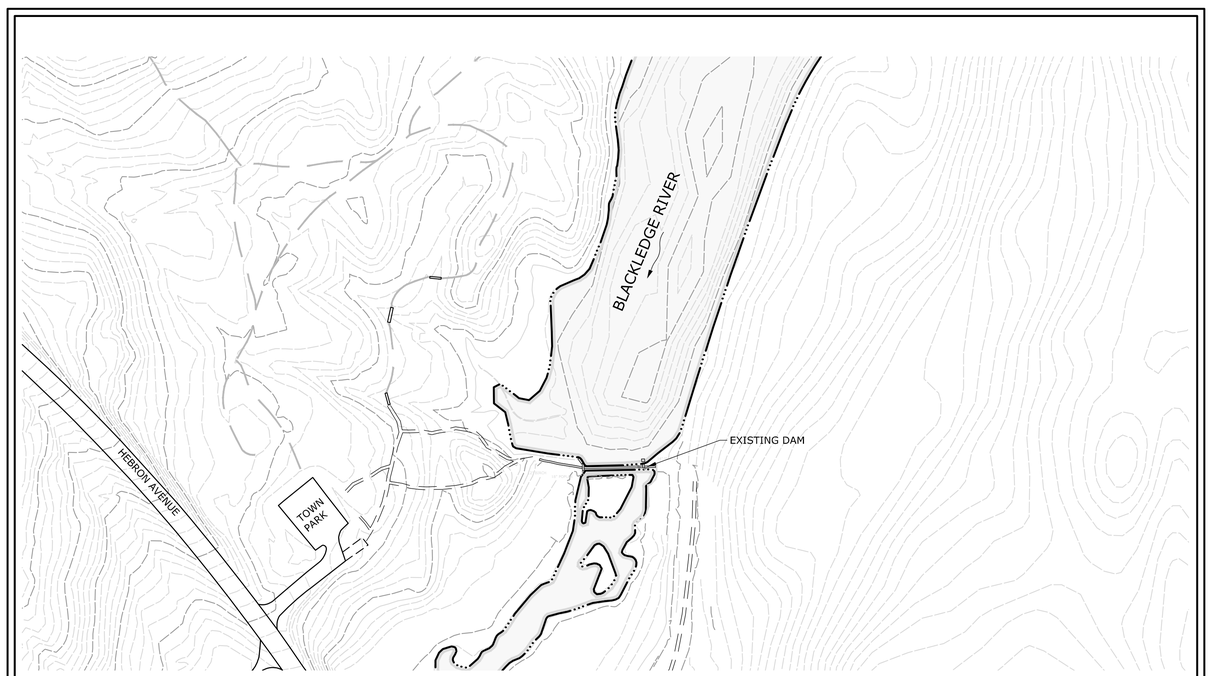
BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

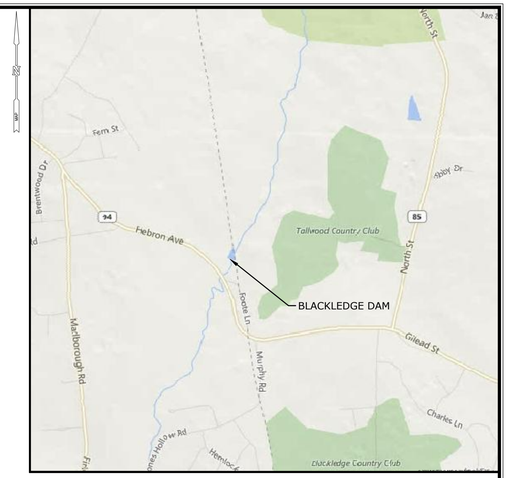
HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

FINAL DESIGN PLANS
NOVEMBER 30, 2017



PROJECT SITE VICINITY MAP:

0' 50' 100'
0 1/2" 1"
SCALE 1" = 100'



LOCATION MAP:

0' 1000' 2000'
0 1/2" 1"
SCALE 1" = 2000'

PREPARED FOR:

TOWN OF GLASTONBURY
2155 MAIN STREET
GLASTONBURY, CONNECTICUT 06033-6523

LIST OF DRAWINGS

NO.	NAME	TITLE
01	--	TITLE SHEET
02	IN-1	INDEX PLAN
03	SP-1	SITE PLAN - EXISTING CONDITIONS
04	SP-2	SITE PLAN - DAM REMOVAL
05	SP-3	SITE PLAN - LAYOUT AND GRADING
06	SP-4	SITE PLAN - PLANTING
07	SP-5	SITE PLAN - IMPOUNDMENT RESTORATION
08	EL-1	ELEVATION - EXISTING DAM
09	PR-1	PROFILE - BLACKLEDGE RIVER
10	CS-1	CROSS SECTIONS - BLACKLEDGE RIVER
11	CS-2	CROSS SECTIONS - BLACKLEDGE RIVER
12	CS-3	CROSS SECTIONS - BLACKLEDGE RIVER
13	CS-4	CROSS SECTIONS - BLACKLEDGE RIVER
14	CP-1	CONSTRUCTION PLAN - PHASE 1
15	CP-2	CONSTRUCTION PLAN - PHASES 2 AND 3
16	CP-3	CONSTRUCTION PLAN - WESTERN ACCESS ROAD
17	CP-4	CONSTRUCTION PLAN - MAINTENANCE AND PROTECTION OF TRAFFIC
18	D-1	DETAILS
19	D-2	DETAILS
20	D-3	DETAILS

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811
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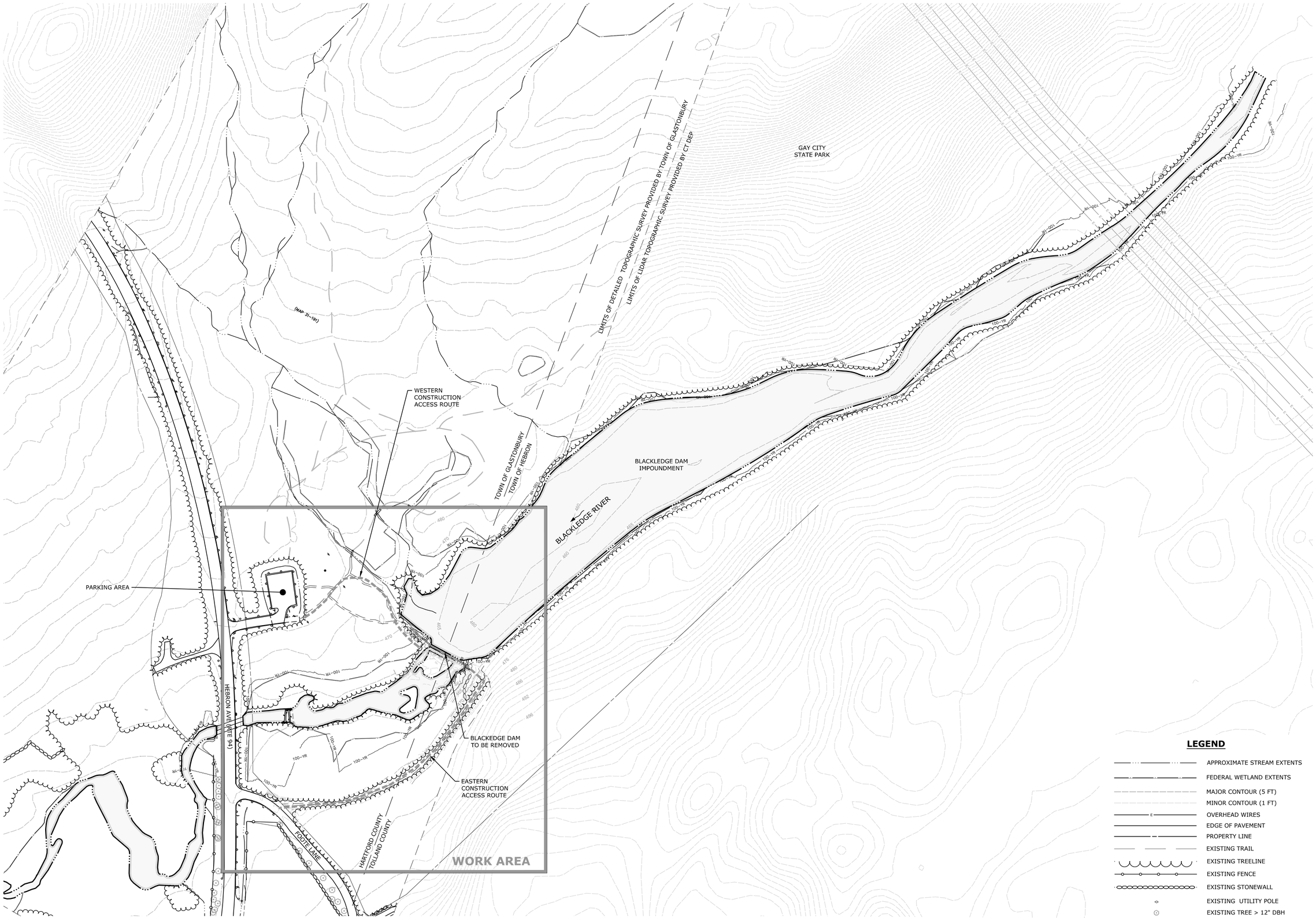
W. Andrew Greene

P.E. CT# 19408



N
0' 50' 100'
0 1/2" 1"

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DESCRIPTION	DATE	BY

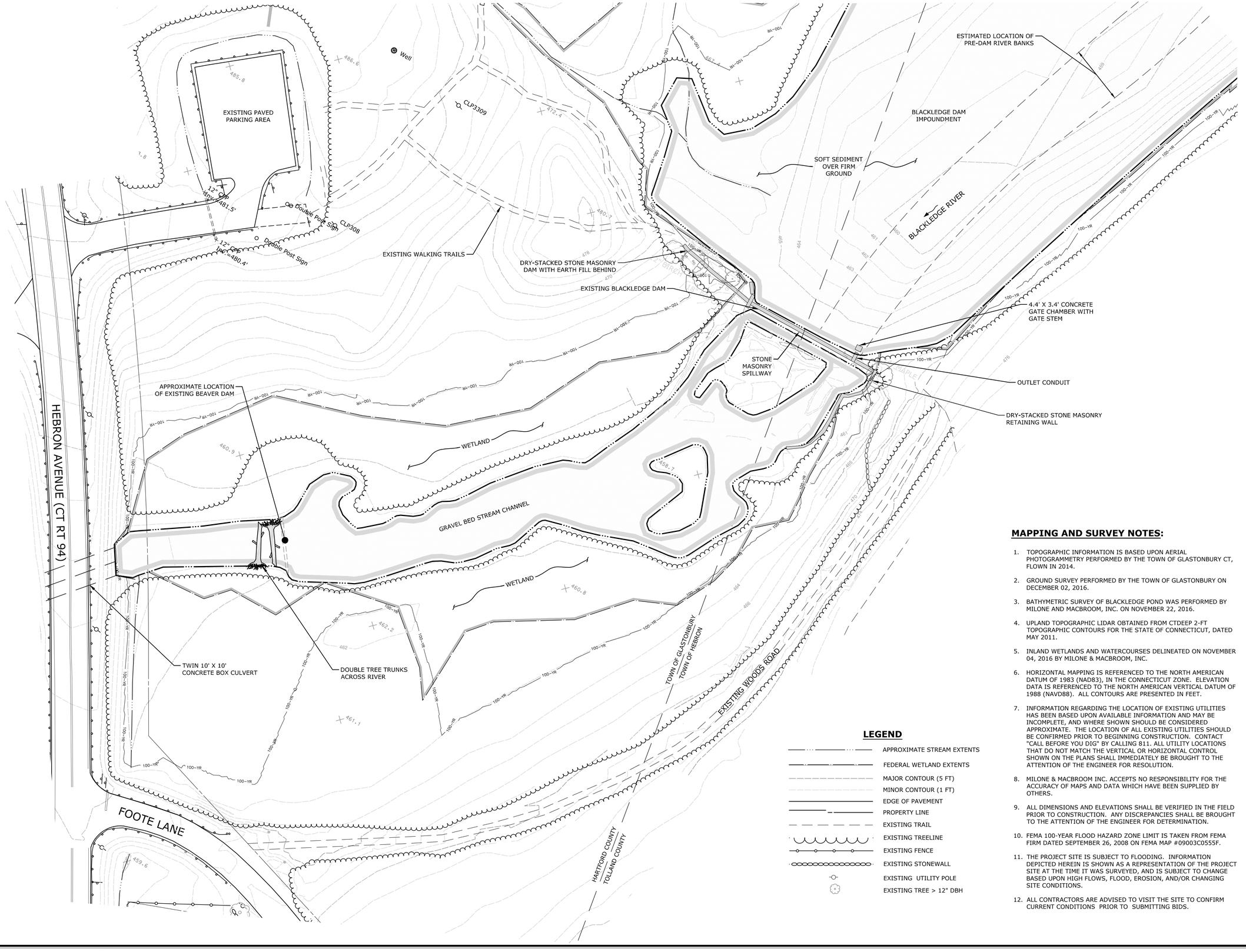
INDEX PLAN

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

--	JCS	WAG
DESIGNED	DRAWN	CHECKED

SCALE: 1"=100'
DATE: NOVEMBER 30, 2017
PROJECT NO.: 2600-13
SHEET NO.: 02 OF 20
SHEET NAME: IN-1



LEGEND

- APPROXIMATE STREAM EXTENTS
- FEDERAL WETLAND EXTENTS
- MAJOR CONTOUR (5 FT)
- MINOR CONTOUR (1 FT)
- EDGE OF PAVEMENT
- PROPERTY LINE
- EXISTING TRAIL
- EXISTING TREELINE
- EXISTING FENCE
- EXISTING STONEWALL
- EXISTING UTILITY POLE
- EXISTING TREE > 12" DBH

MAPPING AND SURVEY NOTES:

1. TOPOGRAPHIC INFORMATION IS BASED UPON AERIAL PHOTOGRAMMETRY PERFORMED BY THE TOWN OF GLASTONBURY CT, FLOWN IN 2014.
2. GROUND SURVEY PERFORMED BY THE TOWN OF GLASTONBURY ON DECEMBER 02, 2016.
3. BATHYMETRIC SURVEY OF BLACKLEDGE POND WAS PERFORMED BY MILONE AND MACBROOM, INC. ON NOVEMBER 22, 2016.
4. UPLAND TOPOGRAPHIC LIDAR OBTAINED FROM CTDEEP 2-FT TOPOGRAPHIC CONTOURS FOR THE STATE OF CONNECTICUT, DATED MAY 2011.
5. INLAND WETLANDS AND WATERCOURSES DELINEATED ON NOVEMBER 04, 2016 BY MILONE & MACBROOM, INC.
6. HORIZONTAL MAPPING IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), IN THE CONNECTICUT ZONE. ELEVATION DATA IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). ALL CONTOURS ARE PRESENTED IN FEET.
7. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. CONTACT "CALL BEFORE YOU DIG" BY CALLING 811. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
8. MILONE & MACBROOM INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.
9. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION.
10. FEMA 100-YEAR FLOOD HAZARD ZONE LIMIT IS TAKEN FROM FEMA FIRM DATED SEPTEMBER 26, 2008 ON FEMA MAP #09003C0555F.
11. THE PROJECT SITE IS SUBJECT TO FLOODING. INFORMATION DEPICTED HEREIN IS SHOWN AS A REPRESENTATION OF THE PROJECT SITE AT THE TIME IT WAS SURVEYED, AND IS SUBJECT TO CHANGE BASED UPON HIGH FLOWS, FLOOD, EROSION, AND/OR CHANGING SITE CONDITIONS.
12. ALL CONTRACTORS ARE ADVISED TO VISIT THE SITE TO CONFIRM CURRENT CONDITIONS PRIOR TO SUBMITTING BIDS.

0' 50' 100'
0 1/2" 1"

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SITE PLAN - EXISTING CONDITIONS

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

--	JCS	WAG
DESIGNED	DRAWN	CHECKED

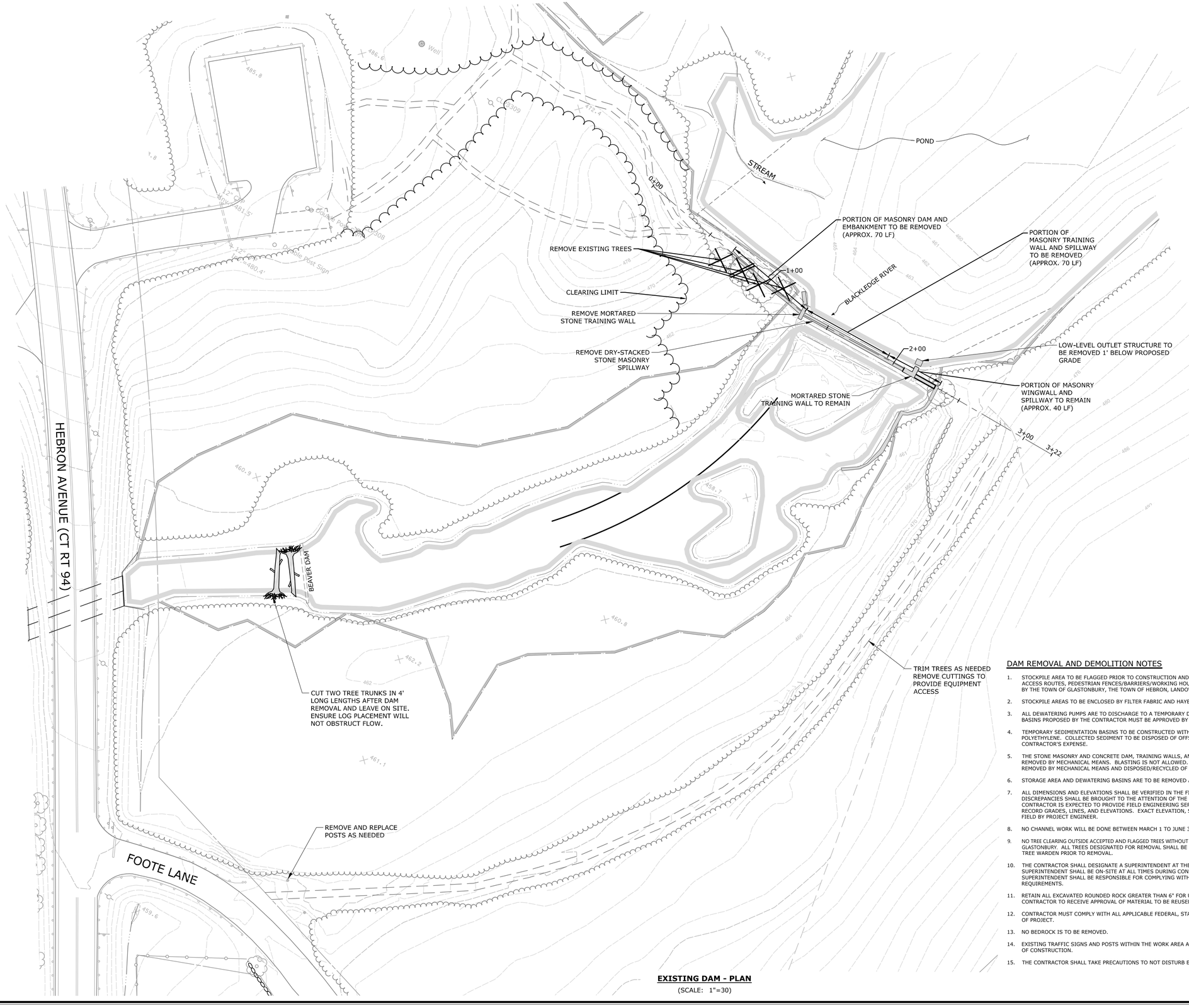
SCALE: 1"=100'

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 03 OF 20

SHEET NAME: SP-1



EXISTING DAM - PLAN
(SCALE: 1"=30)

DAM REMOVAL AND DEMOLITION NOTES

1. STOCKPILE AREA TO BE FLAGGED PRIOR TO CONSTRUCTION AND APPROVED BY ENGINEER. ALL STORAGE AND ACCESS ROUTES, PEDESTRIAN FENCES/BARRIERS/WORKING HOURS, AND LIMITS OF CLEARING SHALL BE APPROVED BY THE TOWN OF GLASTONBURY, THE TOWN OF HEBRON, LANDOWNERS, AND THE PROJECT ENGINEER.
2. STOCKPILE AREAS TO BE ENCLOSED BY FILTER FABRIC AND HAYBALES. SEE DETAILS.
3. ALL DEWATERING PUMPS ARE TO DISCHARGE TO A TEMPORARY DEWATERING SEDIMENT BASIN. ALL SEDIMENT BASINS PROPOSED BY THE CONTRACTOR MUST BE APPROVED BY THE ENGINEER.
4. TEMPORARY SEDIMENTATION BASINS TO BE CONSTRUCTED WITH SANDBAGS OR JERSEY BARRIERS AND LINED WITH POLYETHYLENE. COLLECTED SEDIMENT TO BE DISPOSED OF OFFSITE AT A REGULATED AND PERMITTED AREA AT THE CONTRACTOR'S EXPENSE.
5. THE STONE MASONRY AND CONCRETE DAM, TRAINING WALLS, AND STRUCTURES WITHIN THE CHANNEL ARE TO BE REMOVED BY MECHANICAL MEANS. BLASTING IS NOT ALLOWED. ALL CONCRETE AND REINFORCING STEEL IS TO BE REMOVED BY MECHANICAL MEANS AND DISPOSED/RECYCLED OF OFF SITE AT THE CONTRACTORS EXPENSE.
6. STORAGE AREA AND DEWATERING BASINS ARE TO BE REMOVED AND RESTORED TO ORIGINAL CONDITION.
7. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER FOR DETERMINATION. THE CONTRACTOR IS EXPECTED TO PROVIDE FIELD ENGINEERING SERVICES DURING CONSTRUCTION TO ESTABLISH AND RECORD GRADES, LINES, AND ELEVATIONS. EXACT ELEVATION, SLOPES AND CHANNEL SHAPES WILL BE APPROVED IN FIELD BY PROJECT ENGINEER.
8. NO CHANNEL WORK WILL BE DONE BETWEEN MARCH 1 TO JUNE 30.
9. NO TREE CLEARING OUTSIDE ACCEPTED AND FLAGGED TREES WITHOUT PRIOR AUTHORIZATION FROM THE TOWN OF GLASTONBURY. ALL TREES DESIGNATED FOR REMOVAL SHALL BE POSTED IN ACCORDANCE WITH THE GLASTONBURY TREE WARDEN PRIOR TO REMOVAL.
10. THE CONTRACTOR SHALL DESIGNATE A SUPERINTENDENT AT THE START OF CONSTRUCTION AND THE CONTRACTOR'S SUPERINTENDENT SHALL BE ON-SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR AND HIS/HER JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR COMPLYING WITH THE JOB SPECIFICATIONS AND PERMIT REQUIREMENTS.
11. RETAIN ALL EXCAVATED ROUNDED ROCK GREATER THAN 6" FOR USE IN STREAM CHANNEL AND ALONG TOE OF BANK. CONTRACTOR TO RECEIVE APPROVAL OF MATERIAL TO BE REUSED FROM ENGINEER.
12. CONTRACTOR MUST COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL PERMITS THROUGHOUT DURATION OF PROJECT.
13. NO BEDROCK IS TO BE REMOVED.
14. EXISTING TRAFFIC SIGNS AND POSTS WITHIN THE WORK AREA ARE TO BE REMOVED AND RESET AT THE COMPLETION OF CONSTRUCTION.
15. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO NOT DISTURB EXISTING AERIAL POWER OR COMMUNICATION LINES.

0' 15' 30'
0 15" 1"

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DESCRIPTION	DATE	BY

SITE PLAN - DAM REMOVAL

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

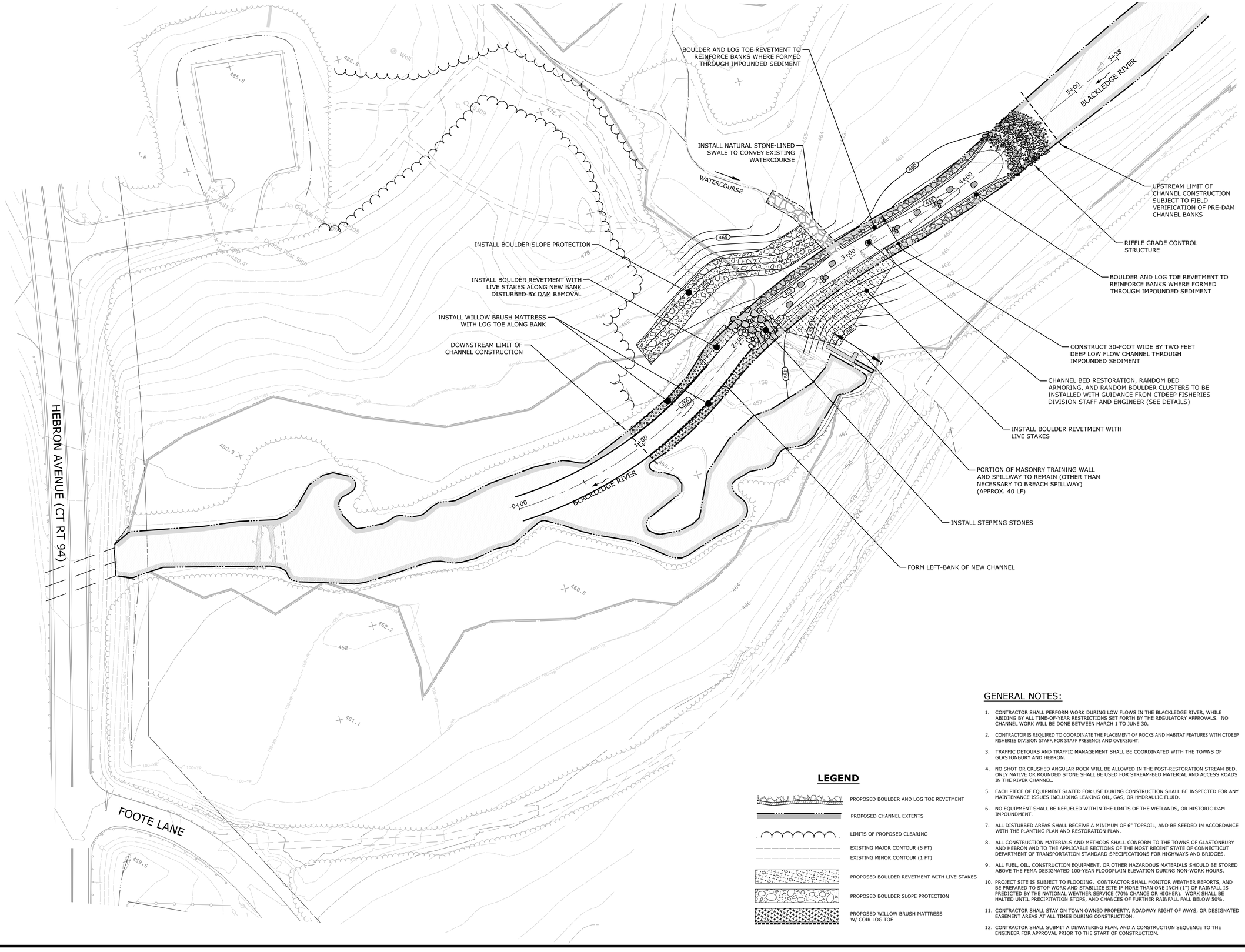
AS NOTED
SCALE

NOVEMBER 30, 2017
DATE

2600-13
PROJECT NO.

04 OF 20
SHEET NO.

SP-2
SHEET NAME



LEGEND

- PROPOSED BOULDER AND LOG TOE REVETMENT
- PROPOSED CHANNEL EXTENTS
- LIMITS OF PROPOSED CLEARING
- EXISTING MAJOR CONTOUR (5 FT)
- EXISTING MINOR CONTOUR (1 FT)
- PROPOSED BOULDER REVETMENT WITH LIVE STAKES
- PROPOSED BOULDER SLOPE PROTECTION
- PROPOSED WILLOW BRUSH MATTRESS W/ COIR LOG TOE

GENERAL NOTES:

1. CONTRACTOR SHALL PERFORM WORK DURING LOW FLOWS IN THE BLACKLEDGE RIVER, WHILE ABIDING BY ALL TIME-OF-YEAR RESTRICTIONS SET FORTH BY THE REGULATORY APPROVALS. NO CHANNEL WORK WILL BE DONE BETWEEN MARCH 1 TO JUNE 30.
2. CONTRACTOR IS REQUIRED TO COORDINATE THE PLACEMENT OF ROCKS AND HABITAT FEATURES WITH CTDEEP FISHERIES DIVISION STAFF, FOR STAFF PRESENCE AND OVERSIGHT.
3. TRAFFIC DETOURS AND TRAFFIC MANAGEMENT SHALL BE COORDINATED WITH THE TOWNS OF GLASTONBURY AND HEBRON.
4. NO SHOT OR CRUSHED ANGULAR ROCK WILL BE ALLOWED IN THE POST-RESTORATION STREAM BED. ONLY NATIVE OR ROUNDED STONE SHALL BE USED FOR STREAM-BED MATERIAL AND ACCESS ROADS IN THE RIVER CHANNEL.
5. EACH PIECE OF EQUIPMENT SLATED FOR USE DURING CONSTRUCTION SHALL BE INSPECTED FOR ANY MAINTENANCE ISSUES INCLUDING LEAKING OIL, GAS, OR HYDRAULIC FLUID.
6. NO EQUIPMENT SHALL BE REFUELED WITHIN THE LIMITS OF THE WETLANDS, OR HISTORIC DAM IMPOUNDMENT.
7. ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 6" TOPSOIL, AND BE SEEDED IN ACCORDANCE WITH THE PLANTING PLAN AND RESTORATION PLAN.
8. ALL CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE TOWNS OF GLASTONBURY AND HEBRON AND TO THE APPLICABLE SECTIONS OF THE MOST RECENT STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
9. ALL FUEL, OIL, CONSTRUCTION EQUIPMENT, OR OTHER HAZARDOUS MATERIALS SHOULD BE STORED ABOVE THE FEMA DESIGNATED 100-YEAR FLOODPLAIN ELEVATION DURING NON-WORK HOURS.
10. PROJECT SITE IS SUBJECT TO FLOODING. CONTRACTOR SHALL MONITOR WEATHER REPORTS, AND BE PREPARED TO STOP WORK AND STABILIZE SITE IF MORE THAN ONE INCH (1") OF RAINFALL IS PREDICTED BY THE NATIONAL WEATHER SERVICE (70% CHANCE OR HIGHER). WORK SHALL BE HALTED UNTIL PRECIPITATION STOPS, AND CHANCES OF FURTHER RAINFALL FALL BELOW 50%.
11. CONTRACTOR SHALL STAY ON TOWN OWNED PROPERTY, ROADWAY RIGHT OF WAYS, OR DESIGNATED EASEMENT AREAS AT ALL TIMES DURING CONSTRUCTION.
12. CONTRACTOR SHALL SUBMIT A DEWATERING PLAN, AND A CONSTRUCTION SEQUENCE TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.

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SITE PLAN - LAYOUT AND GRADING

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

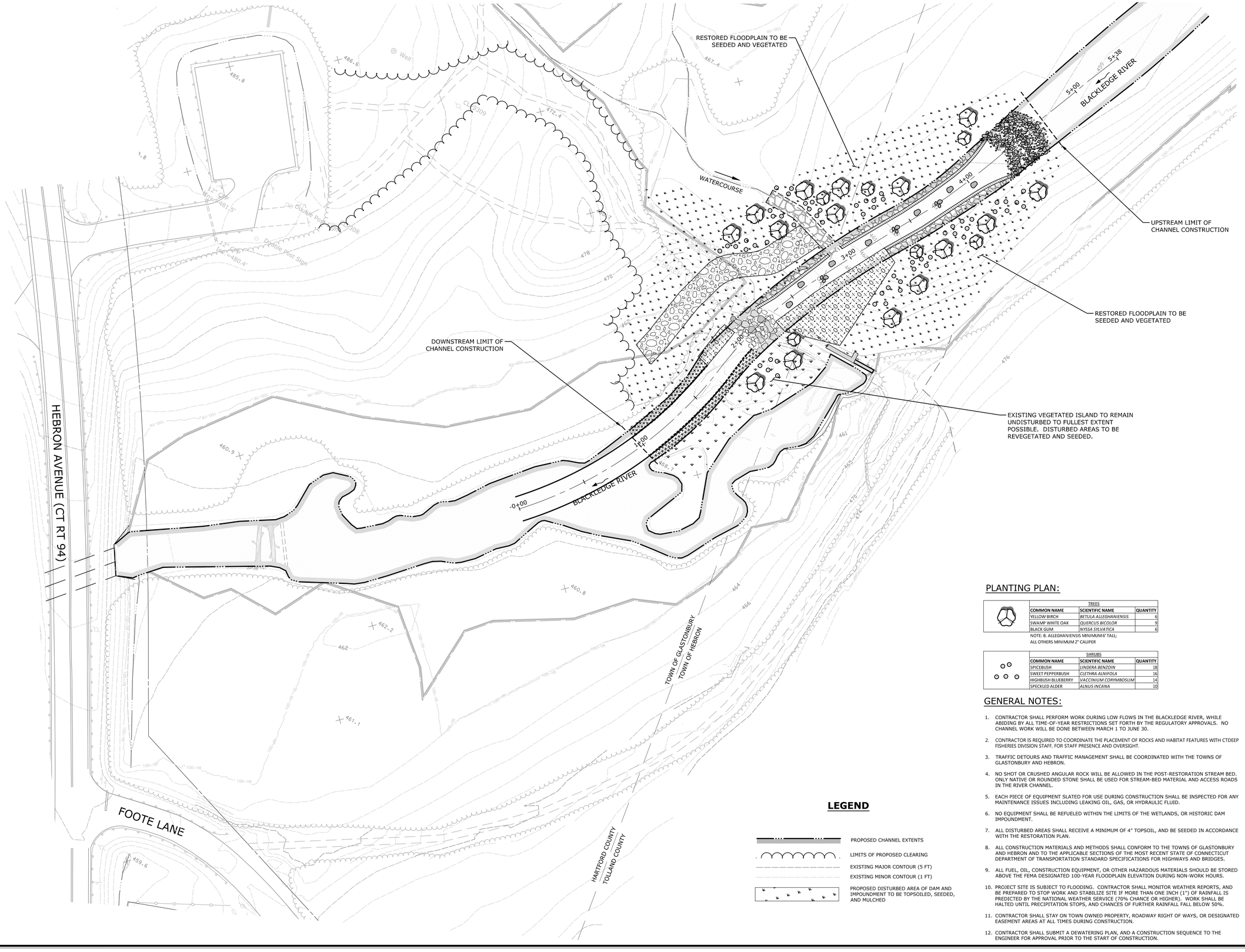
SCALE: 1"=30'

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 05 OF 20

SHEET NAME: SP-3



PLANTING PLAN:

TREES		
COMMON NAME	**SCIENTIFIC NAME**	**QUANTITY**
YELLOW BIRCH	*BETULA ALLEGHANIENSIS*	6
SWAMP WHITE OAK	*QUERCUS BICOLOR*	9
BLACK GUM	*NYSSA SYLVATICA*	6

NOTE: B. ALLEGHANIENSIS MINIMUM 6' TALL;
ALL OTHERS MINIMUM 2" CALIPER

SHRUBS		
COMMON NAME	**SCIENTIFIC NAME**	**QUANTITY**
SPICEBUSH	*LINDERA BENZOIN*	18
SWEET PEPPERBUSH	*CLETHRA ALNIFOLA*	16
HIGHBUSH BLUEBERRY	*VACCINIUM CORYMBOSUM*	14
SPECKLED ALDER	*ALNUS INCANA*	10

GENERAL NOTES:

1. CONTRACTOR SHALL PERFORM WORK DURING LOW FLOWS IN THE BLACKLEDGE RIVER, WHILE ABIDING BY ALL TIME-OF-YEAR RESTRICTIONS SET FORTH BY THE REGULATORY APPROVALS. NO CHANNEL WORK WILL BE DONE BETWEEN MARCH 1 TO JUNE 30.
2. CONTRACTOR IS REQUIRED TO COORDINATE THE PLACEMENT OF ROCKS AND HABITAT FEATURES WITH CTDEEP FISHERIES DIVISION STAFF, FOR STAFF PRESENCE AND OVERSIGHT.
3. TRAFFIC DETOURS AND TRAFFIC MANAGEMENT SHALL BE COORDINATED WITH THE TOWNS OF GLASTONBURY AND HEBRON.
4. NO SHOT OR CRUSHED ANGULAR ROCK WILL BE ALLOWED IN THE POST-RESTORATION STREAM BED. ONLY NATIVE OR ROUNDED STONE SHALL BE USED FOR STREAM-BED MATERIAL AND ACCESS ROADS IN THE RIVER CHANNEL.
5. EACH PIECE OF EQUIPMENT SLATED FOR USE DURING CONSTRUCTION SHALL BE INSPECTED FOR ANY MAINTENANCE ISSUES INCLUDING LEAKING OIL, GAS, OR HYDRAULIC FLUID.
6. NO EQUIPMENT SHALL BE REFUELED WITHIN THE LIMITS OF THE WETLANDS, OR HISTORIC DAM IMPOUNDMENT.
7. ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 4" TOPSOIL, AND BE SEEDED IN ACCORDANCE WITH THE RESTORATION PLAN.
8. ALL CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE TOWNS OF GLASTONBURY AND HEBRON AND TO THE APPLICABLE SECTIONS OF THE MOST RECENT STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
9. ALL FUEL, OIL, CONSTRUCTION EQUIPMENT, OR OTHER HAZARDOUS MATERIALS SHOULD BE STORED ABOVE THE FEMA DESIGNATED 100-YEAR FLOODPLAIN ELEVATION DURING NON-WORK HOURS.
10. PROJECT SITE IS SUBJECT TO FLOODING. CONTRACTOR SHALL MONITOR WEATHER REPORTS, AND BE PREPARED TO STOP WORK AND STABILIZE SITE IF MORE THAN ONE INCH (1") OF RAINFALL IS PREDICTED BY THE NATIONAL WEATHER SERVICE (70% CHANCE OR HIGHER). WORK SHALL BE HALTED UNTIL PRECIPITATION STOPS, AND CHANCES OF FURTHER RAINFALL FALL BELOW 50%.
11. CONTRACTOR SHALL STAY ON TOWN OWNED PROPERTY, ROADWAY RIGHT OF WAYS, OR DESIGNATED EASEMENT AREAS AT ALL TIMES DURING CONSTRUCTION.
12. CONTRACTOR SHALL SUBMIT A DEWATERING PLAN, AND A CONSTRUCTION SEQUENCE TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.

LEGEND

- PROPOSED CHANNEL EXTENTS
- LIMITS OF PROPOSED CLEARING
- EXISTING MAJOR CONTOUR (5 FT)
- EXISTING MINOR CONTOUR (1 FT)
- PROPOSED DISTURBED AREA OF DAM AND IMPOUNDMENT TO BE TOPSOILED, SEEDED, AND MULCHED

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DESCRIPTION	DATE	BY

SITE PLAN - PLANTING

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

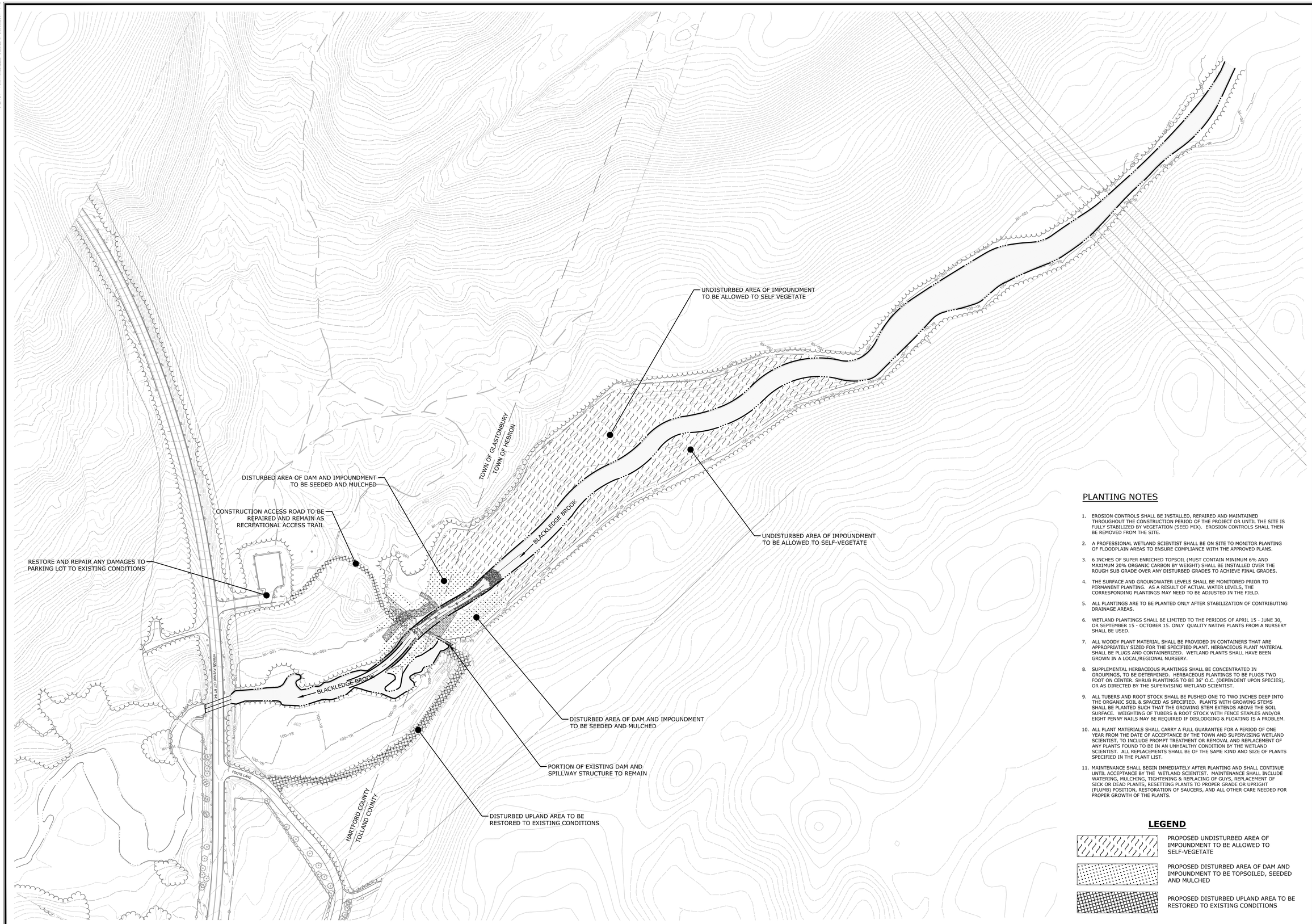
1"=30'
SCALE

NOVEMBER 30, 2017
DATE

2600-13
PROJECT NO.

06 OF 20
SHEET NO.

SP-4
SHEET NAME



PLANTING NOTES

1. EROSION CONTROLS SHALL BE INSTALLED, REPAIRED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD OF THE PROJECT OR UNTIL THE SITE IS FULLY STABILIZED BY VEGETATION (SEED MIX). EROSION CONTROLS SHALL THEN BE REMOVED FROM THE SITE.
2. A PROFESSIONAL WETLAND SCIENTIST SHALL BE ON SITE TO MONITOR PLANTING OF FLOODPLAIN AREAS TO ENSURE COMPLIANCE WITH THE APPROVED PLANS.
3. 6 INCHES OF SUPER ENRICHED TOPSOIL (MUST CONTAIN MINIMUM 6% AND MAXIMUM 20% ORGANIC CARBON BY WEIGHT) SHALL BE INSTALLED OVER THE ROUGH SUB GRADE OVER ANY DISTURBED GRADES TO ACHIEVE FINAL GRADES.
4. THE SURFACE AND GROUNDWATER LEVELS SHALL BE MONITORED PRIOR TO PERMANENT PLANTING. AS A RESULT OF ACTUAL WATER LEVELS, THE CORRESPONDING PLANTINGS MAY NEED TO BE ADJUSTED IN THE FIELD.
5. ALL PLANTINGS ARE TO BE PLANTED ONLY AFTER STABILIZATION OF CONTRIBUTING DRAINAGE AREAS.
6. WETLAND PLANTINGS SHALL BE LIMITED TO THE PERIODS OF APRIL 15 - JUNE 30, OR SEPTEMBER 15 - OCTOBER 15. ONLY QUALITY NATIVE PLANTS FROM A NURSERY SHALL BE USED.
7. ALL WOODY PLANT MATERIAL SHALL BE PROVIDED IN CONTAINERS THAT ARE APPROPRIATELY SIZED FOR THE SPECIFIED PLANT. HERBACEOUS PLANT MATERIAL SHALL BE PLUGS AND CONTAINERIZED. WETLAND PLANTS SHALL HAVE BEEN GROWN IN A LOCAL/REGIONAL NURSERY.
8. SUPPLEMENTAL HERBACEOUS PLANTINGS SHALL BE CONCENTRATED IN GROUPINGS, TO BE DETERMINED. HERBACEOUS PLANTINGS TO BE PLUGS TWO FOOT ON CENTER. SHRUB PLANTINGS TO BE 36" O.C. (DEPENDENT UPON SPECIES), OR AS DIRECTED BY THE SUPERVISING WETLAND SCIENTIST.
9. ALL TUBERS AND ROOT STOCK SHALL BE PUSHED ONE TO TWO INCHES DEEP INTO THE ORGANIC SOIL & SPACED AS SPECIFIED. PLANTS WITH GROWING STEMS SHALL BE PLANTED SUCH THAT THE GROWING STEM EXTENDS ABOVE THE SOIL SURFACE. WEIGHTING OF TUBERS & ROOT STOCK WITH FENCE STAPLES AND/OR EIGHT PENNY NAILS MAY BE REQUIRED IF DISLODGING & FLOATING IS A PROBLEM.
10. ALL PLANT MATERIALS SHALL CARRY A FULL GUARANTEE FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE TOWN AND SUPERVISING WETLAND SCIENTIST, TO INCLUDE PROMPT TREATMENT OR REMOVAL AND REPLACEMENT OF ANY PLANTS FOUND TO BE IN AN UNHEALTHY CONDITION BY THE WETLAND SCIENTIST. ALL REPLACEMENTS SHALL BE OF THE SAME KIND AND SIZE OF PLANTS SPECIFIED IN THE PLANT LIST.
11. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING AND SHALL CONTINUE UNTIL ACCEPTANCE BY THE WETLAND SCIENTIST. MAINTENANCE SHALL INCLUDE WATERING, MULCHING, TIGHTENING & REPLACING OF GUYS, REPLACEMENT OF SICK OR DEAD PLANTS, RESETTING PLANTS TO PROPER GRADE OR UPRIGHT (PLUMB) POSITION, RESTORATION OF SAUCERS, AND ALL OTHER CARE NEEDED FOR PROPER GROWTH OF THE PLANTS.

LEGEND

- PROPOSED UNDISTURBED AREA OF IMPOUNDMENT TO BE ALLOWED TO SELF-VEGETATE
- PROPOSED DISTURBED AREA OF DAM AND IMPOUNDMENT TO BE TOPSOILED, SEEDED AND MULCHED
- PROPOSED DISTURBED UPLAND AREA TO BE RESTORED TO EXISTING CONDITIONS

0' 50' 100'
0 1/2" 1"

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SITE PLAN - IMPOUNDMENT RESTORATION

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

1"=100'
SCALE

NOVEMBER 30, 2017
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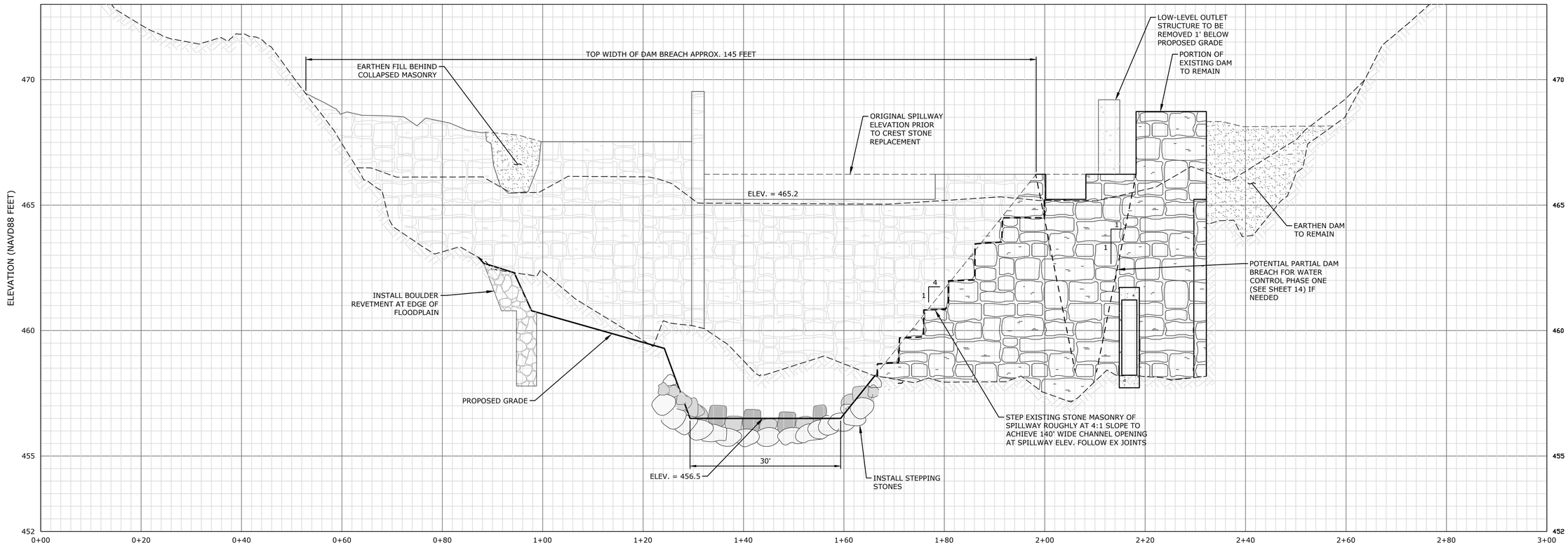
2600-13
PROJECT NO.

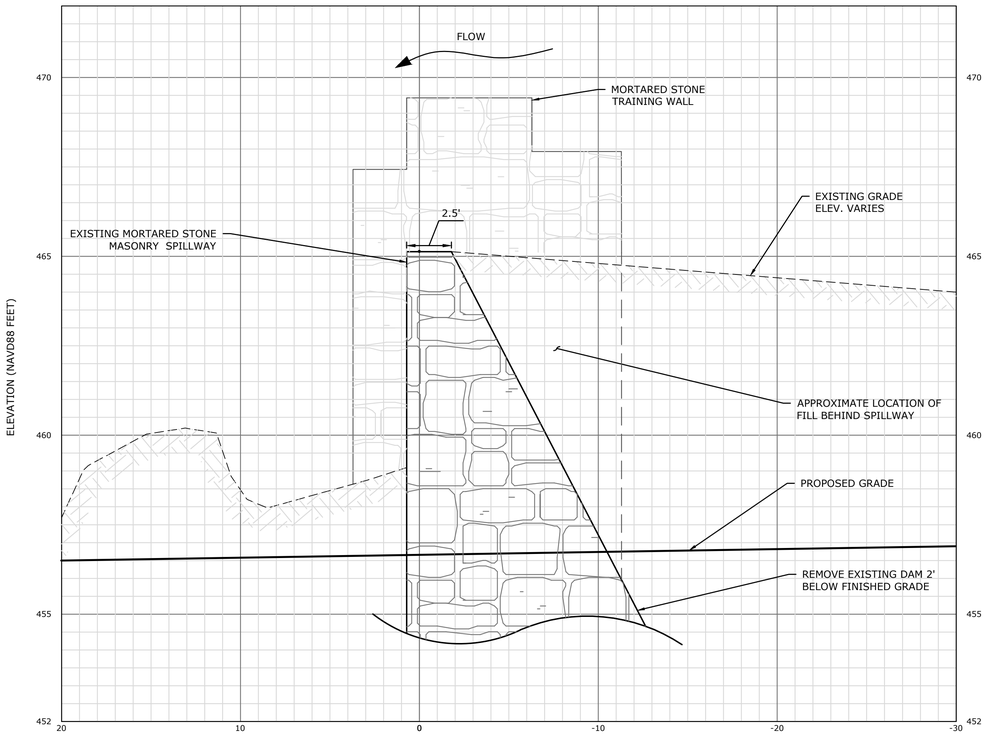
07 OF 20
SHEET NO.

SP-5
SHEET NAME



EXISTING DAM - ELEVATION - FACING UPSTREAM

(SCALE: 1"=10' H, 1"=2'V)



EXISTING DAM - TYPICAL SECTION VIEW

(SCALE: 1"=4'H, 1"=2'V)

LEGEND

- PROPOSED GRADE
- EXISTING GRADE
- EXISTING CONCRETE TO REMAIN
- EXISTING CONCRETE TO BE REMOVED
- EXISTING EARTHEN FILL
- MASONRY WINGWALL AND SPILLWAY TO REMAIN
- PORTION OF WINGWALL AND SPILLWAY TO BE REMOVED
- PROPOSED BOULDER REVETMENT

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DESCRIPTION	DATE	BY

ELEVATION - EXISTING DAM

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	--
DESIGNED	DRAWN	CHECKED

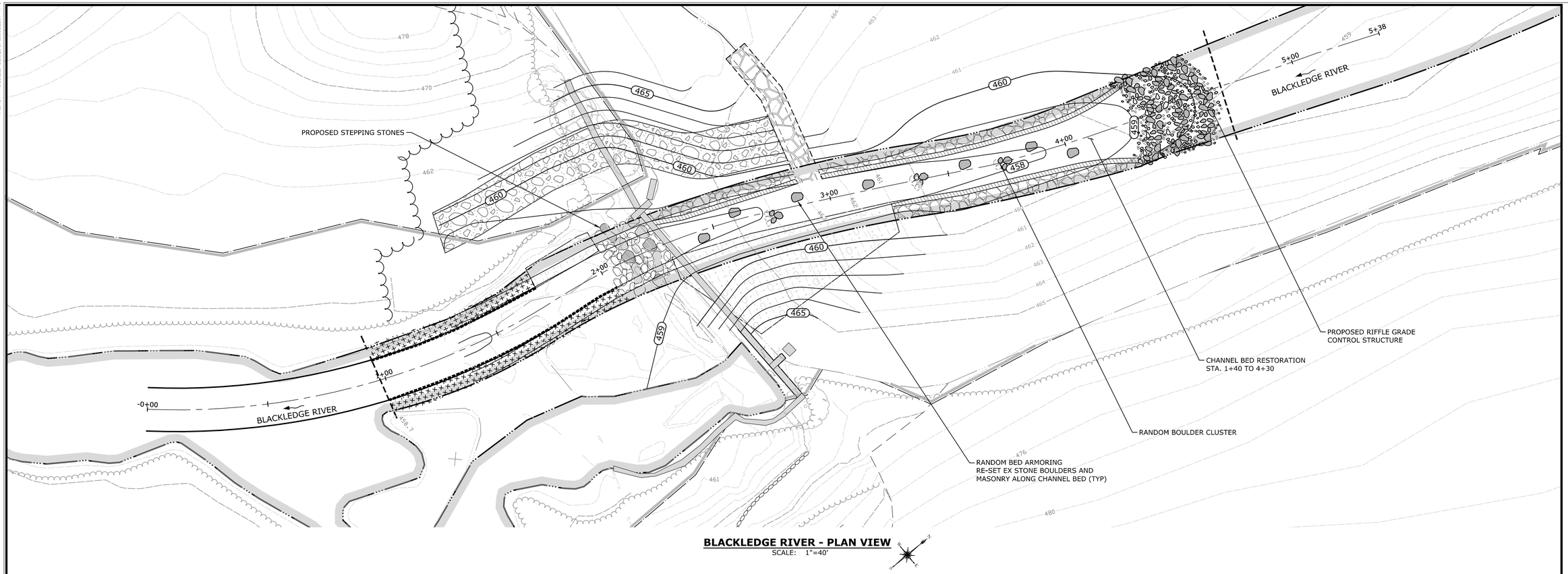
AS NOTED (SCALE)

NOVEMBER 30, 2017 (DATE)

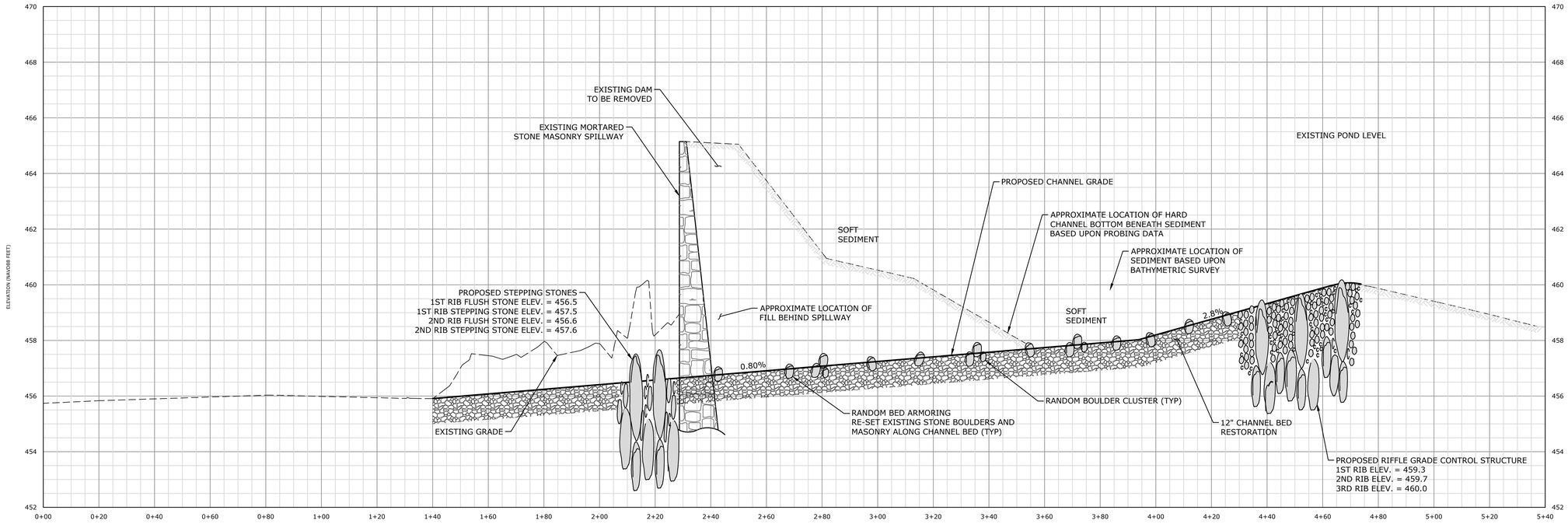
2600-13 (PROJECT NO.)

08 OF 20 (SHEET NO.)

EL-1 (SHEET NAME)



BLACKLEDGE RIVER - PLAN VIEW
SCALE: 1"=40'



BLACKLEDGE RIVER - PROFILE
1"=20'H, 1" = 2'V (10X VERTICAL EXAGGERATION)

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DESCRIPTION	DATE	BY

PROFILE - BLACKLEDGE RIVER

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION
HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

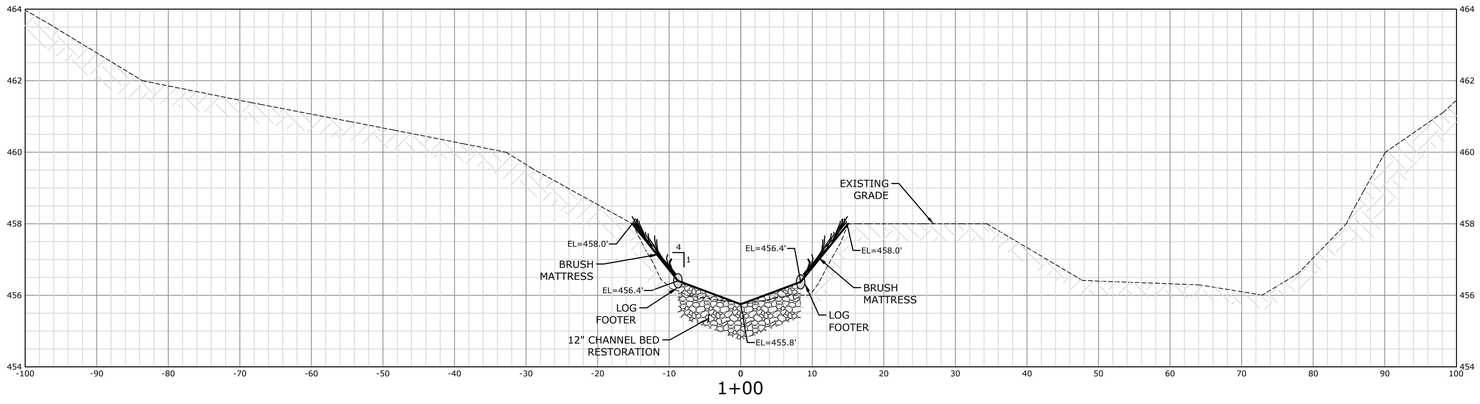
AS NOTED
SCALE

NOVEMBER 30, 2017
DATE

2600-13
PROJECT NO.

09 OF 20
SHEET NO.

PR-1
SHEET NAME



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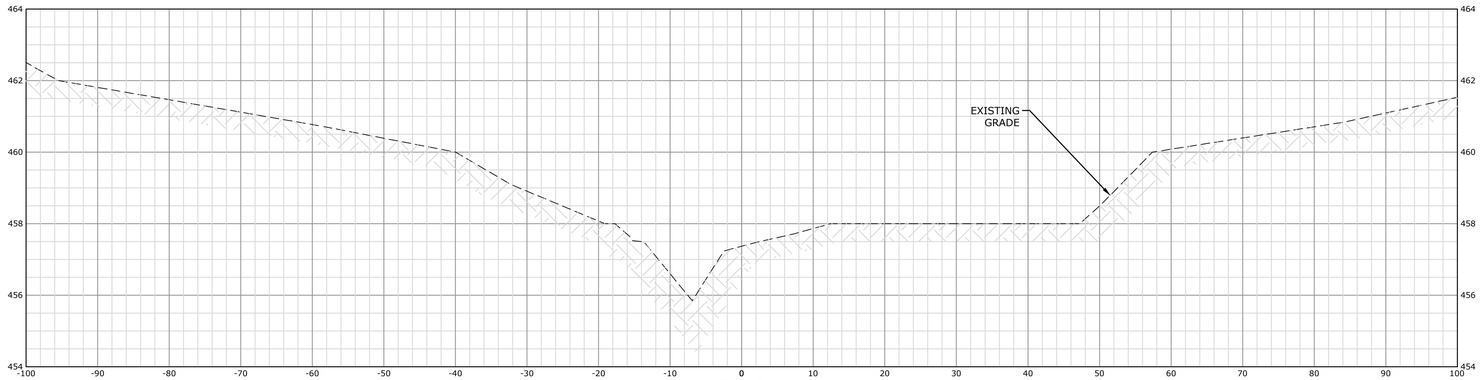

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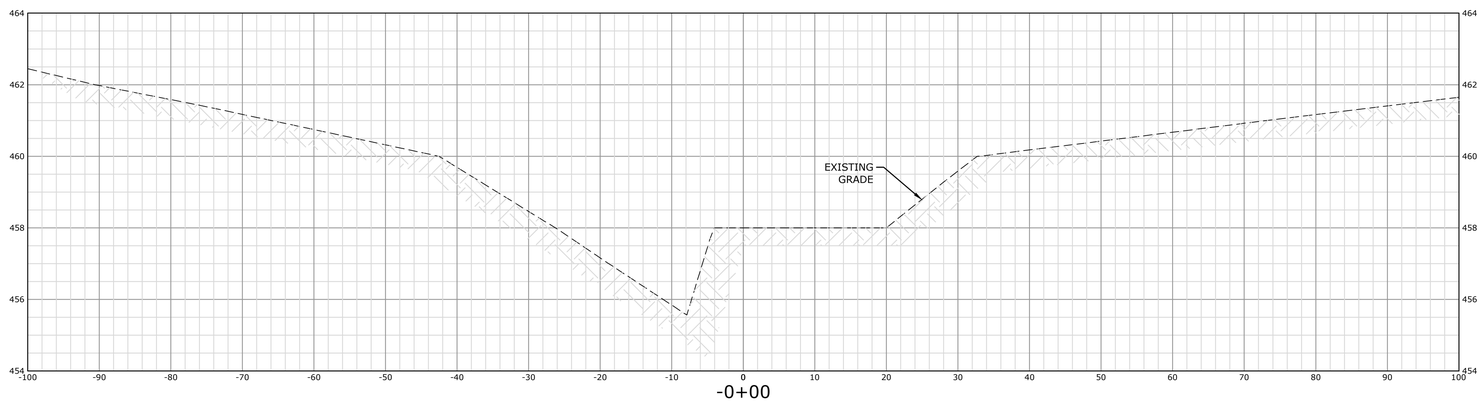

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DESCRIPTION	DATE	BY

CROSS SECTIONS - BLACKLEDGE RIVER

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

DESIGNED	DRAWN	CHECKED
WAG	JCS	WAG

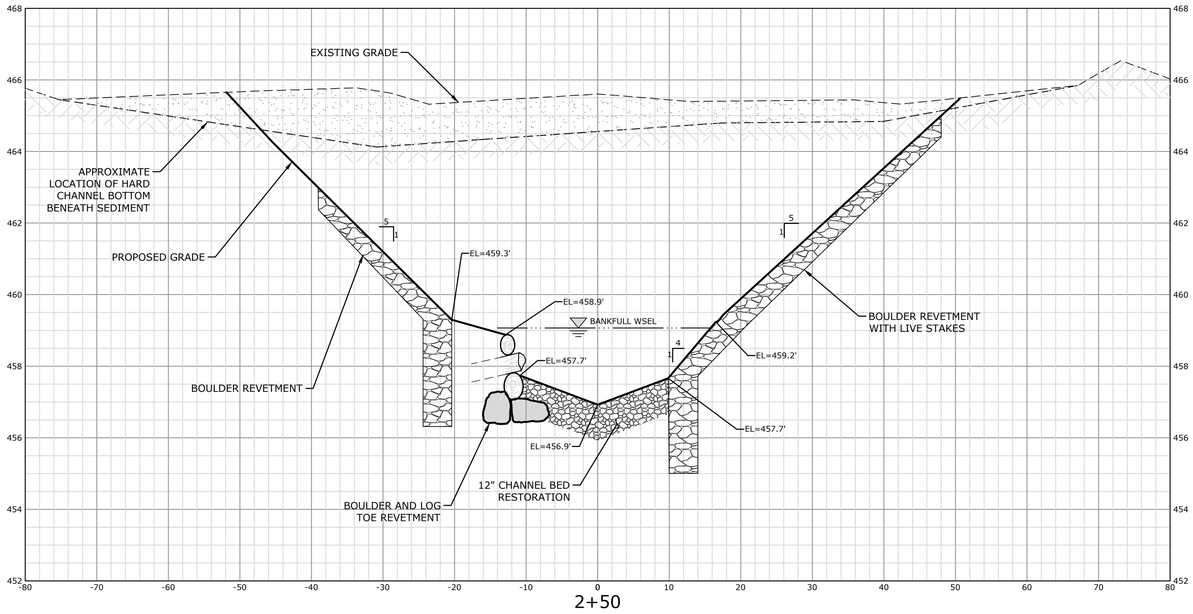
SCALE: 1"=10'H, 1"=2'V

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 10 OF 20

SHEET NAME: CS-1



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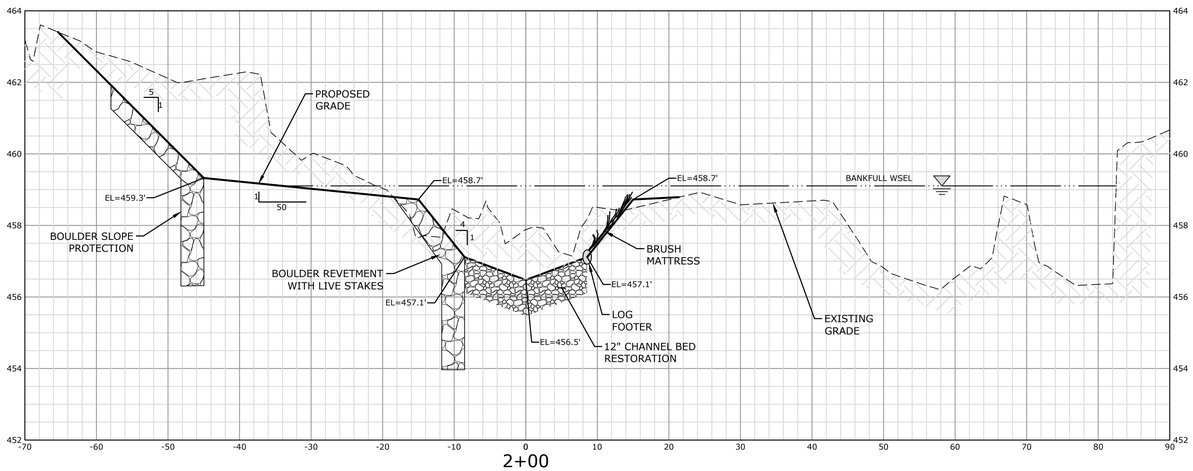

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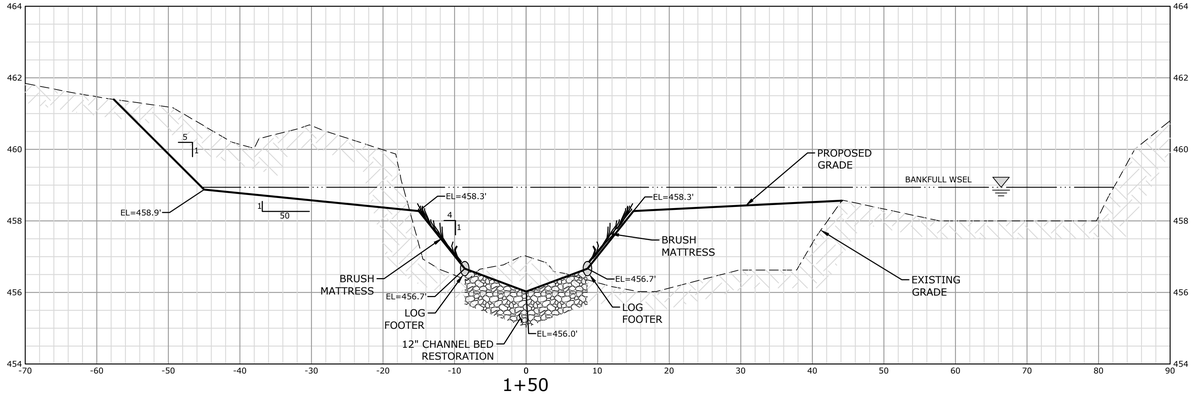

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CROSS SECTIONS - BLACKLEDGE RIVER

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

DESIGNED	DRAWN	CHECKED
WAG	JCS	WAG

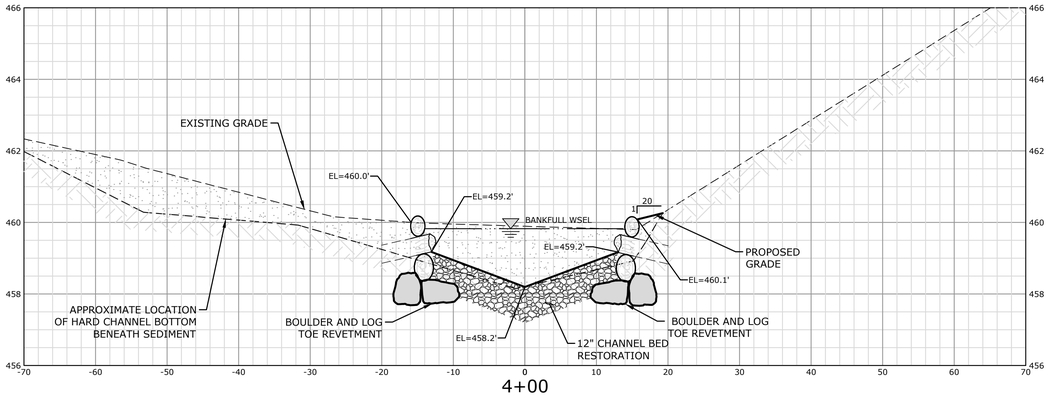
SCALE: 1"=10'H, 1"=2'V

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 11 OF 20

SHEET NAME: CS-2



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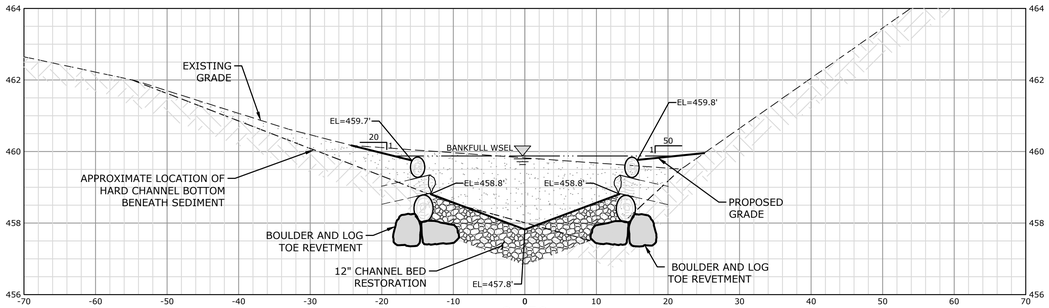

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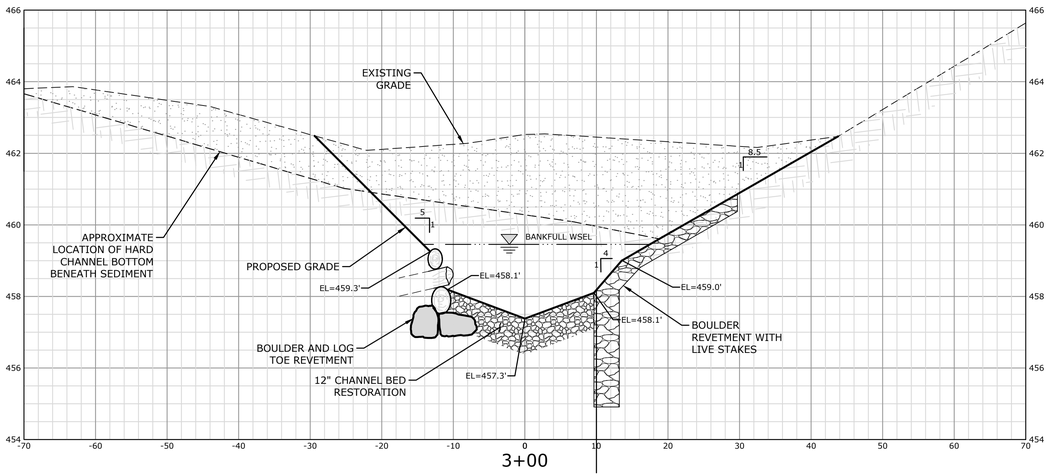

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DESCRIPTION	DATE	BY

CROSS SECTIONS - BLACKLEDGE RIVER

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

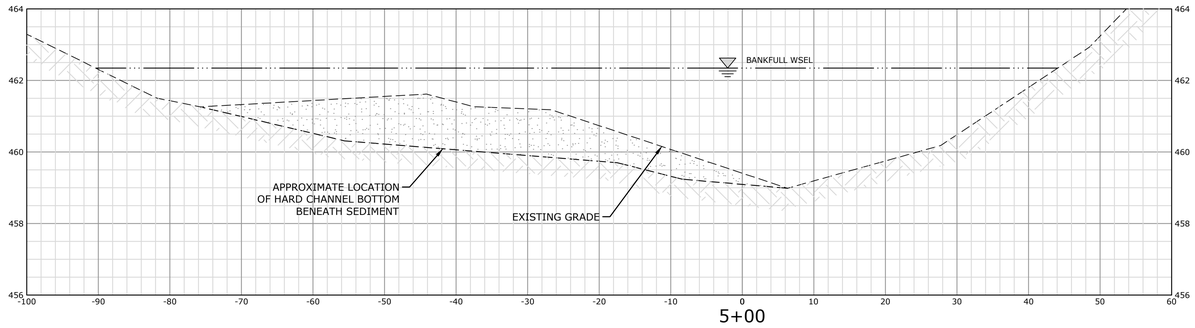
SCALE: 1"=10'H, 1"=2'V

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 12 OF 20

SHEET NAME: CS-3



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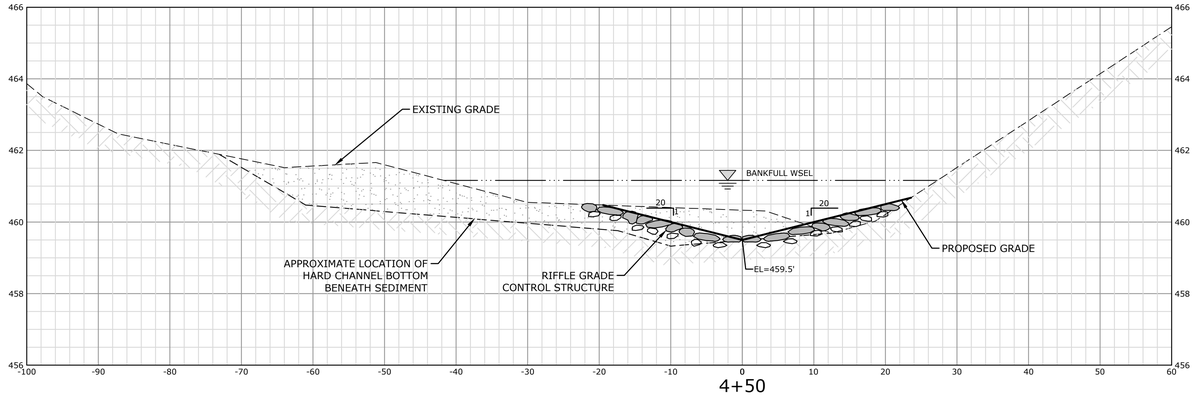

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CROSS SECTIONS - BLACKLEDGE RIVER

BLACKLEDGE DAM REMOVAL
AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

1"=10'H, 1"=2'V
SCALE

NOVEMBER 30, 2017
DATE

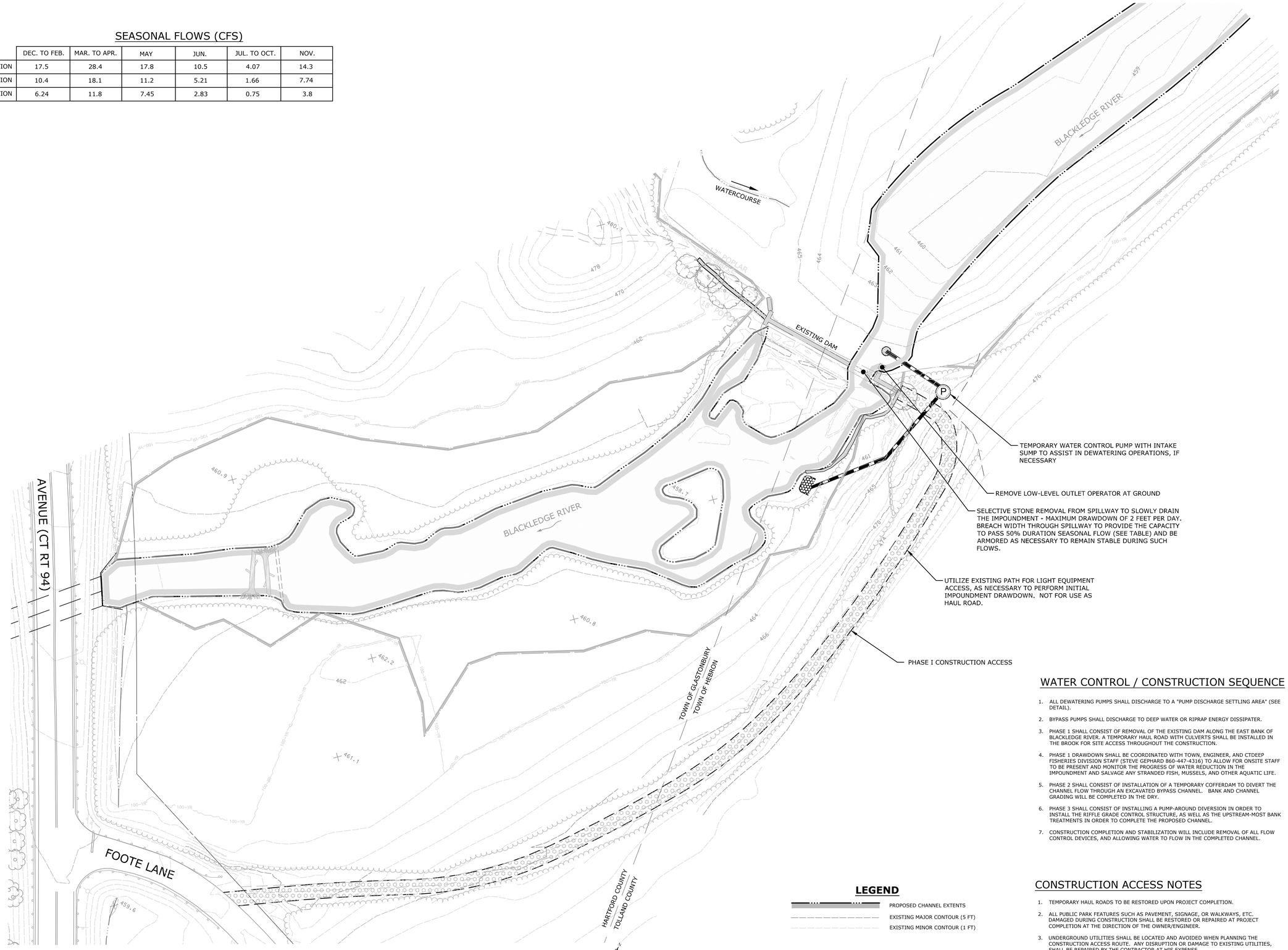
2600-13
PROJECT NO.

13 OF 20
SHEET NO.

CS-4
SHEET NAME

SEASONAL FLOWS (CFS)

	DEC. TO FEB.	MAR. TO APR.	MAY	JUN.	JUL. TO OCT.	NOV.
25% DURATION	17.5	28.4	17.8	10.5	4.07	14.3
50% DURATION	10.4	18.1	11.2	5.21	1.66	7.74
75% DURATION	6.24	11.8	7.45	2.83	0.75	3.8



PHASE 1 - INITIAL DRAWDOWN OF IMPOUNDMENT
(SCALE: 1"=30')

0' 15' 30'
0 1/2" 1"

WATER CONTROL / CONSTRUCTION SEQUENCE

1. ALL DEWATERING PUMPS SHALL DISCHARGE TO A "PUMP DISCHARGE SETTLING AREA" (SEE DETAIL).
2. BYPASS PUMPS SHALL DISCHARGE TO DEEP WATER OR RIPRAP ENERGY DISSIPATER.
3. PHASE 1 SHALL CONSIST OF REMOVAL OF THE EXISTING DAM ALONG THE EAST BANK OF BLACKLEDGE RIVER. A TEMPORARY HAUL ROAD WITH CULVERTS SHALL BE INSTALLED IN THE BROOK FOR SITE ACCESS THROUGHOUT THE CONSTRUCTION.
4. PHASE 1 DRAWDOWN SHALL BE COORDINATED WITH TOWN, ENGINEER, AND CTDEEP FISHERIES DIVISION STAFF (STEVE GEPHARD 860-447-4316) TO ALLOW FOR ONSITE STAFF TO BE PRESENT AND MONITOR THE PROGRESS OF WATER REDUCTION IN THE IMPOUNDMENT AND SALVAGE ANY STRANDED FISH, MUSSELS, AND OTHER AQUATIC LIFE.
5. PHASE 2 SHALL CONSIST OF INSTALLATION OF A TEMPORARY COFFERDAM TO DIVERT THE CHANNEL FLOW THROUGH AN EXCAVATED BYPASS CHANNEL. BANK AND CHANNEL GRADING WILL BE COMPLETED IN THE DRY.
6. PHASE 3 SHALL CONSIST OF INSTALLING A PUMP-AROUND DIVERSION IN ORDER TO INSTALL THE RIFFLE GRADE CONTROL STRUCTURE, AS WELL AS THE UPSTREAM-MOST BANK TREATMENTS IN ORDER TO COMPLETE THE PROPOSED CHANNEL.
7. CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL FLOW CONTROL DEVICES, AND ALLOWING WATER TO FLOW IN THE COMPLETED CHANNEL.

LEGEND

- PROPOSED CHANNEL EXTENTS
- EXISTING MAJOR CONTOUR (5 FT)
- EXISTING MINOR CONTOUR (1 FT)

CONSTRUCTION ACCESS NOTES

1. TEMPORARY HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
2. ALL PUBLIC PARK FEATURES SUCH AS PAVEMENT, SIGNAGE, OR WALKWAYS, ETC. DAMAGED DURING CONSTRUCTION SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE DIRECTION OF THE OWNER/ENGINEER.
3. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTE. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

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CONSTRUCTION PLAN - PHASE 1

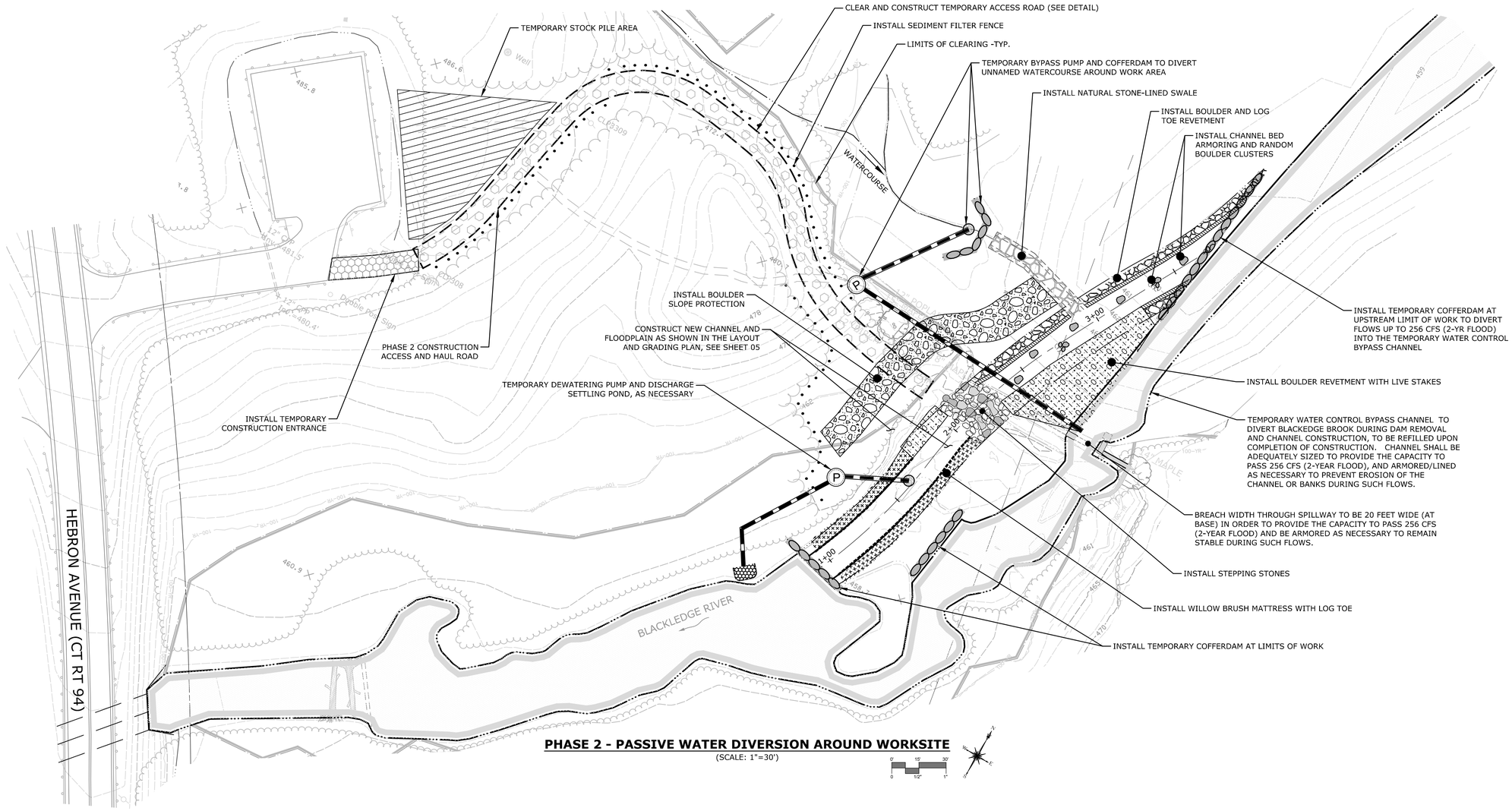
BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

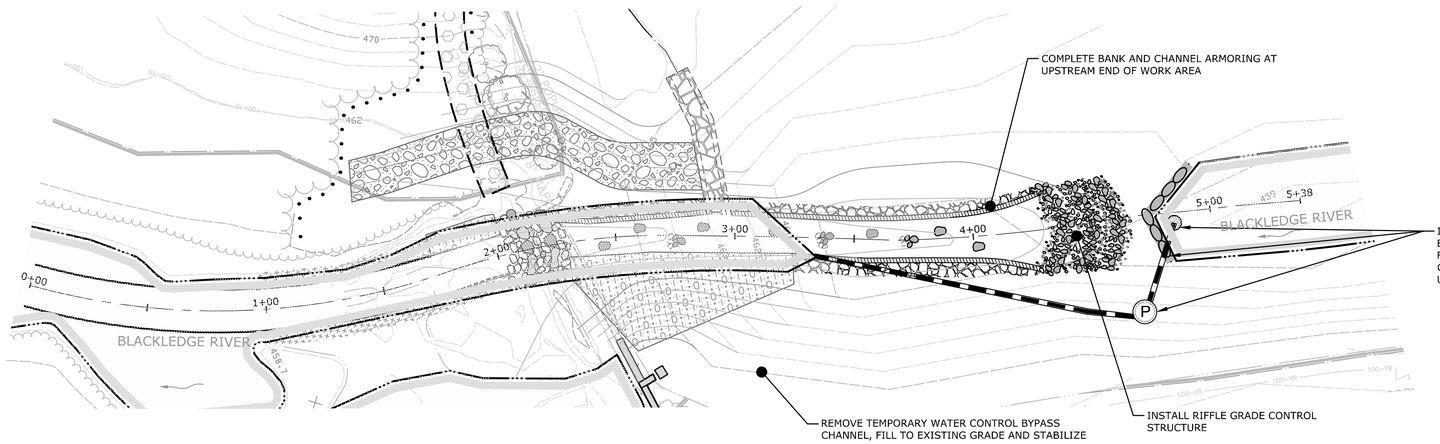
SCALE: AS NOTED
DATE: NOVEMBER 30, 2017
PROJECT NO.: 2600-13
SHEET NO.: 14 OF 20

SHEET NAME: **CP-1**



PHASE 2 - PASSIVE WATER DIVERSION AROUND WORKSITE

(SCALE: 1"=30')



PHASE 3 - PUMP AROUND FOR ROCK STRUCTURES

(SCALE: 1"=30')

LEGEND

- PROPOSED CHANNEL EXTENTS
- TEMPORARY COFFERDAM
- LIMITS OF PROPOSED CLEARING
- PROPOSED SILT FENCE
- EXISTING MAJOR CONTOUR (5 FT)
- EXISTING MINOR CONTOUR (1 FT)
- PROPOSED CONSTRUCTION ACCESS ROAD
- TEMPORARY CONSTRUCTION ENTRANCE ANTI-TRACKING PAD

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CONSTRUCTION PLAN - PHASES 2 AND 3

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

DESIGNED	DRAWN	CHECKED
WAG	JCS	WAG

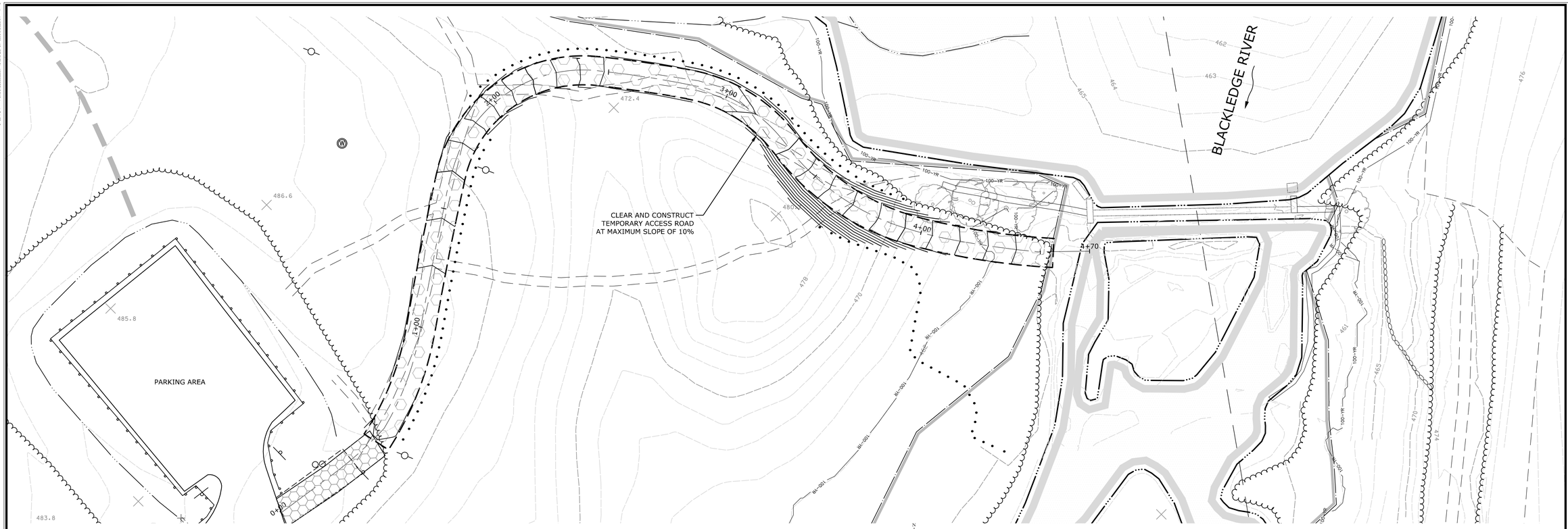
SCALE: AS NOTED

DATE: NOVEMBER 30, 2017

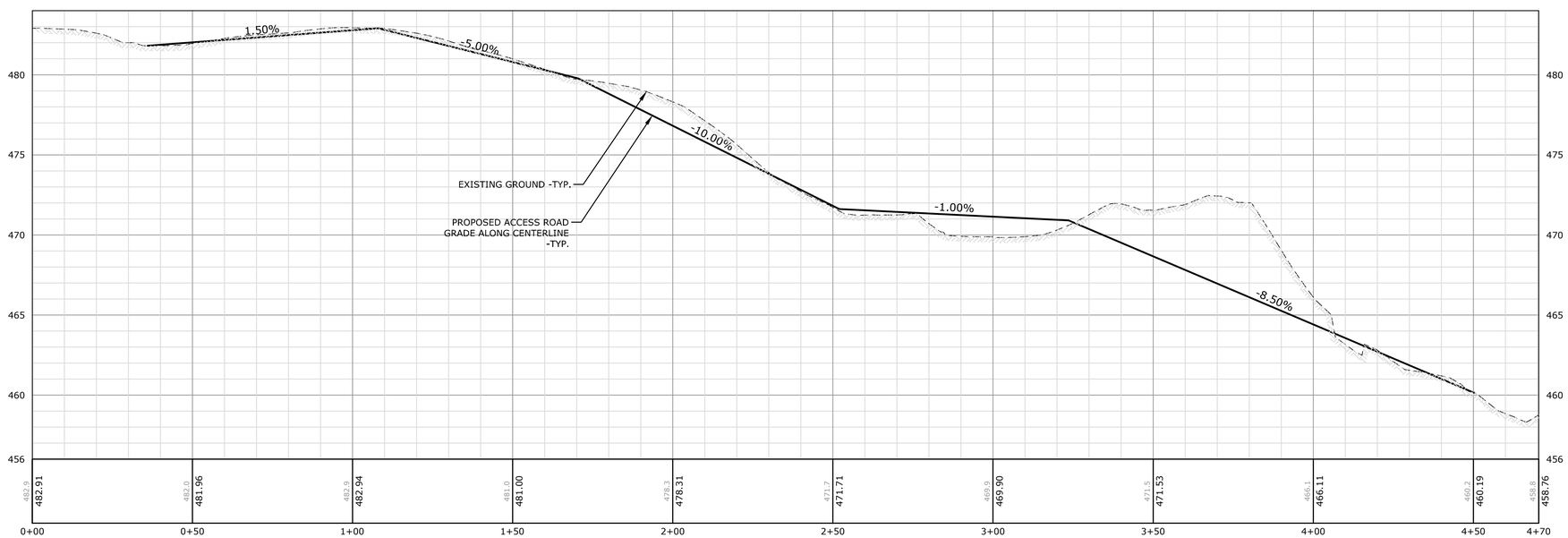
PROJECT NO.: 2600-13

SHEET NO.: 15 OF 20

SHEET NAME: CP-2



WESTERN ACCESS ROAD - PLAN VIEW
SCALE: 1"=20'



WESTERN ACCESS ROAD - PROFILE
1"=20'H, 1" = 4'V

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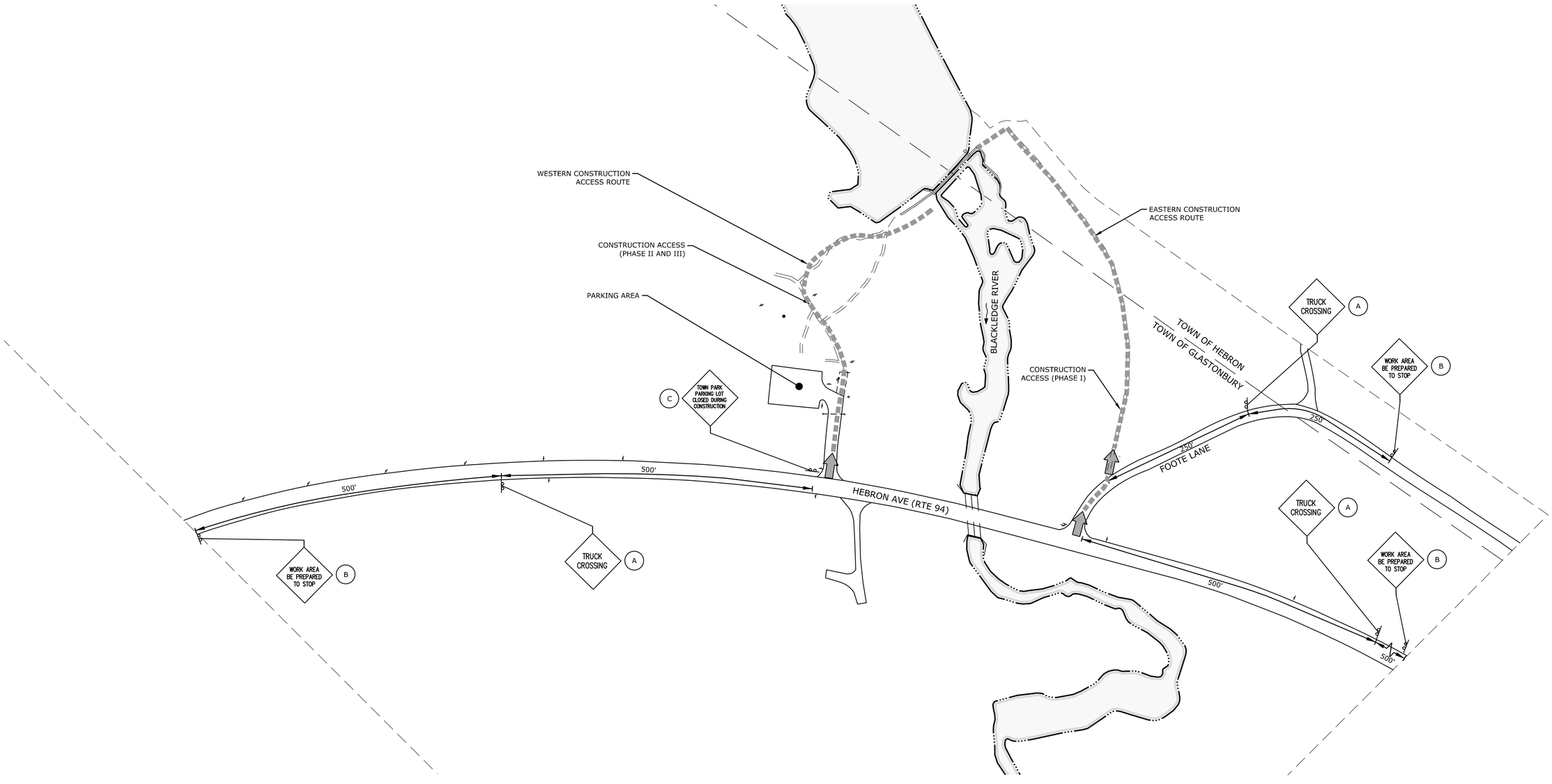
CONSTRUCTION PLAN - WESTERN ACCESS ROAD

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION
HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

AS NOTED — SCALE
NOVEMBER 30, 2017 — DATE
2600-13 — PROJECT NO.
16 OF 20 — SHEET NO.

CP-3 — SHEET NAME



MAP LEGEND

CONSTRUCTION ACCESS LOCATIONS

CONSTRUCTION SIGN LEGEND*

PLAN DESIGNATION	MESSAGE	MINIMUM SIZE	DESIGNATION
A	TRUCK CROSSING	30" x 30"	ConnDOT 80-9711
B	WORK AREA BE PREPARED TO STOP	36" x 36"	MUTCD W20-SERIES
C	TOWN PARK PARKING LOT CLOSED DURING CONSTRUCTION	36" x 36"	

*EQUIVALENT SIGNAGE MAY BE USED IF APPROVED BY THE ENGINEER.

TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR SHALL LOCATE ALL DRUMS IN ORDER TO AVOID CONFLICTS WITH VEHICLES ENTERING AND EXITING EXISTING DRIVEWAYS AND INTERSECTIONS.
2. ALL CONSTRUCTION SIGNING AND ALL WORK PERFORMED IN LOCATING AND ERECTING SIGNS, BARRICADES, DRUMS, AND TEMPORARY PAVEMENT MARKINGS, SHALL CONFORM TO THE STANDARDS IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE REQUIREMENTS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION, AND THE TOWNS OF HEBRON AND GLASTONBURY. THE SIGN CODES REFERENCE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES WHERE APPLICABLE.
3. THE CONTRACTOR MUST MAINTAIN PEDESTRIAN AND VEHICULAR ACCESS AROUND PROJECT ROADWAYS TO ACCOUNT FOR ROAD CLOSURES OR BLOCKAGES AT ALL TIMES DURING CONSTRUCTION.
4. LOCATIONS OF TEMPORARY SIGNS ARE APPROXIMATE AND SHALL BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER OR OWNER SO AS NOT TO CONFLICT WITH EXISTING PERMANENT SIGNS. EXISTING SIGNS IN CONFLICT WITH TEMPORARY SIGNS SHALL BE COVERED OR RELOCATED AS DIRECTED BY THE ENGINEER OR OWNER.
5. THE CONTRACTOR IS RESPONSIBLE FOR SAFELY MAINTAINING THE FLOW OF TRAFFIC THROUGH THE CONSTRUCTION AREA. IF, IN THE OPINION OF THE ENGINEER, THE MAINTENANCE AND PROTECTION OF TRAFFIC MEASURES CREATE AN UNSAFE CONDITION, THE CONTRACTOR SHALL IMMEDIATELY CEASE ALL OPERATIONS UNTIL CORRECTIVE MEASURES ARE IN PLACE AND APPROVED BY THE ENGINEER.
6. SIGNS SHALL BE LOCATED TO PROVIDE OPTIMUM VISIBILITY.
7. WHEN DRUMS, CONES, AND BARRICADES ARE USED IN CONTROLLING THE MOVEMENT OF TRAFFIC THROUGH THE WORK AREA, THE CONTRACTOR MUST TAKE STEPS NECESSARY TO PREVENT DRUMS/CONES FROM BEING BLOWN OVER OR DISPLACED BY PASSING VEHICLES.
8. BEFORE BEGINNING WORK THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNAGE.

0' 40' 80'
0 1/2" 1"

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DESCRIPTION	DATE	BY

CONSTRUCTION PLAN - MAINTENANCE AND PROTECTION OF TRAFFIC

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

DESIGNED	DRAWN	CHECKED
WAG	JCS	WAG

SCALE: 1"=80'
DATE: NOVEMBER 30, 2017
PROJECT NO.: 2600-13
SHEET NO.: 17 OF 20
SHEET NAME: CP-4

SEDIMENT & EROSION CONTROL SPECIFICATIONS

GENERAL:

THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND/OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION, AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT.

SEDIMENTATION AND EROSION CONTROLS AS INSTALLED ON THE SITE SHALL CONFORM TO THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

ALL CONSTRUCTION ACTIVITIES SHALL PROCEED IN SUCH A MANNER SO AS NOT TO POLLUTE ANY WETLANDS, WATERCOURSE, WATERBODY, AND CONDUIT CARRYING WATER, ETC. THE CONTRACTOR SHALL LIMIT, INSOFAR AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES, AND WATERBODIES, AND TO PREVENT, INSOFAR AS POSSIBLE, EROSION ON THE SITE.

LAND GRADING

GENERAL:

1. THE RESHAPING OF THE GROUND SURFACE BY EXCAVATION AND FILLING OR A COMBINATION OF BOTH, TO OBTAIN PLANNED GRADES, SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

a. THE CUT FACE OF EARTH EXCAVATION SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

b. THE PERMANENT EXPOSED FACES OF FILLS SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

c. THE CUT FACE OF ROCK EXCAVATION SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO FOUR VERTICAL (1:4).

d. PROVISION SHOULD BE MADE TO CONDUCT SURFACE WATER SAFELY TO STORM DRAINS TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FILL SLOPES.

e. EXCAVATIONS SHOULD NOT BE MADE SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTY WITHOUT PROTECTING SUCH PROPERTY FROM EROSION, SLIDING, SETTLING, OR CRACKING.

f. NO FILL SHOULD BE PLACED WHERE IT WILL SLIDE OR WASH UPON THE PREMISES OF ANOTHER OWNER OR UPON ADJACENT WETLANDS, WATERCOURSES, OR WATERBODIES.

g. PRIOR TO ANY REGRADING, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE ENTRANCE TO THE WORK AREA IN ORDER TO REDUCE MUD AND OTHER SEDIMENTS FROM LEAVING THE SITE.

TOPSOILING

GENERAL:

1. TOPSOIL SHALL BE SPREAD OVER ALL EXPOSED AREAS IN ORDER TO PROVIDE A SOIL MEDIUM HAVING FAVORABLE CHARACTERISTICS FOR THE ESTABLISHMENT, GROWTH, AND MAINTENANCE OF VEGETATION.

2. UPON ATTAINING FINAL SUBGRADES, SCARIFY SURFACE TO PROVIDE A GOOD BOND WITH TOPSOIL.

3. REMOVE ALL LARGE STONES, TREE LIMBS, ROOTS AND CONSTRUCTION DEBRIS.

4. APPLY LIME ACCORDING TO SOIL TEST OR AT THE RATE OF TWO (2) TONS PER ACRE.

MATERIAL:

1. TOPSOIL SHOULD HAVE PHYSICAL, CHEMICAL, AND BIOLOGICAL CHARACTERISTICS FAVORABLE TO THE GROWTH OF PLANTS.

2. TOPSOIL SHOULD HAVE A SANDY OR LOAMY TEXTURE.

3. TOPSOIL SHOULD BE RELATIVELY FREE OF SUBSOIL MATERIAL AND MUST BE FREE OF STONES (OVER 1" IN DIAMETER), LUMPS OF SOIL, ROOTS, TREE LIMBS, TRASH, OR CONSTRUCTION DEBRIS. IT SHOULD BE FREE OF ROOTS OR RHIZOMES SUCH AS THISTLE, NUTGRASS, AND QUACKGRASS.

4. AN ORGANIC MATTER CONTENT OF SIX PERCENT (6%) IS REQUIRED. AVOID LIGHT COLORED SUBSOIL MATERIAL.

5. SOLUBLE SALT CONTENT OF OVER 500 PARTS PER MILLION (PPM) IS LESS SUITABLE. AVOID TIDAL MARSH SOILS BECAUSE OF HIGH SALT CONTENT AND SULFUR ACIDITY.

6. THE pH SHOULD BE MORE THAN 6.0. IF LESS, ADD LIME TO INCREASE pH TO AN ACCEPTABLE LEVEL.

APPLICATION

1. AVOID SPREADING WHEN TOPSOIL IS WET OR FROZEN.

2. SPREAD TOPSOIL UNIFORMLY TO A DEPTH OF AT LEAST SIX INCHES (6"), OR TO THE DEPTH SHOWN ON THE LANDSCAPING PLANS.

TEMPORARY VEGETATIVE COVER

GENERAL:

1. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL UNPROTECTED AREAS THAT PRODUCE SEDIMENT, AREAS WHERE FINAL GRADING HAS BEEN COMPLETED, AND AREAS WHERE THE ESTIMATED PERIOD OF BARE SOIL EXPOSURE IS LESS THAN 12 MONTHS. TEMPORARY VEGETATIVE COVER SHALL BE APPLIED IF AREAS WILL NOT BE PERMANENTLY SEEDED BY SEPTEMBER 1.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.

2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.

3. APPLY LIME ACCORDING TO SOIL TEST OR AT A RATE OF ONE (1) TON OF GROUND DOLOMITIC LIMESTONE PER ACRE (5 LBS. PER 100 SQ. FT.).

4. APPLY FERTILIZER ACCORDING TO SOIL TEST OR AT THE RATE OF 300 LBS. OF 10-10-10 PER ACRE (7 LBS. PER 1,000 SQ. FT.) AND SECOND APPLICATION OF 200 LBS. OF 10-10-10- (5 LBS. PER 1,000 SQ. FT.) WHEN GRASS IS FOUR INCHES (4") TO SIX INCHES (6") HIGH. APPLY ONLY WHEN GRASS IS DRY.

5. UNLESS HYDROSEEDED, WORK IN LIME AND FERTILIZER TO A DEPTH OF FOUR (4") INCHES USING A DISK OR ANY SUITABLE EQUIPMENT.

6. TILLAGE SHOULD ACHIEVE A REASONABLY UNIFORM LOOSE SEEDBED. WORK ON CONTOUR IF SITE IS SLOPING.

ESTABLISHMENT:

1. SELECT APPROPRIATE SPECIES FOR THE SITUATION. NOTE RATES AND SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).

2. APPLY SEED UNIFORMLY ACCORDING TO THE RATE INDICATED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.

3. UNLESS HYDROSEEDED, COVER RYEGRASS SEEDS WITH NOT MORE THAN 1/4 INCH OF SOIL USING SUITABLE EQUIPMENT.

4. MULCH IMMEDIATELY AFTER SEEDING IF REQUIRED. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW.) APPLY STRAW OR HAY MULCH AND ANCHOR TO SLOPES GREATER THAN 3% OR WHERE CONCENTRATED FLOW WILL OCCUR.

PERMANENT VEGETATIVE COVER

GENERAL:

1. PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED AS VARIOUS SECTIONS OF THE PROJECT ARE COMPLETED IN ORDER TO STABILIZE THE SOIL, REDUCE DOWNSTREAM DAMAGE FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE AESTHETIC NATURE OF THE SITE. IT WILL BE APPLIED TO ALL CONSTRUCTION AREAS SUBJECT TO EROSION WHERE FINAL GRADING HAS BEEN COMPLETED AND A PERMANENT COVER IS NEEDED.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.

2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.

3. PERFORM ALL PLANTING OPERATIONS PARALLEL TO THE CONTOURS OF THE SLOPE.

4. APPLY TOPSOIL AS INDICATED ELSEWHERE HEREIN.

5. APPLY FERTILIZER ACCORDING TO SOIL TEST OR:

- SPREAD SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING, 300 LBS.
- FALL SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING, 600 LBS. 0F 10-10-10 FERTILIZER PER ACRE (14 LBS. PER 1,000 SQ. FT.).

EROSION CHECKS

GENERAL:

1. TEMPORARY PERVIOUS BARRIERS USING BALES OF HAY OR STRAW, HELD IN PLACE WITH STAKES DRIVEN THROUGH THE BALES AND INTO THE GROUND OR GEOTEXTILE FABRIC FASTENED TO A FENCE POST AND BURIED INTO THE GROUND, SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO CHECK EROSION AND REDUCE SEDIMENTATION.

CONSTRUCTION:

1. BALES SHOULD BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.

2. EACH BALE SHALL BE EMBEDDED INTO THE SOIL A MINIMUM OF FOUR (4") INCHES.

3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY WOOD STAKES OR REINFORCEMENT BARS DRIVEN THROUGH THE BALES AND INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.

4. GEOTEXTILE FABRIC SHALL BE SECURELY ANCHORED AT THE TOP OF A THREE FOOT (3') HIGH FENCE AND BURIED A MINIMUM OF FOUR INCHES (4") TO THE SOIL. SEAMS BETWEEN SECTIONS OF FILTER FABRIC SHALL OVERLAP A MINIMUM OF TWO FEET (2').

VEGETATIVE COVER SELECTION & MULCHING

TEMPORARY VEGETATIVE COVER:

PERENNIAL RYEGRASS 3 LBS./1,000 SQ.FT.
(IOLUIUM PERENNE)

UPLAND RESTORATION AREA

GENERAL SEEDING AND RESTORATION OF DISTURBED AREAS
LESCO, INC. - "CONSERVATION MIX" (OR APPROVED EQUAL)

CREEPING RED FESCUE	40%	SEEDING RATE: 7 LBS./1000 S.F. (OR PER MANUF., CHOOSE DENSER RATE)
TURF-TYPE PERENNIAL RYEGRASS	25%	
SHAMROCK KENTUCKY BLUEGRASS	20%	SPRING SEEDING: 4/1 to 5/31
ANNUAL RYEGRASS	10%	FALL SEEDING: 8/16 to 10/15
WHITE CLOVER	5%	

TEMPORARY MULCHING:

STRAW 70-90 LBS./1,000 SQ.FT.
(TEMPORARY VEGETATIVE AREAS)

WOOD FIBER IN HYDROMULCH SLURRY 25-50 LBS./1,000 SQ. FT.

ESTABLISHMENT:

1. SMOOTH AND FIRM SEEDBED WITH CULTIPACKER OR OTHER SIMILAR EQUIPMENT PRIOR TO SEEDING (EXCEPT WHEN HYDROSEEDING).

2. SELECT ADAPTED SEED MIXTURE FOR THE SPECIFIC SITUATION. NOTE RATES AND THE SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPEC. BELOW).

3. APPLY SEED UNIFORMLY ACCORDING TO RATE INDICATED, BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.

4. COVER GRASS AND LEGUME SEED WITH NOT MORE THAN 1/4 INCH OF SOIL WITH SUITABLE EQUIPMENT (EXCEPT WHEN HYDROSEEDING).

5. MULCH IMMEDIATELY AFTER SEEDING, IF REQUIRED, ACCORDING TO TEMPORARY MULCHING SPECIFICATIONS. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).

6. USE PROPER INOCULANT ON ALL LEGUME SEEDINGS, USE FOUR (4) TIMES NORMAL RATES WHEN HYDROSEEDING.

7. USE SOD WHERE THERE IS A HEAVY CONCENTRATION OF WATER AND IN CRITICAL AREAS WHERE IT IS IMPORTANT TO GET A QUICK VEGETATIVE COVER TO PREVENT EROSION.

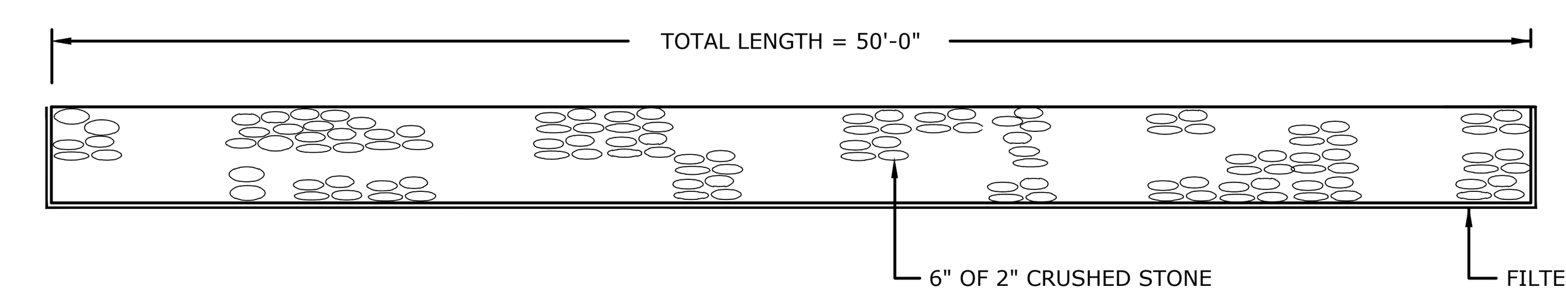
MAINTENANCE:

1. TEST FOR SOIL ACIDITY EVERY THREE (3) YEARS AND LIME AS REQUIRED.

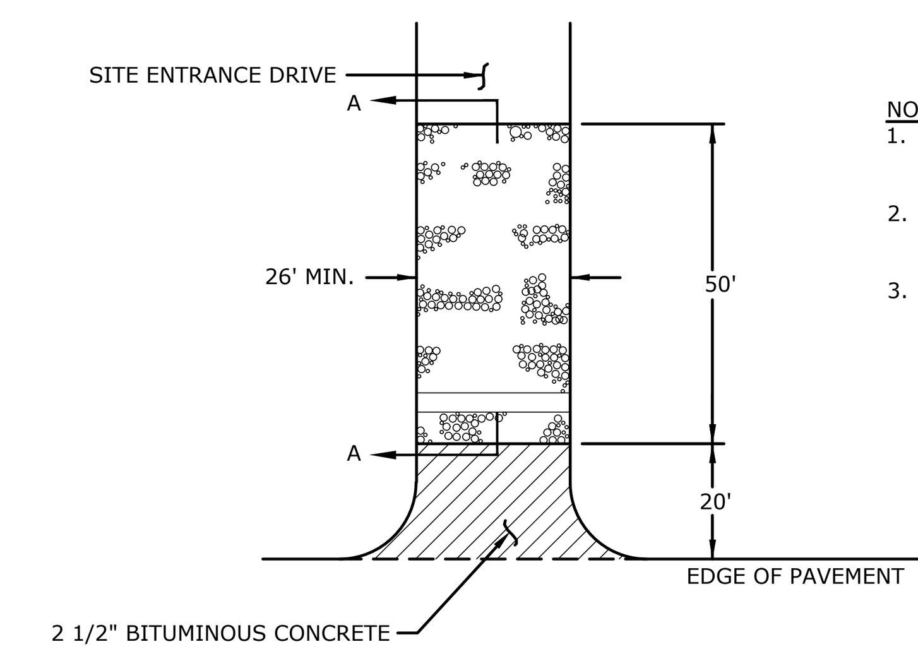
2. ON SITES WHERE GRASSES PREDOMINATE, BROADCAST ANNUALLY 500 POUNDS OF 10-10-10 FERTILIZER PER ACRE (12 LBS. PER 1,000 SQ. FT.) OR AS NEEDED ACCORDING TO ANNUAL SOIL TESTS.

EROSION CONTROL MAINTENANCE INTERVALS

EROSION CONTROL MEASURE	CONTROL OBJECTIVE	INSPECTION/MAINTENANCE	FAILURE INDICATORS	REMOVAL
SILT FENCE	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO ½ THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	SILT FENCE MAY BE REMOVED AFTER UPHILL AND SENSITIVE AREAS HAVE BEEN PERMANENTLY STABILIZED.
HAY BALES	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE THE DEPTH OF SEDIMENT IS EQUAL TO ½ THE HEIGHT OF THE BARRIER. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	HAY BALES MAY BE REMOVED AFTER UPHILL AREAS HAVE BEEN PERMANENTLY STABILIZED.
CONSTRUCTION ENTRANCE	- REDUCE THE TRACKING OF SEDIMENT OFF-SITE ONTO PAVED SURFACES.	INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC ADDITION OF STONE, OR LENGTHENING OF ENTRANCE MAY BE REQUIRED AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES AS A RESULT OF INEFFICIENCY OF CONSTRUCTION ENTRANCE SHALL BE IMMEDIATELY REMOVED.	- SEDIMENT IN ROADWAY ADJACENT TO SITE	CONSTRUCTION ENTRANCE MAY BE REMOVED ONCE THE SITE HAS BEEN PERMANENTLY STABILIZED, AND ALL OTHER SECTIONS OF ROADWAY HAVE BEEN PERMANENTLY PAVED.
STOCKPILE PROTECTION	- RETAIN SOIL STOCKPILE IN LOCATIONS SPECIFIED, AND REDUCE ATER-TRANSPORT.	INSPECT SILT FENCE AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC REINFORCEMENT OF SILT FENCE, OR ADDITION OF HAY BALES MAY BE NECESSARY.	- EVIDENCE OF STOCK PILE DIMINISHING DUE TO RAIN EVENTS - FAILURE OF SILT FENCE	STOCKPILE PROTECTION MAY BE REMOVED ONCE THE STOCKPILE IS USED OR REMOVED.
EROSION CONTROL BLANKET	- TO PROVIDE TEMPORARY SURFACE PROTECTION TO NEWLY SEEDED AND/OR DISTURBED SOILS.	INSPECT BLANKET AT LEAST ONCE A WEEK, AND AFTER A RAINFALL EVENT OF 0.5" OR GREATER. ASSESS FOR GOOD SOIL-TO-BLANKET CONTACT. REPAIR, ANCHOR, AND ENSURE PROPERLY SECURED TO SLOPE.	- SEED/SOIL WASHOUT FROM BELOW BLANKET - BLANKET DISPLACEMENT, TEARS, OR DISLODGING FROM ANCHOR POINTS, EXPOSING SOIL	BLANKET SHALL BIODEGRADE OVER A PERIOD OF NOT MORE THAN 2 YEAR, AND SHALL BE LEFT IN PLACE.



SECTION A - A

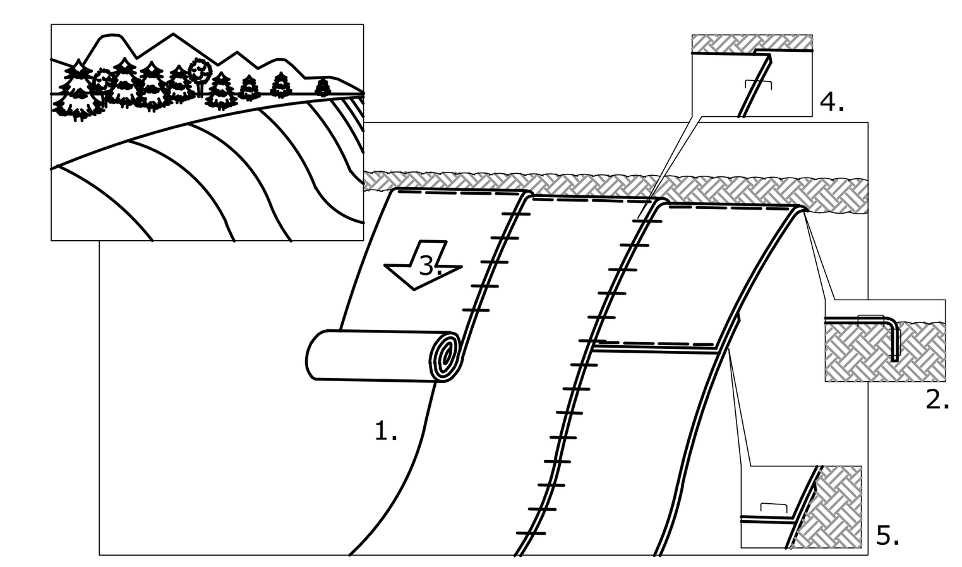


PLAN

NOTES:
1. MAINTAIN PAVEMENT AT APRON IN GOOD CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
2. ROADWAY SHALL BE SWEPT DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO THE PAVEMENT.
3. FOR INDIVIDUAL RESIDENTIAL LOTS, THE LENGTH OF THE CONSTRUCTION ENTRANCE MAY BE REDUCED TO 20' MINIMUM AND THE WIDTH MAY BE REDUCED TO 12' MINIMUM.

CONSTRUCTION ENTRANCE

NOT TO SCALE

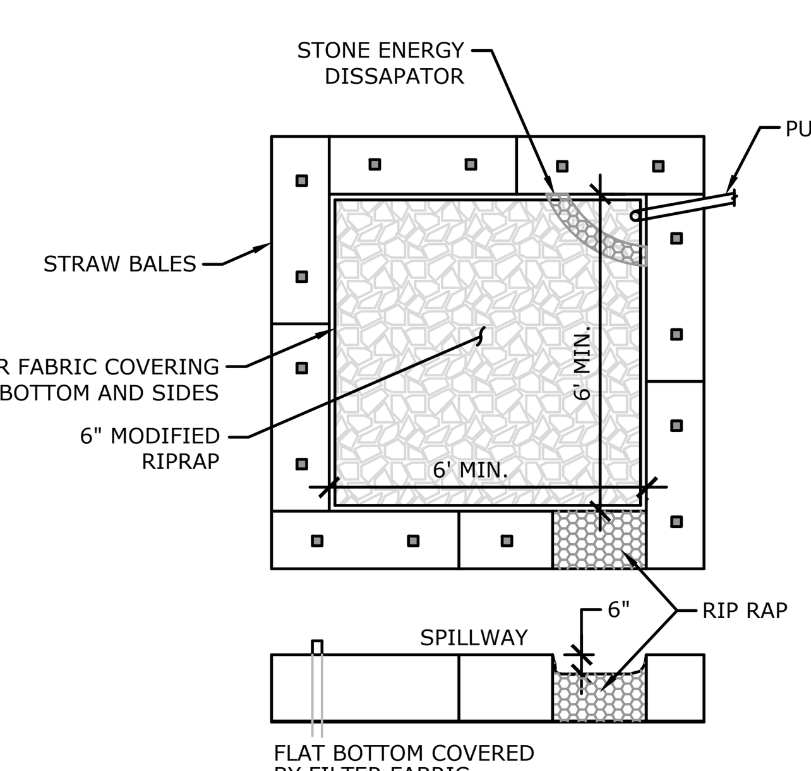


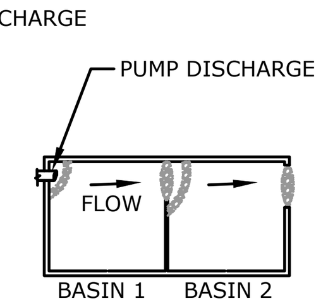
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: BLANKETS SHALL BE TENSAR BioNet S150BN OR APPROVED EQUAL, SEE: WWW.TENSARNAGREEN.COM/SYSTEMS-AND-PRODUCTS/ROLLMAX.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.

REFER TO GENERAL STAPLE PATTERN GUIDE IN NORTH AMERICAN GREEN CATALOG FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

EROSION CONTROL BLANKET

NOT TO SCALE





NOTES:

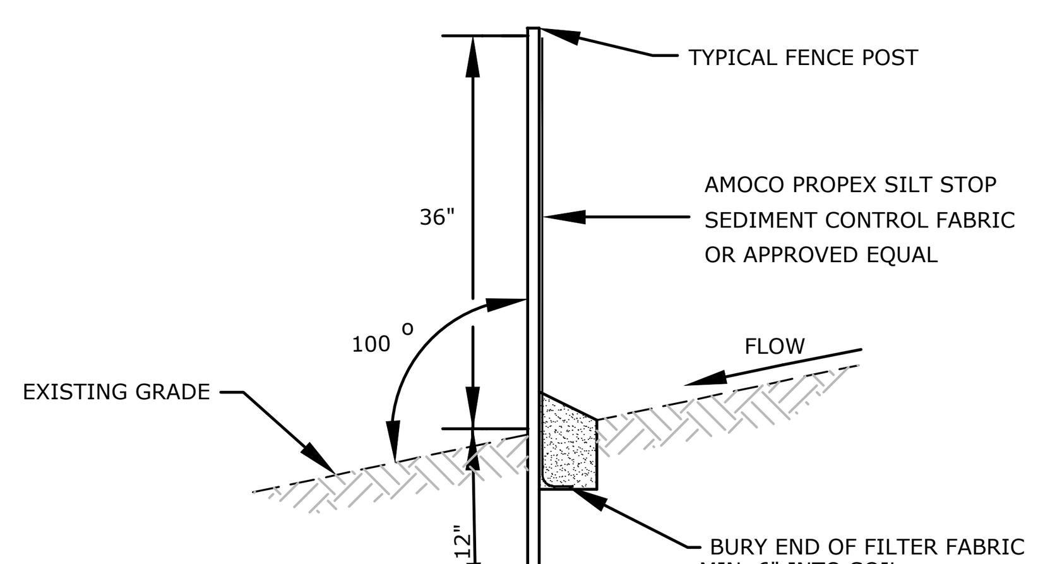
1. IF PUMPING VOLUME EXCEEDS CAPACITY (I.E. EXIT WATERS REMAIN TURBID) SETTLING AREA TO BE USED IN TANDEM OR TIERS.

2. INCREASE RIPRAP SIZE ON SETTLING AREA BOTTOM AS NECESSARY TO MAINTAIN SEDIMENT-FREE DISCHARGE WATERS

3. SETTLING AREA SHALL BE LIMITED TO DISCHARGE OF 3.4 GPM UNLESS STORAGE VOLUME IS INCREASED IN ACCORDANCE WITH 2002 CT SEDIMENT AND EROSION CONTROL SECTION 5-13-7.

PUMP DISCHARGE SETTLING AREA

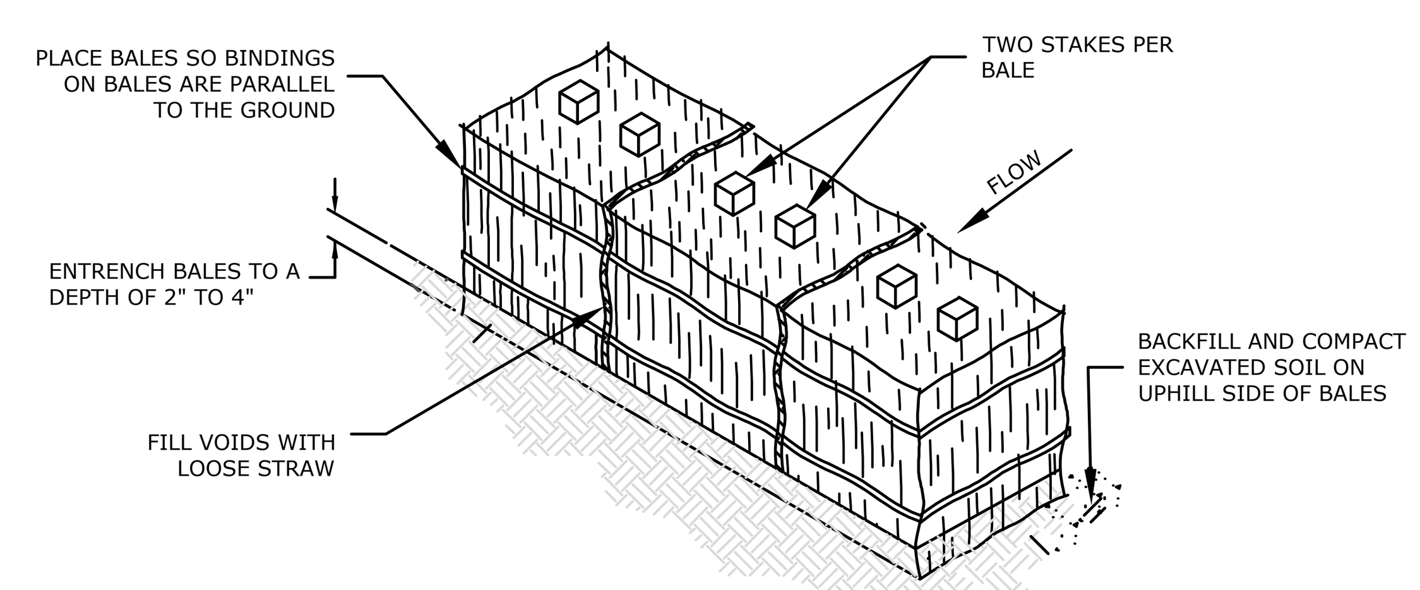
NOT TO SCALE



NOTE:
1. CONTRACTOR SHALL HAVE AVAILABLE ON-SITE A MIN. OF 300 LINEAR FEET OF SILT FENCE FOR USE IF REQUIRED BY FIELD CONDITIONS.

SEDIMENT FILTER FENCE

NOT TO SCALE



NOTES:

1. IDEALLY, BALES SHOULD BE ENTRENCHED 2 TO 4 INCHES AND TIGHTLY BUTTED TOGETHER. BALES CAN BE SUCCESSFULLY PLACED WITHOUT A TRENCH IF GOOD GROUND CONTACT IS MADE. REMOVE HEAVY BRUSH AND FILL ALL VOIDS WITH LOOSE STRAW.

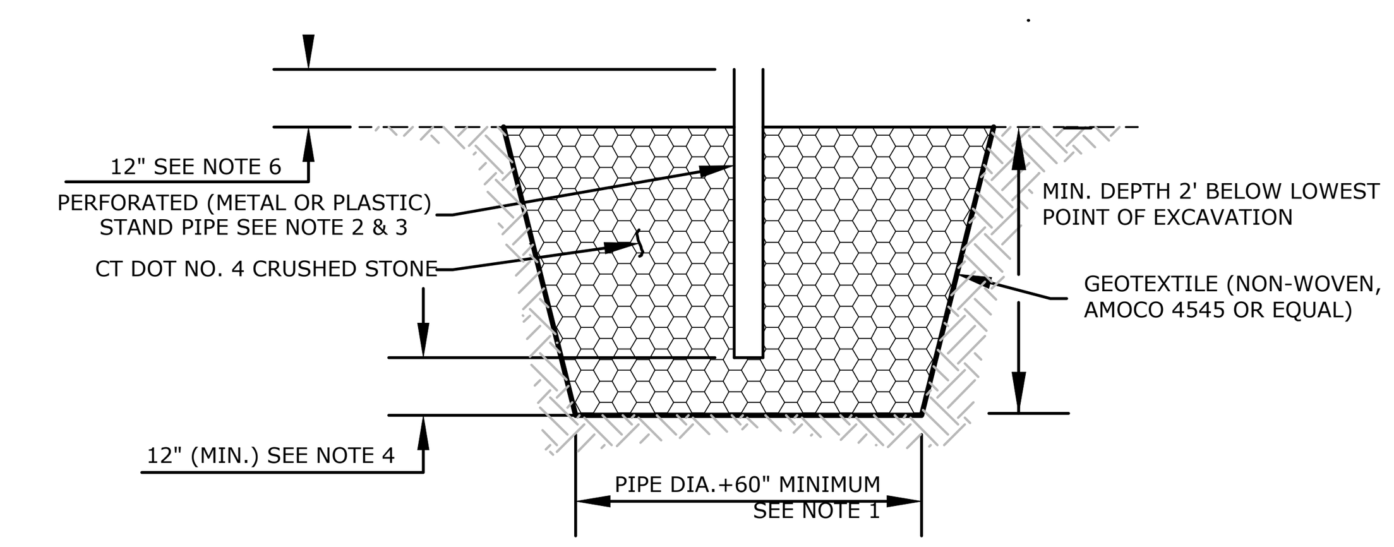
2. BALES SHALL BE ONLY USED AS A TEMPORARY BARRIER AND FOR NO LONGER THAN 60 DAYS.

3. WHEN SEDIMENTATION DEPOSITS REACH WITHIN 3" OF THE TOP OF BALES, REMOVE SEDIMENTATION OR ADD ADDITIONAL BALES ON SEDIMENTATION DIRECTLY BEHIND FIRST ROW OF BALES AS DIRECTED BY THE ENGINEER.

4. UPON ESTABLISHMENT OF GROUND COVER ON DISTURBED AREAS AND WHEN DIRECTED BY THE ENGINEER, HAY BALES WILL BE REMOVED AND USED AS MULCH. ANY SEDIMENTATION WILL BE THINLY SPREAD UPON ESTABLISHED GROUND COVER.

HAYBALE BARRIER PROTECTION

NOT TO SCALE



NOTES:

1. OVERALL SUMP PIT DIMENSIONS TO BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP TO BE USED.

2. THE STAND PIPE DIAMETER AND NUMBER OF PERFORATIONS TO BE COMPATIBLE WITH THE PUMP SIZE BEING USED.

3. PERFORATIONS IN THE STANDPIPE TO BE EITHER CIRCULAR OR SLOTS, PERFORATION SIZE SHALL NOT EXCEED 1/2" DIAMETER.

4. NO. 4 CRUSHED STONE CONFORMING TO CT DOT FORM 816, M.01.01. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.

5. A PROPERLY DESIGNED GEOTEXTILE TO BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE BACKFILL.

6. THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

CONSTRUCTION RUNOFF DEWATERING SUMP

NOT TO SCALE

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DESCRIPTION	DATE	BY

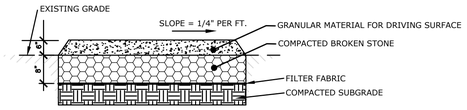
DETAILS

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

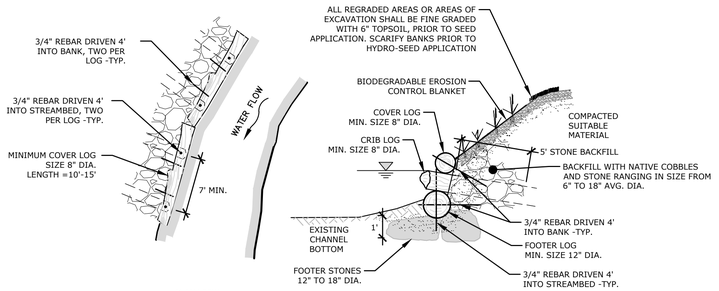
SCALE: AS NOTED
DATE: NOVEMBER 30, 2017
PROJECT NO.: 2600-13
SHEET NO.: 18 OF 20
SHEET NAME: D-1



NOTES:
1. WESTERN ACCESS ROAD TO REMAIN AT THE CONCLUSION OF CONSTRUCTION TO PROVIDE ACCESS TO THE RIVER

TEMPORARY CONSTRUCTION ACCESS ROAD DETAIL (WESTERN ACCESS ROAD ONLY)

NOT TO SCALE



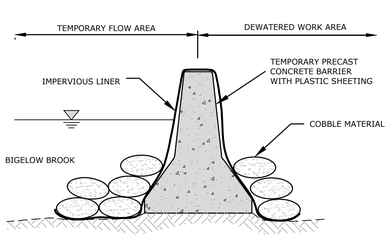
PLAN VIEW SECTION VIEW

BOULDER AND LOG TOE REVETMENT

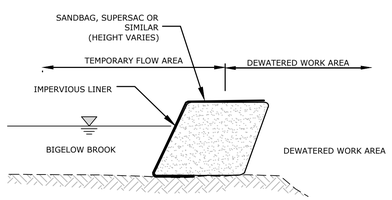
NOT TO SCALE

BOULDER AND LOG TOE REVETMENT NOTES:

1. USE 8 TO 12 INCH DIAMETER LOGS.
2. REUSE LOGS FROM ON-SITE CLEARING WHEN POSSIBLE.
3. LOGS SHALL BE LIMBED PRIOR TO INSTALLATION. STUBS UP TO 2X TREE DIAMETER ARE PREFERRED.
4. PIN THE FOOTER LOG TO DIRECTLY TO THE GROUND USING 3/4" STEEL REBAR AT LEAST 60 INCHES LONG.
5. VERTICAL REBAR SHALL BE DRIVEN THROUGH OVERLAPPING LOGS.
6. PIN BANK LOGS TO THE GROUND.
7. BURY CRIB LOGS AT LEAST 6 FEET INTO STREAM BANK.
8. USE PRE-DRILLED PILOT HOLES TO PIN COVER LOGS TO CRIB LOGS.
9. USE 1' TO 2' DIAMETER STONES UPSTREAM AND DOWNSTREAM OF THE STRUCTURE TO PROTECT IT FROM EROSION.
10. INSTALL AT A LOW PROFILE SUCH THAT THE COVER LOG IS PARTIALLY SUBMERGED DURING NORMAL LOW FLOW.
11. FINISHED ELEVATION OF THE COVER LOG WILL BE DETERMINED IN THE FIELD.



CONCRETE BARRIER



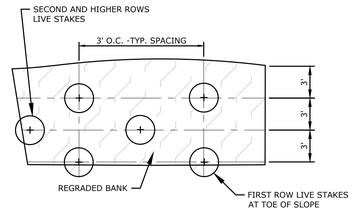
SANDBAG

TEMPORARY COFFERDAM DETAIL

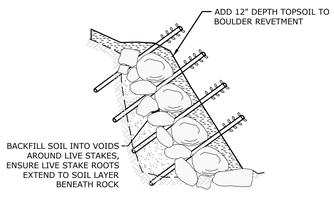
NOT TO SCALE

NOTES:

1. COFFERDAM AND TO BE SIZED FOR NORMAL FLOW CONDITIONS. TOP ELEVATION OF COFFERDAM TO ISOLATE LAGOON FROM TIDAL INFLUENCE AND STREAM FLOWS.
2. COFFERDAM TO BE CONSTRUCTED OF SUPERSAC OR SIMILAR PRODUCT.



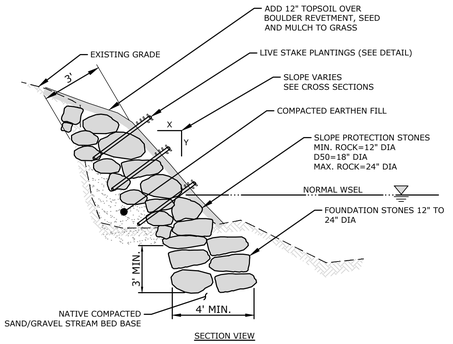
PLAN VIEW



LIVE STAKES IN BOULDER REVETMENT - SECTION VIEW

PLANTING NOTES:

1. LIVE STAKE SPECIES SHALL VARY BASED UPON LOCATION, AVAILABILITY, AND TIME OF YEAR.
2. EXCAVATE BANK SUFFICIENTLY TO PLACE BOULDERS WITHOUT DECREASING CHANNEL SIZE.
3. INSTALL BOULDER REVETMENT PER PLAN, AND PLACE ONE FOOT OF TOPSOIL AS SHOWN IN DETAIL.
4. BEGIN WILLOW INSTALLATION USING THE "STINGER" OR SIMILAR METHOD TO CREATE VOIDS IN THE ROCK.
5. ALONG THE TOE OF THE SLOPE (FIRST ROW), INSTALL 4' LONG LIVE WILLOW STAKES (*SALIX LUCIDA* OR SIMILAR NATIVE WILLOW SPECIES AS APPROVED BY OWNER/ENGINEER) SPACED 3' ON CENTER. THESE ARE TO BE INSERTED INTO PREDRILLED PILOT HOLES SLIGHTLY LARGER THAN THE STAKE DIAMETER AND BACKFILLED. STAKES SHOULD BE INSERTED TO 36" DEPTH.
6. HIGHER ON SLOPE (ABOVE FIRST ROW), INSTALL 4' LONG LIVE STAKES SPACED 3' ON CENTER. THESE ARE TO BE INSERTED INTO PREDRILLED PILOT HOLES SLIGHTLY LARGER THAN THE STAKE DIAMETER AND BACKFILLED. STAKES SHOULD BE INSERTED TO 36" DEPTH.
7. STAKES THAT ARE SPLIT OR DAMAGED DURING INSTALLATION SHALL BE REMOVED AND REPLACED
8. LIGHTLY TAMP TOPSOIL AROUND EACH STAKE AND SATURATE WITH WATER.
9. SEED BANK WITH A MIX CONSISTING OF NATIVE SPECIES THAT ARE AT LEAST MODERATELY DROUGHT TOLERANT, DO WELL ON POOR SOILS AND DEVELOP SUBSTANTIAL BELOW-GROUND BIOMASS. THE SLOPE SHOULD BE HAND RAKED TO SCARIFY THE SOIL SURFACE, THEN HAND SEEDED, HYDROMULCHED OR HAND SPREAD WITH A STRAW MULCH, AND RAKED LIGHTLY TO ENSURE SEED TO SOIL CONTACT. SEE SEEDING NOTES BELOW FOR SEED MIX COMPOSITION.
10. PLANT MATERIALS SHOULD BE PLANTED THE DAY THEY ARRIVE ON SITE. PLANTS AND CUTTINGS THAT CANNOT BE PLANTED THE DAY THEY ARRIVE SHALL BE STORED ON SITE UNDER A WET TARP TO PROTECT THEM FROM WIND, DIRECT SUNLIGHT, DRYING OR OTHER DAMAGE. CUTTINGS OR UNROOTED STOCK THAT IS NOT PLANTED WITHIN TWO DAYS AFTER ARRIVAL ON THE SITE SHALL BE DISCARDED UNLESS REFRIGERATED AT 40 TO 50 DEGREES FAHRENHEIT.
11. WILLOW CUTTINGS FOR BIOENGINEERNIG SHOULD BE SOAKED PRIOR TO INSTALLATION.



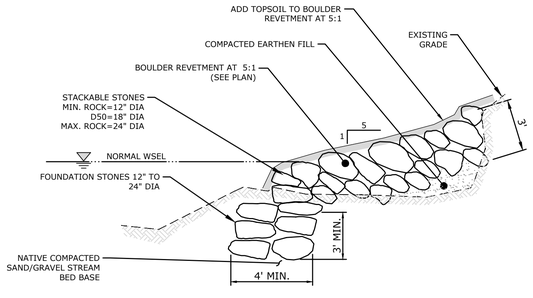
SECTION VIEW

BOULDER REVETMENT WITH LIVE STAKES

NOT TO SCALE

BOULDER SLOPE PROTECTION NOTES:

1. EMBED STONE A MINIMUM OF 3 FEET INTO THE STREAM BANK BELOW THALWEG TO KEY INTO THE BANK.
2. FINISHED ELEVATION OF THE STONES AS SHOWN ON CROSS SECTIONS AND GRADING PLAN.



BOULDER SLOPE PROTECTION

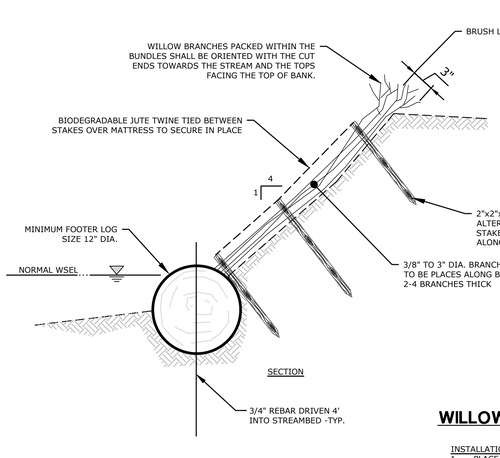
NOT TO SCALE

NOTES:

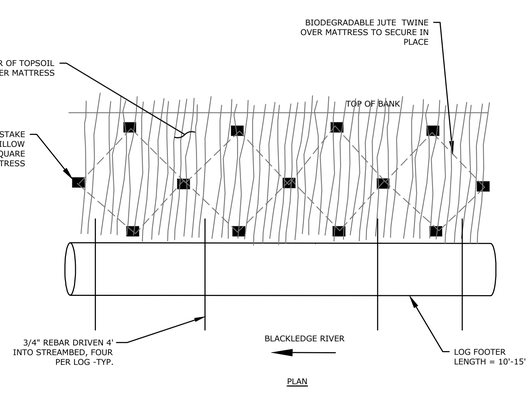
1. USE STACKABLE STONE FOR THE STONE REVETMENT.
2. EMBED STONE A MINIMUM OF 3 FEET INTO THE STREAM BANK BELOW THALWEG TO KEY INTO THE BANK.
3. FINISHED ELEVATION OF THE STONES AS SHOWN ON CROSS SECTIONS
4. IF BEDROCK IS ENCOUNTERED THE FIRST COURSE OF ROCK SHALL BE PINNED A MINIMUM OF 2 TIMES PER ROCK UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE DRILLED HOLES SHALL BE A MINIMUM OF 1 ½ INCHES IN DIAMETER AND EXTEND A MINIMUM OF 12 INCHES INTO THE ROCK BELOW. A #8 REBAR SHALL BE USED AS THE PIN IN EACH HOLE. THE REBAR SHALL BE CUT SO THAT IT IS RECESSED 2 TO 6 INCHES DOWN INTO THE ROCK.

LIVE STAKE PLANTINGS

(NOT TO SCALE)



SECTION



PLAN

WILLOW BRUSH MATTRESS WITH LOG FOOTER

NOT TO SCALE

INSTALLATION NOTES:

1. PLACE MATERIAL WITH BASAL ENDS LOCATED TOWARDS BOTTOM OF SLOPE.
2. PLACE STAKES AT 5' SQUARE PATTERN TO SECURE MATTRESS.
3. SECURE MATTRESS MATERIAL WITH BIODEGRADABLE TWIN TIED TO 2"x2" STAKES.
4. PLACE 3" LAYER OF TOPSOIL OVER MATTRESS TO PROMOTE ROOTING OF MATERIAL, SEED AND MULCH.

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99 Realty Drive
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733
www.miloneandmacbroom.com

DESCRIPTION	DATE	BY

DETAILS

BLACKLEDGE DAM REMOVAL AND RIVER RESTORATION

HEBRON AVE AND FOOTE LANE
GLASTONBURY AND HEBRON, CONNECTICUT

WAG	JCS	WAG
DESIGNED	DRAWN	CHECKED

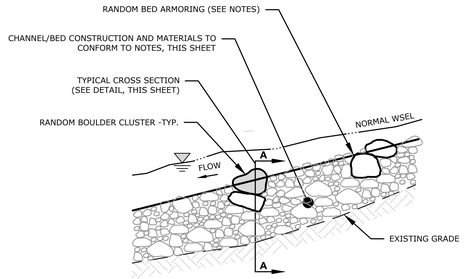
SCALE: AS NOTED

DATE: NOVEMBER 30, 2017

PROJECT NO.: 2600-13

SHEET NO.: 19 OF 20

SHEET NAME: D-2



TYPICAL PROFILE VIEW

CHANNEL BED RESTORATION - PROFILE

NOT TO SCALE

CHANNEL/BED CONSTRUCTION AND MATERIALS:

1. **REMOVAL OF EXISTING BED ARMORING:**

1.1. REMOVE AND STOCKPILE ALL EXISTING SAND, GRAVEL, COBBLE, AND BOULDER TO MINIMUM 12" DEPTH WITHIN EXISTING BANKFULL CHANNEL. REUSE MATERIAL ON TOP 12" OF FINAL CHANNEL BED.

2. **CHANNEL RESTORATION:**

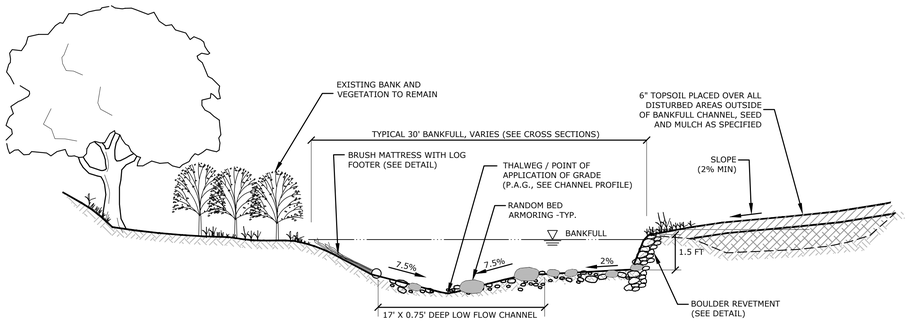
2.1. PERFORM ROUGH GRADING OF CHANNEL.
2.2. DO NOT REUSE FINE-GRAINED SILTS, CLAYS, OR ORGANIC MATERIAL WITHIN THE BANKFULL CHANNEL.
2.3. TO ESTABLISH NEW CHANNEL IN FILL SITUATION: FILL TO WITHIN 12" OF FINAL GRADE WITH NATURAL SAND & GRAVEL/COBBLE/BOULDER RE-USED FROM ON-SITE EXCAVATION. DO NOT USE SILTS, CLAYS, OR ORGANICS. DO NOT USE STOCKPILED BED ARMORING AS GENERAL FILL TO RAISE BED. PLACE FINAL 12" OF MATERIAL FROM STOCKPILED MATERIAL, AND SUPPLEMENT WITH BED ARMORING AS DESCRIBED BELOW.
2.4. TO ESTABLISH NEW CHANNEL IN CUT SITUATION, IN SUITABLE SOIL: PLACE FINAL 12" OF MATERIAL FROM STOCKPILED MATERIAL, AND SUPPLEMENT WITH BED ARMORING AS DESCRIBED BELOW.
2.5. TO ESTABLISH NEW CHANNEL IN CUT SITUATION, IN UNSUITABLE SOIL: REMOVE MATERIAL TO 24" BELOW FINAL GRADE. PLACE 12" OF SUITABLE SAND/GRAVEL FILL. PLACE FINAL 12" OF MATERIAL FROM STOCKPILED MATERIAL, AND SUPPLEMENT WITH BED ARMORING AS DESCRIBED BELOW.

3. **LOW-FLOW CHANNEL:**

3.1 SHALL BE A V-SHAPED CHANNEL WITH 7.5% SLOPE FROM DEEPEST POINT TO BANKS, 17' WIDE AND 0.75' DEEP.

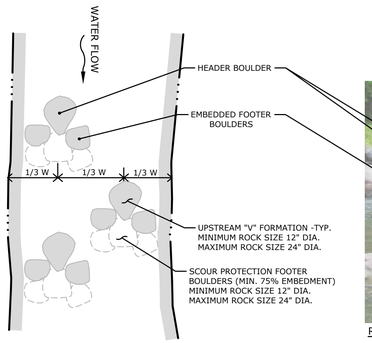
4. **RANDOM BED ARMORING:**

4.1. PLACE 3"-12" WEATHERED/ROUNDED BOULDER, AT A RANDOM APPLICATION RATE OF 9 ROCKS PER TEN LINEAR FEET OF STREAM CHANNEL, 3 WITHIN LOW FLOW, 6 WITHIN BANKFULL (REUSE FROM EXISTING CHANNEL OR IMPORT IF NECESSARY)

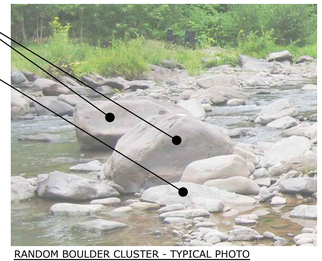


CHANNEL BED RESTORATION - TYPICAL SECTION A-A

(NOT TO SCALE)



PLAN VIEW



RANDOM BOULDER CLUSTER - TYPICAL PHOTO

RANDOM BOULDER CLUSTER

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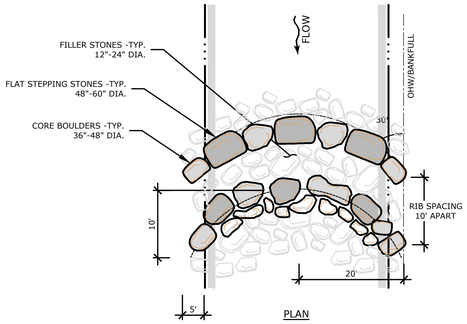
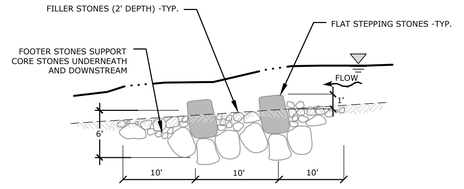
NOTES:

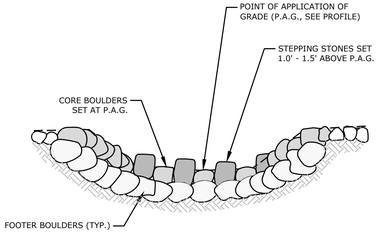
1. 3 BOULDERS PER RANDOM BOULDER CLUSTER, PLUS 3 SCOUR PROTECTION FOOTER BOULDERS.
2. PLACE BOULDERS IN THE MIDDLE THIRD OF THE STREAM WITHIN DEEPEST PORTION OF CHANNEL.
3. POSITION BOULDER GROUPS IN A UPSTREAM "V" FORMATION.
4. INDIVIDUAL BOULDERS PLACED IN THE STREAM SHOULD BE 12" TO 24" IN DIAMETER.
5. POSITION BOULDERS WITH THEIR LONG AXIS PARALLEL TO THE STREAM FLOW.
6. INSTALL FOOTER BOULDER TO WEDGE HEADER BOULDER IN PLACE FROM DOWNSTREAM.
7. INSTALL HEADER BOULDERS AT A LOW PROFILE SUCH THAT THEY ARE PARTIALLY SUBMERGED DURING NORMAL LOW FLOW. INSTALL SUCH THAT ½ OF ROCK DIAMETER IS BURIED IN STREAM CHANNEL.
8. FINISHED ELEVATION OF THE BOULDERS WILL BE DETERMINED IN THE FIELD.



PLAN



PROFILE VIEW



STEPPING STONE RIB SECTION

STEPPING STONES

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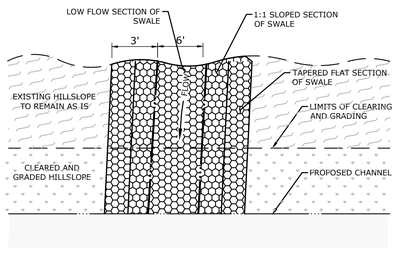
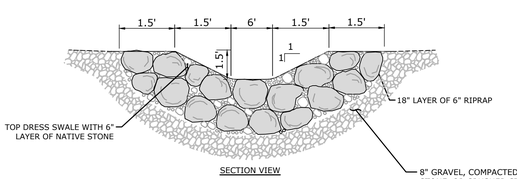


PLAN VIEW



SECTION VIEW

NATURAL STONE-LINED SWALE

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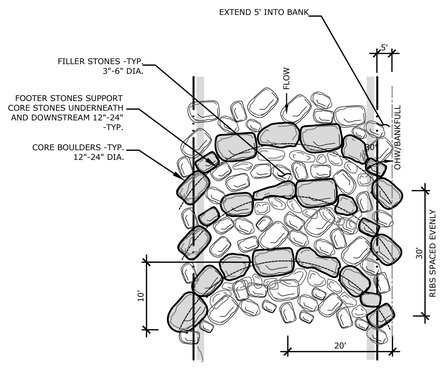
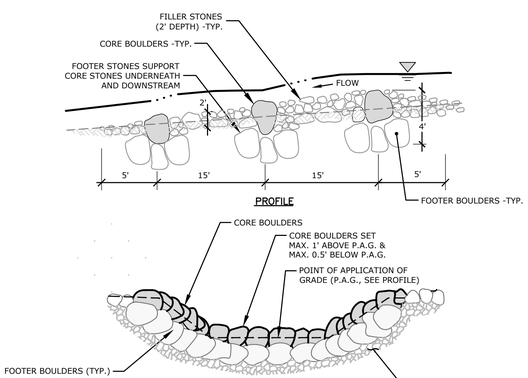


PLAN



PROFILE

SECTION

RIFFLE GRADE CONTROL STRUCTURE

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