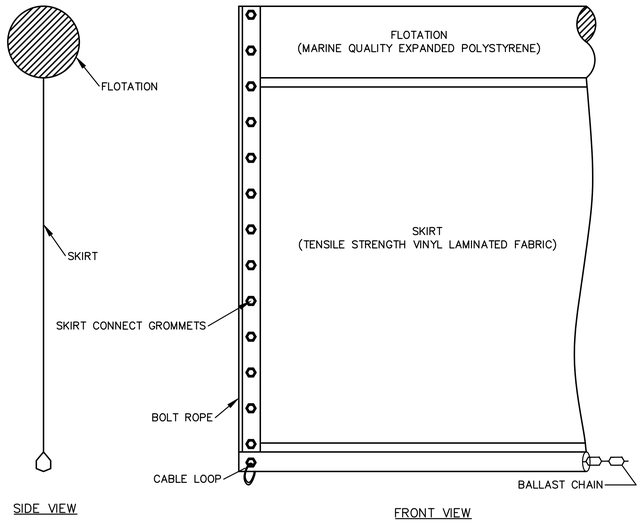
10. THE CONTRACTOR IS RESPONSIBLE TO INSPECT AND REPAIR EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED TO PREVENT DAMAGE OR SEDIMENTATION.

11. 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.

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 DESIGN 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.



SIDE VIEW

FRONT VIEW

TURBIDITY CURTAIN DETAIL
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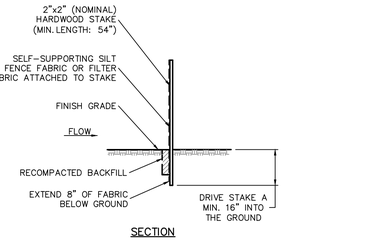
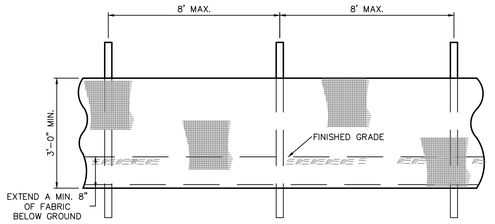


SECTION



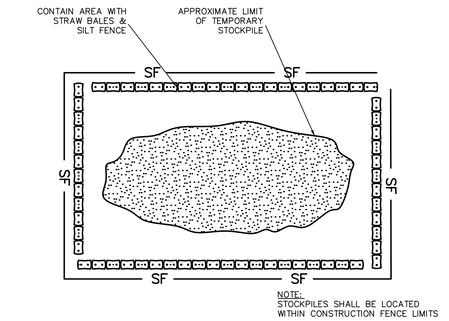
ELEVATION

SILT FENCE NOTES:

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

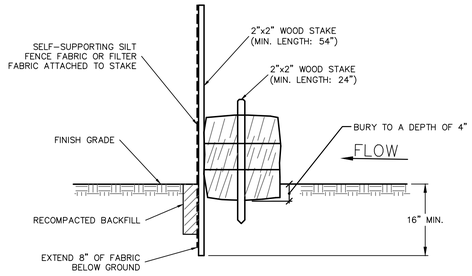
2.) SYNTHETIC FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE FILAMENTS AND SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE SPECIFICATIONS.

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
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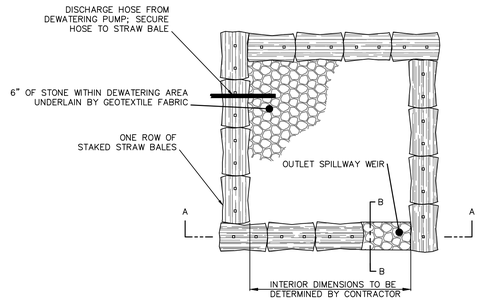
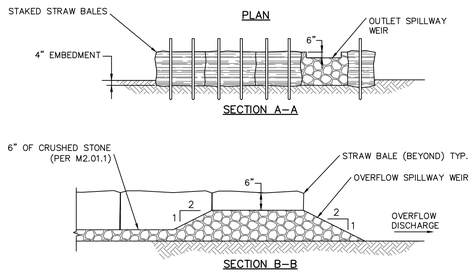


SIZING FORMULA:
CUBIC FT. OF REQUIRED STORAGE =
PUMP DISCHARGE RATE (GPM) x 16

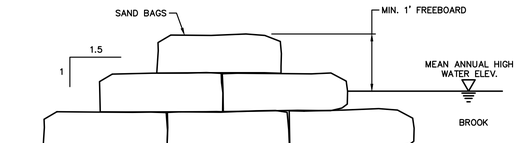


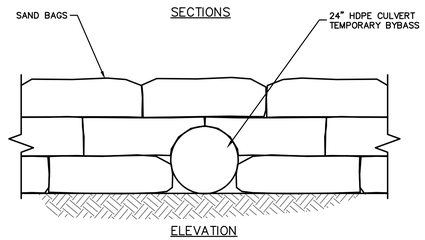
SECTION A-A

SECTION B-B

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.





ELEVATION

TEMPORARY COFFER DAM
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COMMONWEALTH OF MASSACHUSETTS
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TOWN OF SOUTHWICK
EROSION & SEDIMENT CONTROL DETAILS
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SOUTHWICK MASSACHUSETTS

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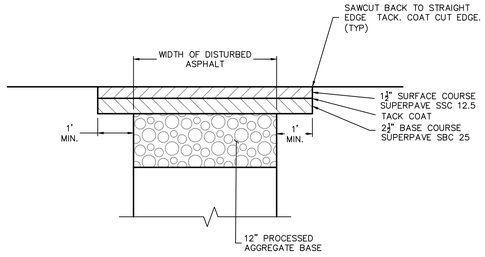

FULL DEPTH PAVEMENT RECONSTRUCTION

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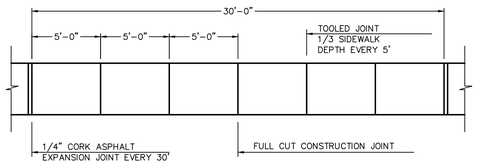
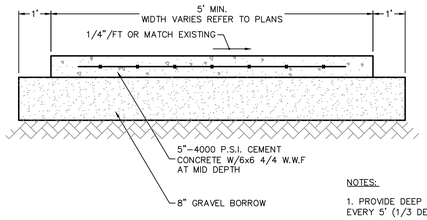


PLAN



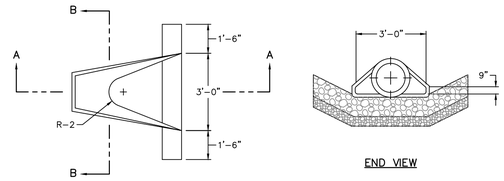
SECTION

NOTES:

1. PROVIDE DEEP DUMMY JOINT EVERY 5' (1/3 DEPTH OF SLAB)
2. REPLACE 1/4" EXPANSION JOINT IF EXISTING JOINT FALLS WITHIN RECONSTRUCTION.
3. REFER TO STRUCTURAL DETAILS FOR CONCRETE SIDEWALK OVER CULVERT

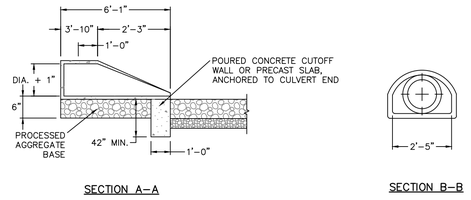
CONCRETE SIDEWALK

SCALE: N.T.S.



PLAN

END VIEW

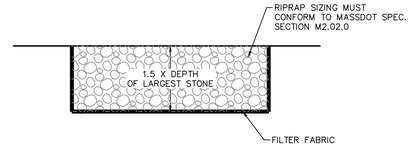


SECTION A-A

SECTION B-B

CONCRETE CULVERT FLARED END

SCALE: N.T.S.



RIP RAP PROTECTION

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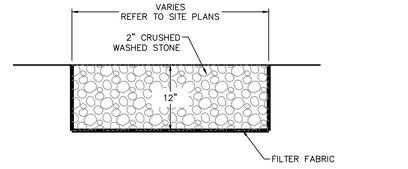
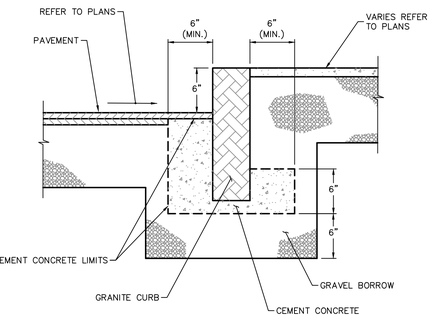


2" CRUSHED STONE SHOULDER

SCALE: N.T.S.

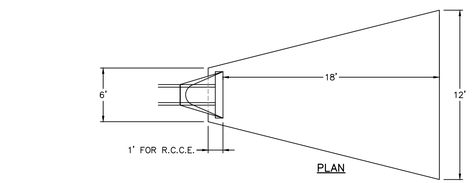


NOTES:

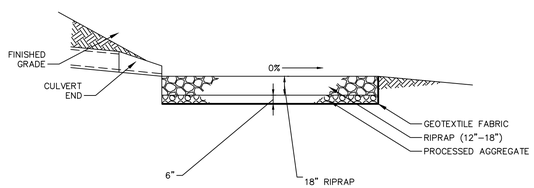
1. LENGTH OF CURB VARIES TO FIT RADIUS. 2 FT. MIN.
2. ENDS SHALL BE SQUARE TO TOP AND RADIAL TO FACE.
3. BUTT ENDS TOGETHER AS CLOSE AS POSSIBLE. MAXIMUM SPACE OF 1/2" ALLOWED. 8" DOWN FROM TOP. JOINT SHALL BE MORTARED FULL DEPTH.
4. 1/2" EXPANSION JOINT EVERY 50± FEET.
5. CURBS TO BE SET ON A RADIUS OF 100 FEET OR LESS SHALL BE CUT TO THE CURVE REQUIRED, AND THEIR ENDS CUT ON RADIAL LINES.
6. 1/2" EXPANSION JOINT AND FILLER WHEN CURB IS ADJACENT TO CONCRETE SIDEWALK.
7. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BINDER, BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE.

VA CURB

SCALE: N.T.S.



PLAN



CONCRETE FLARED END W/RIP RAP APRON

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COMMONWEALTH OF MASSACHUSETTS
CIVIL
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2/16/2022

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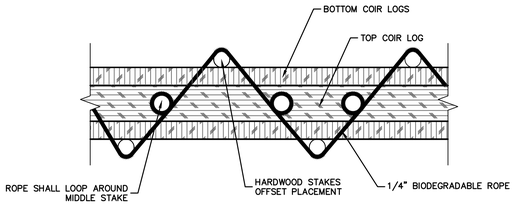
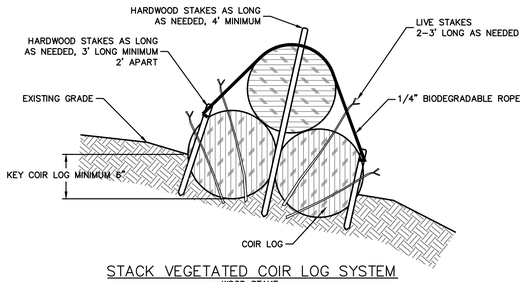
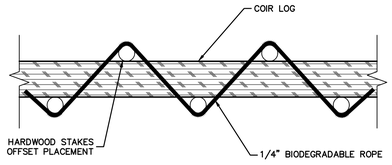
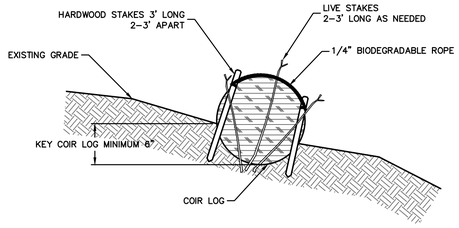


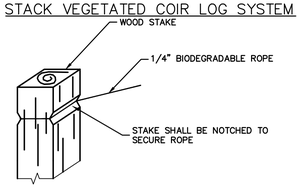


STACK VEGETATED COIR LOG SYSTEM





SINGLE VEGETATED COIR LOG SYSTEM FOR TYING STACKED COIR LOGS INTO GRADE



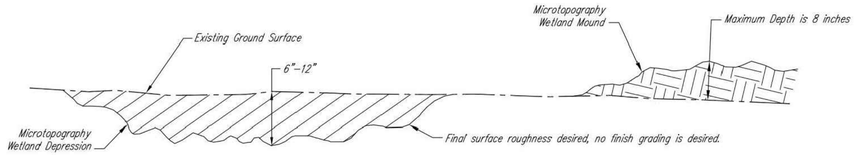
HARDWOOD STAKE NOTCH

NOTES:

1. STACK VEGETATED COIR LOG SYSTEM SHALL BE USED TO ACHIEVE THE MINIMUM ELEVATION SHOWN ON THE GRADING AND DRAINAGE PLAN EXCEPT WHERE TYING INTO GRADE AND SINGLE COIR LOG MAY BE NEEDED. TOP OF SYSTEM SHALL BE 1.5' ABOVE GRADE, EXCEPT AT WEIR ELEVATION WHERE TOP OF SYSTEM SHALL BE 1' ABOVE GRADE.
2. PRIOR TO CONSTRUCTION CONTRACTOR, TOWN CONSTRUCTION SUPERVISOR AND ENGINEER SHALL MEET TO DISCUSS VEGETATED COIR LOG SYSTEM LAYOUT AND PLAN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION SHOWING AT A MINIMUM THE LAYOUT INCLUDING COIR LOG DIAMETER, LENGTHS, STAKING AND ELEVATIONS.
3. LIVE STAKES SHALL BE LONG ENOUGH TO BE PLANTED THROUGH THE COIR LOG (I.E. IN THE SOIL BELOW THE LOG). LIVE STAKES ARE NOT REQUIRED IN/THROUGH THE TOP LOG.
4. HARDWOOD STAKES SHALL BE INSTALLED AT 2' TO 3' INTERVALS FOR SINGLE COIR LOGS AS SHOWN. HARDWOOD STAKES SHALL BE INSTALLED AT 2' INTERVALS FOR STACKED COIR LOGS AS SHOWN.

VEGETATED COIR LOG SYSTEM (FOR USE IN WEIR SYSTEM)

SCALE: N.T.S.

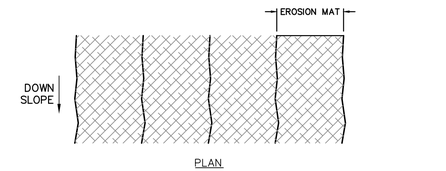


NOTES:

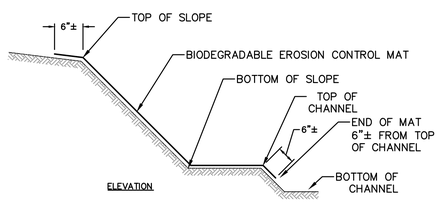
1. CUSTOMIZE SHAPES TO FIT EXISTING LANDSCAPE CONDITIONS IN A RANDOM ORDER. EXCAVATION AND MOUND AREAS ARE TO BE IRREGULAR IN SHAPE AND VARY IN DEPTH (SEE TYPICAL CROSS SECTION FOR EXAMPLE). LENGTH AND WIDTH RATIO OF DEPRESSION AND MOUND SHAPES SHALL NOT EXCEED 2:1.
2. MINIMUM TOPSOIL DEPTH IN AREAS 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

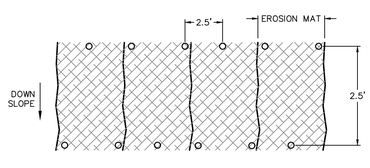


ELEVATION

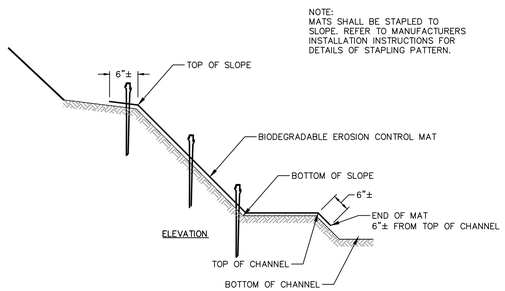
NOTE:
1. MATS SHALL BE STAPLED TO SLOPE. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR DETAILS OF STAPLING PATTERN.
2. BIODEGRADABLE EROSION CONTROL MAT SHALL BE ABLE TO WITHSTAND 8 FPS WATER VELOCITIES AND 2.10 PSF SHEAR STRESS.
3. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR DETAILS 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.



PLAN



ELEVATION

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

SCALE: N.T.S.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

SCALE:
HORZ.: N.T.S
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

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

TOWN OF SOUTHWICK
CONSTRUCTION DETAILS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C5.02

File Path: J:\DWG\P2017\0390\G11\Civil\Details\20170390G11_DET01.dwg Layout: C5.02 Plotted: Wed, February 16, 2022 - 1:59 PM User: jblack
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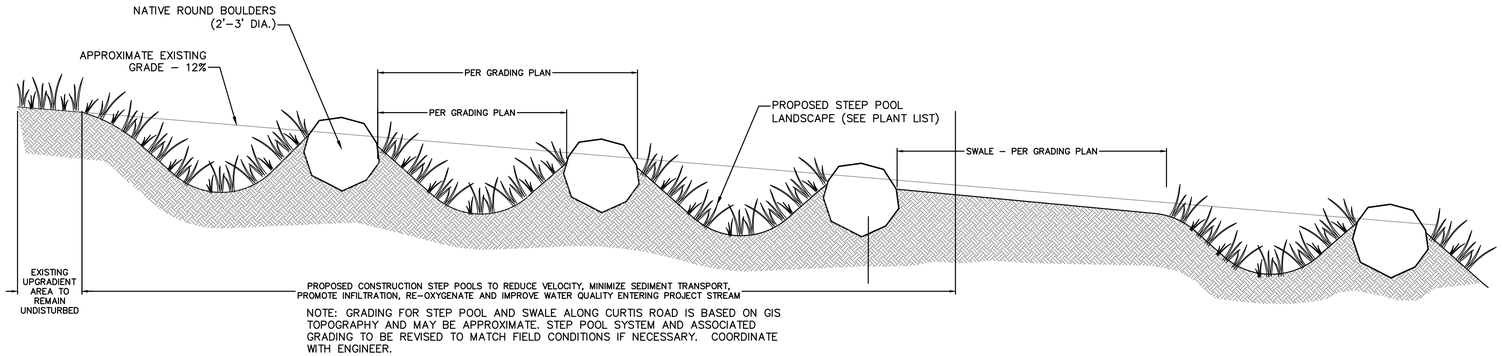
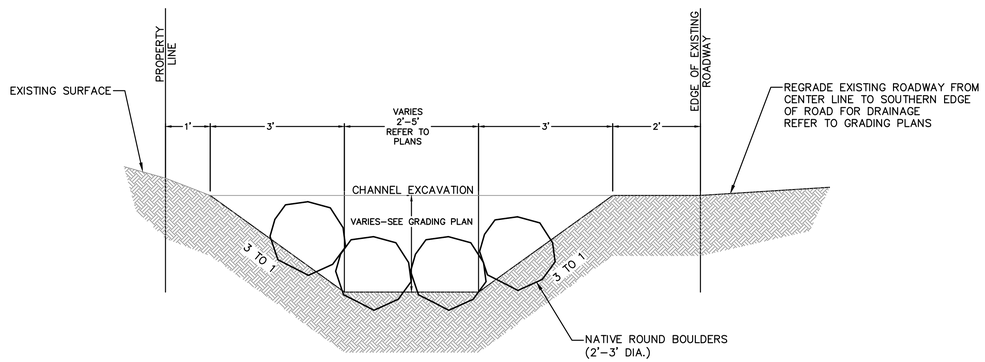
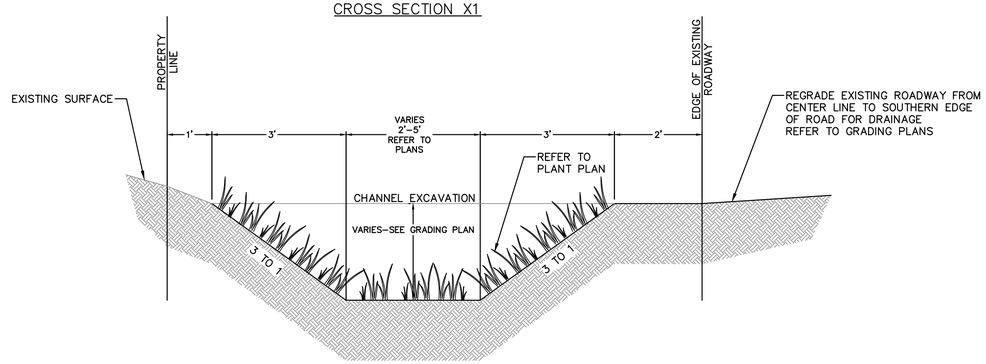


NOTE: GRADING FOR STEP POOL AND SWALE ALONG CURTIS ROAD IS BASED ON GIS TOPOGRAPHY AND MAY BE APPROXIMATE. STEP POOL SYSTEM AND ASSOCIATED GRADING TO BE REVISED TO MATCH FIELD CONDITIONS IF NECESSARY. COORDINATE WITH ENGINEER.

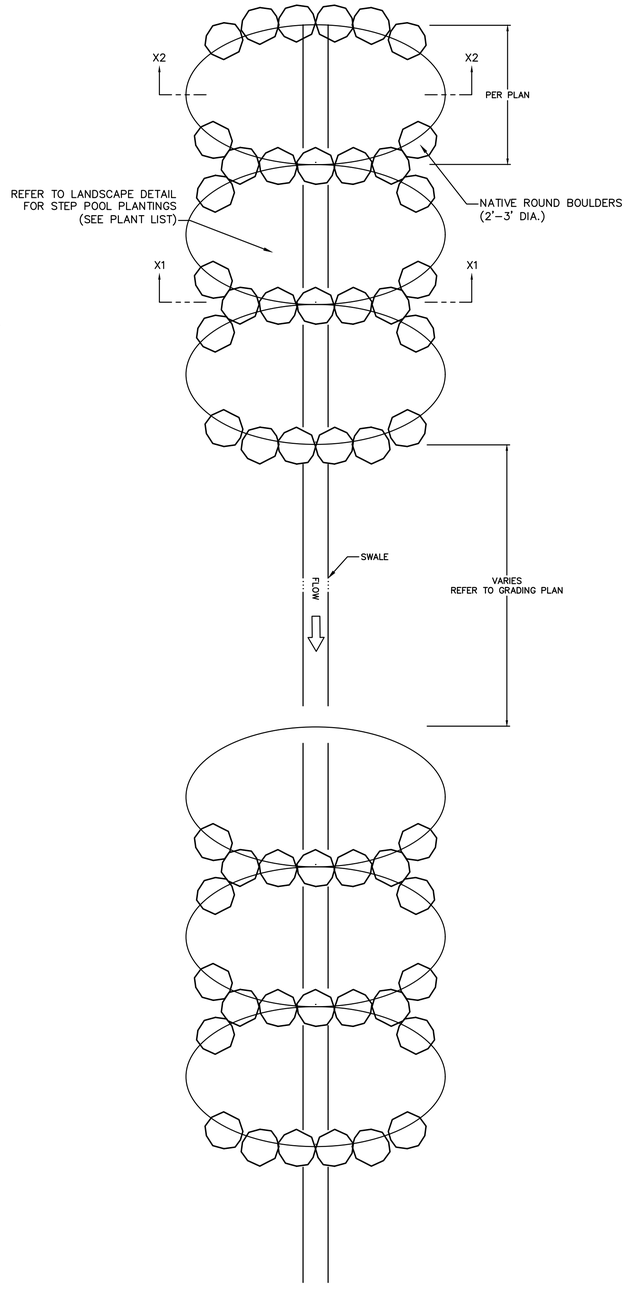
TYPICAL PROFILE



CROSS SECTION X1



CROSS SECTION X2



PLAN VIEW

STEP POOLS & ASSOCIATED IMPROVEMENTS – TYPICAL CROSS SECTION

SCALE: N.T.S.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED
PROFESSIONAL ENGINEER
2/16/2022

SCALE:
HORZ.: N.T.S
VERT.:
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0
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TOWN OF SOUTHWICK
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JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

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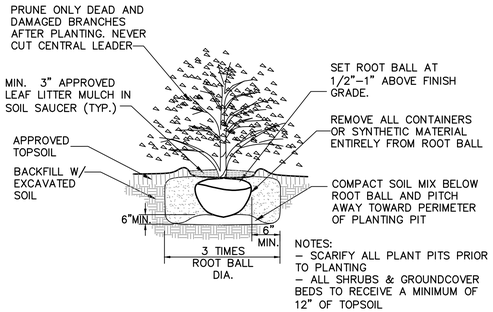
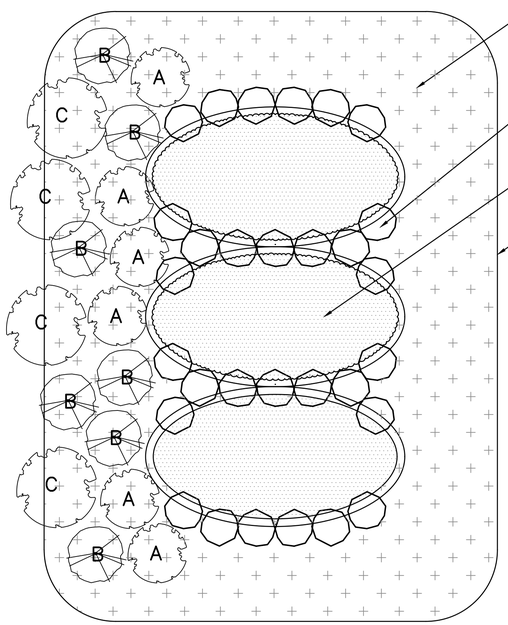


SHRUB PLANTING

N.T.S.



STEP POOL – TYPICAL PLANTING

SCALE: 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

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 45477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

SCALE:
HORZ.: N.T.S
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1550 MAIN STREET, SUITE 400
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CONSTRUCTION DETAILS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

C5.04

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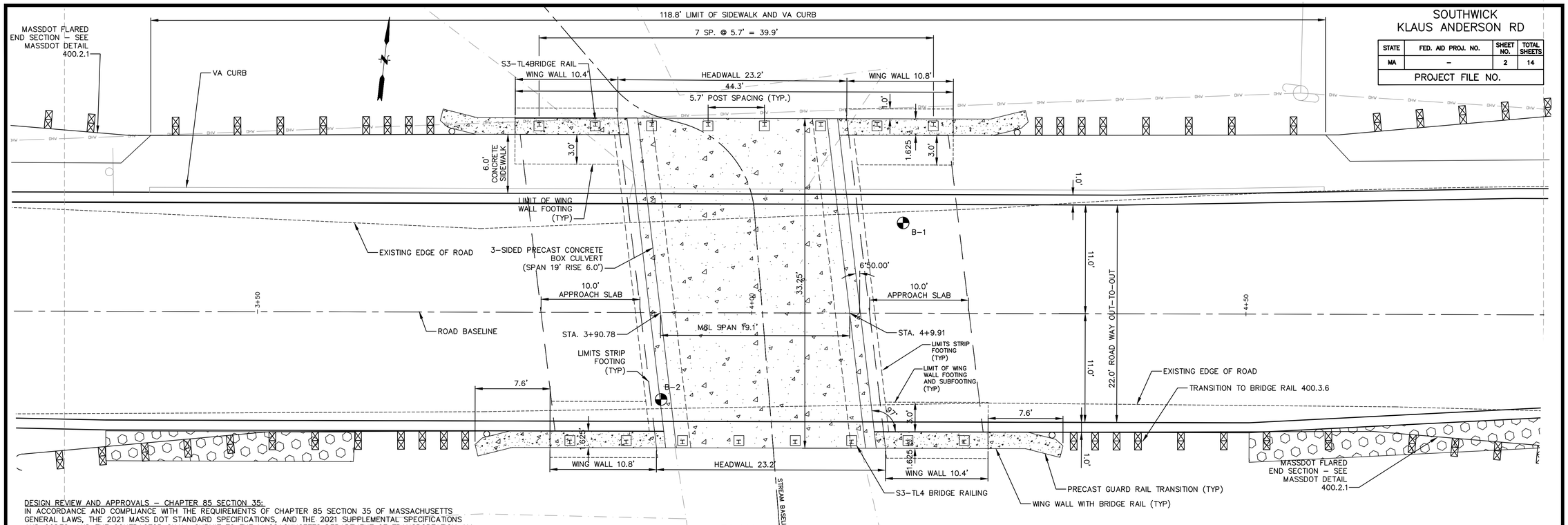
SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	2	14
PROJECT FILE NO.			



PLAN
1" = 5'

DESIGN REVIEW AND APPROVALS – CHAPTER 85 SECTION 35:
IN ACCORDANCE AND COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 85 SECTION 35 OF MASSACHUSETTS GENERAL LAWS, THE 2021 MASS DOT STANDARD SPECIFICATIONS, AND THE 2021 SUPPLEMENTAL SPECIFICATIONS AND CODES. AND 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.

REVISIONS TO THE APPROVED PLANS SHALL ALSO BE SUBMITTED TO MASSDOT FOR APPROVAL.

DESIGN:
IN ACCORDANCE WITH THE 2019 (8TH EDITIONS) AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIAL LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2018, FOR HL–93 LOADING.

BENCHMARK:
VERTICAL DATUM IS BASED AND PROVIDED BY SURVEY PERFORMED BY HERITAGE SURVEYS, INC. IS 1988 NAVD SYSTEM. A TEMPORARY BENCHMARK WAS ESTABLISHED ON SITE, TBM, SPIKE IN POLE, EL 252.20'.

DATE:
TO BE PLACED ON THE NORTHEAST AND SOUTHWEST GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST GUARDRAIL TRANSITION IS CONSTRUCTED.

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

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

GEOTECHNICAL REPORT:
REFER TO GEOTECHNICAL REPORT DATED JANUARY 20, 2020 PREPARED BY FUSS & O'NEILL.

HYDRAULIC REPORT:
REFER TO DRAINAGE REPORT DATED APRIL 29, 2020 PREPARED BY FUSS & O'NEILL.

REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASSHTO M31, GRADE 60. EPOXY COATED REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ASSHTO M284. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS
1. NONE	21"	26"
2. 12" OF CONCRETE BELOW BAR	29"	36"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4. COATED BARS, ALL OTHER CASES	25"	31"
5. CONDITION 2. AND 3.	35"	44"
6. CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE THE LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ALL REINFORCING BARS ANDSUPPORTING DEVICES SHALL BE COATED, UNLESS OTHERWISE NOTED.

CONSTRUCTION REQUIREMENTS AND PROCEDURES:
THE EXISTING BRIDGE TO BE REPLACED IS TO REMAIN CLOSED DURING CONSTRUCTION OF THE NEW BRIDGE REPLACEMENT. ADDITIONALLY THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION. REFER TO APPROVED DEMOLITION/ ERECTION PLANS.

EXISTING CONSTRUCTION:
DIMENSIONS SHOWN ARE TAKEN FROM SURVEY, ORIGINAL DESIGN DRAWINGS AND VARIOUS FIELD MEASUREMENTS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE AND NOT ORDER ANY MATERIAL OF COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

DOWEL BAR SPLICERS:
DOWEL BAR SPLICERS SHALL HAVE THE SAME COATINGS AS THE REINFORCING BARS THEY ARE SPLICING.

CONCRETE MIXES:
THE FOLLOWING CONCRETE MIXES UNLESS NOTED ELSEWHERE ARE TO BE USED:
5000 PSI. ¾ IN, 685 HP CEMENT CONCRETE (COPING AND AS NOTED)
4000 PSI. ¾ IN, 610 CEMENT CONCRETE (RIGID FRAME FOOTINGS, HEADWALLS, SIDEWALK, AND AS NOTED)
3000 PSI, MASS CONCRETE (SUBFOOTING)

UTILITIES:
AS ENCOUNTERED THE CONTRACTOR SHALL LOCATE, NOT DAMAGE AND PROTECT ALL UTILITIES, POLES WTC. WHEN LOCATING, TEMPROARILY RELOCATING AND PERMANENTLY RECONSTRUCTING ALL EXISTING AND NEWLY CONSTRUCTED UTILITIES AS NOTED HEREIN THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY OWNERS ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED DURING ALL PHASES OF BRIDGE REPLACEMENT CONSTRUCTION.

AREAS SURROUNDING THE CONSTRUCTION SITE AND UTILITIES OUTSIDE THE LIMITS OF PROPOSED WORK DISRUPTED BY THE CONTRACTORS OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD:	XX
DESIGN SPECTRA	
As	0.071
SDs	0.130
SD1	0.037
SITE CLASS	C
SEISMIC DESIGN CATEGORY (SDC)	A

QUANTITIES*

ITEM #	DESCRIPTION	QTY	UNIT
120	EARTH EXCAVATION	261	C.Y.
151.20	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	142	C.Y.
460	HOT MIX ASPHALT	12	TON
628.24	TRANSITION TO BRIDGE RAIL	4	EA.
903	3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE	92	C.Y.
904	4000 PSI, ¾ INCH, 610 HP CEMENT CONCRETE	64	C.Y.
910.10	STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	10037	LB
915.36	ARCH FRAME UNIT (OVER 6 FEET WIDE–30 TO 34.99 FOOT SPAN)	7	EA.
970	BITUMINOUS DAMP–PROOFING	218	S.Y.
975.10	METAL BRIDGE RAILING (3 RAIL), STEEL (TYPE S3–TL4)	89	FT

GUARDRAIL SCHEDULE

LOCATION	SEGMENT	START STA.	END STA.	OFFSET FROM ROADWAY BL
NE	TERMINAL CONNECTOR	3+74.53	3+72.85	18.0' LEFT
NE	THRIE BEAM	3+72.85	3+60.40	18.0' LEFT
NE	THRIE BEAM TRANSITION	3+60.40	3+54.13	18.0' LEFT
NE	W BEAM	3+54.13	3+37.03	18.0' LEFT
NE	FLARED END	3+37.03	3+12.11	18.0' LEFT
NW	TERMINAL CONNECTOR	4+21.86	4+23.51	18.0' LEFT
NW	THRIE BEAM	4+23.56	4+35.98	18.0' LEFT
NW	THRIE BEAM TRANSITION	4+35.98	4+42.22	18.0' LEFT
NW	W BEAM	4+42.22	4+59.11	18.0' LEFT
NW	FLARED END	4+59.11	4+84.00	18.0' LEFT
SE	TERMINAL CONNECTOR	3+78.12	3+76.46	12.0' RIGHT
SE	THRIE BEAM	3+76.46	3+63.96	12.0' RIGHT
SE	THRIE BEAM TRANSITION	3+63.96	3+57.71	12.0' RIGHT
SE	W BEAM	3+57.71	3+51.59	12.0' RIGHT
SE	FLARED END	3+51.59	3+26.30	12.0' RIGHT
SW	TERMINAL CONNECTOR	4+25.44	4+27.11	12.0' RIGHT
SW	THRIE BEAM	4+27.11	4+39.61	12.0' RIGHT
SW	THRIE BEAM TRANSITION	4+39.61	4+45.86	12.0' RIGHT
SW	W BEAM	4+45.86	4+62.94	12.0' RIGHT
SW	FLARED END	4+62.94	4+87.90	12.0' RIGHT

HYDRAULIC DESIGN DATA	
DRAINAGE AREA (SQ. MILES)	1.81
DESIGN FLOOD DISCHARGE (C.F.S.)	674.36
DESIGN FLOOD FREQUENCY (YEARS)	50
DESIGN FLOOD VELOCITY (F.P.S.)	6.25
DESIGN FLOOD ELEVATION (FEET, NAVD)	250.00
BASE (100–YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	885.18
BASE FLOOD ELEVATION (FEET, NAVD)	250.32
DESIGN AND CHECK SCOUR DATA	
DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY (YEARS)	100
DESIGN FLOOD ABUTMENT SCOUR DEPTH (FEET)	12.9
DESIGN FLOOD PIER SCOUR DEPTH (FEET)	N/A
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY (YEARS)	200
CHECK FLOOD ABUTMENT SCOUR DEPTH (FEET)	13.5
CHECK FLOOD PIER SCOUR DEPTH (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	UNKNOWN
FREQUENCY (IF KNOWN, YEARS)	UNKNOWN
MAXIMUM ELEVATION (FEET, NAVD)	UNKNOWN
DATE (MM/YYYY)	UNKNOWN
HISTORY OF ICE FLOES	UNKNOWN
EVIDENCE OF SCOUR AND EROSION	UNKNOWN

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — 12/8/21 DATE

*** QUANTITIES ON THIS SHEET DO NOT INCLUDE THE FULL SCOPE OF THE PROJECT AND SHALL BE IGNORED FOR BIDDING PURPOSES.**

JANUARY 2021

PROPOSED BRIDGE REPLACEMENT
SOUTHWICK
KLAUS ANDERSON ROAD
OVER
JOHNSON BROOK

CITY OF SOUTHWICK

TITLE: CHIEF ENGINEER

SHEET 1 OF 13 SHEETS BRIDGE NO. S–22–026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE: HORZ.: AS NOTED VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 0 5 0 5

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1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

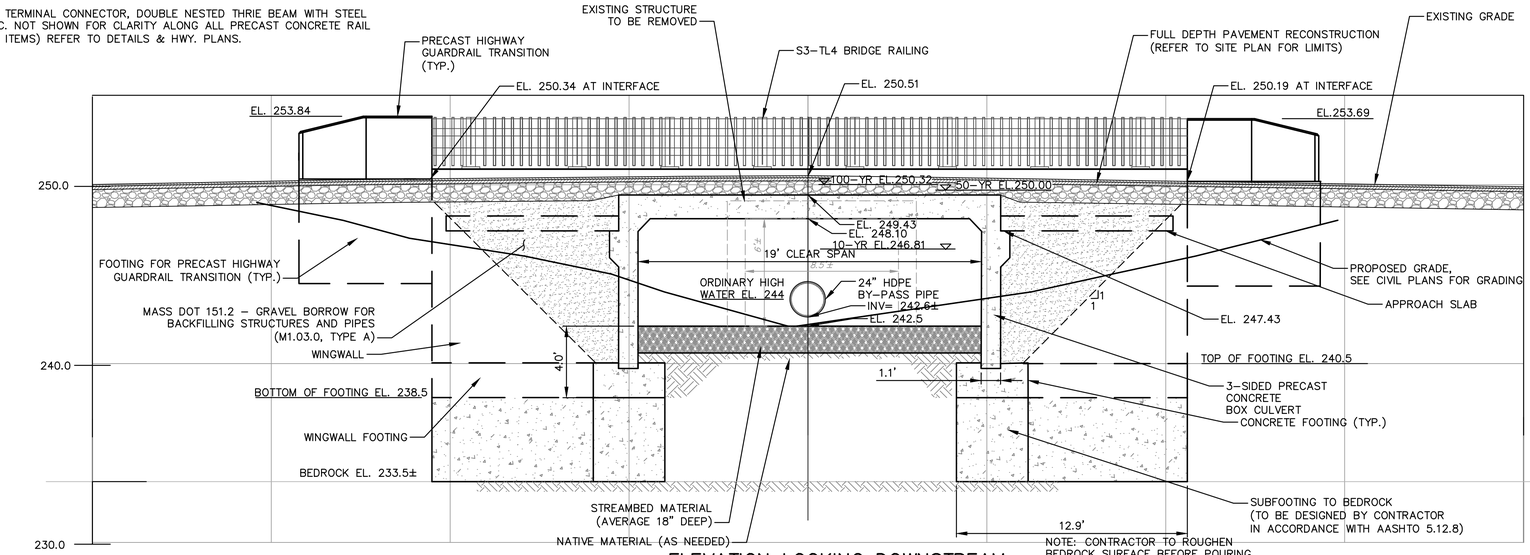
TOWN OF SOUTHWICK
BRIDGE LAYOUT PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-1

File Path: \\private\dfs\CadPro\DWG\P2017\03390\G11\CivilStructures\20170390G11_STR01.dwg Layout: STR-1 Plotted: Wed, November 24, 2021 - 3:12 PM User: jeberli
Plotter: DWG TO PDF PC3 CTB File: F&O STANDARD.CTB
LAYER STATE:
MS VIEW:

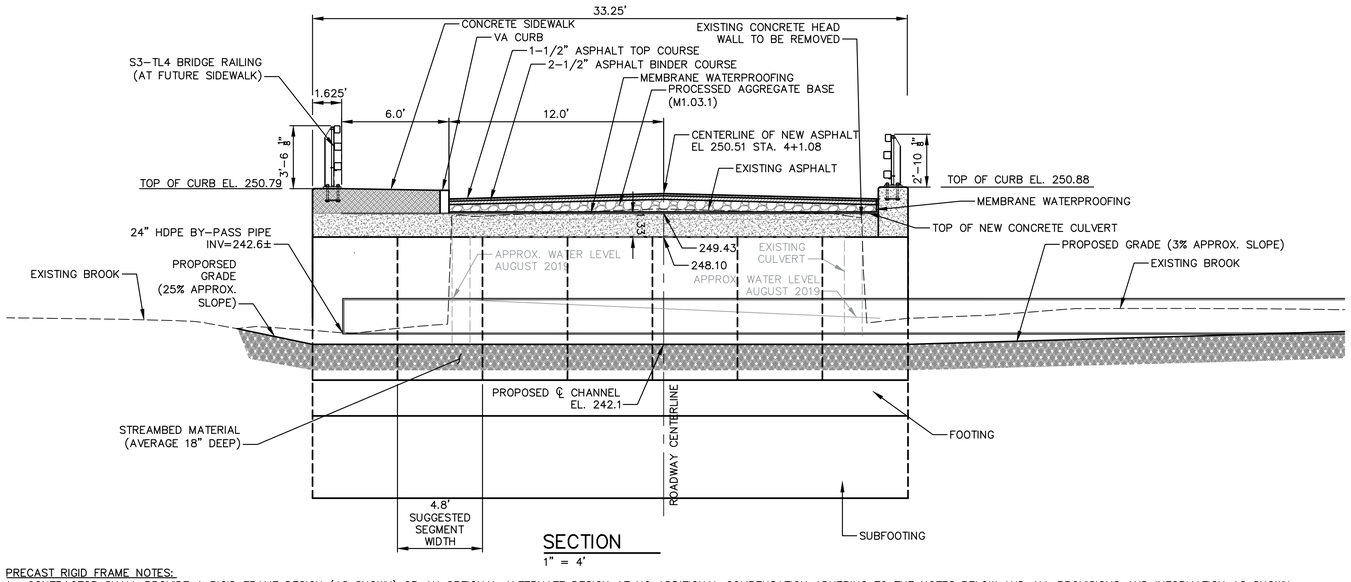
NOTE: THRIE BEAM TERMINAL CONNECTOR, DOUBLE NESTED THRIE BEAM WITH STEEL RAILING POSTS, ETC. NOT SHOWN FOR CLARITY ALONG ALL PRECAST CONCRETE RAIL TRANSITIONS (HWY. ITEMS) REFER TO DETAILS & HWY. PLANS.



NOTE: CONTRACTOR TO ROUGHEN BEDROCK SURFACE BEFORE POURING SUBFOOTING.

ELEVATION LOOKING DOWNSTREAM
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.



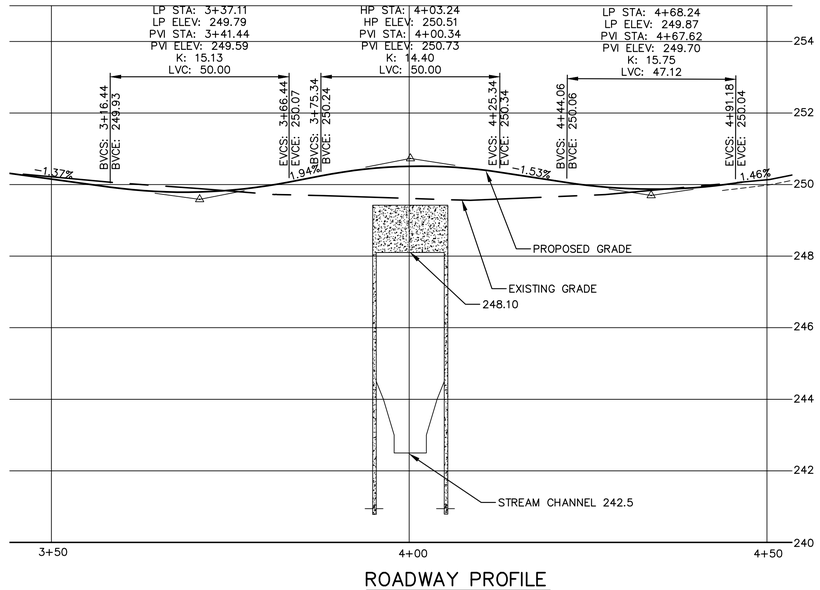
SECTION
1" = 4'

PRECAST RIGID FRAME NOTES:

1. CONTRACTOR SHALL PROVIDE A RIGID FRAME DESIGN (AS SHOWN) OR AN OPTIONAL ALTERNATE DESIGN AT NO ADDITIONAL COMPENSATION ADHERING TO THE NOTES BELOW AND ALL PROVISIONS AND INFORMATION AS SHOWN THROUGHOUT THE CONTRACT PLANS.
2. DESIGN AND CONSTRUCTION OF ALL RIGID FRAME STRUCTURAL ELEMENTS SHALL COMPLY WITH: DESIGN REVIEW AND APPROVALS – CHAPTER 85 SECTION 35 – SEE GENERAL NOTES.

   THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS PREPARED IN ACCORDANCE WITH THE LATEST AASHTO LRFD BRIDGE DESIGN MANUAL FOR HL-93 TRUCK LOADING FOR APPROVAL OF THE ENGINEER. THE DESIGN COMPUTATIONS SHALL CONSIDER ALL LOADINGS AS ARE APPROPRIATE DURING FABRICATION, SHIPMENT, ERECTION INCLUDING THE EFFECTS OF ALL LIFTING DEVICES NEEDED THROUGHOUT CONSTRUCTION AND UPON COMPLETION OF CONSTRUCTION BASED UPON THESE CONSTRUCTION DRAWINGS.

   FINAL SHOP DRAWINGS AND COMPUTATIONS DETAILING THE PROPOSED RIGID FRAME DESIGN SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS FOR FINAL CHAPTER 85 SECTION 35 REVIEW AND APPROVAL. ALL FINAL SHOP DRAWINGS AND DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER AND MASSDOT FOR FINAL APPROVAL, ONCE APPROVED THE SHOP DRAWINGS SHALL BE AFFIXED WITH THE APPROVED SEAL.
3. ALL OVERALL FRAME DIMENSIONS INCLUDING THE SIZE AND SPACING OF STEEL REINFORCEMENT PROVIDED ARE SHOWN TO ESTABLISH THE SIZE OF THE PROPOSED OPENING AND BRIDGE TYPE. THE WIDTH'S AND THICKNESS OF ALL PRECAST CONCRETE ELEMENTS SHALL NOT VARY AND ARE TO BE PARALLEL AND ALIGNED WITH THE CONSTRUCTION BASELINE AS SHOWN ON THESE CONSTRUCTION DRAWINGS.
4. PRECAST ELEMENTS: THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF LIFT HOOKS FOR ALL PRECAST ELEMENTS, PLANS PROVIDING SPACING AND LOCATION OF LIFTING DEVICES AND HANDLING STRESS CALCULATIONS, DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN MASSACHUSETTS FOR REVIEW AND APPROVAL. REINFORCING STEEL SHOWN ON AND ALONG THE RIGID FRAME MEMBERS SHALL NOT BE USED TO LIFT THE PRECAST ELEMENTS.
5. PRECAST CONCRETE FRAME UNITS SHALL CONFORM TO THE APPLICABLE PARTS OF THE SECTION 930 OF THE SPECIFICATIONS. ALL FOOTINGS, AND BRIDGE RAILING HEADWALLS SHALL BE CAST IN PLACE AS SHOWN ON THE PLANS.
6. THE DESIGN OF THE FOOTINGS DETAILED HEREIN WAS BASED UPON THE GEOMETRY OF THE FRAME SHOWN.
7. CONCRETE FOR ALL PRECAST RIGID FRAME UNITS SHALL BE 5,000 PSI, ¾ IN., 685 CEMENT CONCRETE.
8. FOOTINGS: THE PRECAST CONCRETE RIGID FRAME UNITS SHALL BE INSTALLED ON CAST-IN-PLACE CONCRETE FOOTINGS.
9. SUBFOOTING TO BE DESIGNED BY CONTRACTOR.



ROADWAY PROFILE
SCALE: H: 1"=20'
V: 1"=2'

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — DATE 12/8/21

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 2 OF 13 SHEETS BRIDGE NO. S-22-026 (C8X)

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	3	14
PROJECT FILE NO.			

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY CIVIL NO. 45477 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
11/28/2021

SCALE: HORZ.: AS NOTED VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 0 0 0 0

FUSS & O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
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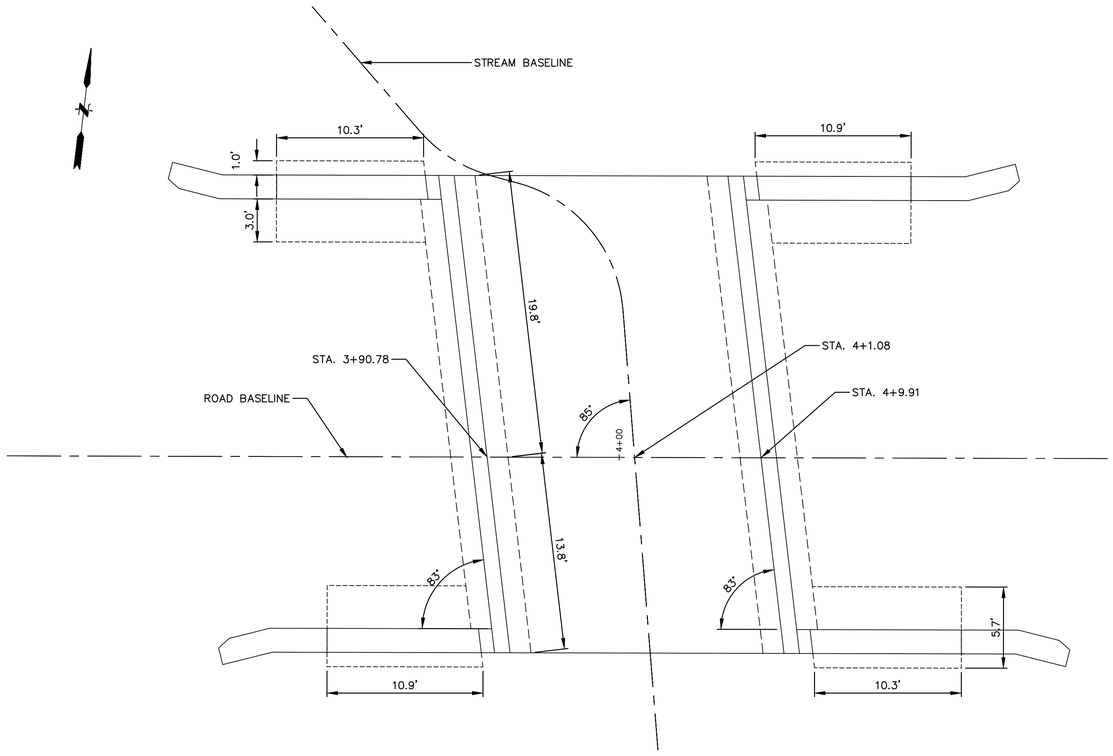
TOWN OF SOUTHWICK
BRIDGE SECTIONS AND ELEVATIONS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

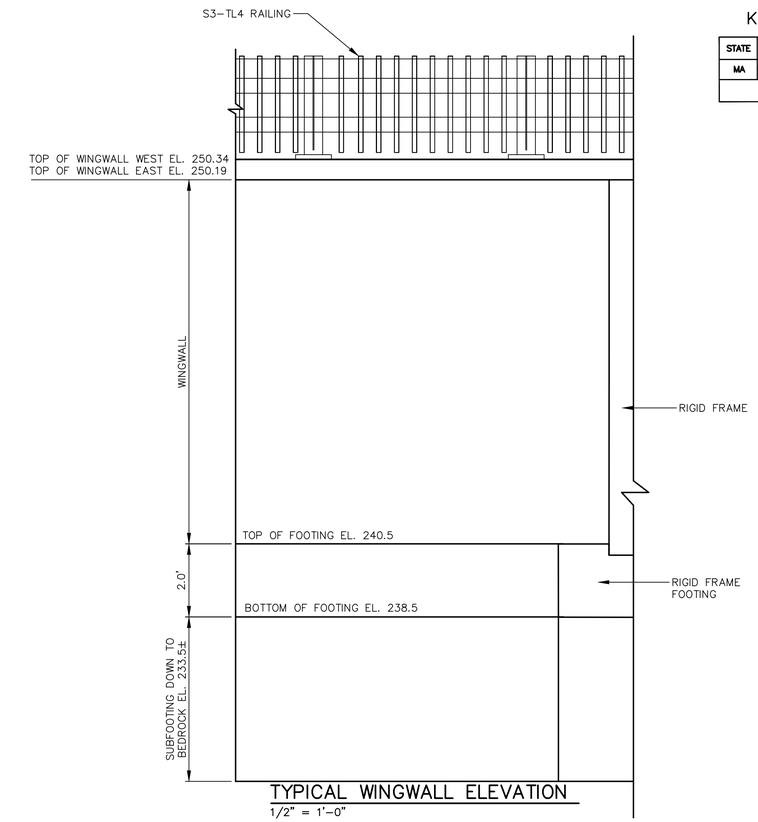
STR-2

SOUTHWICK
KLAUS ANDERSON RD

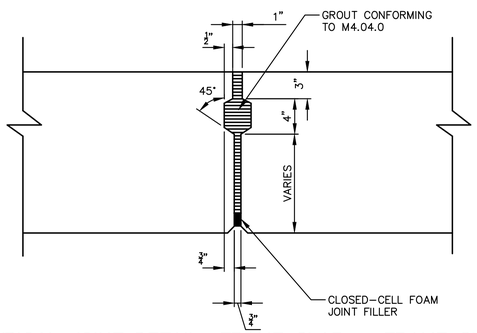
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	4	14
PROJECT FILE NO.			



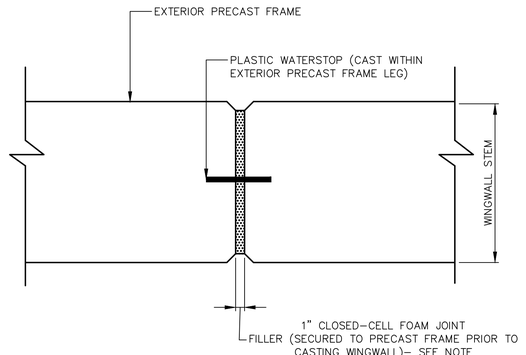
FOOTING PLAN
1" = 5'



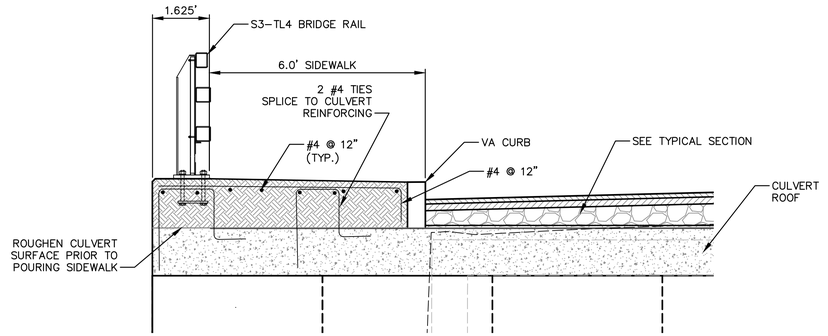
TYPICAL WINGWALL ELEVATION
1/2" = 1'-0"



TYPICAL JOINT DETAIL: FRAME SLAB – FRAME SLAB
1-1/2" = 1'-0"



TYPICAL JOINT DETAIL: FRAME LEG – WINGWALL
1-1/2" = 1'-0"



CONCRETE SIDEWALK DETAIL
1/2" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — DATE 12/8/21

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 3 OF 13 SHEETS BRIDGE NO. S-22-026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 45477
REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.:
VERT.:
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TOWN OF SOUTHWICK
FOOTING PLAN
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-3

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	5	14
PROJECT FILE NO.			

FUSS & O'NEILL

SOIL BORING LOG

BORING NO.: **B-1** Page 1 of 1

Project: Klaus Anderson Road / Johnson Brook Road - Stream Crossing Redesign
Location: Southwick, MA
Client: Town of Southwick, MA
Drilling Co.: Seaboard Geotechnical and Environmental Drilling Services
Driller: D. Griffin
Project No.: 20170390.G11
Project Mgr: Julianne Busa
Field Eng. Staff: P. Grulke
Date Started: December 4, 2019
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 ☐ Rubber Tire ☐ Track ☐ Skid ☐ Tripod ☐ Geoprobe ☐ Air Track ☐ Cat-Head ☑ Winch ☑ Roller Bit ☐ Cutting Head ☐

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Fluid: ☐ Bentonite ☐ Polymer ☑ Water ☐ None

Drill Rod Size: Casing Advance — 4" I.D. P/WC 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)	Field Tests: Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
0 / 245	SS-1 0.0'-2.0'	6/24	15 10 9 6		FILL	0.3 Bituminous Concrete Medium dense, gray to brown, fine to coarse SAND, some Gravel, little Silt	-	-	-	-	moist
	SS-2 2.0'-4.0'	9/24	7 6 5 7		FILL	Same as above	-	-	-	-	moist
5 / 240	SS-3 5.0'-7.0'	6/24	3 5 7 11		SM	5.0 Medium dense, red to brown, fine to coarse SAND, some Gravel, little Silt	-	-	-	-	moist
	SS-4 7.0'-8.9'	9/23	4 6 6 50/5"		SM	Same as above, except occasional cobbles and boulders	-	-	-	-	moist
10 / 235	SS-5 10.0'-10.1'	1/1	50/1"			10.0 Very dense, red, Weathered Arkose	-	-	-	-	
15 / 230											

BOTTOM OF FOOTING EL. 238.5

Water Level Data: Date	Time	Elapsed Time (hr)	Depth in feet: Bottom of Hole	Water

Minor Constituent Proportions	
And	35 - 50%
Some	20 - 35%
Little	10 - 20%
Trace	<10%

Soil Density	
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Soil Consistency	
Very Soft	0 - 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

Sample Type	
SS	Split Spoon
ST	Shelby Tube
GS	Grab Sample
ET	Extruded Tube

Notes: Refusal at 9 feet on possible boulder. Boring offset 5 feet east. EOB at 10.1 feet

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

FUSS & O'NEILL

SOIL BORING LOG

BORING NO.: **B-2** Page 1 of 2

Project: Klaus Anderson Road / Johnson Brook Road - Stream Crossing Redesign
Location: Southwick, MA
Client: Town of Southwick, MA
Drilling Co.: Seaboard Geotechnical and Environmental Drilling Services
Driller: D. Griffin
Project No.: 20170390.G11
Project Mgr: Julianne Busa
Field Eng. Staff: P. Grulke
Date Started: December 4, 2019
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 ☐ Rubber Tire ☐ Track ☐ Skid ☐ Tripod ☐ Geoprobe ☐ Air Track ☐ Cat-Head ☑ Winch ☑ Roller Bit ☐ Cutting Head ☐

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Fluid: ☐ Bentonite ☐ Polymer ☑ Water ☐ None

Drill Rod Size: Casing Advance — 4" I.D. P/WC 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)	Field Tests: Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
0 / 245	SS-1 0.0'-2.0'	9/24	16 10 10 9		FILL	0.3 Bituminous Concrete 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 / 240	SS-3 5.0'-7.0'	9/24	3 4 9 3		SM	5.0 Medium dense, red to brown, fine to coarse SAND, some Gravel, little Silt	-	-	-	-	moist
	SS-4 7.0'-9.0'	5/24	6 11 12		SM	Same as above, except very loose	-	-	-	-	moist
10 / 235	SS-5 10.0'-11.9'	15/23	7 8 14 50/5"		SM	11.9 Same as above, except occasional Cobbles	-	-	-	-	moist
	R-1 11.0'-16.0'	36/60				Very dense, red, Weathered Arkose	-	-	-	-	RQD=0%
15 / 230	R-2 16.0'-21.0'	54/60				16.0 Slightly to moderately weathered, very close to close joint spacing, reddish brown, ARKOSE	-	-	-	-	RQD=23%

Water Level Data: Date	Time	Elapsed Time (hr)	Depth in feet: Bottom of Hole	Water

Minor Constituent Proportions	
And	35 - 50%
Some	20 - 35%
Little	10 - 20%
Trace	<10%

Soil Density	
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Soil Consistency	
Very Soft	0 - 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

Sample Type	
SS	Split Spoon
ST	Shelby Tube
GS	Grab Sample
ET	Extruded Tube

Notes: E.O.B. at 21 feet

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

FUSS & O'NEILL

SOIL BORING LOG (continued)

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)	Field Tests: Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
20 / 225						21.0					
25 / 220											
30 / 215											
35 / 210											
40 / 205											
45 / 200											

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

BORING NOTES:

1. LOCATION OF THE BORINGS ARE SHOWN THUS: ⊕
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE AMTERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. BORINGS SHALL EXTEND TO THE SPECIFIED HIGHEST BOTTOM ELEVATION OR TO REFUSAL BELOW THE H.B.E., WHICHEVER IS DEEPER.
4. SHOULD BEDROCK BE ENCOUNTERED AT OR ABOVE THE SPECIFIED HIGHEST BOTTOM ELECATION, THE BORING SHALL BE CONTINUED AS A ROCK CORE BORING FOR A DEPTH OF 10', THEN TERMINATED.
5. BORINGS ARE LOCATED FROM THE BASELINE OF THE ROAD.
6. ADDITIONAL BORINGS MAY BE REQUESTED BY THE ENGINEER, IF NECESSARY

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE
TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — DATE: 12/8/21

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 4 OF 13 SHEETS BRIDGE NO. S-22-026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
11/28/2021

SCALE: HORZ.: AS NOTED VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 0 0 0 0

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1550 MAIN STREET, SUITE 400
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TOWN OF SOUTHWICK
BORING LOGS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-4

File Path: \\private\dfs\CadPro\DWG\P20170390\G11\Civil\Structures\20170390G11_STR01.dwg Layout: STR-4 Plotted: Wed, November 24, 2021 - 3:15 PM User: jeberil
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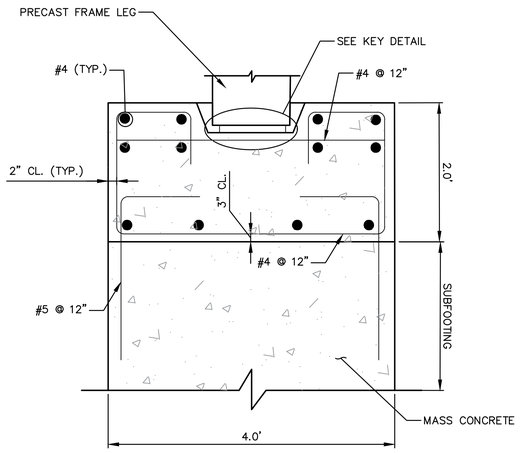
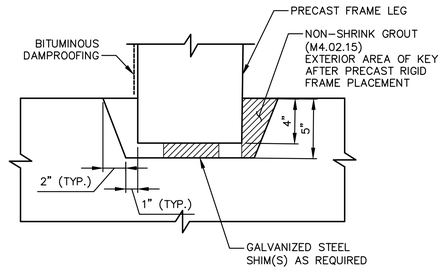
MS VIEW:

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	6	14
PROJECT FILE NO.			



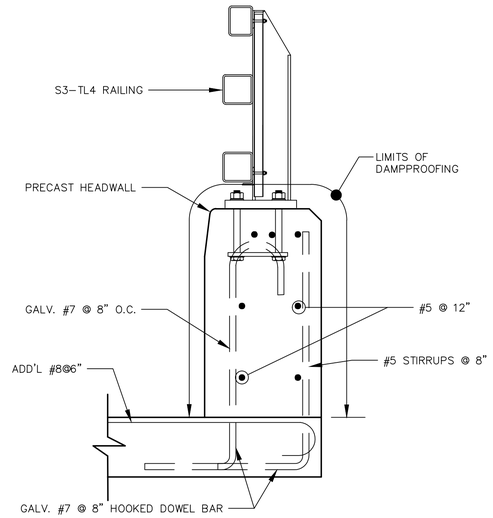
RIGID FRAME FOOTING DETAIL
1" = 1'–0"



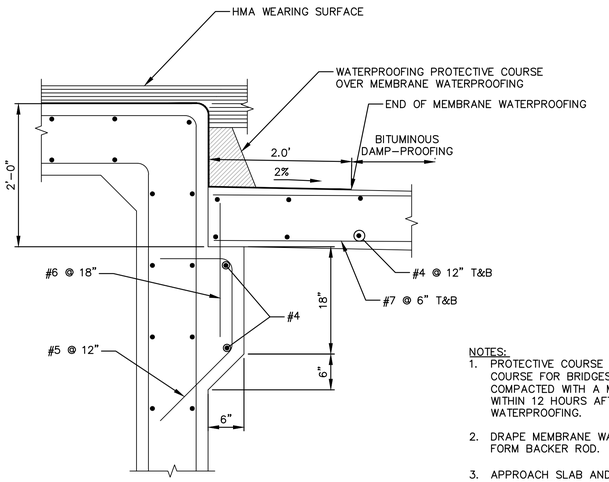
KEY DETAIL
2" = 1'–0"

NOTES:

1. FILL ENTIRE HORIZONTAL VOID ALONG KEY SOLID WITH NON–SHRINK GROUT.
2. THIS DETAIL MAY BE MODIFIED SUBJECT TO THE APPROVAL OF THE ENGINEER.

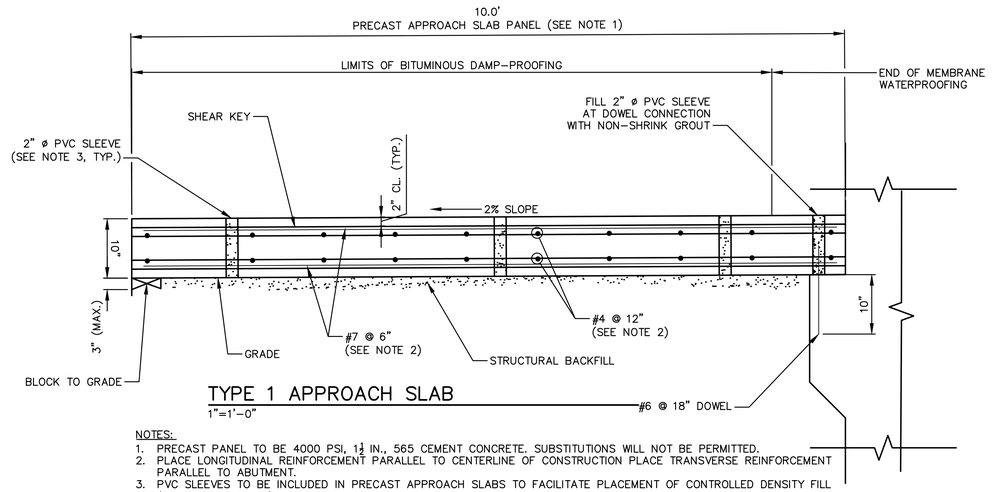


REBAR AT HEADWALL
1"=1'–0"



NOTES:
1. PROTECTIVE COURSE TO BE CLASS 1 DENSE BINDER COURSE FOR BRIDGES, PLACES IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND–GUIDED TAMPER WITHIN 12 HOURS AFTER PLACING MEMBRANE WATERPROOFING.
2. DRAPE MEMBRANE WATERPROOFING OVER CLOSED CELL FORM BACKER ROD.
3. APPROACH SLAB AND SEAT TO BE C.I.P 4,000 PSI, ¾ IN., 610 CEMENT CONCRETE.
4. PLACE TRANSVERSE REINFORCEMENT PARALLEL TO VERTICAL FRAME LEG.

PRECAST APPROACH SLAB SHELF DETAIL
1"=1'–0"



TYPE 1 APPROACH SLAB
1"=1'–0"

NOTES:
1. PRECAST PANEL TO BE 4000 PSI, 1½ IN., 565 CEMENT CONCRETE. SUBSTITUTIONS WILL NOT BE PERMITTED.
2. PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO CENTERLINE OF CONSTRUCTION PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.
3. PVC SLEEVES TO BE INCLUDED IN PRECAST APPROACH SLABS TO FACILITATE PLACEMENT OF CONTROLLED DENSITY FILL (NON–EXCAVATABLE).

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING
12/8/21
DISTRICT TWO BRIDGE ENGINEER — DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
	FEBRUARY 2021	ISSUED FOR CONSTRUCTION		
	DATE	DESCRIPTION		
USE ONLY PRINTS OF LATEST DATE				

SHEET 5 OF 13 SHEETS BRIDGE NO. S–22–026 (C8X)

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 49477
REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE: HORZ.: AS NOTED VERT.:
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TOWN OF SOUTHWICK
BRIDGE DETAILS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-5

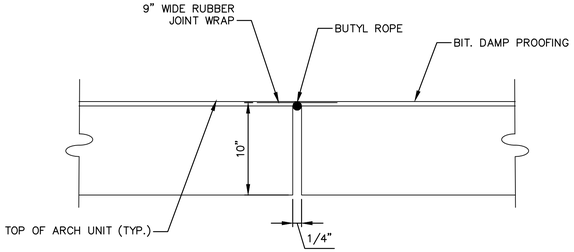
File Path: \\private\dfs\CadProj\DWG\P20170390\G11\Civil\Structures\20170390C11_STR01.dwg Layout: STR-5 Plotted: Wed, November 24, 2021 - 3:15 PM User: jeberli
Plotter: DWG TO PDF.PC3 CTB File: F&O STANDARD.CTB
LAYER STATE:
MS VIEW:

SOUTHWICK
KLAUS ANDERSON RD

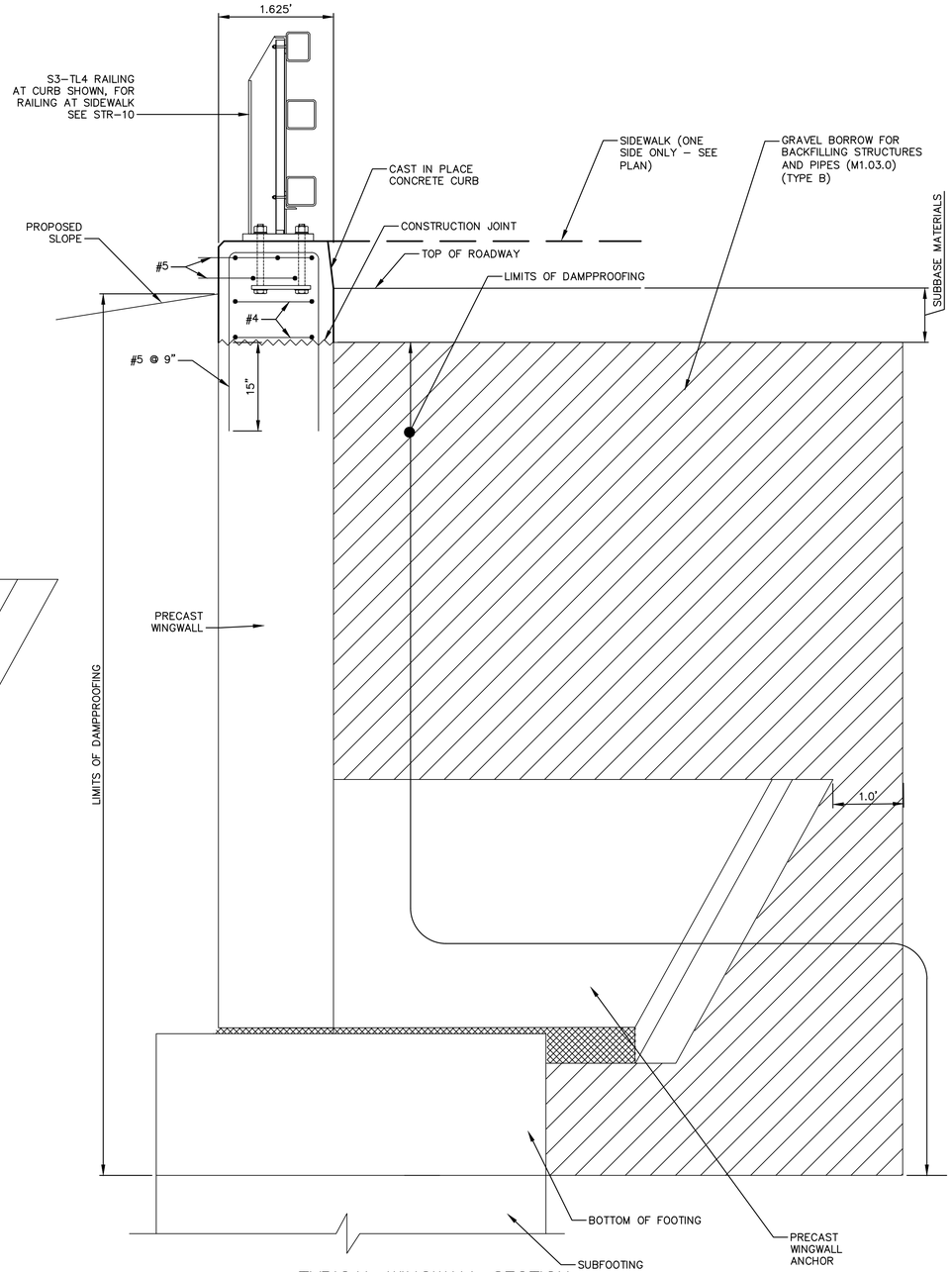
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	7	14
PROJECT FILE NO.			

PRECAST ARCH UNIT AND WINGWALL NOTES:

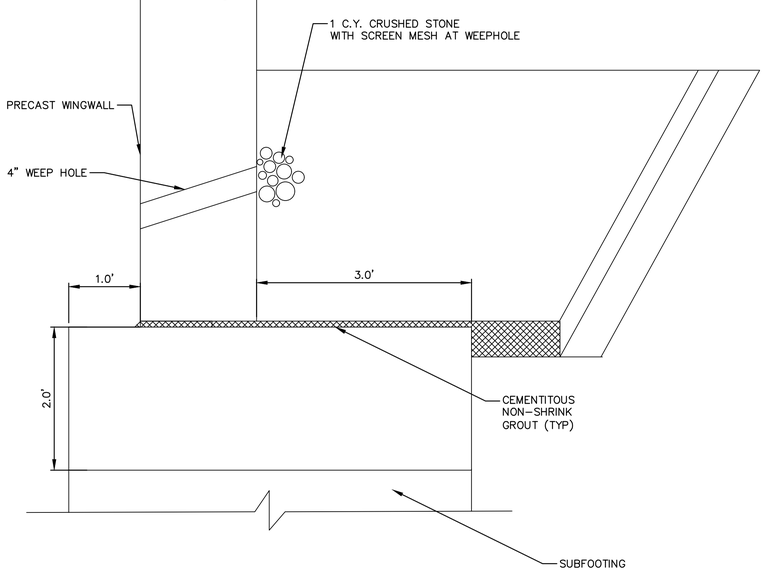
1. THE FABRICATOR SHALL SUBMIT DESIGN CALCULATIONS OF THE PRECAST UNITS PREPARED IN ACCORDANCE WITH THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND THE MASSACHUSETTS HIGHWAY DEPARTMENT LRFD BRIDGE DESIGN MANUAL FOR HL-93 LOADING FOR THE APPROVAL OF THE ENGINEER. THE DESIGN COMPUTATIONS SHALL CONSIDER ALL LOADINGS AS APPROPRIATE DURING FABRICATION, SHIPMENT, ERECTION, CONSTRUCTION, AND AFTER COMPLETION OF CONSTRUCTION BASED UPON THESE CONSTRUCTION DRAWINGS.
2. THE ARCH DIMENSIONS PROVIDED ARE SHOWN TO ESTABLISH THE SIZE OF THE PROPOSED OPENING. THE WIDTHS AND THICKNESS OF EACH ARCH UNIT MAY VARY DEPENDING UPON THE MANUFACTURER'S SPECIFICATIONS.
3. THE FOOTING DESIGN DETAILED HEREIN IS BASED UPON THE ASSUMED GEOMETRY. THE FABRICATOR SHALL PREPARE AND SUBMIT THE FINAL DESIGN OF THE FOOTING FOR APPROVAL.
4. A MINIMUM OF 4 FT COVER TO THE BOTTOM OF FOOTING SHALL BE PROVIDED.
5. THE MINIMUM 28-DAY CONCRETE COMPRESSIVE STRENGTH FOR PRECAST UNITS SHALL BE 5000 PSI.
6. THE CONTRACTOR SHALL FURNISH AND APPLY BITUMINOUS DAMP PROOFING TO THE BACK FACE OF ALL CONCRETE UNITS COMING INTO CONTACT WITH SOIL.
7. ALL SHOP DRAWINGS AND DESIGN CALCULATIONS TO BE SIGNED AND SEALED BY A MASSACHUSETTS REGISTERED ENGINEER.
8. WINGWALLS CAN BE CAST IN PLACE OR PRECAST AS DETERMINED BY THE CONTRACTOR.
9. CURBS FOR BRIDGE RAILING SHALL BE CAST-IN-PLACE.



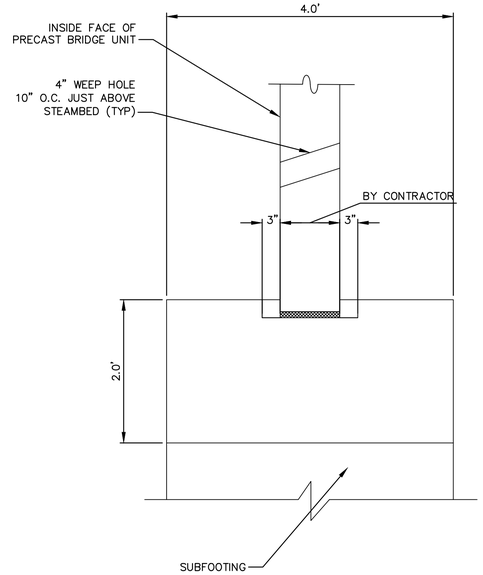
ARCH UNIT JOINT DETAIL
1" = 1'-0"



TYPICAL WINGWALL SECTION
1" = 1'-0"



WINGWALL FOOTING DETAIL
1" = 1'-0"



ARCH FOOTING DETAIL
1" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
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DISTRICT TWO BRIDGE ENGINEER — 12/8/21 DATE

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 6 OF 13 SHEETS BRIDGE NO. S-22-026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE: HORZ.: AS NOTED VERT.: DATUM: HORZ.: VERT.: GRAPHIC SCALE 0 0 0 0 0

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1550 MAIN STREET, SUITE 400
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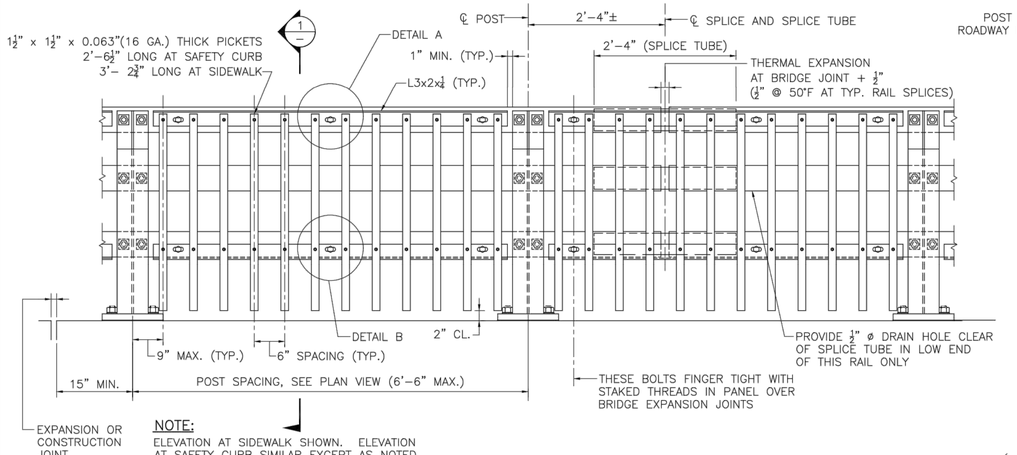
TOWN OF SOUTHWICK
BRIDGE DETAILS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-6

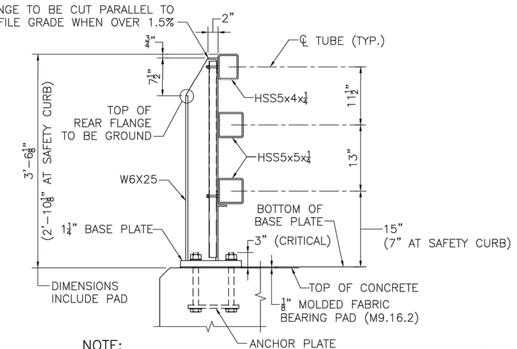
SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	8	14
PROJECT FILE NO.			



NOTE:
ELEVATION AT SIDEWALK SHOWN. ELEVATION AT SAFETY CURB SIMILAR EXCEPT AS NOTED.

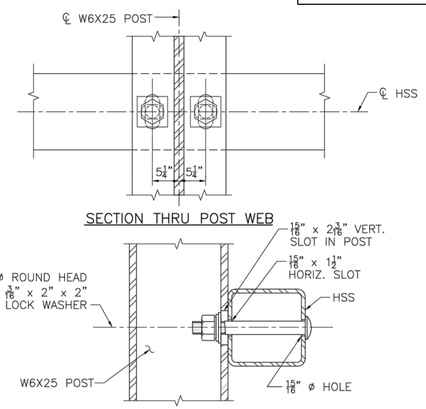
BRIDGE RAILING ELEVATION
SCALE: 1" = 1'–0"



NOTE:
SECTION AT SIDEWALK SHOWN. SECTION AT SAFETY CURB SIMILAR, EXCEPT AS NOTED.

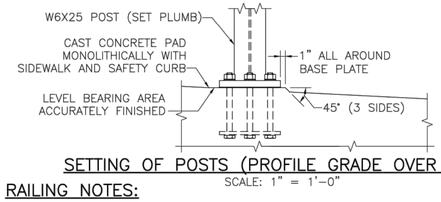
SECTION 1
SCALE: 1" = 1'–0"

7/8" ø ROUND HEAD BOLT
SCALE: 3" = 1'–0"

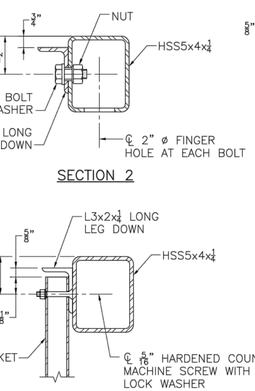


NOTE:
CONNECTIONS AT LOWER RAILS SHOWN.
CONNECTIONS AT TOP RAIL SIMILAR.

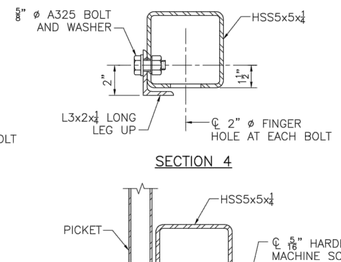
TYPICAL RAIL TO POST CONNECTIONS
SCALE: 1" = 1'–0"



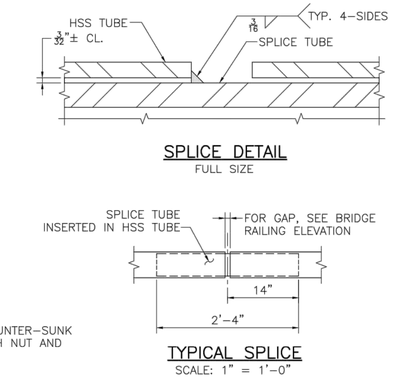
SETTING OF POSTS (PROFILE GRADE OVER 1.5%)
SCALE: 1" = 1'–0"



SECTION 2

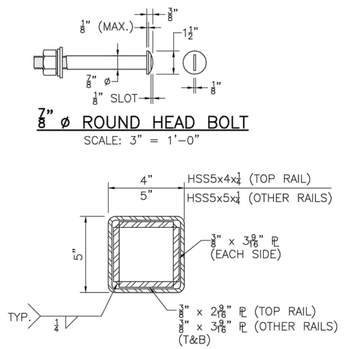


SECTION 4



TYPICAL SPLICE
SCALE: 1" = 1'–0"

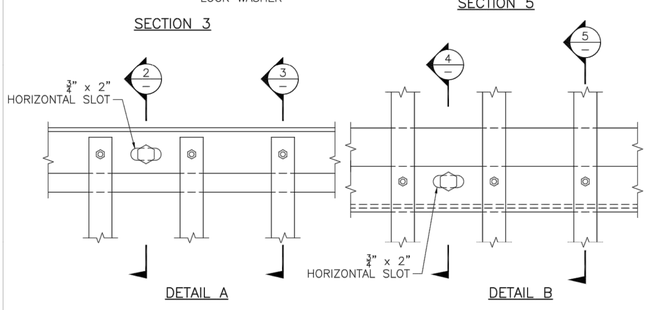
SPLICE DETAIL
FULL SIZE



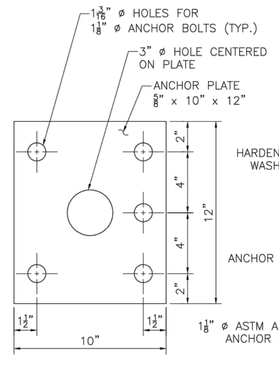
SPLICE TUBE DETIALS
SCALE: 3" = 1'–0"

SECTION 3

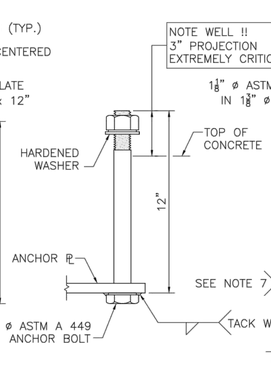
SECTION 5



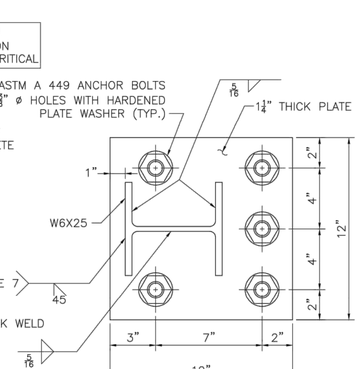
TYPICAL PICKET TO RAIL DETAILS
SCALE: 3" = 1'–0"



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 ⅜" 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.

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SHEET 7 OF 13 SHEETS BRIDGE NO. S–22–026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 45477
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11/28/2021

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TOWN OF SOUTHWICK
S3-TL4 BRIDGE RAILING DETAILS
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PROJ. No.: 20170390.G11
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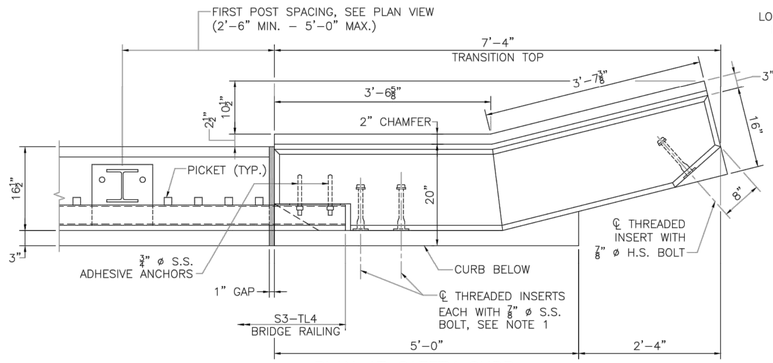
STR-7

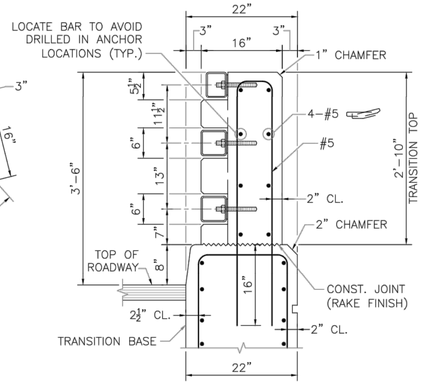
File Path: \\private\dfs\CadProj\DWGIP\20170390\G11\Civil\Structures\20170390G11_STR01.dwg Layout: STR-7 Plotted: Wed, November 24, 2021 - 3:18 PM User: jebeil
MS VIEW: LAYER STATE: Plotter: DWG TO PDF.PC3 CTB File: F&O STANDARD.CTB

SOUTHWICK
KLAUS ANDERSON RD

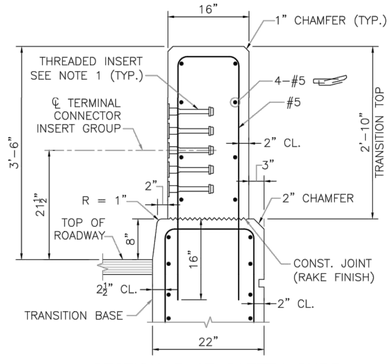
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	9	14
PROJECT FILE NO.			



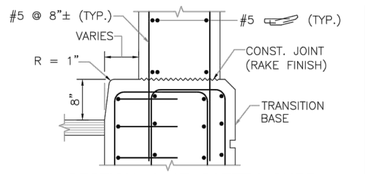
PLAN AT SAFETY CURB
SCALE: 1" = 1'-0"



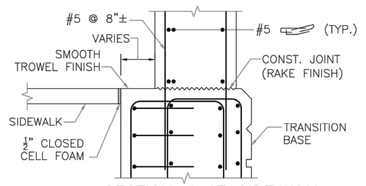
SECTION 2 AT SAFETY CURB
SCALE: 1" = 1'-0"



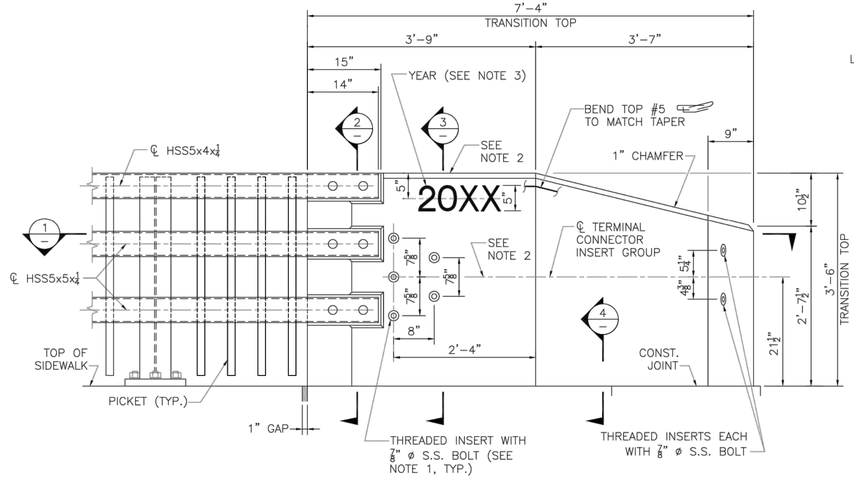
SECTION 3 AT SAFETY CURB
SCALE: 1" = 1'-0"



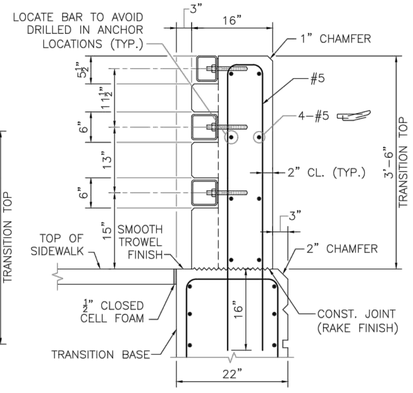
SECTION 4 AT SAFETY CURB
SCALE: 1" = 1'-0"



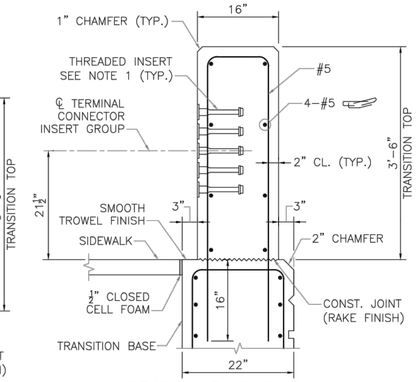
SECTION 4 AT SIDEWALK
SCALE: 1" = 1'-0"



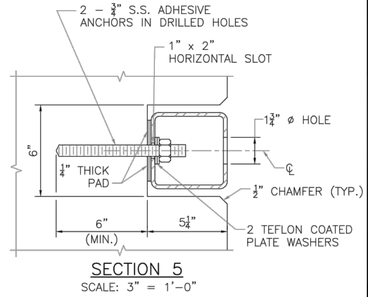
ELEVATION AT SIDEWALK
SCALE: 1" = 1'-0"



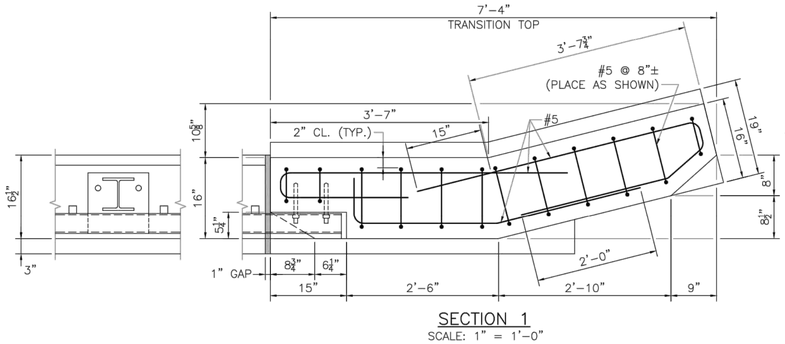
SECTION 2 AT SIDEWALK
SCALE: 1" = 1'-0"



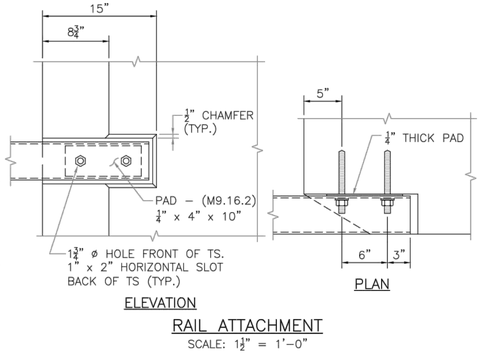
SECTION 3 AT SIDEWALK
SCALE: 1" = 1'-0"



SECTION 5
SCALE: 3" = 1'-0"



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



RAIL ATTACHMENT
SCALE: 1½" = 1'-0"

NOTES:

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

   FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF 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

COMMONWEALTH OF MASSACHUSETTS
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DISTRICT TWO BRIDGE ENGINEER — DATE: 12/8/21

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SHEET 8 OF 13 SHEETS BRIDGE NO. S-22-026 (C8X)

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DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
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TOWN OF SOUTHWICK
TOP OF PRECAST HIGHWAY GUARDRAIL TRANSITION FOR S3-TL4 RAILING
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
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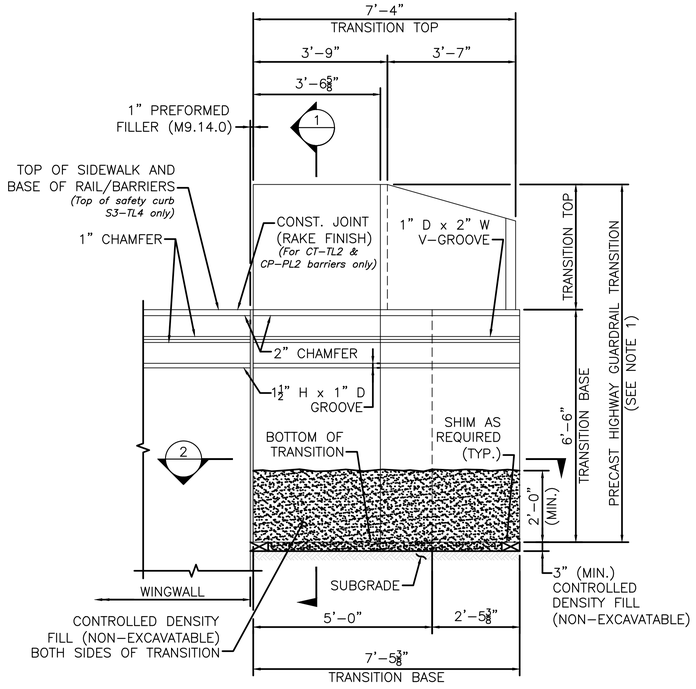
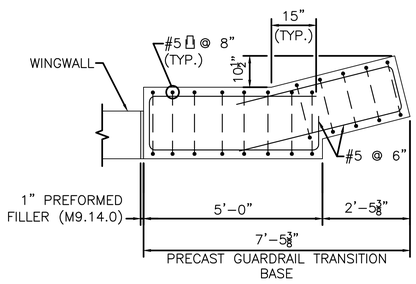
STR-8

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	10	14
PROJECT FILE NO.			

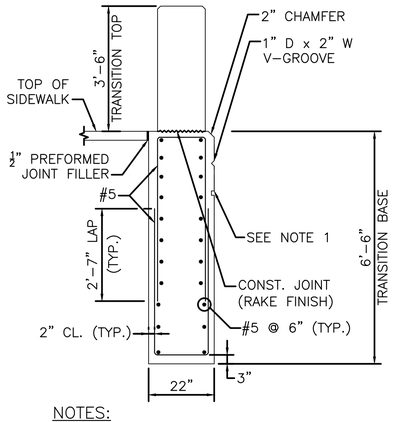


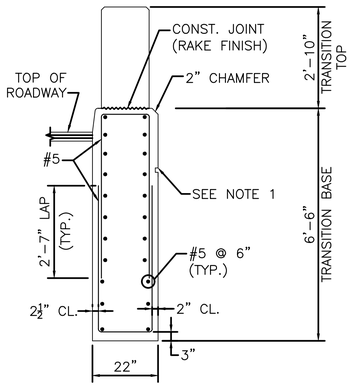
PRECAST GUARDRAIL TRANSITION
ELEVATION AT U–WINGWALL
SCALE: ½" = 1'–0"
FOR S3–TL4 RAILING AND S3–TL4 RAILING AT SAFETY CURB



NOTE:
WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

SECTION 2
SCALE: ½" = 1'–0"





NOTES:
1. 1½" H x 1" D GROOVE. ALIGN WITH GROOVE AT TOP OF STRIATIONS.
2. REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.

SECTION 1
SCALE: ½" = 1'–0"
FOR S3–TL4 RAILING AT SIDEWALK SIDE

SECTION 1
SCALE: ½" = 1'–0"
FOR S3–TL4 RAILING AT SAFETY CURB

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CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.:
VERT.:
0 0 0 0
GRAPHIC SCALE

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413.452.0445
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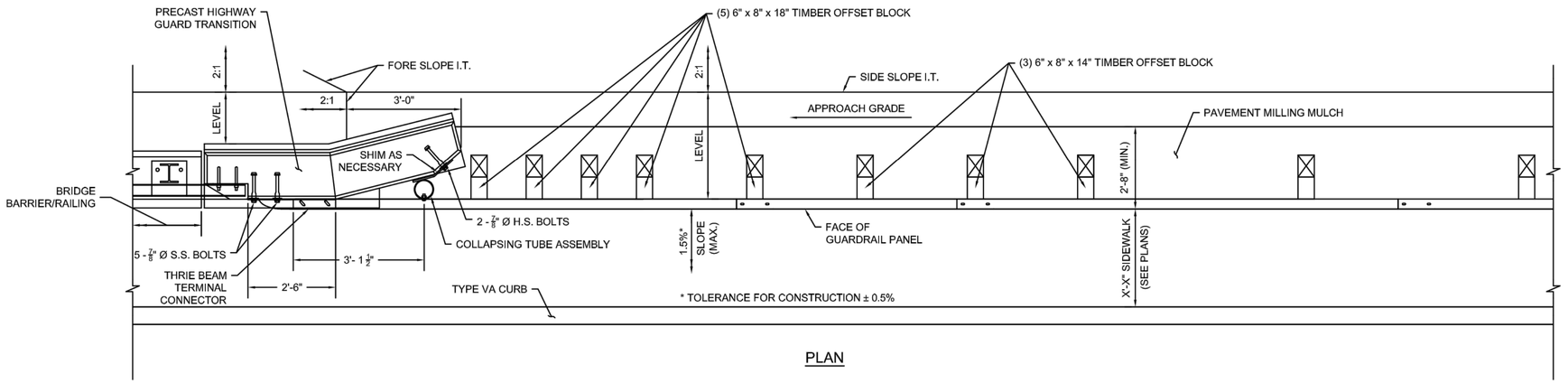
TOWN OF SOUTHWICK
BOTTOM OF PRECAST HIGHWAY GUARDRAIL TRANSITION FOR S3-TL4 RAILING
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

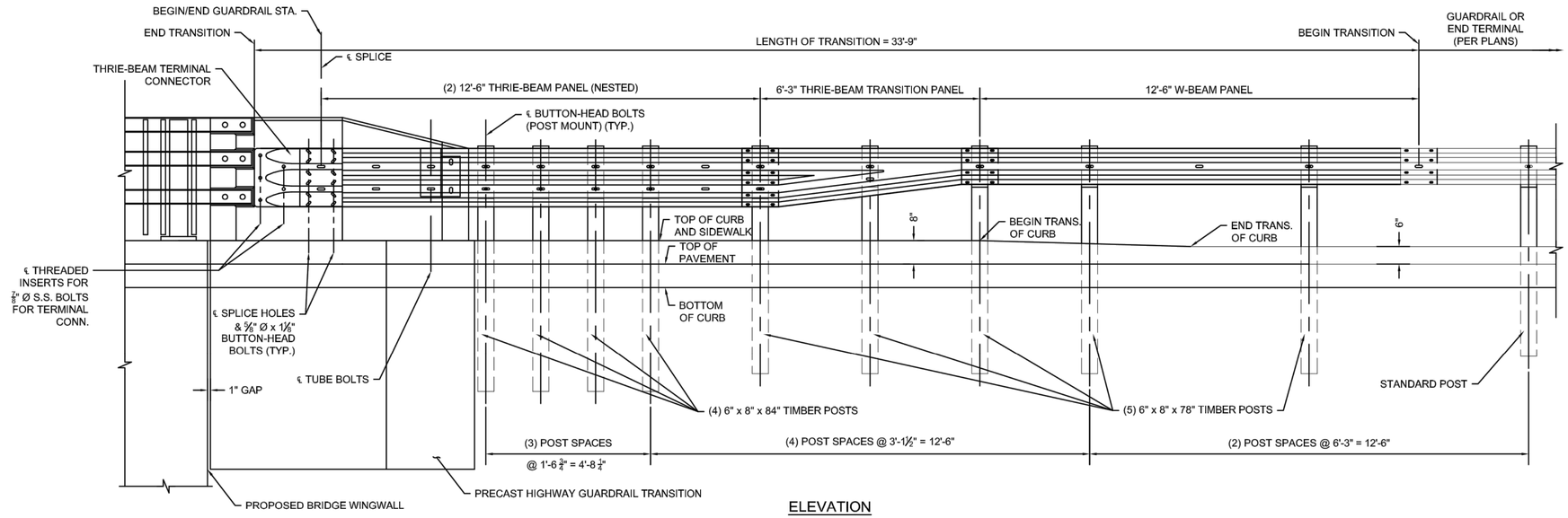
STR-9

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	11	14
PROJECT FILE NO.			



PLAN



ELEVATION

massDOT Massachusetts Department of Transportation Highway Division

CONSTRUCTION STANDARDS
SECTION 400

TRANSITION TO BRIDGE RAIL (BACK OF SIDEWALK)

DATE OF ISSUE: OCTOBER 2017

DRAWING NUMBER: **400.3.5**

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — DATE 12/8/21

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 10 OF 14 SHEETS BRIDGE NO. S–22–026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F DELANY CIVIL NO. 45477 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

11/28/2021

SCALE: HORZ.: AS NOTED VERT.: DATUM: HORZ.: VERT.: GRAPHIC SCALE 0 0 0 0 0

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TOWN OF SOUTHWICK
TRANSITION TO BRIDGE RAIL
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-10

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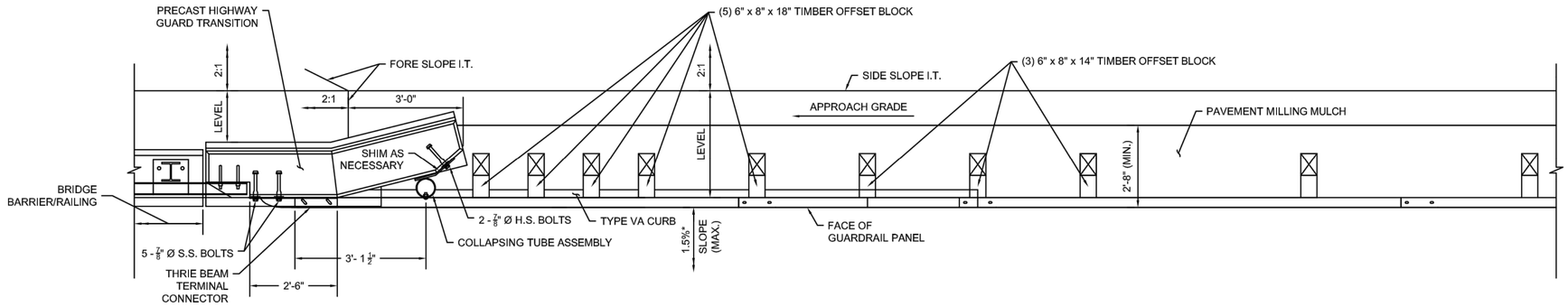
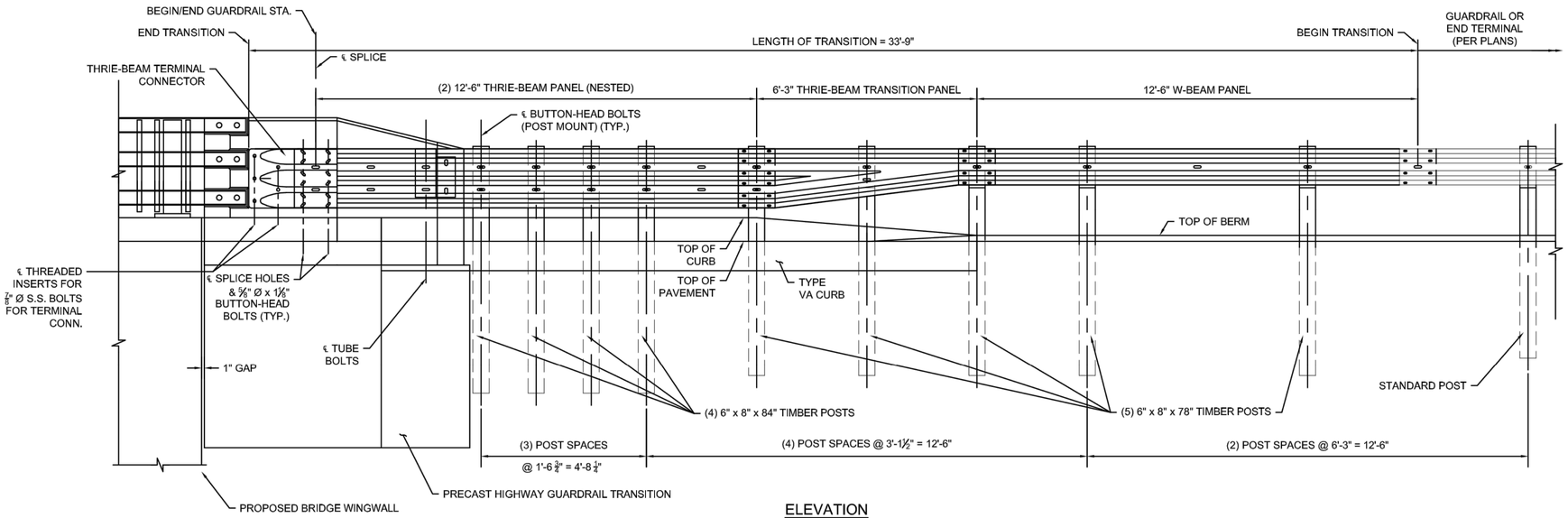
MS VIEW: LAYER STATE:

SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	12	14
PROJECT FILE NO.			



PLAN



ELEVATION

massDOT Massachusetts Department of Transportation Highway Division

CONSTRUCTION STANDARDS
SECTION 400

TRANSITION TO BRIDGE RAIL (FACE OF CURB)

DATE OF ISSUE: OCTOBER 2017

DRAWING NUMBER: **400.3.6**

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING

DISTRICT TWO BRIDGE ENGINEER — DATE: 12/8/21

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 11 OF 14 SHEETS BRIDGE NO. S–22–026 (C8X)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY — COMMONWEALTH OF MASSACHUSETTS — CIVIL — NO. 40477 — REGISTERED PROFESSIONAL ENGINEER
11/28/2021

SCALE: HORZ.: AS NOTED VERT.: DATUM: HORZ.: VERT.: GRAPHIC SCALE 0 0 0 0

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TOWN OF SOUTHWICK
TRANSITION TO BRIDGE RAIL
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

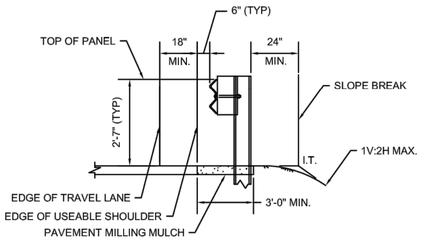
PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-11

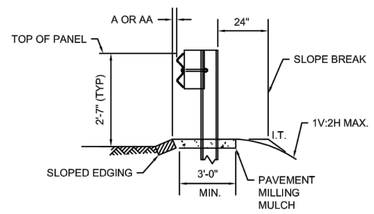
SOUTHWICK
KLAUS ANDERSON RD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	13	14
PROJECT FILE NO.			

SINGLE FACED:

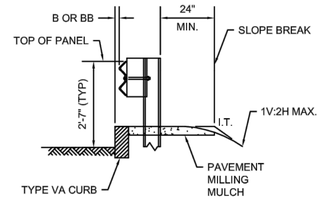


FLUSH WITH ROADWAY



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)

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 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.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 45477
REGISTERED PROFESSIONAL ENGINEER

11/28/2021

SCALE: HORZ.: AS NOTED
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DATUM: HORZ.:
VERT.:
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TOWN OF SOUTHWICK
GUARDRAIL SECTIONS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-12

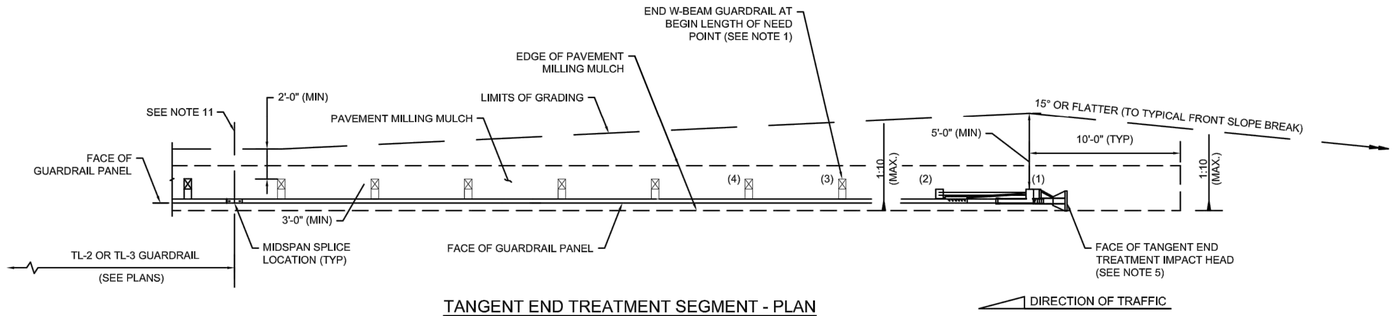
DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

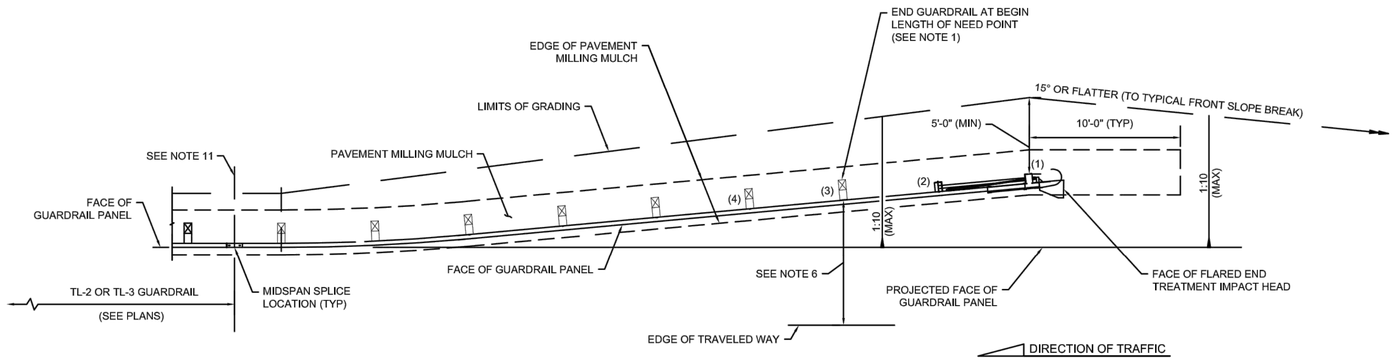
SHEET 13 OF 14 SHEETS BRIDGE NO. C-22-026 (C8X)

SOUTHWICK
KLAUS ANDERSON RD

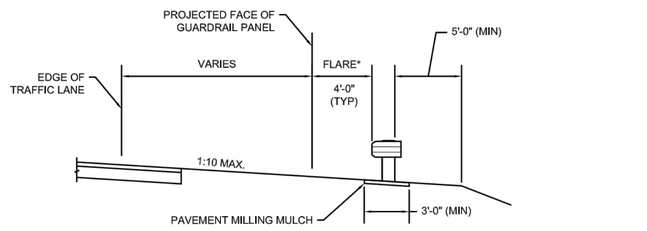
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	–	14	14
PROJECT FILE NO.			



TANGENT END TREATMENT SEGMENT - PLAN

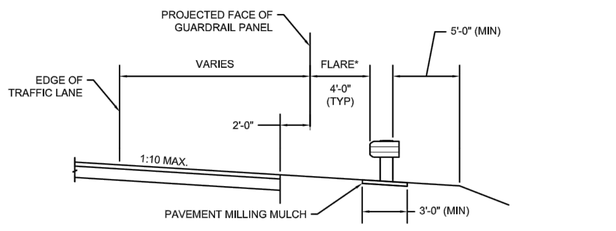


FLARED END TREATMENT SEGMENT - PLAN



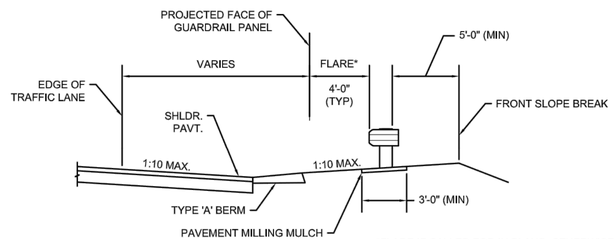
*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)

SECTION AT POST (1)
WITH UNPAVED SHOULDER



*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)

SECTION AT POST (1)
WITH FULLY PAVED SHOULDER



*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)

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

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.

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

DANIEL F. DELANY
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

11/28/2021

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.:
VERT.:
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GRAPHIC SCALE

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TOWN OF SOUTHWICK
APPROACH GEOMETRY: SINGLE FACED
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G11
DATE: NOVEMBER 2021

STR-13

DATE	DESCRIPTION
FEBRUARY 2021	ISSUED FOR CONSTRUCTION

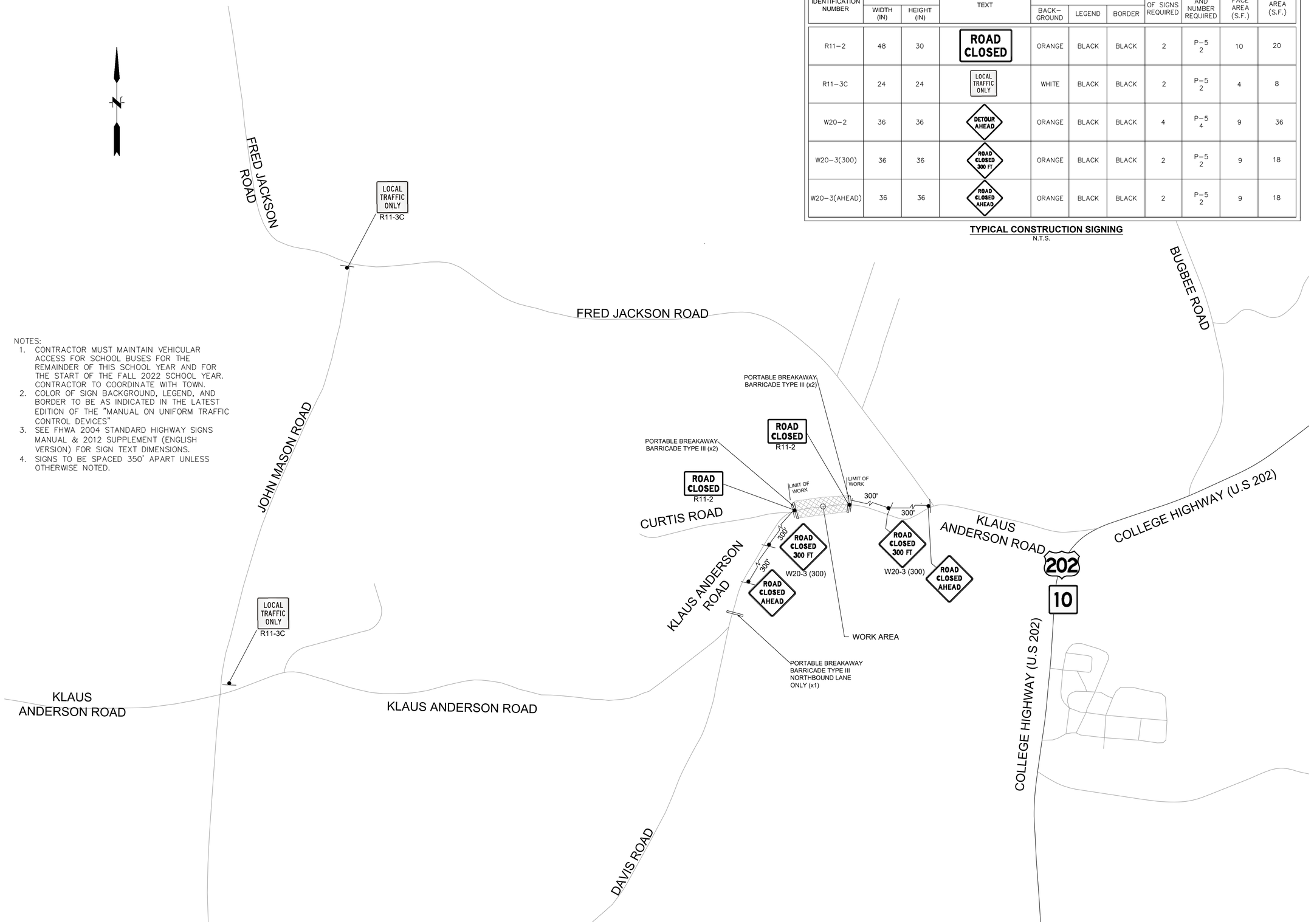
USE ONLY PRINTS OF LATEST DATE

SHEET 14 OF 14 SHEETS BRIDGE NO. S–22–026 (C8X)

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	COLOR			NUMBER OF SIGNS REQUIRED	POST SIZE AND NUMBER REQUIRED	SIGN FACE AREA (S.F.)	TOTAL AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		BACK-GROUND	LEGEND	BORDER				
R11-2	48	30	ROAD CLOSED	ORANGE	BLACK	BLACK	2	P-5 2	10	20
R11-3C	24	24	LOCAL TRAFFIC ONLY	WHITE	BLACK	BLACK	2	P-5 2	4	8
W20-2	36	36	DETOUR AHEAD	ORANGE	BLACK	BLACK	4	P-5 4	9	36
W20-3(300)	36	36	ROAD CLOSED 300 FT	ORANGE	BLACK	BLACK	2	P-5 2	9	18
W20-3(AHEAD)	36	36	ROAD CLOSED AHEAD	ORANGE	BLACK	BLACK	2	P-5 2	9	18

TYPICAL CONSTRUCTION SIGNING
N.T.S.

NOTES:
1. CONTRACTOR MUST MAINTAIN VEHICULAR ACCESS FOR SCHOOL BUSES FOR THE REMAINDER OF THIS SCHOOL YEAR AND FOR THE START OF THE FALL 2022 SCHOOL YEAR. CONTRACTOR TO COORDINATE WITH TOWN.
2. COLOR OF SIGN BACKGROUND, LEGEND, AND BORDER TO BE AS INDICATED IN THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"
3. SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION) FOR SIGN TEXT DIMENSIONS.
4. SIGNS TO BE SPACED 350' APART UNLESS OTHERWISE NOTED.



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

DANIEL F. DELANY
COMMONWEALTH OF MASSACHUSETTS
CIVIL
NO. 43477
REGISTERED PROFESSIONAL ENGINEER
2/16/2022

SCALE:
HORZ.: 1" = 300'
VERT.:
DATUM:
HORZ.:
VERT.:
300 150 0 300
GRAPHIC SCALE

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TOWN OF SOUTHWICK
TEMPORARY TRAFFIC DETOUR PLANS
JOHNSON BROOK RESTORATION
SOUTHWICK MASSACHUSETTS

PROJ. No.: 20170390.G14
DATE: 02/16/2022

TMP-01

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