

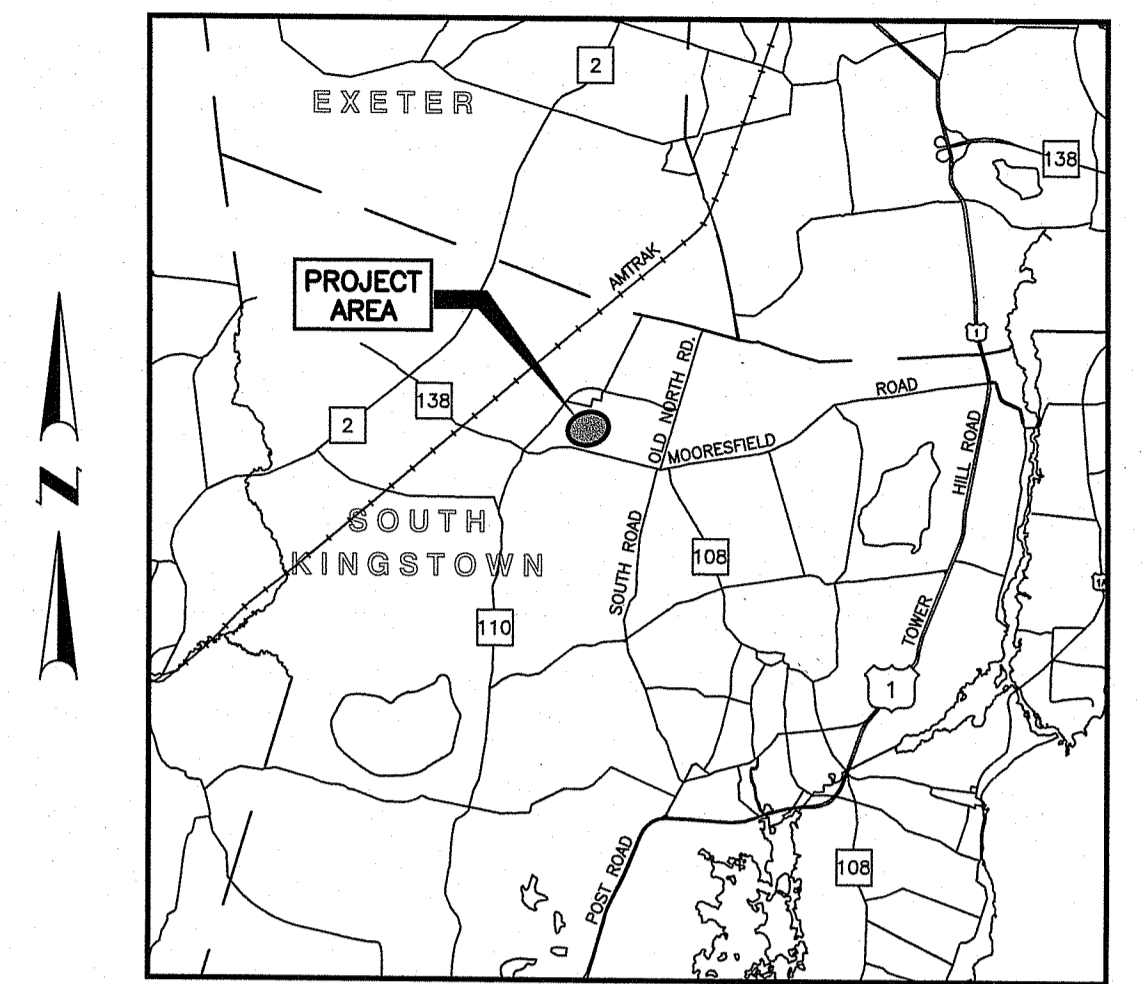
INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	LEGEND AND NOTES
3 & 4	EXISTING CONDITIONS PLANS 1 & 2
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UNIVERSITY OF RHODE ISLAND

Office of Capital Projects

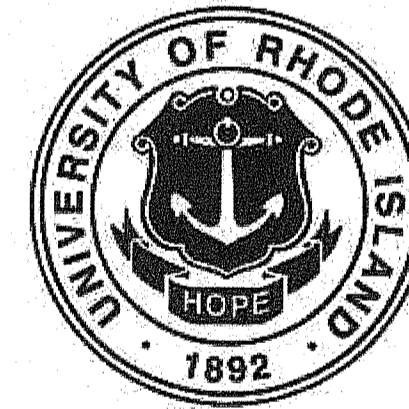
PLANS AND DETAILS OF PROPOSED
 BUTTERFIELD ROAD & HOPE COMMONS
 DRAINAGE IMPROVEMENTS
 KINGSTON, RHODE ISLAND



LOCATION MAP
 SCALE: 1" = 2 Miles

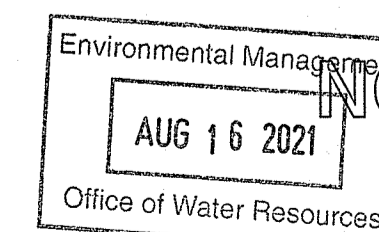
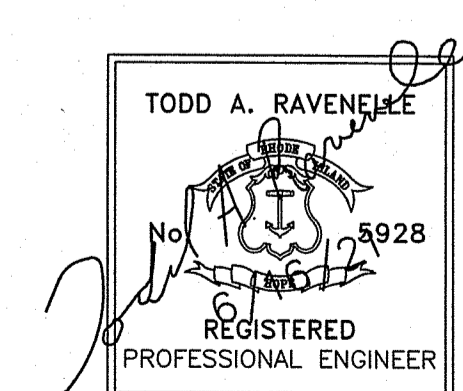
THE UNIVERSITY OF RHODE ISLAND

THINK BIG  WE DOSM



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED DEC 17 2021 FILE # 21-0104
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Martin D. Wenczek

RHODE ISLAND DEPARTMENT OF
 ENVIRONMENTAL MANAGEMENT
 SUPPLEMENTAL NO. 1
 PERMIT APPLICATION SET
 JUNE 2021



NOT FOR CONSTRUCTION

Number of Sheet 1
 Total Sheets 16



Gordon R. Archibald, Inc.
 Civil and Environmental Engineers

PLAN FOR NOTICE

GENERAL NOTES

- SPECIFICATIONS GOVERNING THIS PROJECT SHALL BE THE RIDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (AMENDED AUGUST 2013, INCLUDING ALL REVISIONS, ADDENDA AND SUPPLEMENTAL SPECIFICATIONS; AND THE "RHODE ISLAND STANDARD DETAILS" (1998, INCLUDING ALL REVISIONS. ALL PROJECT SITE IMPROVEMENTS SHALL CONFORM TO THE APPLICABLE STANDARDS SET FORTH IN THESE DOCUMENTS (AND THE SUB-REFERENCES INCORPORATED THEREIN) UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
- THE PROJECT LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS. IN ADDITION TO THOSE AREAS SPECIFICALLY DESIGNATED ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING (THROUGH PROVISION AND PLACEMENT OF LOAM AND SEED) ANY UNPAVED AREAS OUTSIDE OF THE PROJECT LIMITS OF DISTURBANCE IMPACTED BY CONSTRUCTION OPERATIONS. ANY REQUIRED RESTORATION OUTSIDE THE PROJECT LIMITS OF DISTURBANCE SHALL BE COMPLETED TO THE SATISFACTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.
- ANY DAMAGE CAUSED BY THE CONTRACTOR TO EXISTING CURBING, SIDEWALKS, PAVEMENTS, FENCES, OR OTHER SITE FEATURES TO REMAIN IN PLACE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL EXCESS EXCAVATED PAVEMENTS, CURBING, SIDEWALKS, CURB STOPS, AND OTHER CONSTRUCTION WASTE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.
- THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATION IN A DRY CONDITION. NO SEPARATE PAYMENT OR ALLOWANCE SHALL BE MADE FOR DEWATERING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING SEDIMENTS FROM DEWATERING OPERATION DISCHARGES THROUGH THE USE OF STILLING BASINS, FILTER FABRIC DEVICES, AND/OR OTHER SUITABLE MEANS AS APPROVED BY THE ENGINEER.
- FILL REQUIRED FOR EMBANKMENTS SHALL CONFORM TO THE REQUIREMENTS FOR COMMON BORROW SET FORTH IN SECTION M.01.01 OF THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
- THE CONTRACTOR SHALL PROVIDE CONTINUOUS DUST CONTROL (USING WATER AND/OR CALCIUM CHLORIDE OR OTHER APPROVED METHODS) FOR ALL EARTH STOCKPILES, EARTH PILED ALONG EXCAVATIONS AND SURFACES OF BACK FILLED TRENCHES, IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL PROVIDE ALL REQUIRED NOTICES AND COMPLY WITH ALL PERMITS, LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED IN THE CONTRACT DOCUMENTS.
- EXISTING UTILITIES HAVE BEEN PLOTTED FROM BEST AVAILABLE DATA AND ARE APPROXIMATE ONLY. IN ACCORDANCE WITH CURRENT STATE "DIG SAFE" LAWS AND RULES, THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE SYSTEM ELEMENTS AND UTILITIES (BOTH UNDERGROUND AND OVERHEAD) BEFORE ANY EXCAVATION MAY COMMENCE. THE CONTRACTOR IS ADVISED THAT (A) NOT ALL UTILITY PROVIDERS SUBSCRIBE TO THE DIG SAFE PROGRAM, AND (B) IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL POTENTIALLY AFFECTED UTILITY COMPANIES AND ENSURE THAT ALL UTILITIES HAVE BEEN MARKED PRIOR TO THE COMMENCEMENT OF WORK. EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY MUNICIPAL, STATE OR FEDERAL AGENCY OR AUTHORITY HAVING JURISDICTION OVER THE WORK. ANY DAMAGE TO EXISTING UTILITIES MARKED IN THE FIELD OR UNMARKED UTILITIES (AS A RESULT OF FAILING TO CONTACT THE APPROPRIATE UTILITY COMPANY) SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE CONTRACTOR IS ADVISED THAT WORK UNDER EXISTING OVERHEAD UTILITIES IS REQUIRED, AND THAT MINIMUM CLEARANCES SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS. THIS MAY REQUIRE SPECIAL MEANS AND METHODS IN ORDER TO PROPERLY COMPLETE THE WORK. SHOULD THE CONTRACTOR ELECT TO RELOCATE EXISTING OVERHEAD UTILITIES, THEN THE CONTRACTOR SHALL CONDUCT ALL COORDINATION WITH THE AFFECTED UTILITY COMPANIES AND BEAR ALL COSTS ASSOCIATED WITH UTILITY RELOCATIONS NOT INCLUDED IN THE CONTRACT.
- PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING PIPES AND/OR STRUCTURES WHICH ARE TO BE CONNECTED OR REMOVED. ANY VARIATION FROM THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION, WHEREUPON WORK CAN COMMENCE ONLY UPON THE ENGINEER'S AUTHORIZATION.
- ALL EXISTING PIPE, SUBSURFACE STRUCTURES, PAVEMENTS, EXCESS EXCAVATED MATERIALS AND MISCELLANEOUS MATERIALS REMOVED IN THE COURSE OF UTILITY WORK (INSTALLATION OF DRAINAGE, WATER AND SEWER PIPING, ETC.) SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR AT AN OFFSITE LOCATION.
- WHERE UNDERGROUND UTILITY CROSSINGS ARE REQUIRED, AT LEAST TWO (2) TEST PITS SHALL BE DUG TO DETERMINE THE LOCATION/DEPTH AND MATERIAL OF THE EXISTING UTILITY.
- UTILITY SERVICES TO EXISTING BUILDINGS AND FACILITIES SHALL BE MAINTAINED AT ALL TIMES FOR THE DURATION OF CONSTRUCTION.
- THE CONTRACTOR SHALL ADJUST ALL UTILITY BOXES, FRAMES, AND COVERS AS REQUIRED TO MATCH FINISH GRADE.

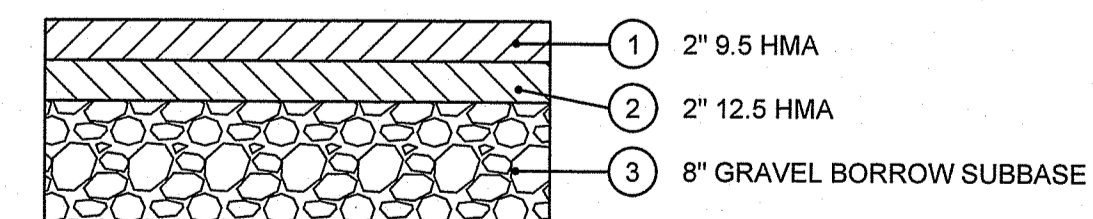
EROSION AND SEDIMENT CONTROL NOTES

- SOIL EROSION AND SEDIMENTATION CONTROL MEASURES TO BE EMPLOYED ON THE PROJECT ARE INDICATED ON THE PLANS. CONTROL MEASURES SHALL BE FURNISHED, INSTALLED, MAINTAINED FOR THE DURATION OF CONSTRUCTION, AND SUBSEQUENTLY REMOVED, ALL IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATIONS, THE LATEST EDITION OF THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" (REVISED 2014), AND ANY SITE-SPECIFIC EROSION AND SEDIMENT CONTROL / POLLUTION PREVENTION PLAN INCLUDED IN THE CONTRACT DOCUMENTS.
- ALL CLEARING, GRADING AND EARTHWORK ACTIVITIES SHALL REMAIN STRICTLY WITHIN THE LIMITS OF DISTURBANCE (LOD) DEPICTED ON THE PLANS AND SHALL BE RESTRICTED TO ACTIVITIES NECESSARY FOR COMPLETION OF THE WORK. THE CONTRACTOR SHALL ENSURE THAT ALL AREAS OUTSIDE THE LIMITS OF DISTURBANCE REMAIN UNDISTURBED AND PROTECTED FROM CONSTRUCTION IMPACTS.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE ROUTINELY INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATIONS, THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, AND THE APPLICABLE CONDITIONS OF ANY REGULATORY/ENVIRONMENTAL PERMITS ISSUED FOR THE PROJECT.
- PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES, EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT LOCATIONS AND AREAS SHOWN ON THE PLANS. CLEARING MAY OCCUR PRIOR TO INSTALLATION OF SUCH CONTROLS; HOWEVER NO GRUBBING, GRADING, FILLING, OR OTHER SOIL DISTURBANCE SHALL OCCUR PRIOR TO INSTALLATION.
- PERIMETER EROSION CONTROL BARRIERS (STAKED COMPOST FILTER SOCK, SILT FENCE, OR OTHER DEVICES AS INDICATED) SHALL BE INSTALLED IN CONTINUOUS UNINTERRUPTED RUNS AT THE LOCATIONS INDICATED ON THE PLANS AND MAINTAINED IN EFFECTIVE CONDITION UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH VEGETATION. FOLLOWING SUCCESSFUL STABILIZATION OF DISTURBED AREAS, ALL PERIMETER EROSION CONTROL BARRIERS SHALL BE REMOVED. PRIOR TO REMOVAL OF THE DEVICES, ALL ACCUMULATED SEDIMENT AND DEBRIS TRAPPED BY THE BARRIERS SHALL BE REMOVED AND DISPOSED OF LEGALLY AT A SUITABLE OFFSITE LOCATION.
- THE TOE OF ANY FILL SLOPE IS TO REMAIN AT LEAST ONE (1) FOOT INSIDE OF ALL PERIMETER EROSION CONTROL BARRIERS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR COVER ANY PORTION OF THE EROSION CONTROL MEASURES WITH MATERIAL. ANY MATERIAL THAT IS PLACED ON ANY EROSION CONTROLS BY THE CONTRACTOR (OR ANY AGENT OF THE CONTRACTOR) SHALL BE IMMEDIATELY REMOVED, AND ANY NECESSARY REPAIRS TO THE EROSION CONTROLS SUBSEQUENTLY IMPLEMENTED AT NO COST TO THE OWNER.
- UNTIL VEGETATIVE COVER IS ESTABLISHED AND DISTURBED AREAS ARE FULLY STABILIZED, TRAPPED SEDIMENTS SHALL BE PERIODICALLY REMOVED FROM PERIMETER EROSION CONTROL BARRIERS. AT A MINIMUM, MATERIAL SHALL BE REMOVED ONCE THE DEPTH OF ACCUMULATED SEDIMENT REACHES SIX (6) INCHES OR ONE-HALF THE BARRIER HEIGHT, WHICHEVER IS LESS. ALL REMOVED MATERIAL SHALL BE DISPOSED OF LEGALLY AT A SUITABLE OFFSITE LOCATION.
- ALL MATERIAL STOCKPILES SHALL BE LOCATED WITHIN THE LIMITS OF DISTURBANCE (LOD) DEPICTED ON THE PLANS AND SHALL BE SURROUNDED BY A SECURED PERIMETER OF COMPOST FILTER SOCK.
- ALL EXISTING AND CONSTRUCTED DRAINAGE SYSTEM INLETS SHALL BE PROVIDED WITH INLET PROTECTION DEVICES (FILTER BAGS/SILT SACKS, SANDBAGS, WATTLES, ETC.) AS INDICATED ON THE PLANS. ALL INLET PROTECTION DEVICES SHALL BE INSTALLED, MAINTAINED, AND CLEARED FOR THE DURATION OF CONSTRUCTION AND UNTIL ALL STORMWATER CONTROLS ARE FULLY STABILIZED AND ONLINE, AT WHICH TIME THEY SHALL BE REMOVED.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING STORMS AND PERIODS OF RAINFALL.
- EROSION CONTROL DEVICES SHOULD BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS EXCEEDING ONE HALF INCH (1/2") IN ANY 24-HOUR PERIOD. WHERE AND WHEN REQUIRED, MAINTENANCE AND REPAIRS SHALL BE COMPLETED WITH 24 HOURS OF THE INSPECTION.
- DENUDED/UNVEGETATED SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR PERIODS IN EXCESS OF 2 WEEKS OR THROUGH THE INACTIVE WINTER SEASON.
- ALL DISTURBED SLOPES EITHER NEWLY CREATED OR EXPOSED PRIOR TO OCTOBER 15 SHALL BE SEEDED OR PROTECTED BY THAT DATE FOR ANY WORK COMPLETED DURING EACH CONSTRUCTION YEAR.
- TEMPORARY SURFACE STABILIZATION TREATMENTS SHALL CONSIST OF A HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS FIBER MESH, EROSION CONTROL BLANKETS, OR OTHER MATTING. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS DIRECTED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 3,000-4,000 POUNDS PER ACRE (1.9-2.5 POUNDS PER SQUARE YARD). IF NEEDED, TEMPORARY SEEDING (PROVIDED IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS AND EROSION AND SEDIMENT CONTROL GUIDANCE) MAY BE EMPLOYED TO FURTHER MINIMIZE EROSION.
- TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE, FREE OF SUBSOIL, STONES, ROCKS, ROOTS, BRUSH, REFUSE, CONSTRUCTION DEBRIS AND OTHER DELETERIOUS MATERIALS AND SHALL CONFORM TO SUBSECTION M.18.01 OF THE RIDOT STANDARD SPECIFICATIONS.
- THE SEEDED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
- THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING AND BE APPLIED AT A SEEDING RATE OF 100 POUNDS PER ACRE:

COMPONENT	% BY WEIGHT
RED FESCUE70	
KENTUCKY BLUEGRASS 15	
COLONIAL BENTGRASS 5	
PERENNIAL RYEGRASS 10	
- THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1 - JUNE 1 AND AUGUST 15 - OCTOBER 15.
- STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 14 DAYS OF FINAL GRADING. PLANTING OF GRASS SHALL BE ACCOMPLISHED BY THE CONTRACTOR AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION.
- THE CONTRACTOR MUST REPAIR AND OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE (1) CALENDAR YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.

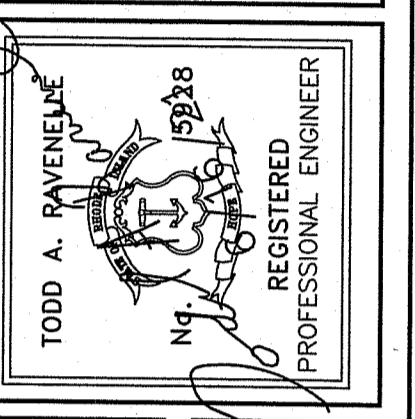
LEGEND

- (1.3.0) CONCRETE CONNECTING COLLAR
- (2.1.0) CONCRETE HEADWALLS AND PIPE CULVERTS
- (2.2.0) STANDARD HEADWALLS FOR MULTIPLE PIPE CULVERTS
- (4.2.0) PRECAST 4'-0" ROUND MAN HOLE
- (4.2.2) PRECAST 6'-0" ROUND MAN HOLE
- (4.4.0) MOD PRECAST 4'-0" ROUND CATCH BASIN W/4' SUMP
- (6.2.1) HEAVY DUTY FRAME & COVER
- (7.1.0) PRECAST CONCRETE CURB (STRAIGHT)
- (7.5.1A) BITUMINOUS BERM
- (7.6.0) MOD CURB SETTING DETAIL
- (43.1.0) CONCRETE SIDEWALK
- (43.2.0) BITUMINOUS CONCRETE SIDEWALK
- (51.1.0) TREE PROTECTION DEVICE
- (ACBO) ARTICULATED CONCRETE BLOCK (OPEN CELL)
- (AFC) ADJUST FRAME AND COVER
- (CBP) CATCH BASIN INLET PROTECTION
- (CCB) CLEAN CATCH BASIN
- (CFP) CLEAN AND FLUSH PIPE
- (CFS) COMPOST FILTER SOCK
- (CG) CLEAR AND GRUB
- (CM) CUT & MATCH
- (DB) REMOVE AND DISPOSE BIT. BERM
- (DC) REMOVE AND DISPOSE CURB
- (DCB) REMOVE AND DISPOSE CATCH BASIN
- (DFP) REMOVE AND DISPOSE FLEXIBLE PAVEMENT
- (DMH) REMOVE AND DISPOSE MAN HOLE
- (DP) REMOVE AND DISPOSE PIPE
- (DSW) REMOVE AND DISPOSE SIDEWALK
- (ETR) ITEM EXISTING TO REMAIN
- (GRR) GROUTED RIP-RAP (COURSE GROUT, SECTION 807.02.7)
- (GW) GABION WALL
- (LFW) LOW FLOW WEIR
- (LOD) LIMIT OF DISTURBANCE
- (LS) 4" LOAM AND SEED
- (PS) 4" PLANTABLE SOIL AND SEED
- (RHH) REMOVE, HANDLE, HAUL, CUT, TRIM, RESET CURB, ALL TYPES
- (RD) ITEM REMOVE AND DISPOSE
- (RDT) REMOVE AND DISPOSE TREE
- (RR) ITEM REMOVE AND RELOCATE
- (RRP) RIP-RAP PAD
- (RRR) REMOVE AND RESET EXISTING RIP-RAP
- (TEP) TIE EXISTING PIPE INTO NEW STRUCTURE
- (TNP) TIE NEW PIPE INTO EXISTING STRUCTURE
- (TRGD) TRASH GUARD FOR FLARED ENDS
- (TRM) TURF REINFORCEMENT MAT(SEE DETAIL)
- (4W) 4" EPOXY RESIN PAVEMENT MARKINGS - WHITE
- ===== EDGE OF PROPOSED PAVEMENT
- ===== PROPOSED CURB
- ===== PROPOSED BERM
- △-----△ APPROXIMATE WETLAND EDGE

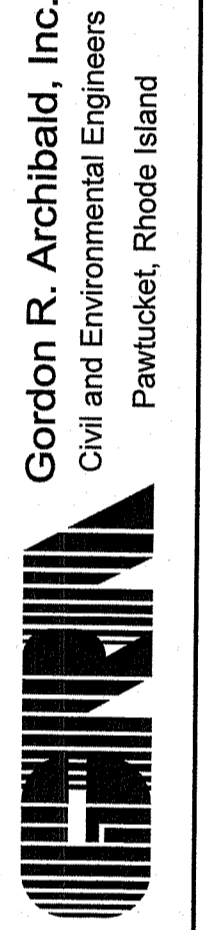


PAVEMENT STRUCTURE
NOT TO SCALE

PROJECT
BUTTERFIELD ROAD & HOPE COMMONS DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND



CLIENT
UNIVERSITY OF RHODE ISLAND



DRAWING TITLE
LEGEND AND NOTES

NO.	DATE	BY	REVISIONS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED **DEC 17 2021** FILE # **21-0104**
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Christopher D. Womack

Environmental Management
AUG 16 2021
 Office of Water Resources

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: NONE

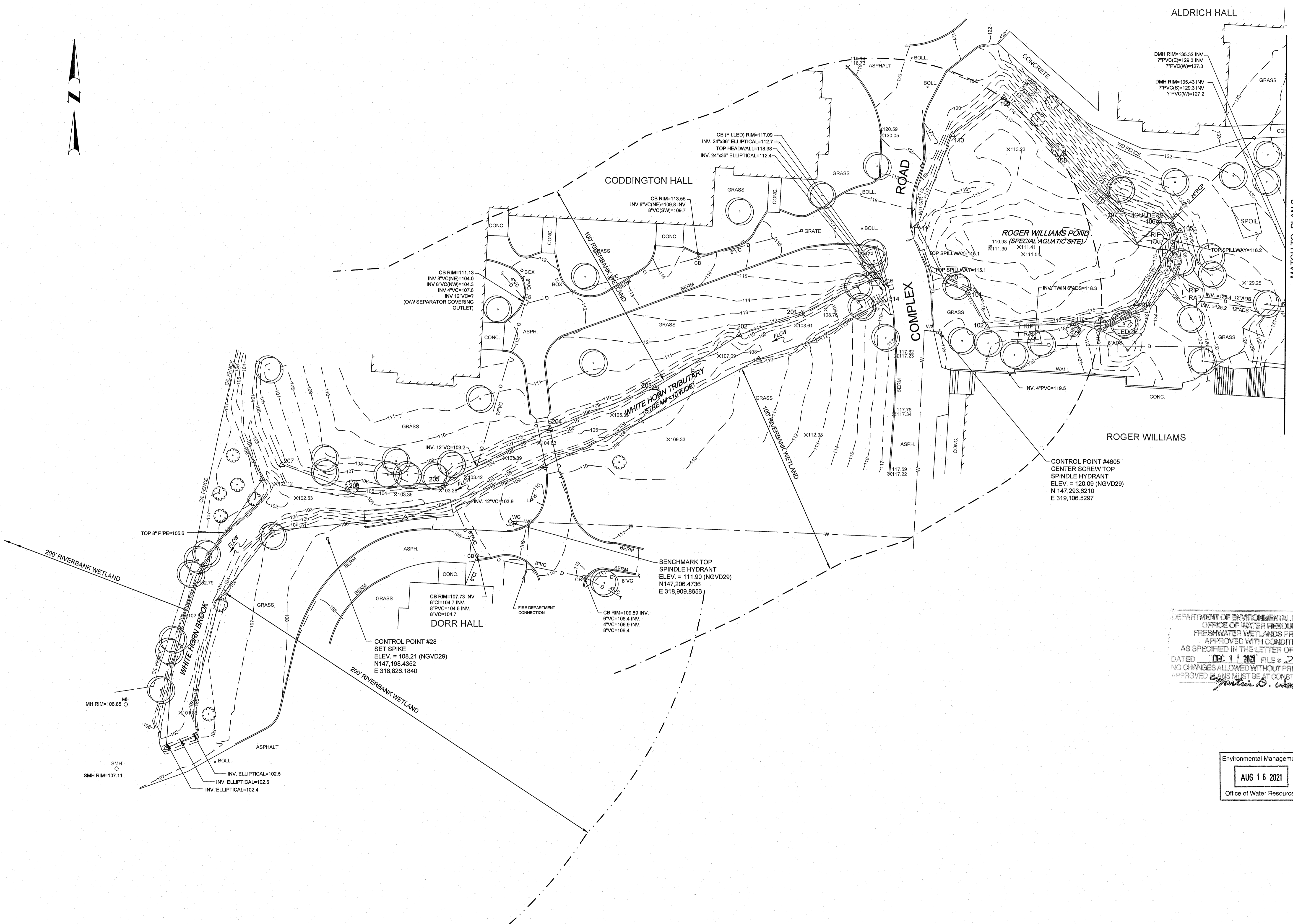
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DRAWING NUMBER

2

SHEET 2 OF 16



PROJECT
**BUTTERFIELD ROAD &
 HOPE COMMONS
 DRAINAGE IMPROVEMENTS**
 KINGSTON, RHODE ISLAND

TODD A. RAVENHILL
 REGISTERED PROFESSIONAL ENGINEER
 No. 15938

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
 Civil and Environmental Engineers
 Pawtucket, Rhode Island



DRAWING TITLE
EXISTING CONDITIONS PLAN 1

NO.	DATE	REVISIONS	BY

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED 10.17.2021 FILE # 21-004
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED *[Signature]*
[Signature]

Environmental Management
AUG 16 2021
 Office of Water Resources

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: 1" = 20'

DRAWN BY: JLH

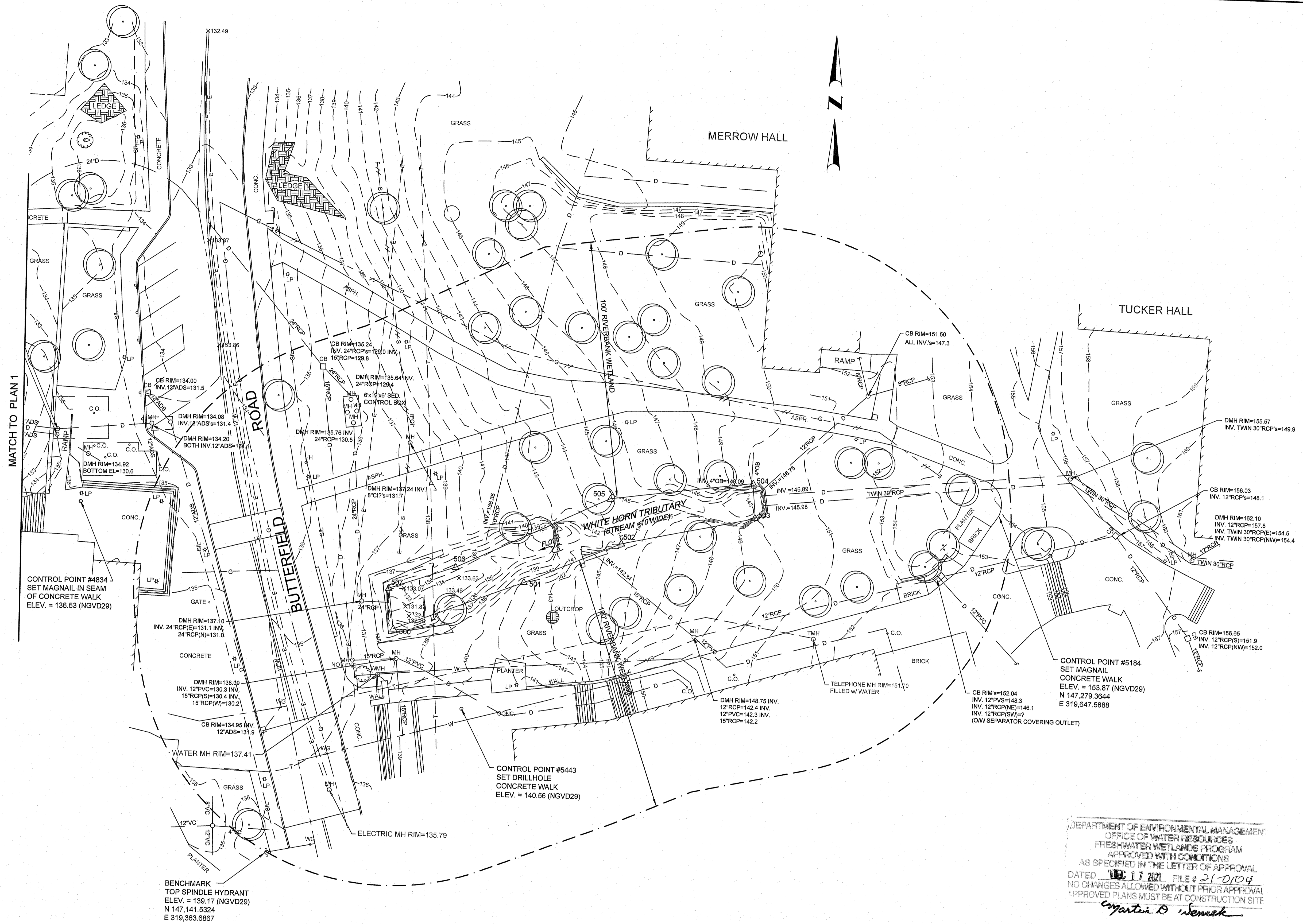
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3

SHEET 3 OF 16

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PROJECT
**BUTTERFIELD ROAD &
 HOPE COMMONS**
 DRAINAGE IMPROVEMENTS
 KINGSTON, RHODE ISLAND

TODD A. PAVENELLE
 No. 0928
 REGISTERED
 PROFESSIONAL ENGINEER

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
 Civil and Environmental Engineers
 Pawtucket, Rhode Island

DRAWING TITLE
EXISTING CONDITIONS PLAN 2

NO.	DATE	REVISIONS	BY

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
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Martin D. Weneck

Environmental Management
AUG 16 2021
 Office of Water Resources

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: 1"=20'

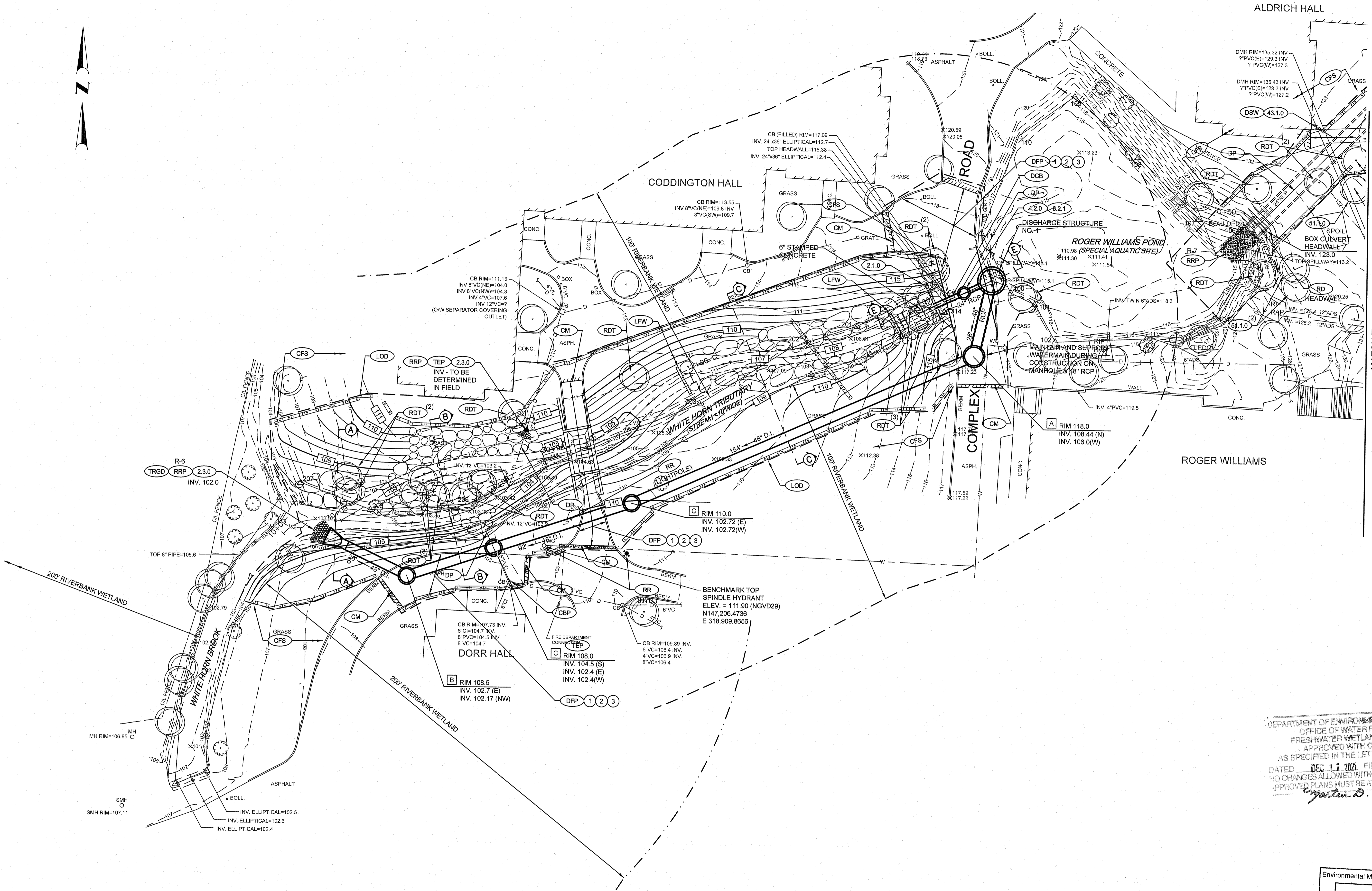
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DRAWING NUMBER

4

SHEET 4 OF 16



MATCH TO & U PLAN 2

PROJECT
**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS**
KINGSTON, RHODE ISLAND

TODD A. RAYVENUE
REGISTERED
PROFESSIONAL ENGINEER

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island



DRAWING TITLE
DRAINAGE & GRADING PLAN 1

NO.	DATE	REVISIONS	BY

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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Martin D. Wenczek

Environmental Management
AUG 16 2021
Office of Water Resources

- DRAINAGE STRUCTURE LEGEND**
- A** 8" DIA. MANHOLE W/ 6 INCH SUMP & RI STD. 6.2.1 FRAME & COVER
 - B** 6" DIA. CATCH BASIN R.I. STD. 4.4.0 W/ 4 FT. SUMP & RI STD. 6.3.0 FRAME & GRATE
 - C** RI STD. 4.4.0 6 FT. DIA. CATCH BASIN W/ 4 FT. SUMP & RI STD. 6.2.1 FRAME & COVER

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: 1" = 20'

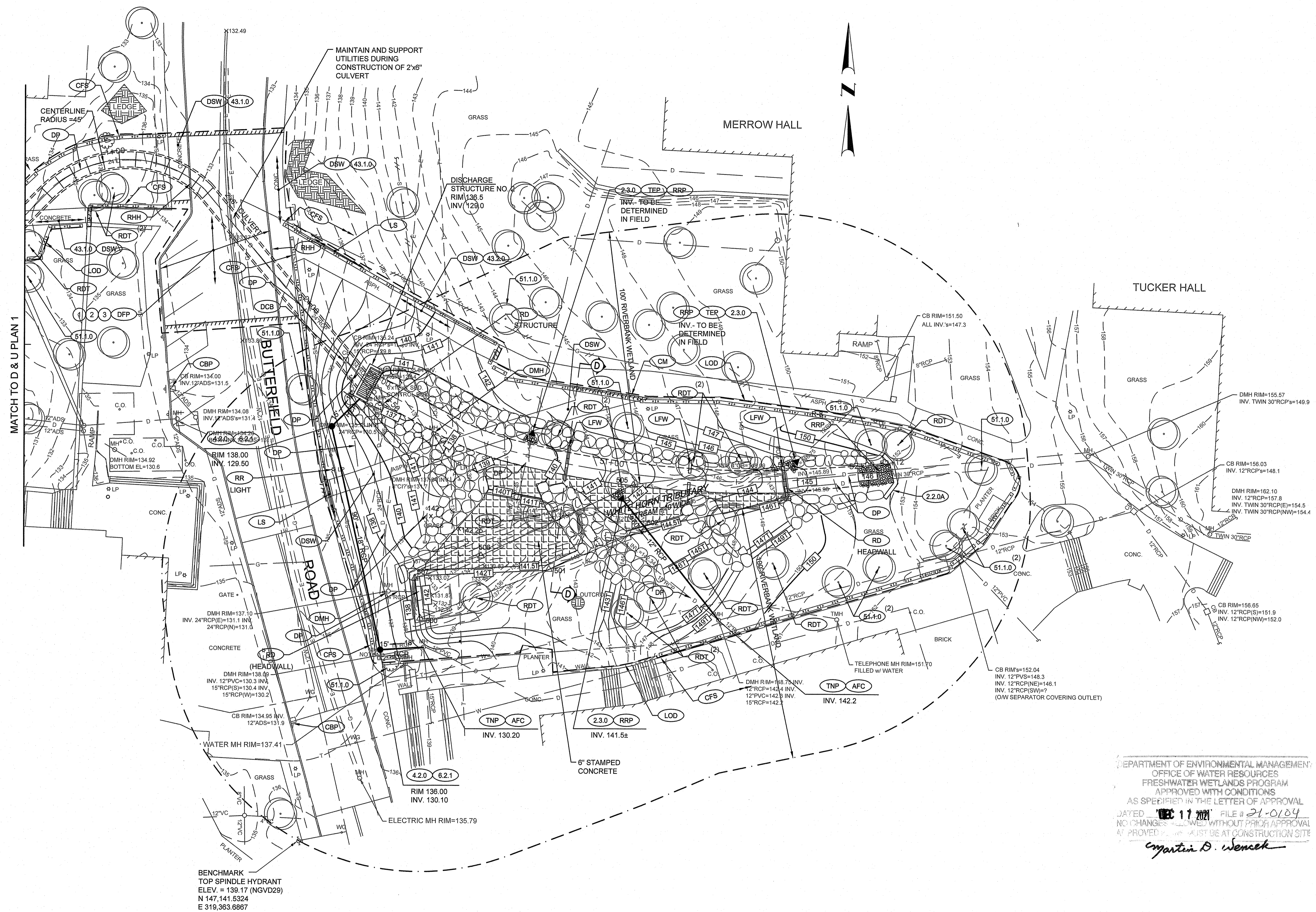
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DRAWING NUMBER

5

SHEET 5 OF 16



MATCH TO D & U PLAN 1

BENCHMARK
TOP SPINDLE HYDRANT
ELEV. = 139.17 (NGVD29)
N 147,141.5324
E 319,363.6867

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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FRESHWATER WETLANDS PROGRAM
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NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
AT PROVED SITE MUST BE AT CONSTRUCTION SITE
Jonathan D. Wenczek

Environmental Management
AUG 16 2021
Office of Water Resources

PROJECT
**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND**

TODD A. RAVENHILL
REGISTERED PROFESSIONAL ENGINEER
No. 5938

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
DRAINAGE & GRADING PLAN 2

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: 1" = 20'

DRAWN BY: JLH

CHECKED BY: TAR

DRAWING NUMBER

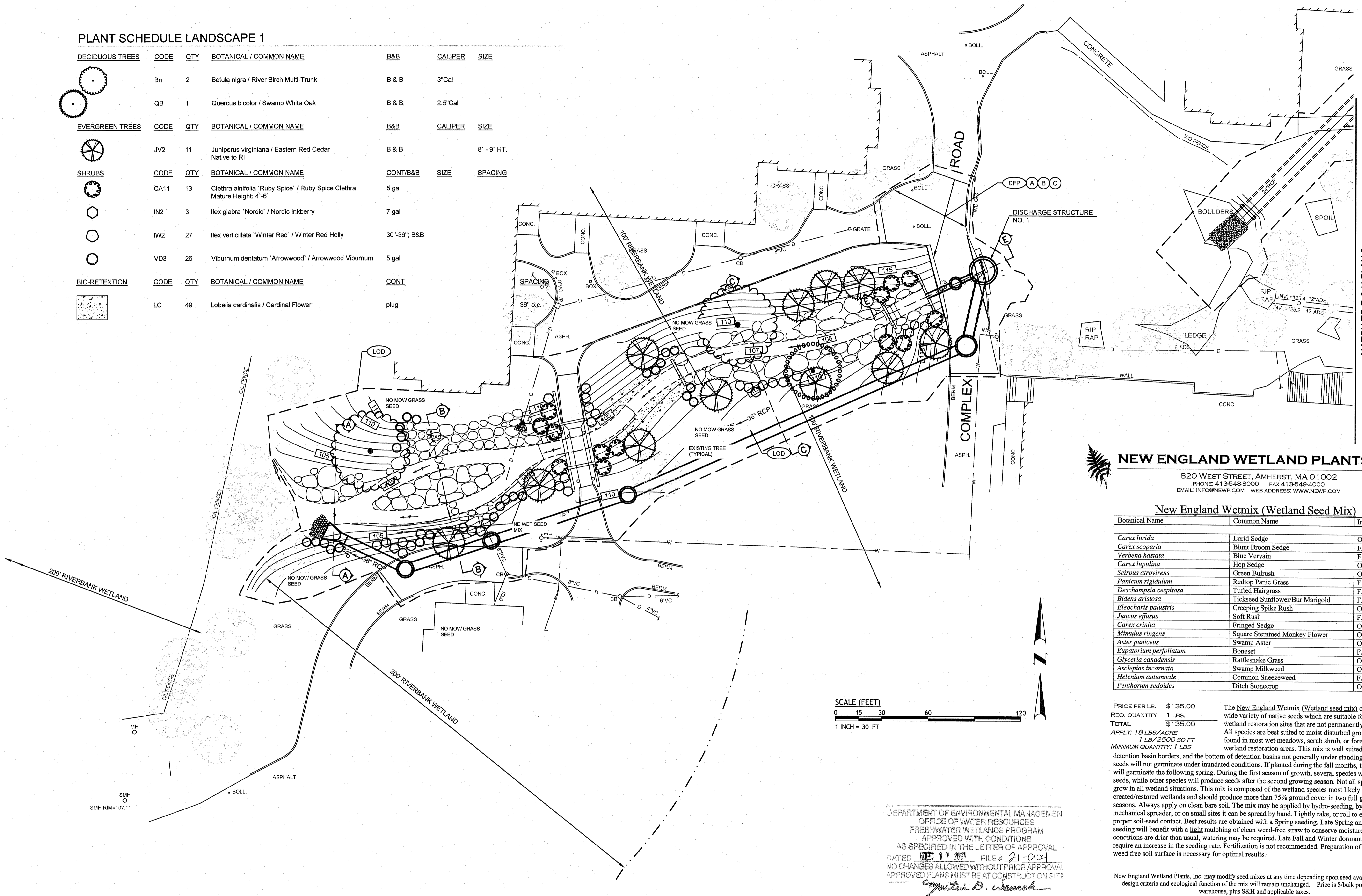
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SHEET 6 OF 16

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PLANT SCHEDULE LANDSCAPE 1

DECIDUOUS TREES	CODE	QTY	BOTANICAL / COMMON NAME	B&B	CALIPER	SIZE
	Bn	2	Betula nigra / River Birch Multi-Trunk	B & B	3"Cal	
	QB	1	Quercus bicolor / Swamp White Oak	B & B	2.5"Cal	
EVERGREEN TREES	CODE	QTY	BOTANICAL / COMMON NAME	B&B	CALIPER	SIZE
	JV2	11	Juniperus virginiana / Eastern Red Cedar Native to RI	B & B		8' - 9' HT.
SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	CONT/B&B	SIZE	SPACING
	CA11	13	Clethra alnifolia 'Ruby Spice' / Ruby Spice Clethra Mature Height: 4'-6'	5 gal		
	IN2	3	Ilex glabra 'Nordic' / Nordic Inkberry	7 gal		
	IW2	27	Ilex verticillata 'Winter Red' / Winter Red Holly	30"-36" B&B		
	VD3	26	Viburnum dentatum 'Arrowwood' / Arrowwood Viburnum	5 gal		
BIO-RETENTION	CODE	QTY	BOTANICAL / COMMON NAME	CONT		
	LC	49	Lobelia cardinalis / Cardinal Flower	plug		



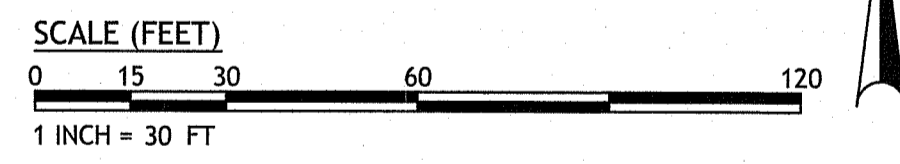
NEW ENGLAND WETLAND PLANTS, INC
 820 WEST STREET, AMHERST, MA 01002
 PHONE: 413-548-9000 FAX: 413-549-4000
 EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Wetmix (Wetland Seed Mix)

Botanical Name	Common Name	Indicator
<i>Carex lurida</i>	Lurid Sedge	OBL
<i>Carex scoparia</i>	Blunt Broom Sedge	FACW
<i>Verbena hastata</i>	Blue Vervain	FACW
<i>Carex lupulina</i>	Hop Sedge	OBL
<i>Scirpus atrovirens</i>	Green Bulrush	OBL
<i>Panicum rigidulum</i>	Redtop Panic Grass	FACW+
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	FACW
<i>Bidens aristata</i>	Tickseed Sunflower/Bur Marigold	FACW
<i>Eleocharis palustris</i>	Creeping Spike Rush	OBL
<i>Juncus effusus</i>	Soft Rush	FACW+
<i>Carex crinita</i>	Fringed Sedge	OBL
<i>Mimulus ringens</i>	Square Stemmed Monkey Flower	OBL
<i>Aster puniceus</i>	Swamp Aster	OBL
<i>Eupatorium perfoliatum</i>	Boneset	FACW
<i>Glyceria canadensis</i>	Rattlesnake Grass	OBL
<i>Asclepias incarnata</i>	Swamp Milkweed	OBL
<i>Helenium autumnale</i>	Common Sneezeweed	FACW+
<i>Penthorum sedoides</i>	Ditch Stonecrop	OBL

PRICE PER LB. \$135.00
 REQ. QUANTITY: 1 LBS.
 TOTAL: \$135.00
 APPLY: 1 LB./ACRE
 1 LB./2500 SQ FT
 MINIMUM QUANTITY: 1 LBS

The New England Wetmix (Wetland seed mix) contains a wide variety of native seeds which are suitable for most wetland restoration sites that are not permanently inundated. All species are best suited to moist disturbed ground as found in most wet meadows, scrub shrub, or forested wetland restoration areas. This mix is well suited for detention basin borders, and the bottom of detention basins not generally under standing water. The seeds will not germinate under inundated conditions. If planted during the fall months, the seed mix will germinate the following spring. During the first season of growth, several species will produce seeds, while other species will produce seeds after the second growing season. Not all species will grow in all wetland situations. This mix is composed of the wetland species most likely to grow in created/restored wetlands and should produce more than 75% ground cover in two full growing seasons. Always apply on clean bare soil. The mix may be applied by hydro-seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper soil-seed contact. Best results are obtained with a Spring seeding. Late Spring and Summer seeding will benefit with a light mulching of clean weed-free straw to conserve moisture. If conditions are drier than usual, watering may be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not recommended. Preparation of a clean weed free soil surface is necessary for optimal results.



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED 11/17/21 FILE # 21-014
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Stephen D. Wenczek

Environmental Management
AUG 16 2021
 Office of Water Resources

Diane C. Soule & Associates, ASLA
 Landscape Architecture
 422 Farnum Pike
 Smithfield, Rhode Island 02917
 www.dianesouleandassociates.com
 401.231.0736
 email: diane@dcsa.ws

PROJECT
BUTTERFIELD ROAD & HOPE COMMONS DRAINAGE IMPROVEMENTS KINGSTON, RHODE ISLAND

TODD A. RAVENELLE
 No. 5928
 REGISTERED PROFESSIONAL ENGINEER

CLIENT
UNIVERSITY OF RHODE ISLAND
 Gordon R. Archibald, Inc.
 Civil and Environmental Engineers
 Pawtucket, Rhode Island

DRAWING TITLE
LANDSCAPE PLAN 1

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: MARCH 2021

SCALE: 1" = 20'

DRAWN BY: JLH

CHECKED BY: TAR

DRAWING NUMBER
7
 SHEET 7 OF 16

MATCH TO D & U PLAN 1



PLANT SCHEDULE LANDSCAPE 2

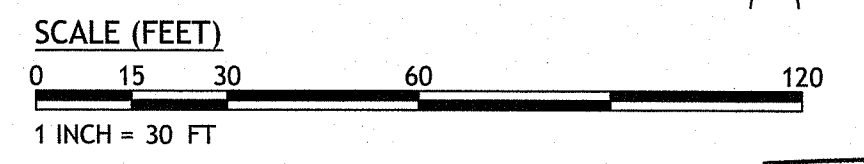
DECIDUOUS TREES	CODE	QTY	BOTANICAL / COMMON NAME	B&B	CALIPER	SIZE
	Ar7	3	Acer rubrum / Red Maple	B & B	3"Cal	
	Bn	1	Betula nigra / River Birch Multi-Trunk	B & B	3"Cal	

EVERGREEN TREES	CODE	QTY	BOTANICAL / COMMON NAME	B&B	CALIPER	SIZE
	JV2	6	Juniperus virginiana / Eastern Red Cedar Native to RI	B & B		8' - 9' HT.

SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	CONT/B&B	SIZE	SPACING
	CA11	23	Clethra alnifolia 'Ruby Spice' / Ruby Spice Clethra Mature Height: 4'-6'	5 gal		
	IN2	21	Ilex glabra 'Nordic' / Nordic Inkberry	7 gal		
	IW2	33	Ilex verticillata 'Winter Red' / Winter Red Holly	30"-36", B&B		
	VD3	6	Viburnum dentatum 'Arrowwood' / Arrowwood Viburnum	5 gal		

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED 10/17/2021 FILE # 21-0164
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Martin A. Senczek



Environmental Management
AUG 16 2021
 Office of Water Resources

Diane C. Soule & Associates, ASLA
 Landscape Architecture
 422 Farnum Pike
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PROJECT
**BUTTERFIELD ROAD &
 HOPE COMMONS
 DRAINAGE IMPROVEMENTS
 KINGSTON, RHODE ISLAND**

TODD A. RAVENELLE
 No. 5928

 REGISTERED
 PROFESSIONAL ENGINEER

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
 Civil and Environmental Engineers
 Pawtucket, Rhode Island

DRAWING TITLE
LANDSCAPE PLAN 2

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: MARCH 2021

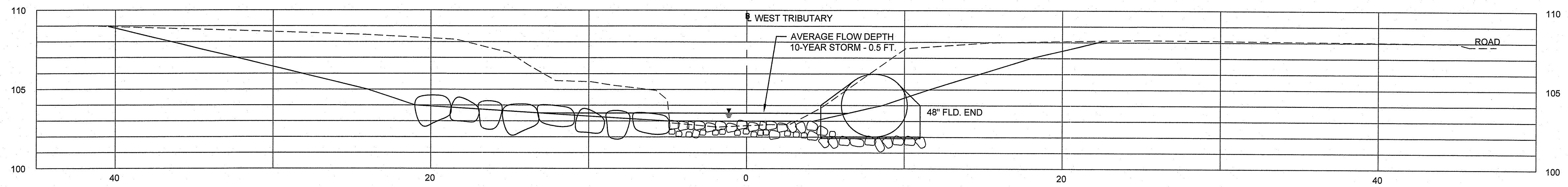
SCALE: 1" = 20'

DRAWN BY: JLH

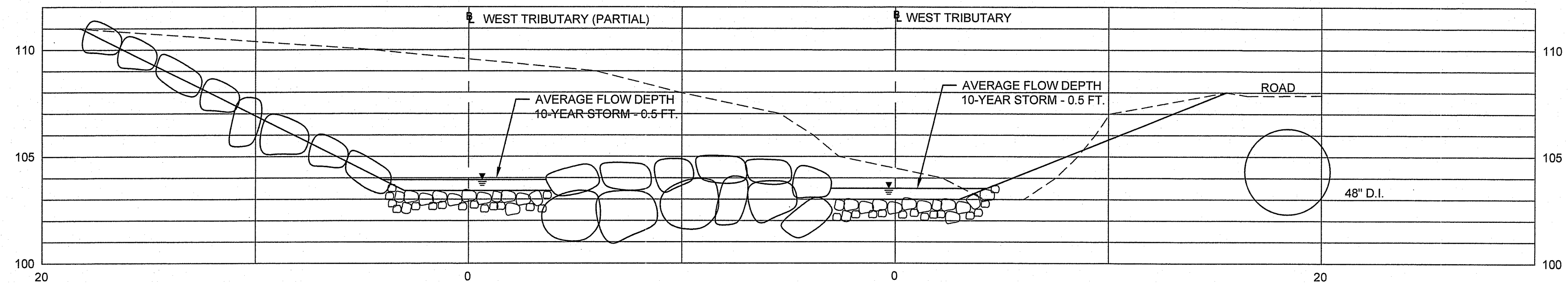
CHECKED BY: TAR

DRAWING NUMBER

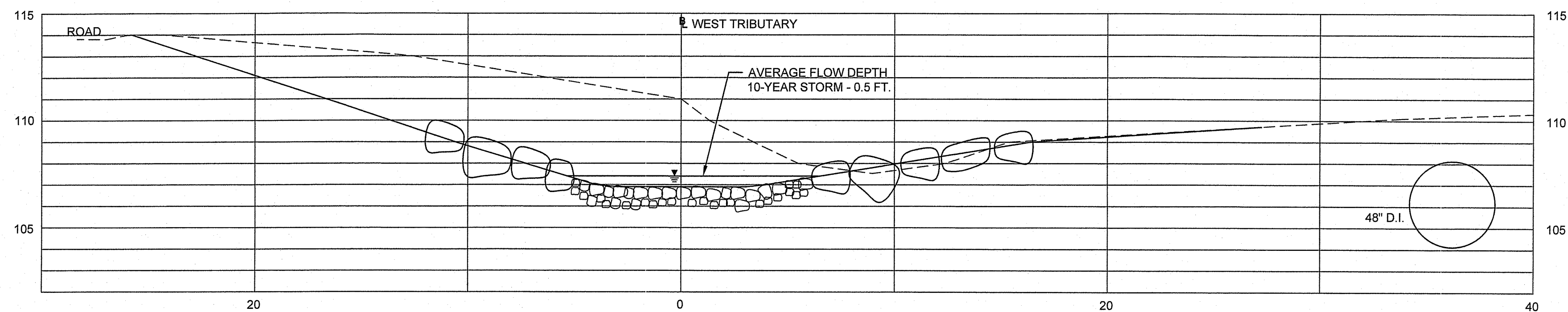
8
 SHEET 8 OF 16



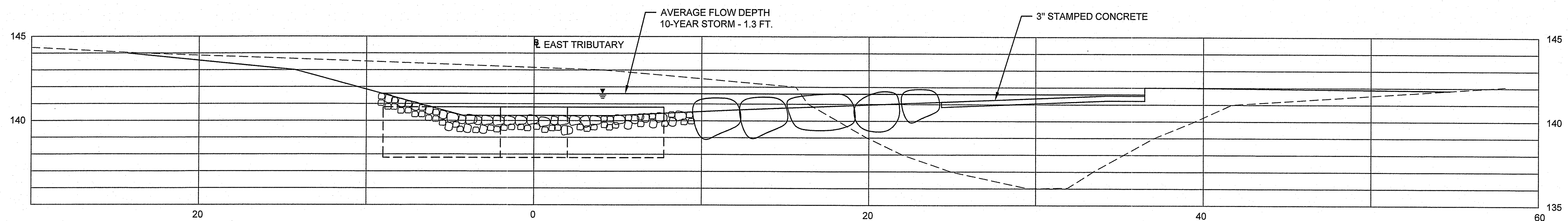
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED DEC 17 2021 FILE # 21-0104
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Stephen D. Wenzel

Environmental Management
 AUG 16 2021
 Office of Water Resources

PROJECT
**BUTTERFIELD ROAD &
 HOPE COMMONS
 DRAINAGE IMPROVEMENTS**
 KINGSTON, RHODE ISLAND

TODD A. RAVENHILL
 REGISTERED
 PROFESSIONAL ENGINEER
 No. 05228

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
 Civil and Environmental Engineers
 Pawtucket, Rhode Island

DRAWING TITLE		REVISIONS	
SECTIONS - 1		NO.	DATE
		BY	

PROJECT NO.: 1908/1946

DATE: JUNE 2021

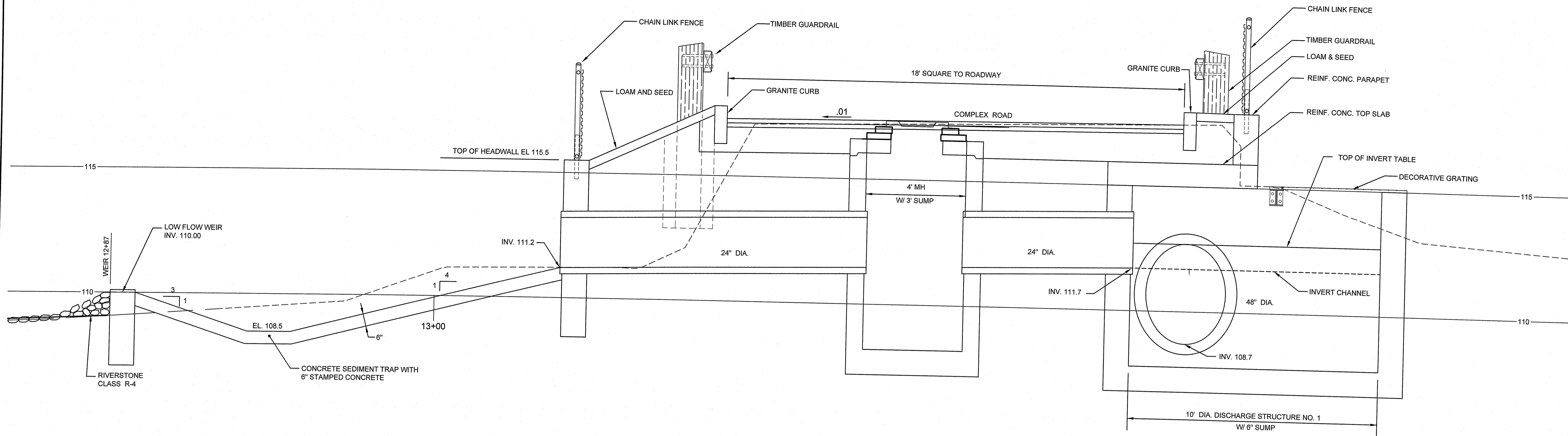
SCALE: 1" = 4'

DRAWN BY: JLH

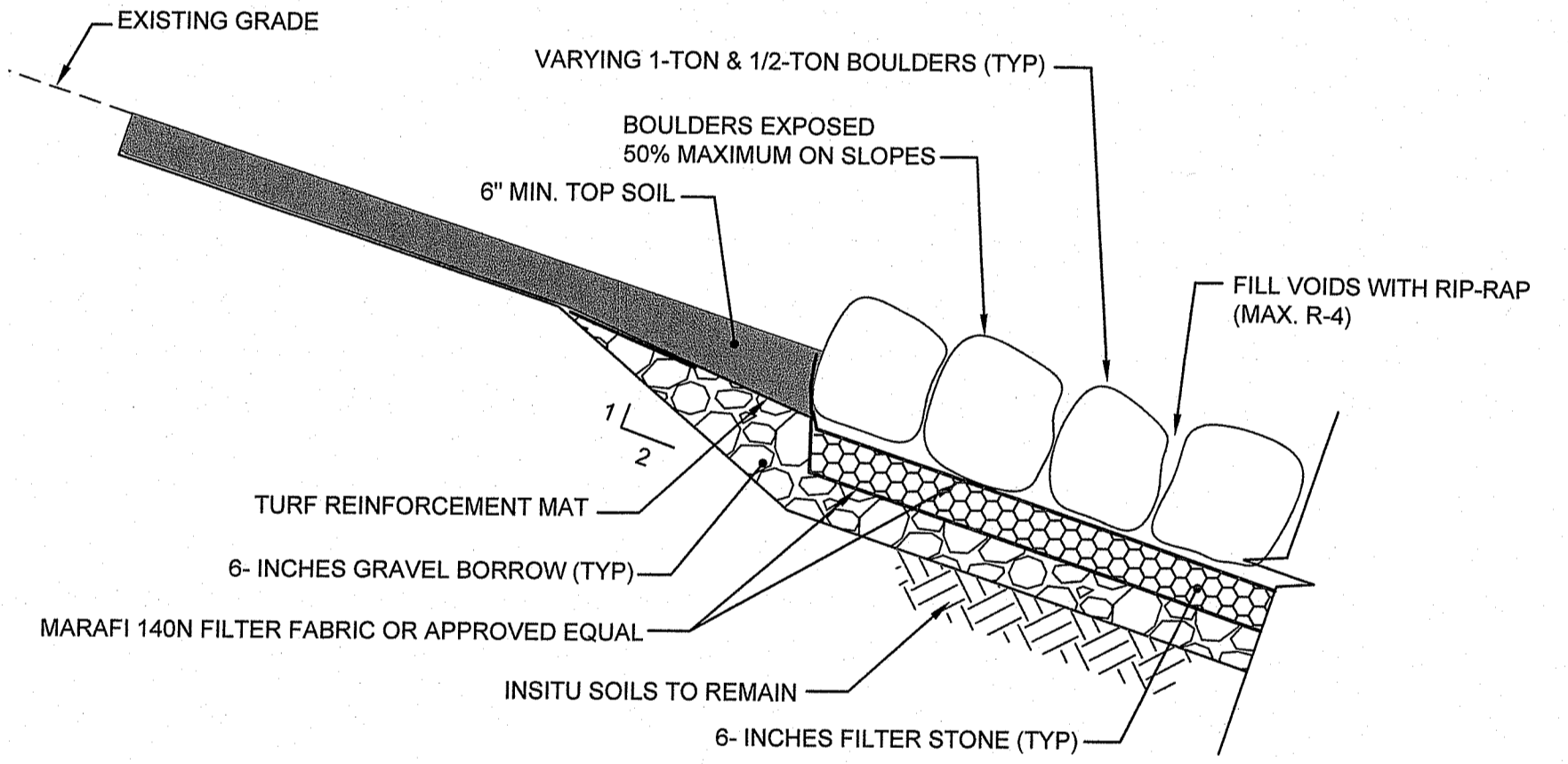
CHECKED BY: TAR

DRAWING NUMBER
9
 SHEET 9 OF 16

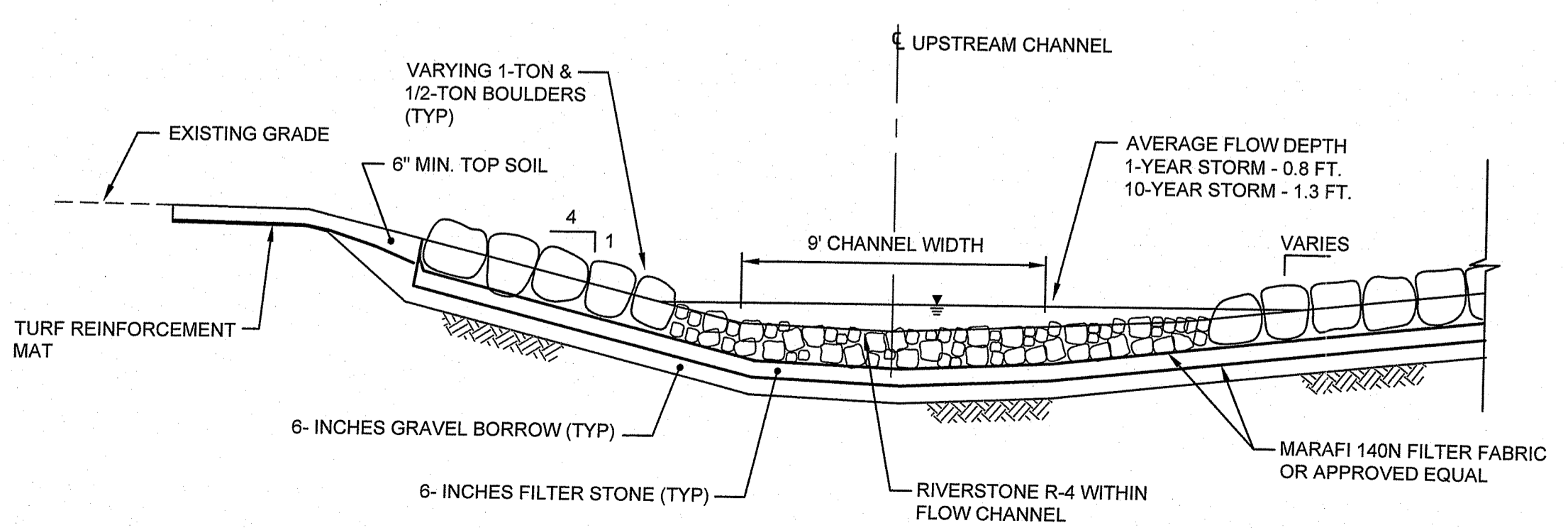
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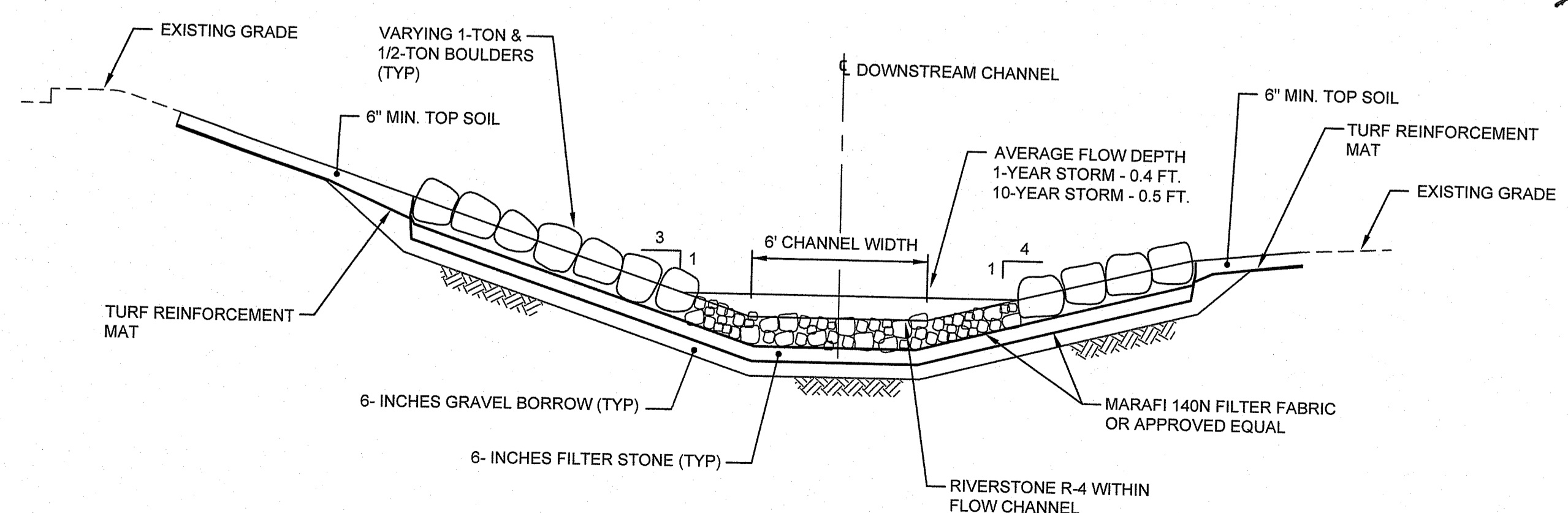
SECTION E-E
SCALE: 1"=2'



TYPICAL BOULDER PLACEMENT DETAIL
N.T.S.



TYPICAL UPSTREAM CHANNEL SECTION
SCALE: 1"=4'



TYPICAL DOWNSTREAM CHANNEL SECTION
SCALE: 1"=4'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED 11/17/2021 FILE # 21-0104
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED BY: *Carsten D. Wenzel*

Environmental Management
AUG 16 2021
Office of Water Resources

PROJECT
**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS**
KINGSTON, RHODE ISLAND

TODD A. RAVENHUE
REGISTERED PROFESSIONAL ENGINEER
No. 15228

CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
SECTIONS - 2

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: JUNE 2021

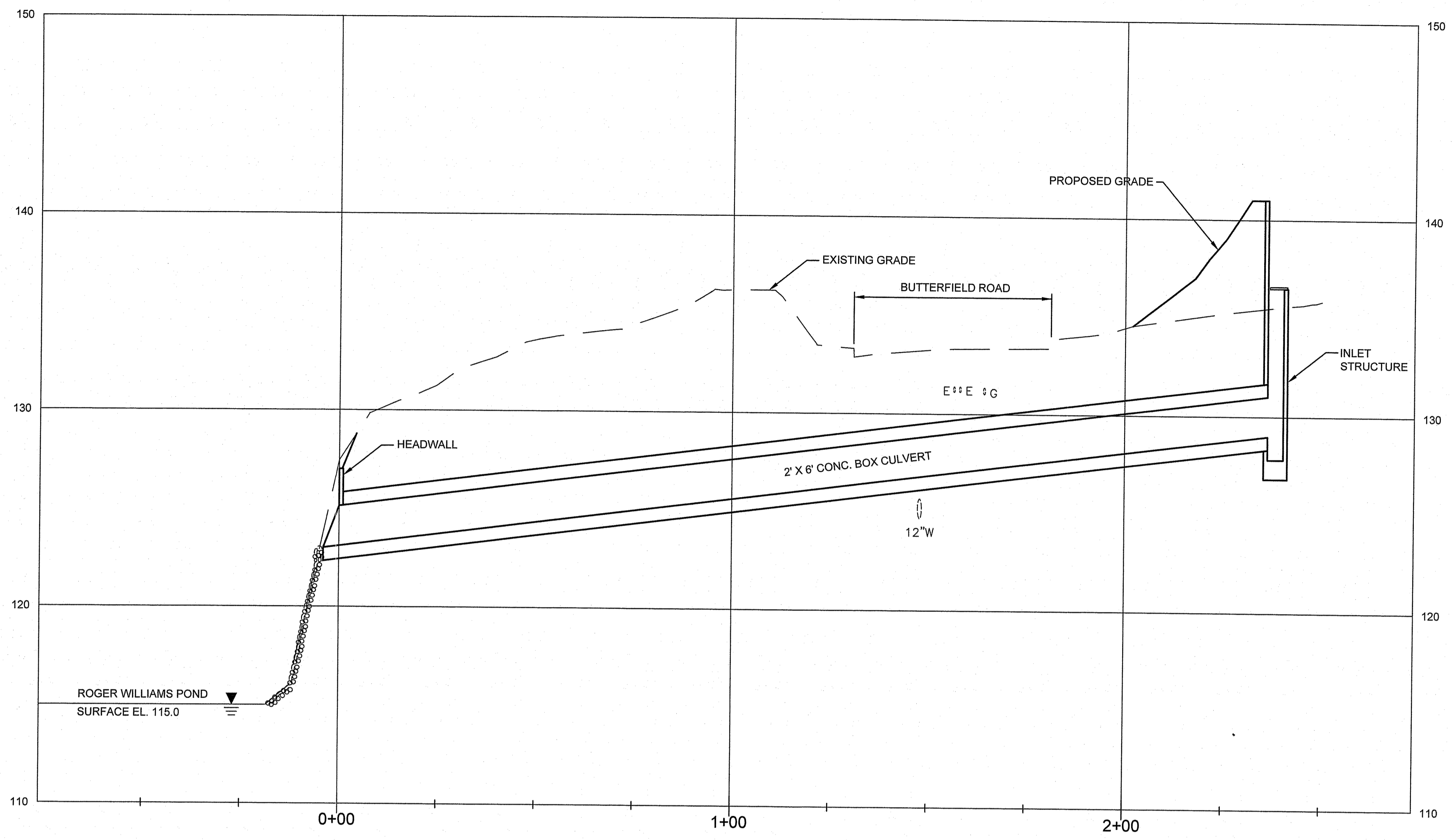
SCALE: AS SHOWN

DRAWN BY: JLH

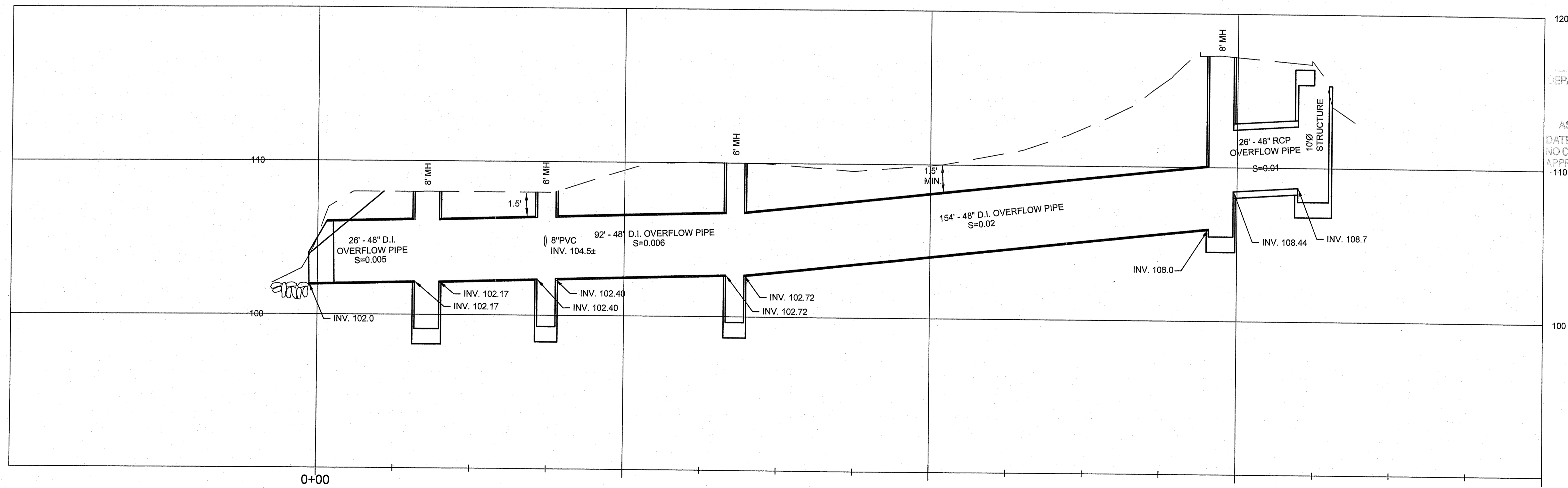
CHECKED BY: TAR

DRAWING NUMBER
10

SHEET 10 OF 16



2'x6' BOX CULVERT PROFILE
STA. 0+00 TO STA. 2+41.85

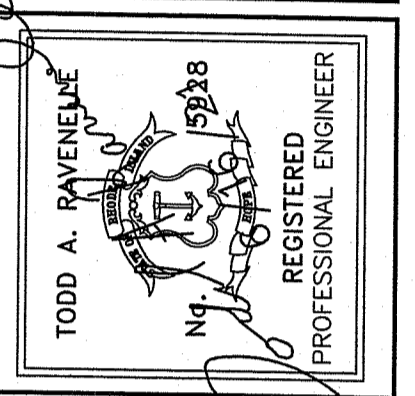


48-INCH BYPASS PIPE PROFILE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED **08-17-2021** FILE # **21-0504**
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Matthew D. Wenzel

Environmental Management
AUG 16 2021
Office of Water Resources

PROJECT
**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND**



CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
PROFILES 2

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: HOR. - 1" = 20'
VERT. - 1" = 4'

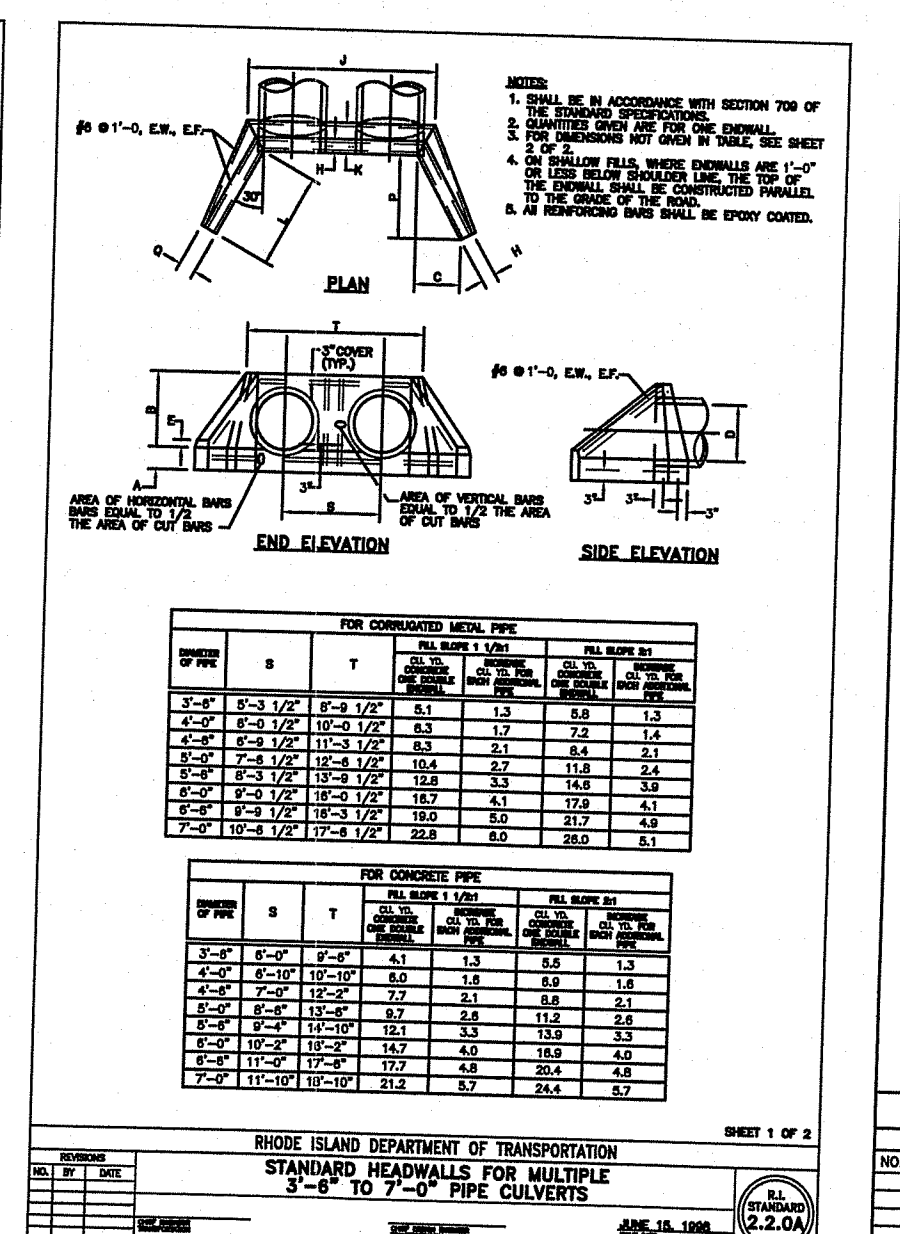
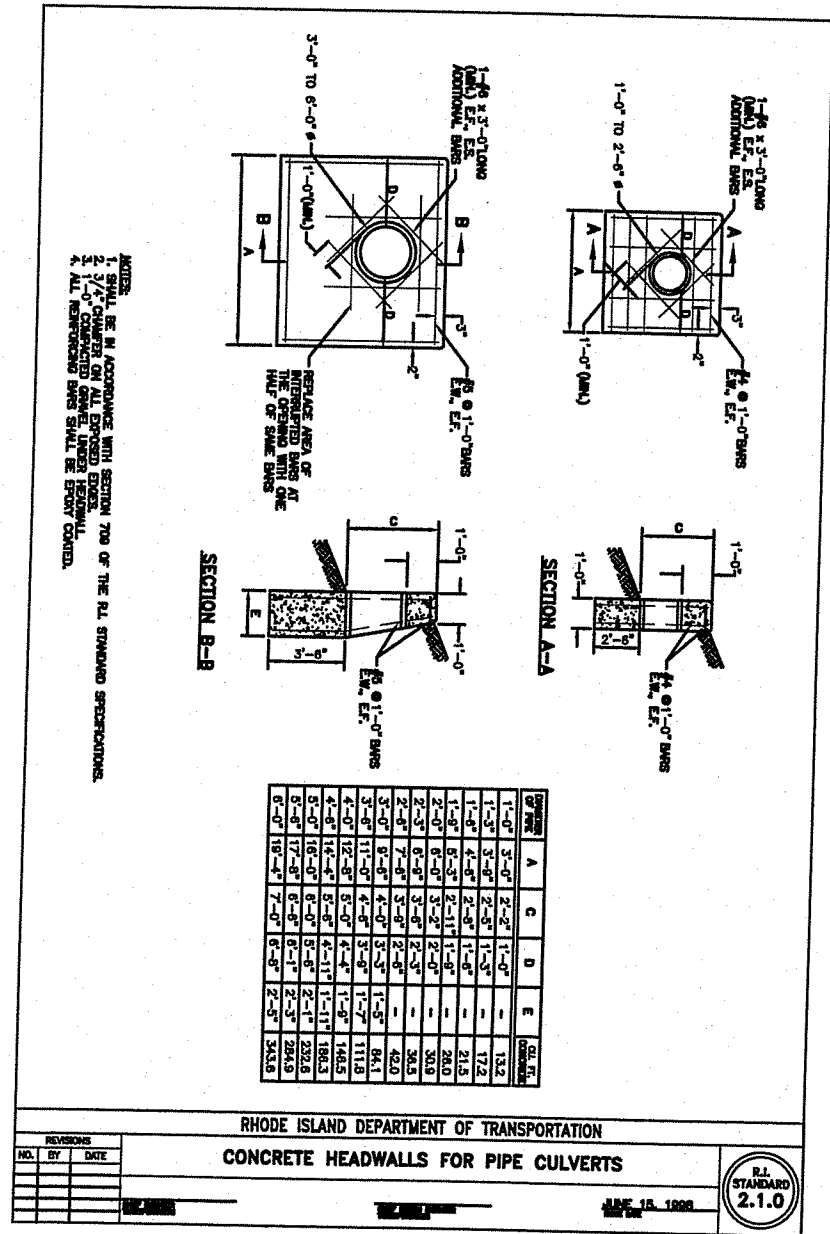
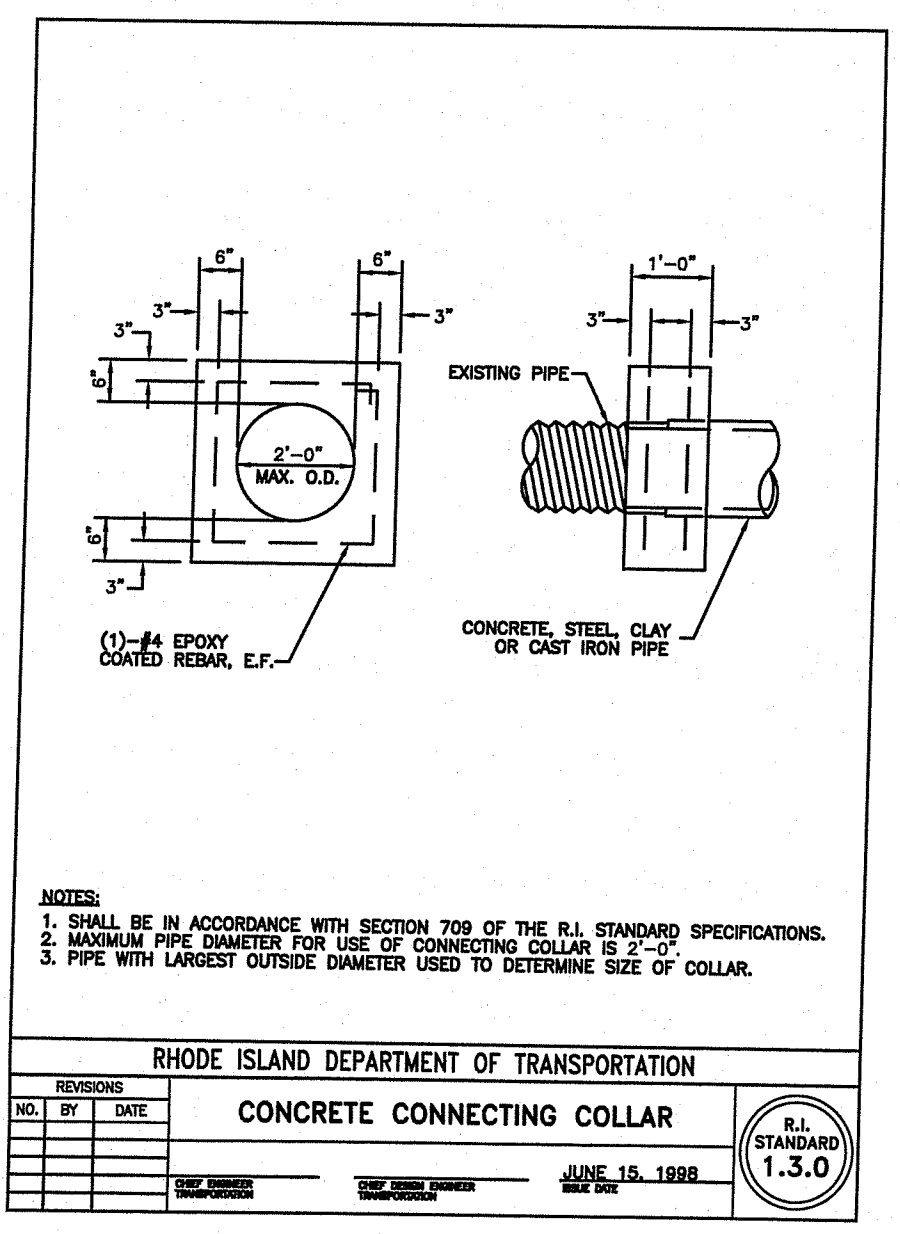
DRAWN BY: JLH

CHECKED BY: TAR

DRAWING NUMBER

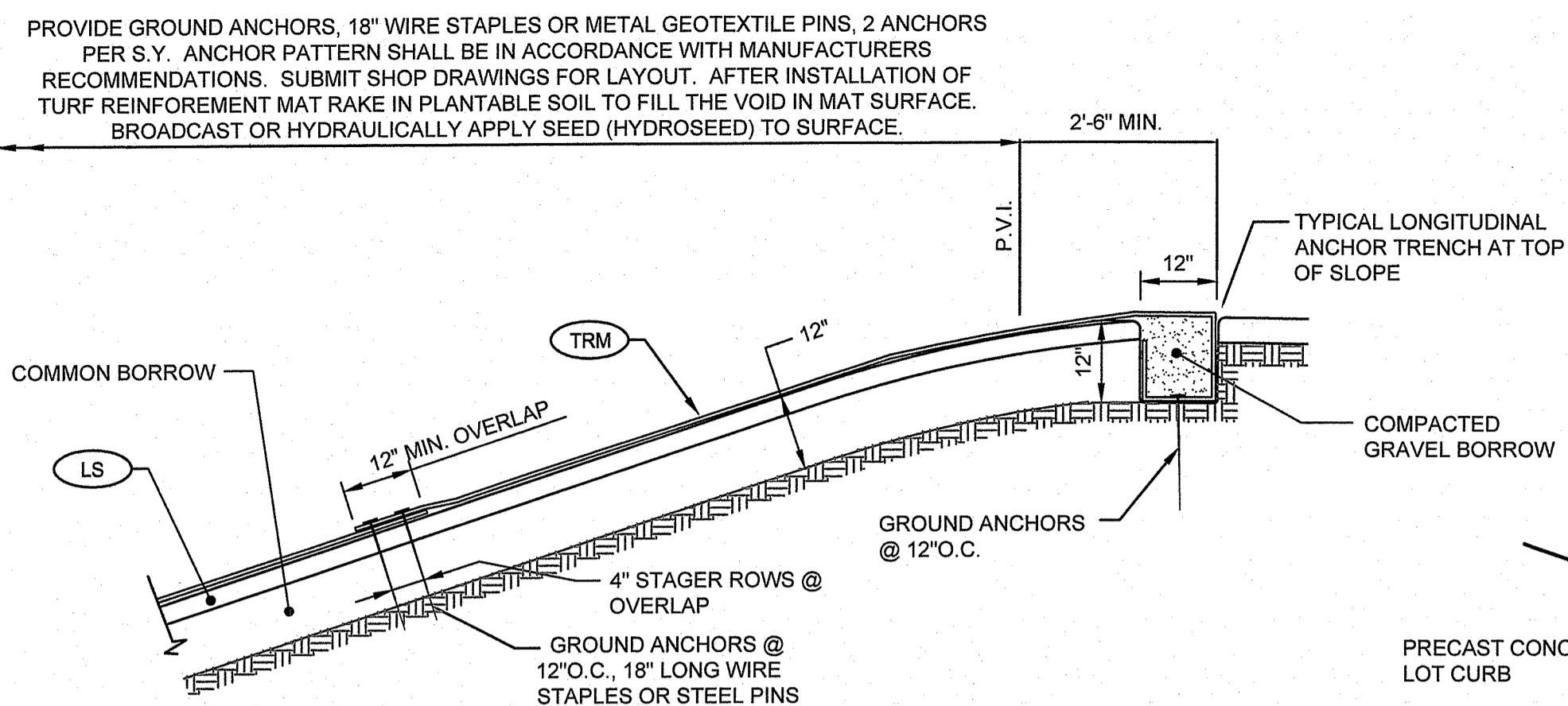
12

SHEET 12 OF 16

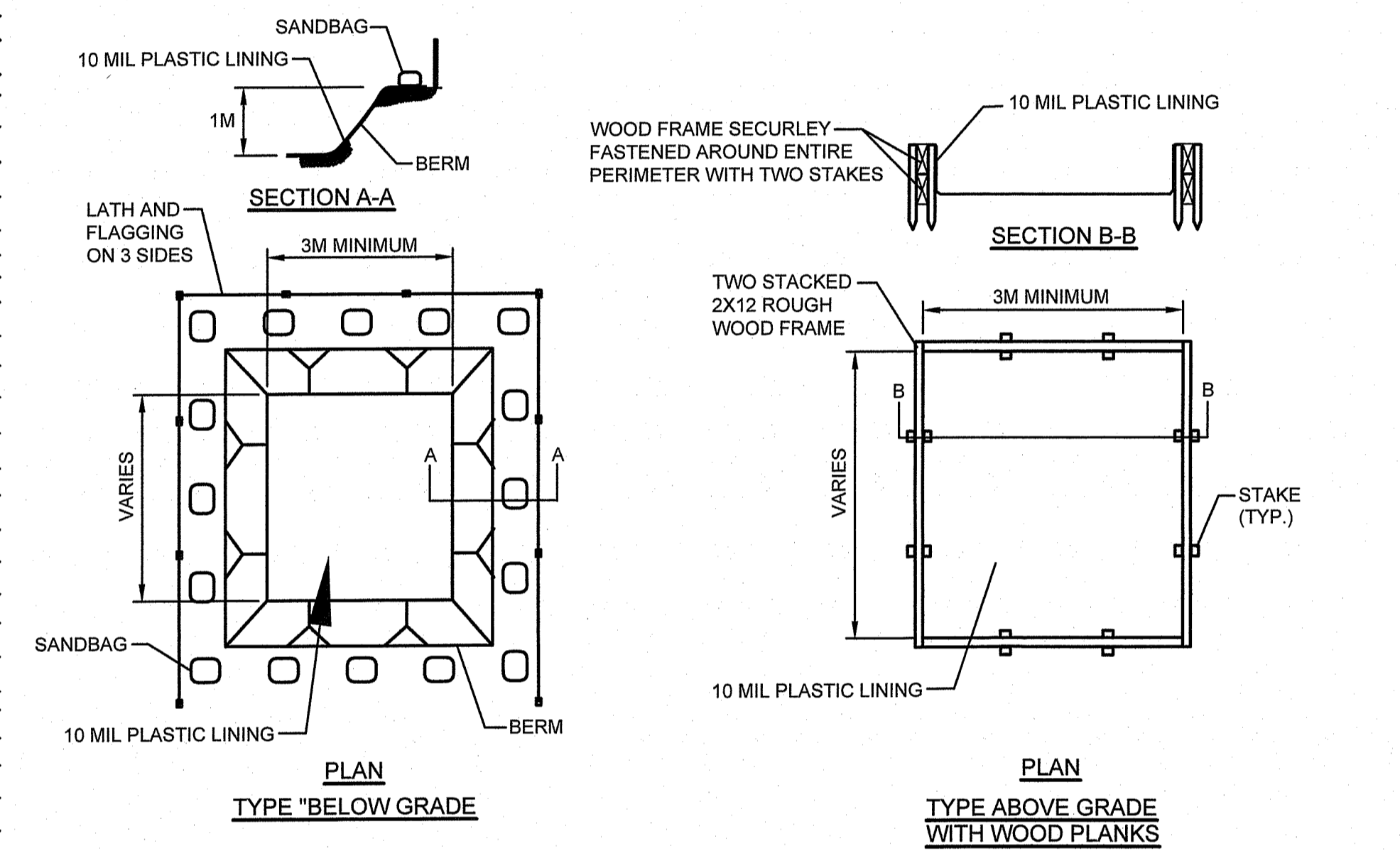


RHODE ISLAND DEPARTMENT OF TRANSPORTATION
TABLE OF DIMENSIONS AND CONCRETE VALUES FOR MANHOLE
 FOR 3'-0" TO 6'-0" CONCRETE PIPE CULVERTS

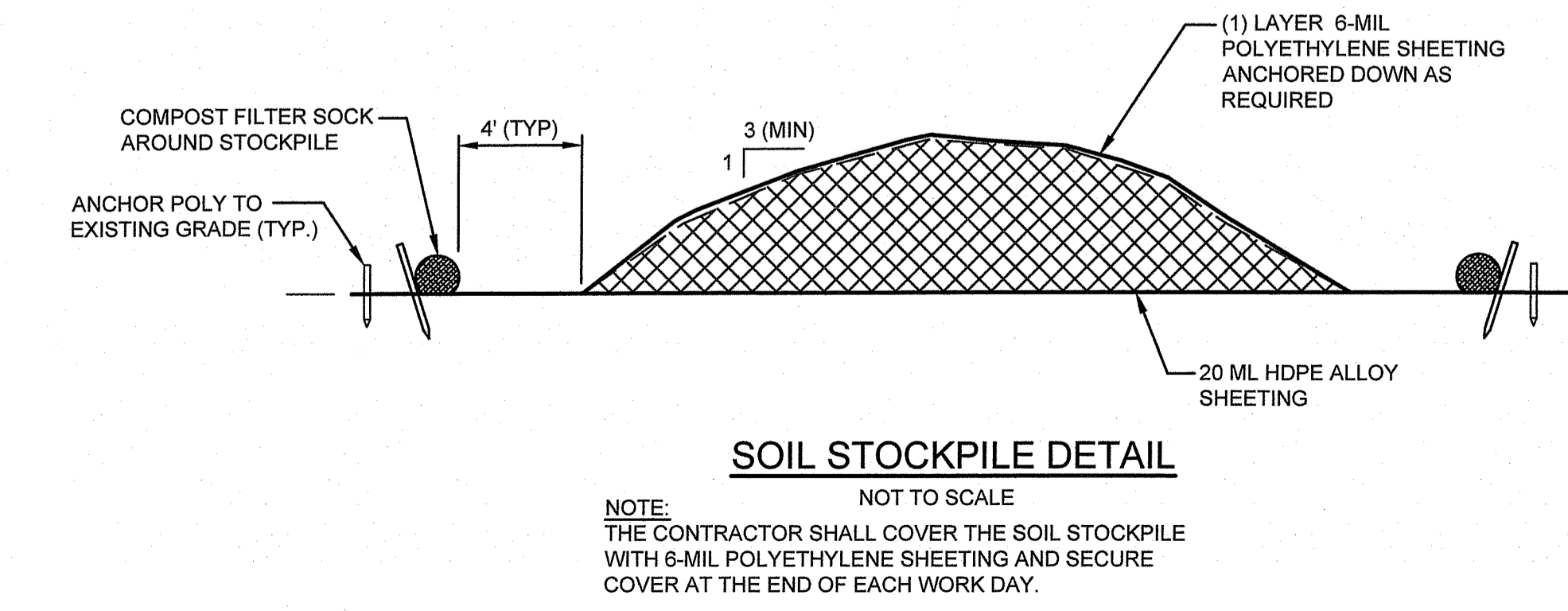
MANHOLE DIA.	MANHOLE HEIGHT	MANHOLE WALL THICKNESS	MANHOLE TOP FLANGE THICKNESS	MANHOLE TOP FLANGE DIAMETER	MANHOLE TOP FLANGE RADIUS	MANHOLE TOP FLANGE STRENGTH	MANHOLE TOP FLANGE WEIGHT
3'-0"	4'-0"	4.0	1.0	3.0	1.5	1000	10.0
3'-6"	4'-6"	4.5	1.0	3.6	1.5	1000	10.5
4'-0"	5'-0"	5.0	1.0	4.0	1.5	1000	11.0
4'-6"	5'-6"	5.5	1.0	4.6	1.5	1000	11.5
5'-0"	6'-0"	6.0	1.0	5.0	1.5	1000	12.0
5'-6"	6'-6"	6.5	1.0	5.6	1.5	1000	12.5
6'-0"	7'-0"	7.0	1.0	6.0	1.5	1000	13.0
6'-6"	7'-6"	7.5	1.0	6.6	1.5	1000	13.5
7'-0"	8'-0"	8.0	1.0	7.0	1.5	1000	14.0
7'-6"	8'-6"	8.5	1.0	7.6	1.5	1000	14.5
8'-0"	9'-0"	9.0	1.0	8.0	1.5	1000	15.0
8'-6"	9'-6"	9.5	1.0	8.6	1.5	1000	15.5
9'-0"	10'-0"	10.0	1.0	9.0	1.5	1000	16.0
9'-6"	10'-6"	10.5	1.0	9.6	1.5	1000	16.5
10'-0"	11'-0"	11.0	1.0	10.0	1.5	1000	17.0
10'-6"	11'-6"	11.5	1.0	10.6	1.5	1000	17.5
11'-0"	12'-0"	12.0	1.0	11.0	1.5	1000	18.0
11'-6"	12'-6"	12.5	1.0	11.6	1.5	1000	18.5
12'-0"	13'-0"	13.0	1.0	12.0	1.5	1000	19.0
12'-6"	13'-6"	13.5	1.0	12.6	1.5	1000	19.5
13'-0"	14'-0"	14.0	1.0	13.0	1.5	1000	20.0
13'-6"	14'-6"	14.5	1.0	13.6	1.5	1000	20.5
14'-0"	15'-0"	15.0	1.0	14.0	1.5	1000	21.0
14'-6"	15'-6"	15.5	1.0	14.6	1.5	1000	21.5
15'-0"	16'-0"	16.0	1.0	15.0	1.5	1000	22.0
15'-6"	16'-6"	16.5	1.0	15.6	1.5	1000	22.5
16'-0"	17'-0"	17.0	1.0	16.0	1.5	1000	23.0
16'-6"	17'-6"	17.5	1.0	16.6	1.5	1000	23.5
17'-0"	18'-0"	18.0	1.0	17.0	1.5	1000	24.0
17'-6"	18'-6"	18.5	1.0	17.6	1.5	1000	24.5
18'-0"	19'-0"	19.0	1.0	18.0	1.5	1000	25.0
18'-6"	19'-6"	19.5	1.0	18.6	1.5	1000	25.5
19'-0"	20'-0"	20.0	1.0	19.0	1.5	1000	26.0
19'-6"	20'-6"	20.5	1.0	19.6	1.5	1000	26.5
20'-0"	21'-0"	21.0	1.0	20.0	1.5	1000	27.0
20'-6"	21'-6"	21.5	1.0	20.6	1.5	1000	27.5
21'-0"	22'-0"	22.0	1.0	21.0	1.5	1000	28.0
21'-6"	22'-6"	22.5	1.0	21.6	1.5	1000	28.5
22'-0"	23'-0"	23.0	1.0	22.0	1.5	1000	29.0
22'-6"	23'-6"	23.5	1.0	22.6	1.5	1000	29.5
23'-0"	24'-0"	24.0	1.0	23.0	1.5	1000	30.0
23'-6"	24'-6"	24.5	1.0	23.6	1.5	1000	30.5
24'-0"	25'-0"	25.0	1.0	24.0	1.5	1000	31.0
24'-6"	25'-6"	25.5	1.0	24.6	1.5	1000	31.5
25'-0"	26'-0"	26.0	1.0	25.0	1.5	1000	32.0
25'-6"	26'-6"	26.5	1.0	25.6	1.5	1000	32.5
26'-0"	27'-0"	27.0	1.0	26.0	1.5	1000	33.0
26'-6"	27'-6"	27.5	1.0	26.6	1.5	1000	33.5
27'-0"	28'-0"	28.0	1.0	27.0	1.5	1000	34.0
27'-6"	28'-6"	28.5	1.0	27.6	1.5	1000	34.5
28'-0"	29'-0"	29.0	1.0	28.0	1.5	1000	35.0
28'-6"	29'-6"	29.5	1.0	28.6	1.5	1000	35.5
29'-0"	30'-0"	30.0	1.0	29.0	1.5	1000	36.0
29'-6"	30'-6"	30.5	1.0	29.6	1.5	1000	36.5
30'-0"	31'-0"	31.0	1.0	30.0	1.5	1000	37.0
30'-6"	31'-6"	31.5	1.0	30.6	1.5	1000	37.5
31'-0"	32'-0"	32.0	1.0	31.0	1.5	1000	38.0
31'-6"	32'-6"	32.5	1.0	31.6	1.5	1000	38.5
32'-0"	33'-0"	33.0	1.0	32.0	1.5	1000	39.0
32'-6"	33'-6"	33.5	1.0	32.6	1.5	1000	39.5
33'-0"	34'-0"	34.0	1.0	33.0	1.5	1000	40.0
33'-6"	34'-6"	34.5	1.0	33.6	1.5	1000	40.5
34'-0"	35'-0"	35.0	1.0	34.0	1.5	1000	41.0
34'-6"	35'-6"	35.5	1.0	34.6	1.5	1000	41.5
35'-0"	36'-0"	36.0	1.0	35.0	1.5	1000	42.0
35'-6"	36'-6"	36.5	1.0	35.6	1.5	1000	42.5
36'-0"	37'-0"	37.0	1.0	36.0	1.5	1000	43.0
36'-6"	37'-6"	37.5	1.0	36.6	1.5	1000	43.5
37'-0"	38'-0"	38.0	1.0	37.0	1.5	1000	44.0
37'-6"	38'-6"	38.5	1.0	37.6	1.5	1000	44.5
38'-0"	39'-0"	39.0	1.0	38.0	1.5	1000	45.0
38'-6"	39'-6"	39.5	1.0	38.6	1.5	1000	45.5
39'-0"	40'-0"	40.0	1.0	39.0	1.5	1000	46.0
39'-6"	40'-6"	40.5	1.0	39.6	1.5	1000	46.5
40'-0"	41'-0"	41.0	1.0	40.0	1.5	1000	47.0
40'-6"	41'-6"	41.5	1.0	40.6	1.5	1000	47.5
41'-0"	42'-0"	42.0	1.0	41.0	1.5	1000	48.0
41'-6"	42'-6"	42.5	1.0	41.6	1.5	1000	48.5
42'-0"	43'-0"	43.0	1.0	42.0	1.5	1000	49.0
42'-6"	43'-6"	43.5	1.0	42.6	1.5	1000	49.5
43'-0"	44'-0"	44.0	1.0	43.0	1.5	1000	50.0
43'-6"	44'-6"	44.5	1.0	43.6	1.5	1000	50.5
44'-0"	45'-0"	45.0	1.0	44.0	1.5	1000	51.0
44'-6"	45'-6"	45.5	1.0	44.6	1.5	1000	51.5
45'-0"	46'-0"	46.0	1.0	45.0	1.5	1000	52.0
45'-6"	46'-6"	46.5	1.0	45.6	1.5	1000	52.5
46'-0"	47'-0"	47.0	1.0	46.0	1.5	1000	53.0
46'-6"	47'-6"	47.5	1.0	46.6	1.5	1000	53.5
47'-0"	48'-0"	48.0	1.0	47.0	1.5	1000	54.0
47'-6"	48'-6"	48.5	1.0	47.6	1.5	1000	54.5
48'-0"	49'-0"	49.0	1.0	48.0	1.5	1000	55.0
48'-6"	49'-6"	49.5	1.0	48.6	1.5	1000	55.5
49'-0"	50'-0"	50.0	1.0	49.0	1.5	1000	56.0
49'-6"	50'-6"	50.5	1.0	49.6	1.5	1000	56.5
50'-0"	51'-0"	51.0	1.0	50.0	1.5	1000	57.0
50'-6"	51'-6"	51.5	1.0	50.6	1.5	1000	57.5
51'-0"	52'-0"	52.0	1.0	51.0	1.5	1000	58.0
51'-6"	52'-6"	52.5	1.0	51.6	1.5	1000	58.5
52'-0"	53'-0"	53.0	1.0	52.0	1.5	1000	59.0
52'-6"	53'-6"	53.5	1.0	52.6	1.5	1000	59.5
53'-0"	54'-0"	54.0	1.0	53.0	1.5	1000	60.0
53'-6"	54'-6"	54.5	1.0	53.6	1.5	1000	60.5
54'-0"	55'-0"	55.0	1.0	54.0	1.5	1000	61.0
54'-6"	55'-6"	55.5	1.0	54.6	1.5	1000	61.5
55'-0"	56'-0"	56.0	1.0	55.0	1.5	1000	62.0
55'-6"	56'-6"	56.5	1.0	55.6	1.5	1000	62.5
56'-0"	57'-0"	57.0	1.0	56.0	1.5	1000	63.0
56'-6"	57'-6"	57.5	1.0	56.6	1.5	1000	63.5
57'-0"	58'-0"	58.0	1.0	57.0	1.5	1000	64.0
57'-6"	58'-6"	58.5	1.0	57.6	1.5	1000	64.5
58'-0"	59'-0"	59.0	1.0	58.0	1.5	1000	65.0
58'-6"	59'-6"	59.5	1.0	58.6	1.5	1000	65.5
59'-0"	60'-0"	60.0	1.0	59.0	1.5	1000	66.0
59'-6"	60'-6"	60.5	1.0	59.6	1.5	1000	66.5
60'-0"	61'-0"	61.0	1.0	60.0	1.5	1000	67.0
60'-6"	61'-6"	61.5	1.0	60.6	1.5	1000	67.5
61'-0"	62'-0"	62.0	1.0	61.0	1.5	1000	68.0
61'-6"	62'-6"	62.5	1.0	61.6	1.5	1000	68.5
62'-0"	63'-0"	63.0	1.0	62.0	1.5	1000	69.0
62'-6"	63'-6"	63.5	1.0	62.6	1.5	1000	69.5
63'-0"	64'-0"	64.0	1.0	63.0	1.5	1000	70.0
63'-6"	64'-6"	64.5	1.0	63.6	1.5	1000	70.5
64'-0"	65'-0"	65.0	1.0	64.0	1.5	1000	71.0
64'-6"	65'-6"	65.5	1.0	64.6	1.5	1000	71.5
65'-0"	66'-0"	66.0	1.0	65.0	1.5	1000	72.0
65'-6"	66'-6"	66.5	1.0	65.6	1.5	1000	72.5
66'-0"	67'-0"	67.0	1.0	66.0	1.5	1000	73.0
66'-6"	67'-6"	67.5	1.0	66.6	1.5	1000	73.5
67'-0"	68'-0"	68.0	1.0	67.0	1.5	1000	74.0
67'-6"	68'-6"	68.5	1.0	67.6	1.5	1000	74.5
68'-0"	69'-0"	69.0	1.0	68.0	1.5	1000	75.0
68'-6"	69'-6"	69.5	1.0	68.6	1.5	1000	75.5
69'-0"	70'-0"	70.0	1.0	69.0	1.5	1000	76.0
69'-6"	70'-6"	70.5	1.0	69.6	1.5	1000	76.5
70'-0"	71'-0"	71.0	1.0	70.0	1.5	1000	77.0
70'-6"	71'-6"	71.5	1.0	70.6	1.5	1000	77.5
71'-0"	72'-0"	72.0	1.0	71.0	1.5	1000	78.0
71'-6"	72'-6"						



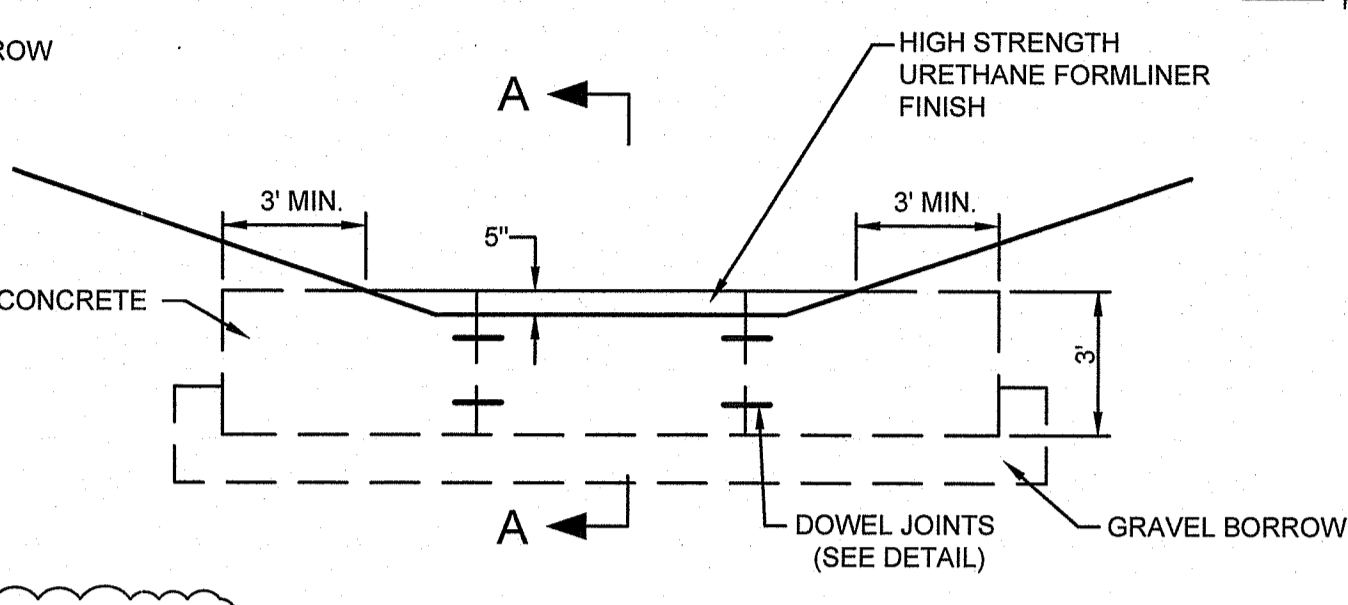
TYPICAL TURF REINFORCEMENT MAT DETAIL (TRM)
NOT TO SCALE



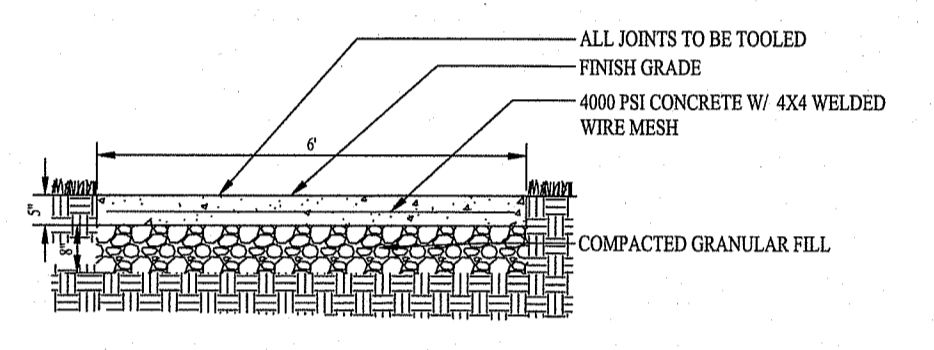
TEMPORARY CONCRETE WASHOUT
NOT TO SCALE



SOIL STOCKPILE DETAIL
NOT TO SCALE



LOW FLOW WEIR DETAIL (LFW)
N.T.S.



6-FOOT WIDE PEDESTRIAN PATH
NOT TO SCALE

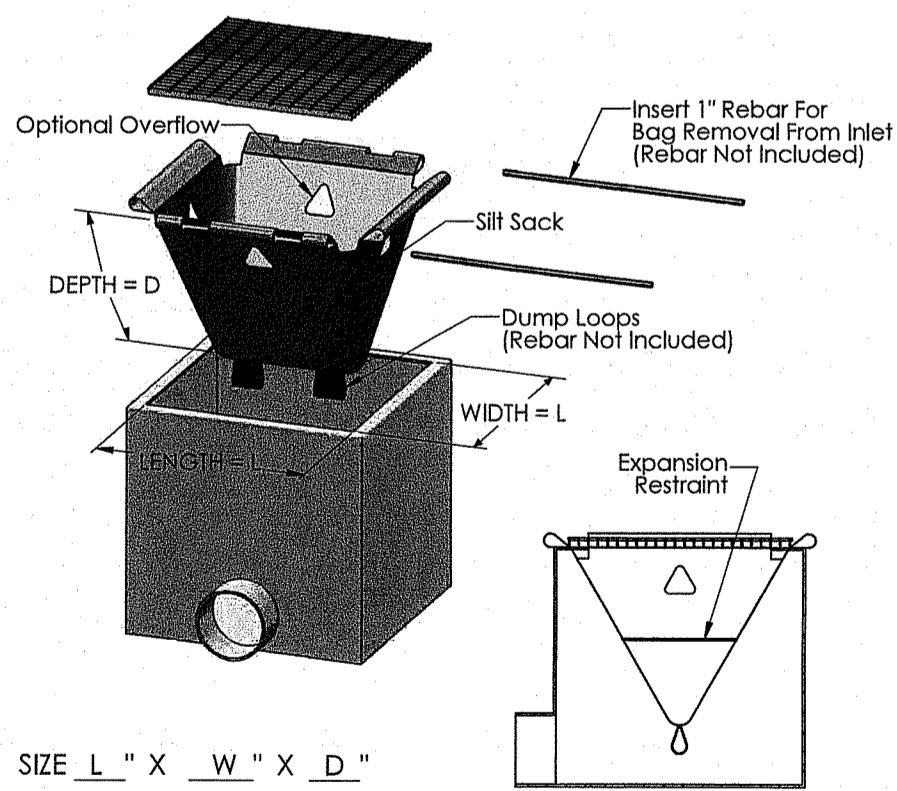
DISTRICT: CAMPUS WIDE

COLOR: GRAY

MAKE: CAST IN PLACE CONCRETE

DESIGN NARRATIVE:

- CONCRETE SHALL HAVE WELDED WIRE MESH REINFORCEMENT
- EXPANSION JOINTS SHALL HAVE DOWELS (SEE EXPANSION JOINT DETAIL)
- ALL SCORE JOINTS SHALL BE TOOLED, BRUSHED, AND TOOLED AGAIN TO CREATE "WINDOW PANE" AESTHETIC
- NO RUNNING BOND SCORE JOINT PATTERN WILL BE ACCEPTED
- ALL CONCRETE PAVEMENT SHALL BE SEALED AT TIME OF INITIAL INSTALLATION
- 6-FOOT WIDE PATHS SHALL BE POURED TO A DEPTH OF 5 INCHES
- ADD SILANE-SILOXANE SEALER TO INCREASE SALT RESISTANCE
- WIRE MESH MUST BE THREE INCHES CLEAR ON ALL FACES OF CONCRETE POUR



EROSION CONTROL SILK SACK
NOT TO SCALE

DISTRICT: CAMPUS WIDE

COLOR: N/A

MAKE: ACF ENVIRONMENTAL OR APPROVED EQUAL

DESIGN NARRATIVE:

- SILT SACKS ARE TO BE USED AS PART OF A MULTI-STEP APPROACH FOR REDUCING SEDIMENTS INTO THE DRAINAGE SYSTEM

EROSION CONTROL COMPOST FILTER SOCK, COIR / LOG / CURLEX
NOT TO SCALE

GUTTER BUDDIES AND ECONOCURB CURB INLET FILTERS
NOT TO SCALE

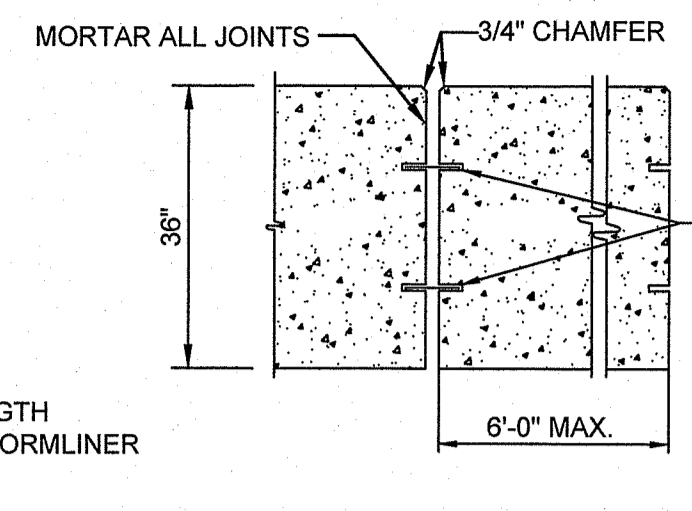
DISTRICT: CAMPUS WIDE

COLOR: N/A

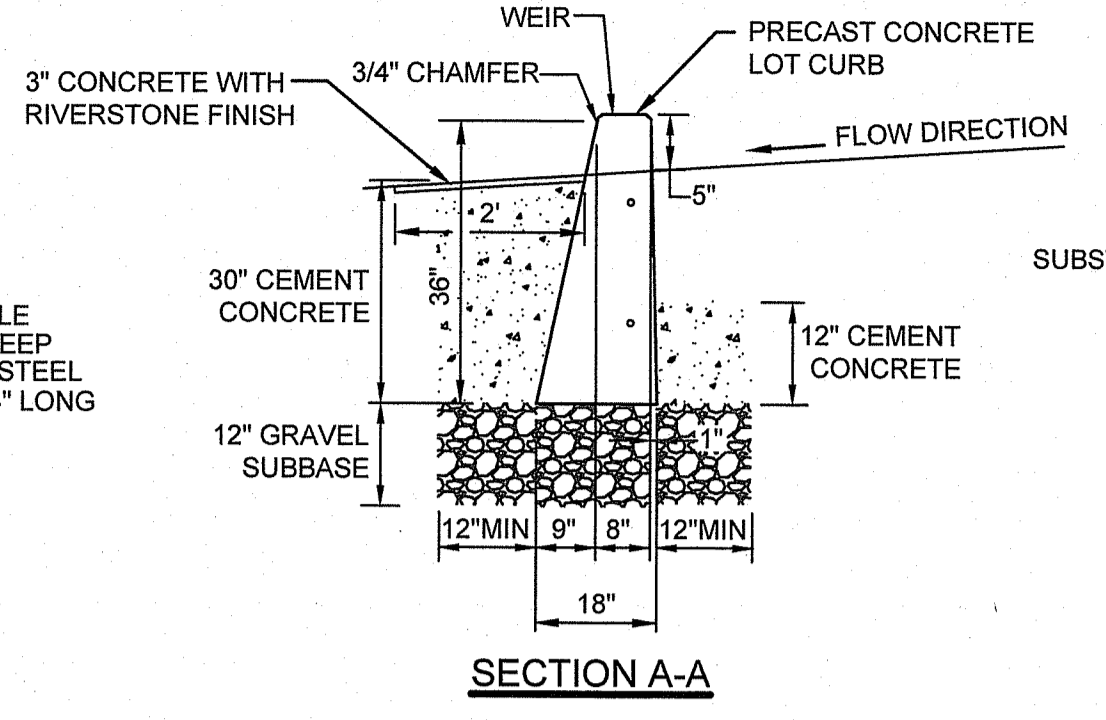
MAKE: GUTTERBUDDY OR APPROVED EQUAL

DESIGN NARRATIVE:

- GUTTERBUDDIES AND ECONO CURB ARE TO BE USED AS A MULTI-STEP APPROACH FOR REDUCING SEDIMENTS INTO THE DRAINAGE SYSTEM DURING CONSTRUCTION



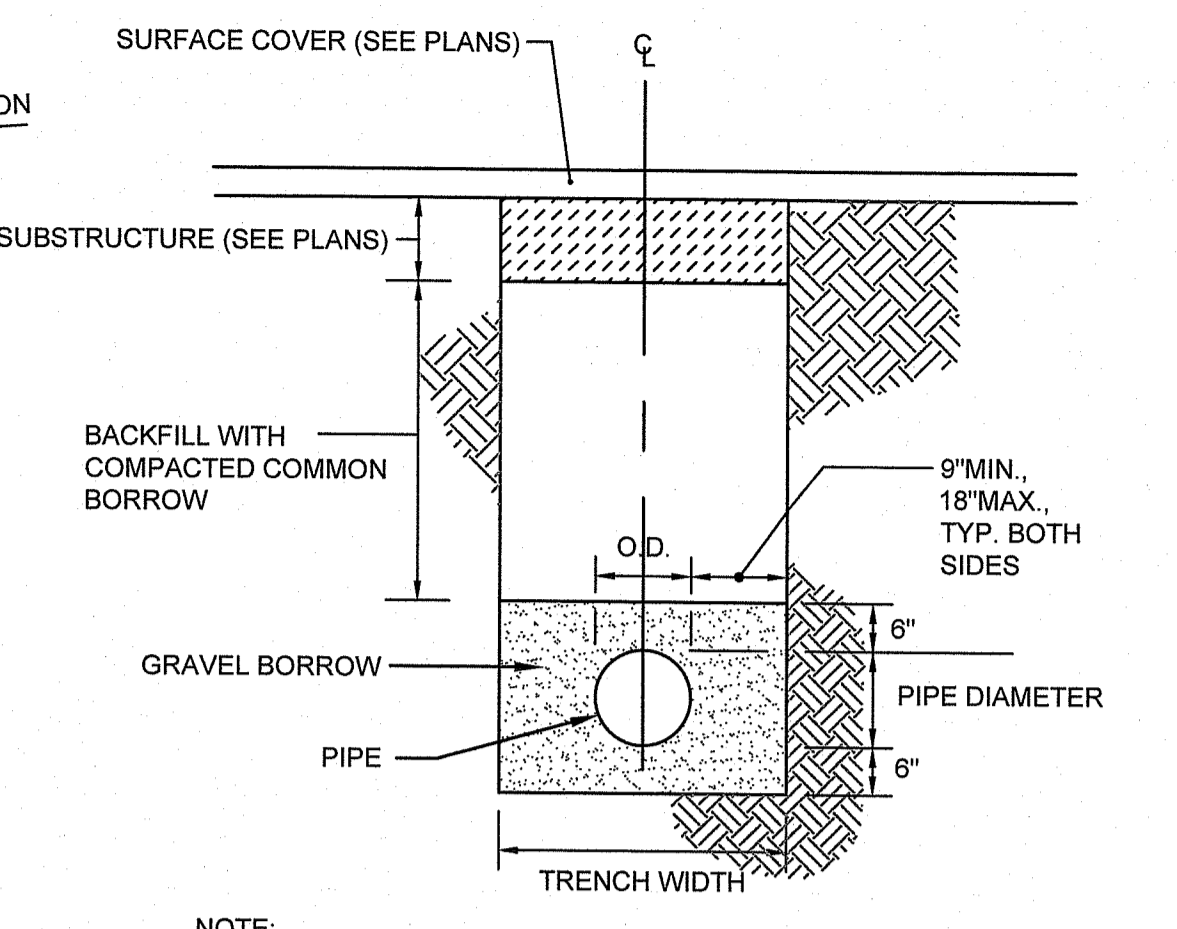
DOWEL DETAIL



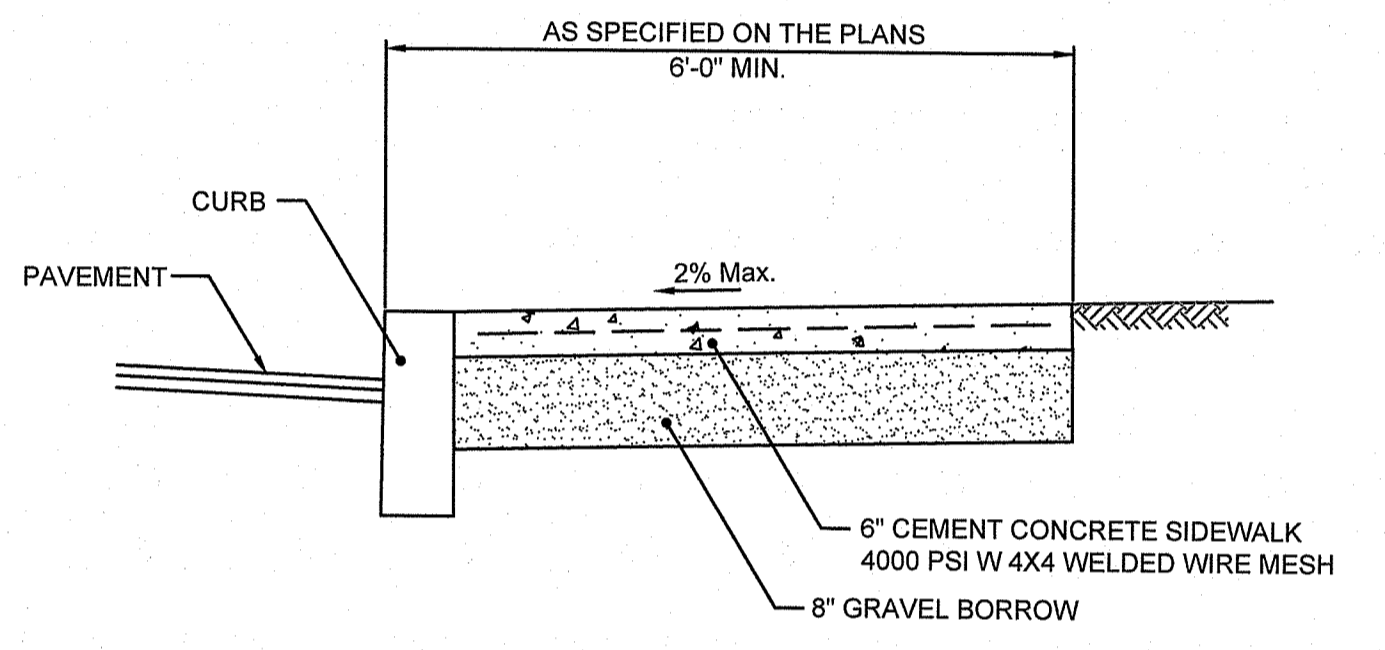
SECTION A-A

PRECAST CONCRETE LOT CURB NOTES:

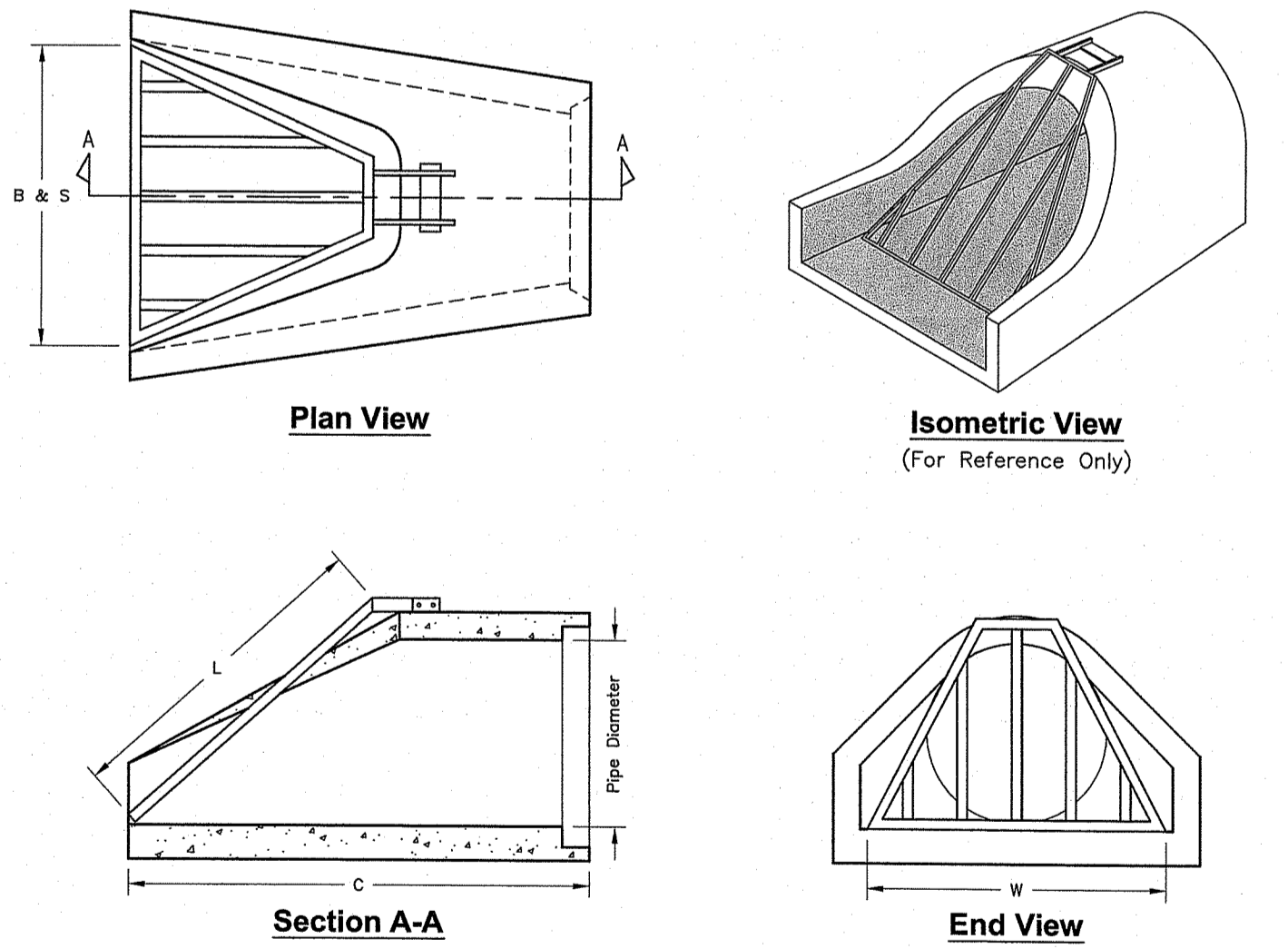
- SHALL BE IN ACCORDANCE WITH SECTION 906 AND SECTION M.09 OF THE RI STANDARD SPECIFICATIONS.
- CONCRETE LOT CURB SHALL BE PRECAST, NOT POURED IN PLACE.
- ALL DOWELS SHALL BE GRADE 60, CONFORMING TO AASHTO M31 (ASTM A615) AND SHALL BE EPOXY COATED IN CONFORMANCE WITH AASHTO M284 (ASTM D3963).
- SURFACES TO HAVE HIGH STRENGTH URETHANE FORMLINER FINIS, APPROVED BY THE UNIVERSITY PRIOR TO ORDER.



TYPICAL STORM PIPE TRENCH DETAIL
NOT TO SCALE



6" CEMENT CONCRETE SIDEWALK (CSW)
N.T.S.

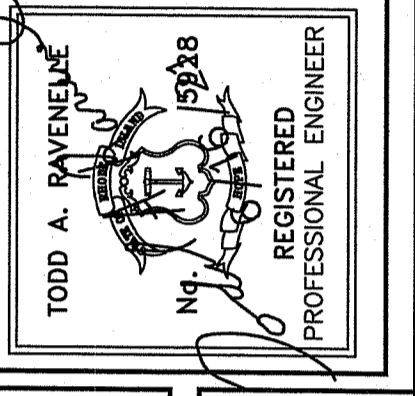


Pipe Diameter	Trash Rack Width W (in.)	Trash Rack Length L (in.)	Total # of Bars B	Bar Spacing S (in.)
12"	21.00"	30.00"	3	6.0"
15"	28.00"	32.00"	3	6.5"
18"	33.00"	34.00"	3	8.0"
24"	40.00"	47.50"	5	8.0"
30"	55.00"	63.00"	5	9.0"
36"	58.00"	71.25"	6	8.0"
42"	64.00"	76.00"	7	8.0"
48"	70.00"	82.75"	9	8.0"
54"	84.00"	84.00"	14	6.0"
60"	94.00"	90.00"	22	6.0"
72"	106.00"	106.00"	22	6.0"

NOTE: OLD CASTLE TRASHGUARD OR APPROVED EQUAL.

FLARED END TRASH GUARD (TRGD)
NOT TO SCALE

PROJECT
BUTTERFIELD ROAD & HOPE COMMONS DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND



CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
DETAILS - 2

NO.	DATE	BY	REVISIONS
1	6/16/21	BN	DETAILS ADDED

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: AS SHOWN

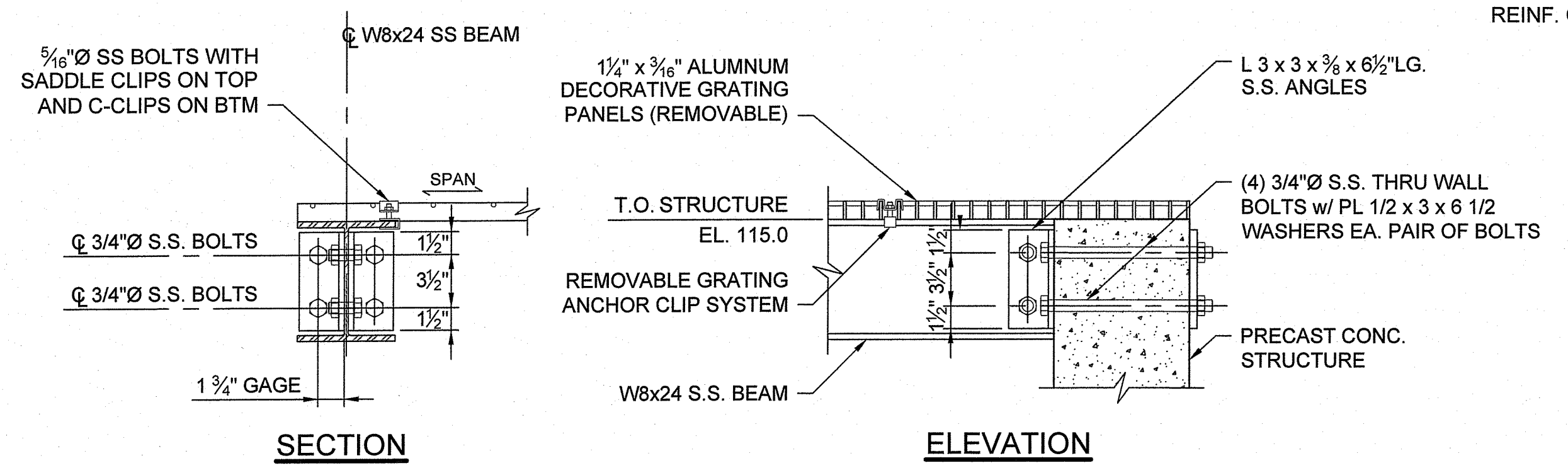
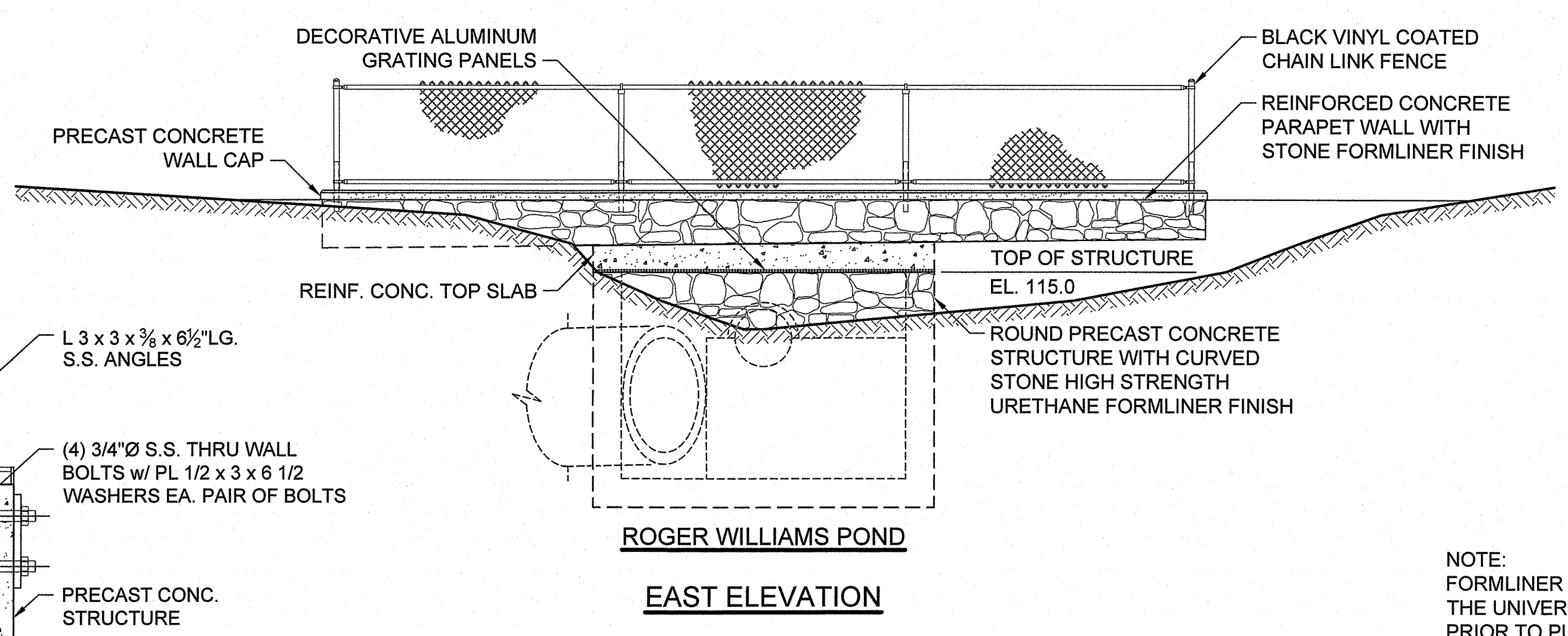
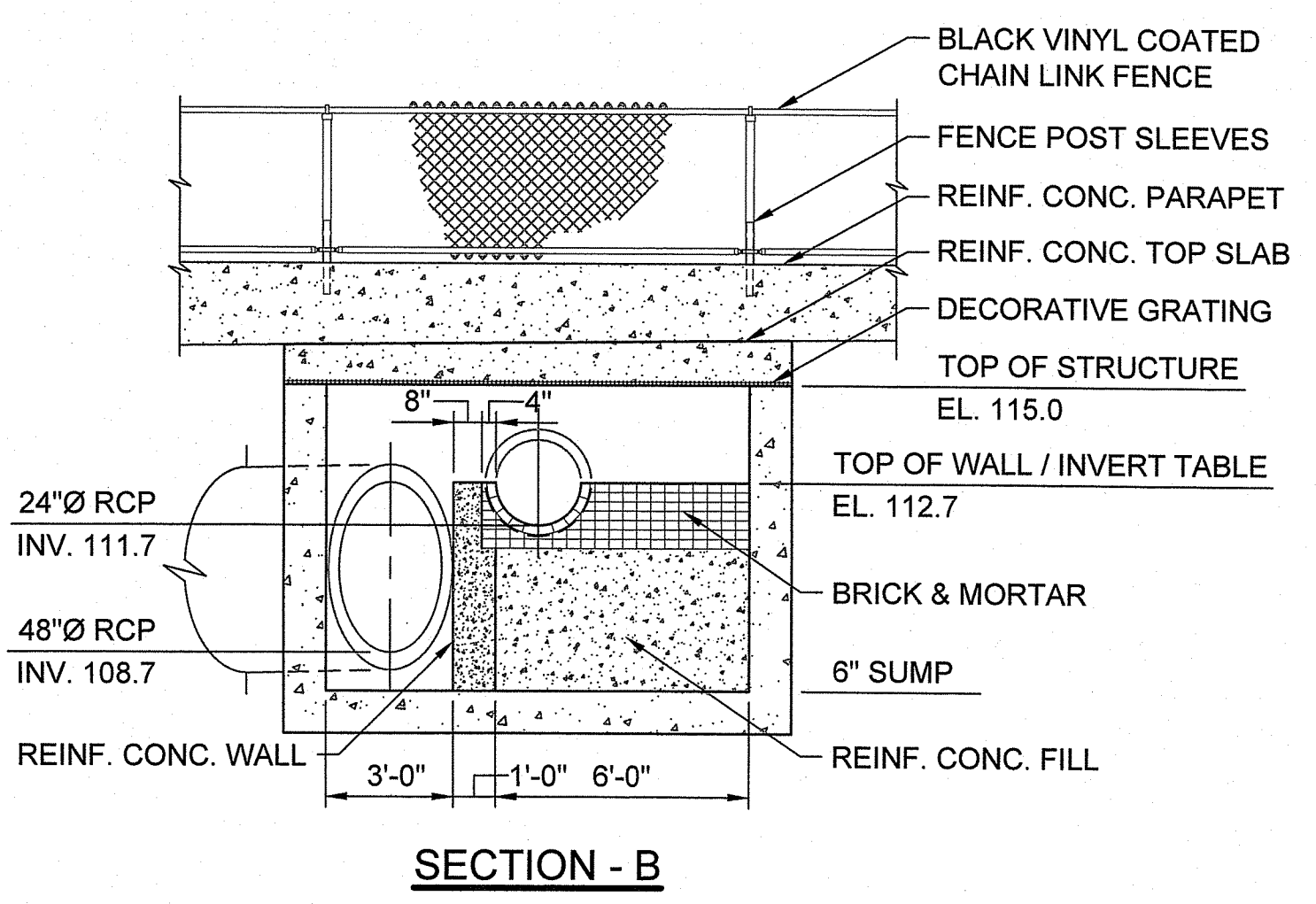
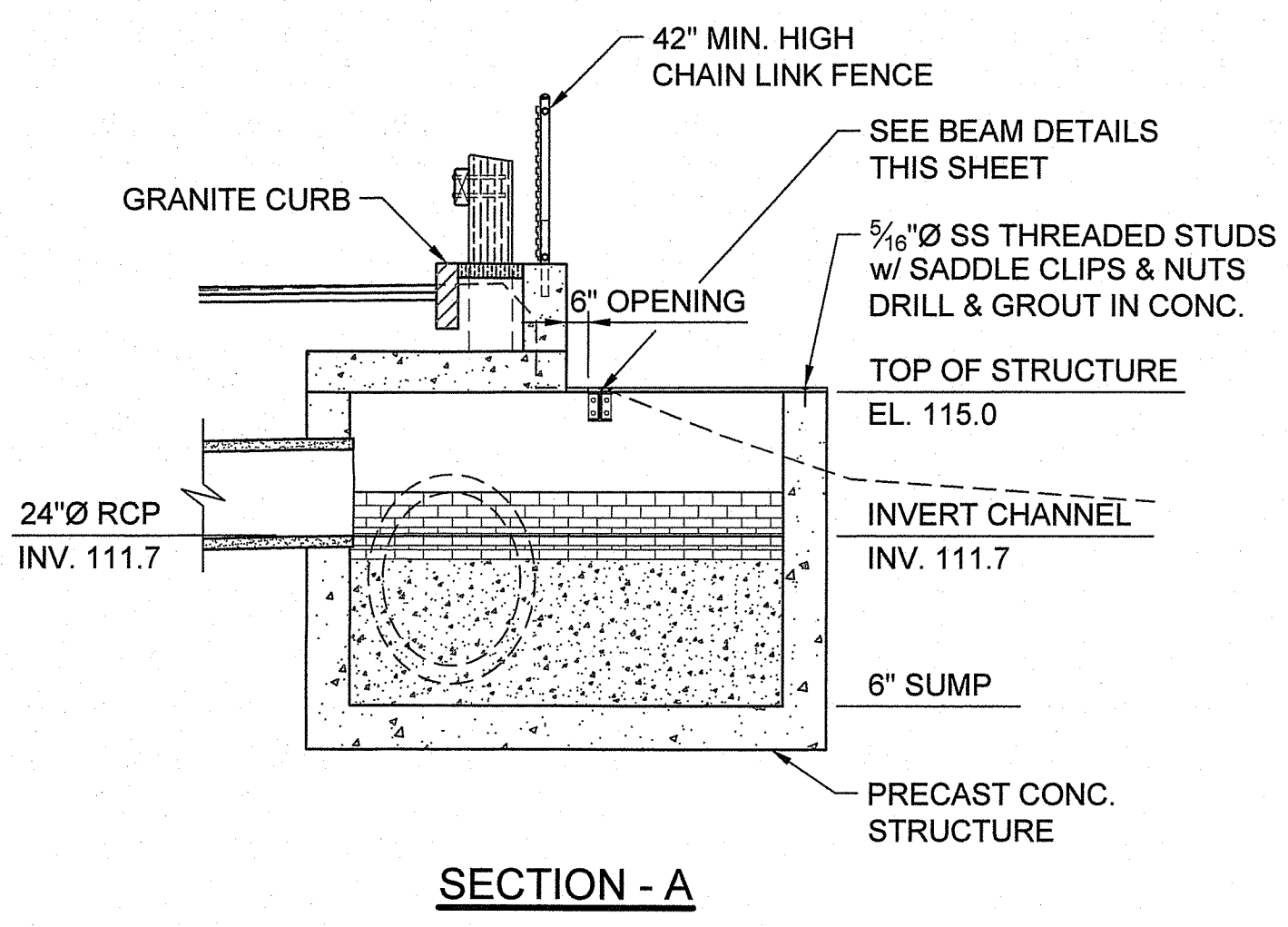
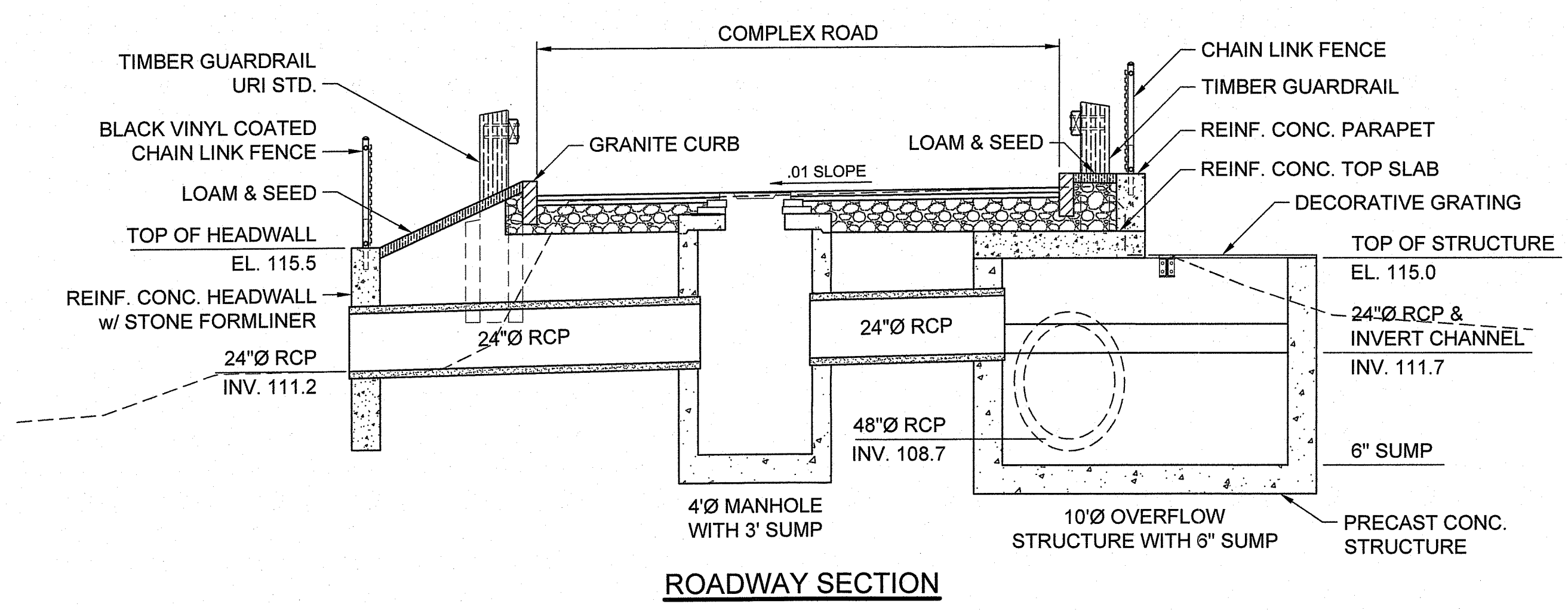
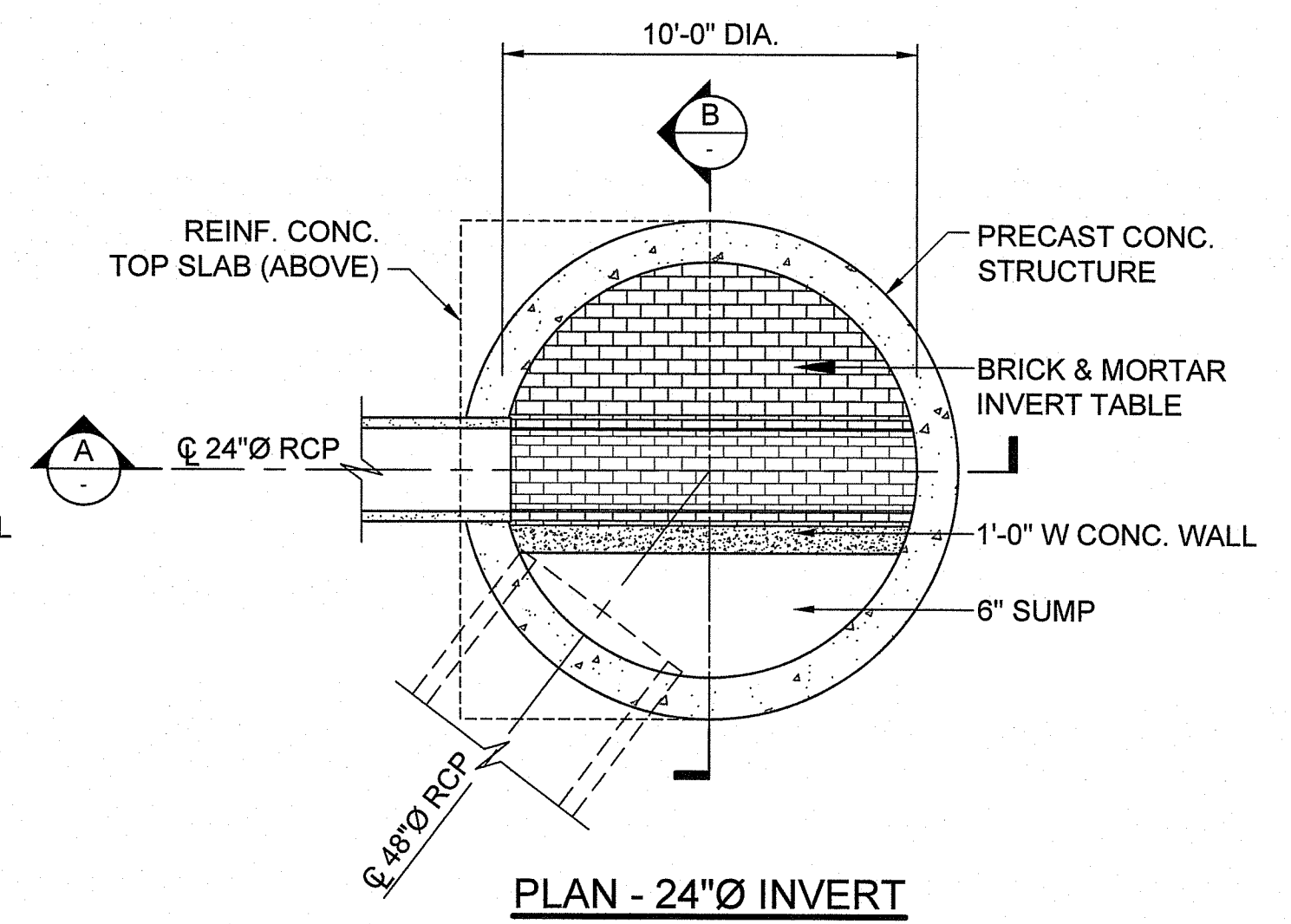
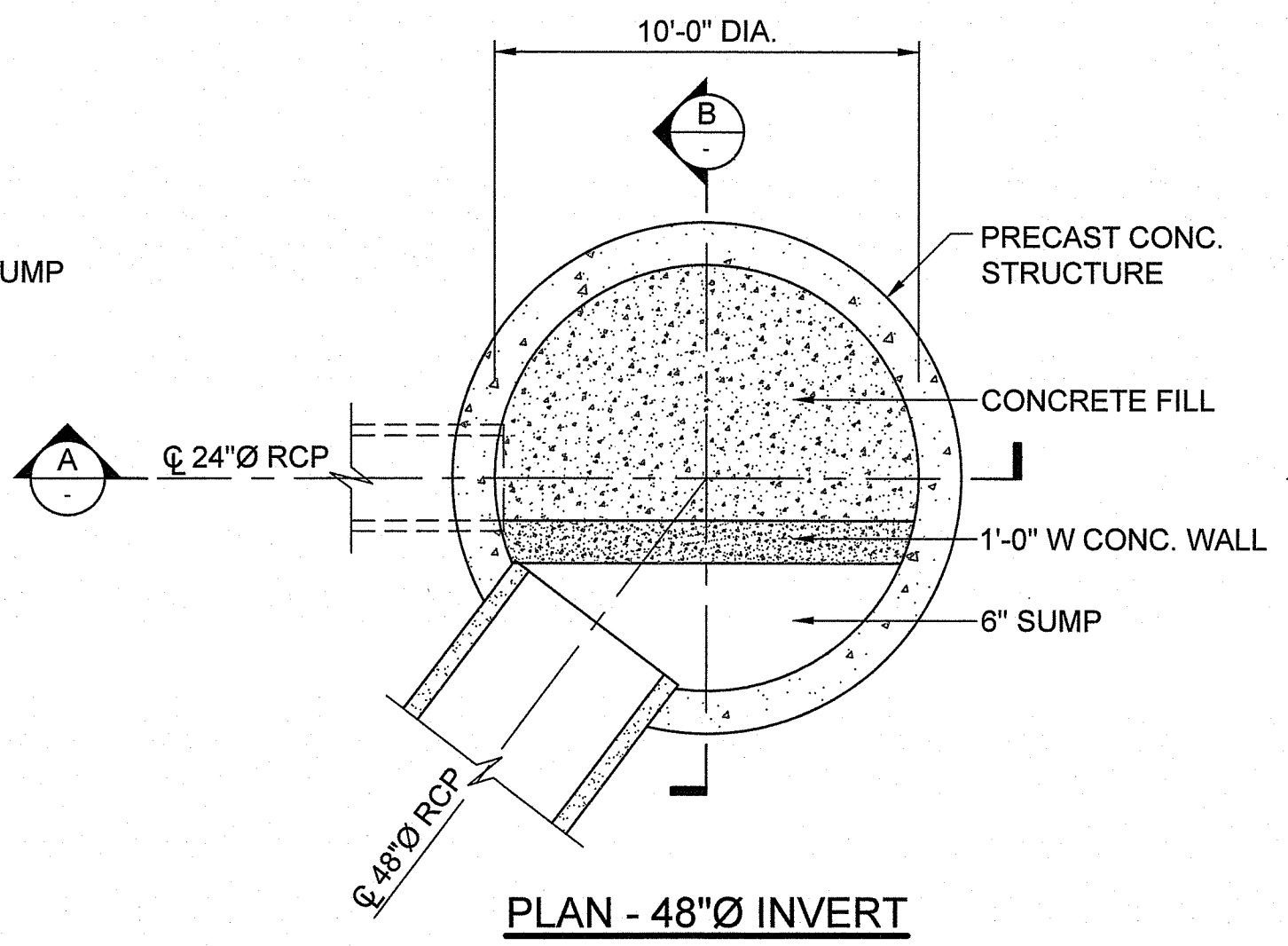
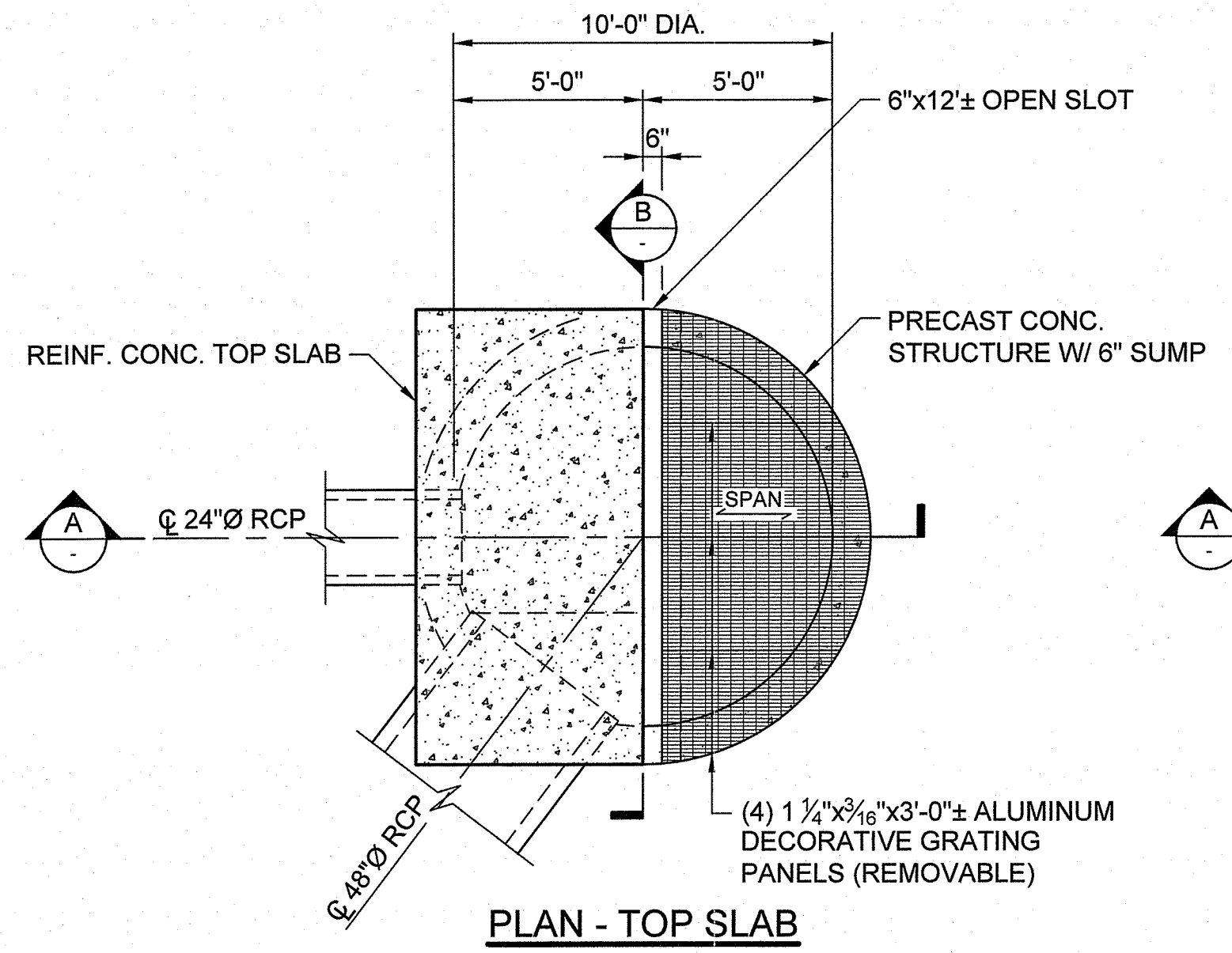
DRAWN BY: JLH

CHECKED BY: TAR

DRAWING NUMBER

14

SHEET 14 OF 16



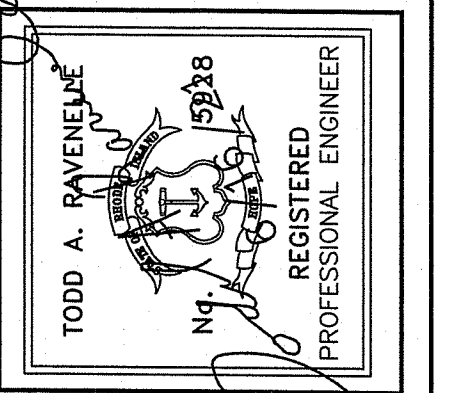
BEAM DETAILS
SCALE: 1/2" = 1'-0"

DISCHARGE STRUCTURE NO. 1
SCALE: 1/4" = 1'-0"

NOTE:
FORMLINER SHALL BE APPROVED BY
THE UNIVERSITY OF RHODE ISLAND
PRIOR TO PURCHASE.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED **DEC 17 2021** FILE # **21-004**
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Jonathan B. Swannell

PROJECT
**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND**



CLIENT
UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
DETAILS - 3

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: AS SHOWN

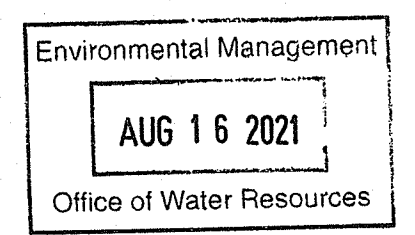
DRAWN BY: JLH

CHECKED BY: TAR

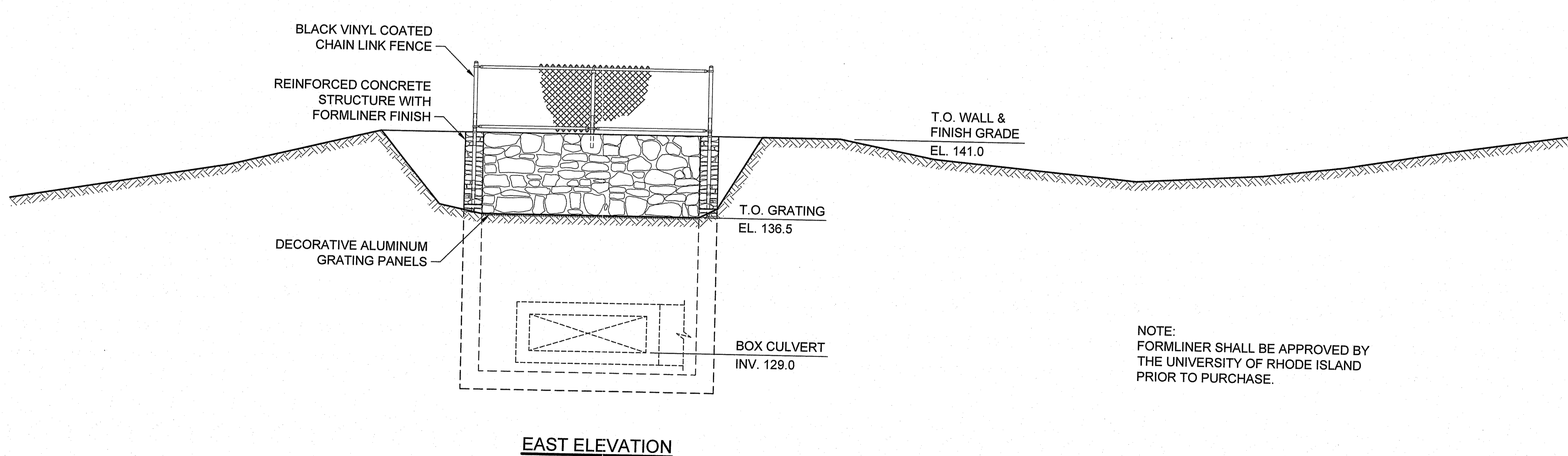
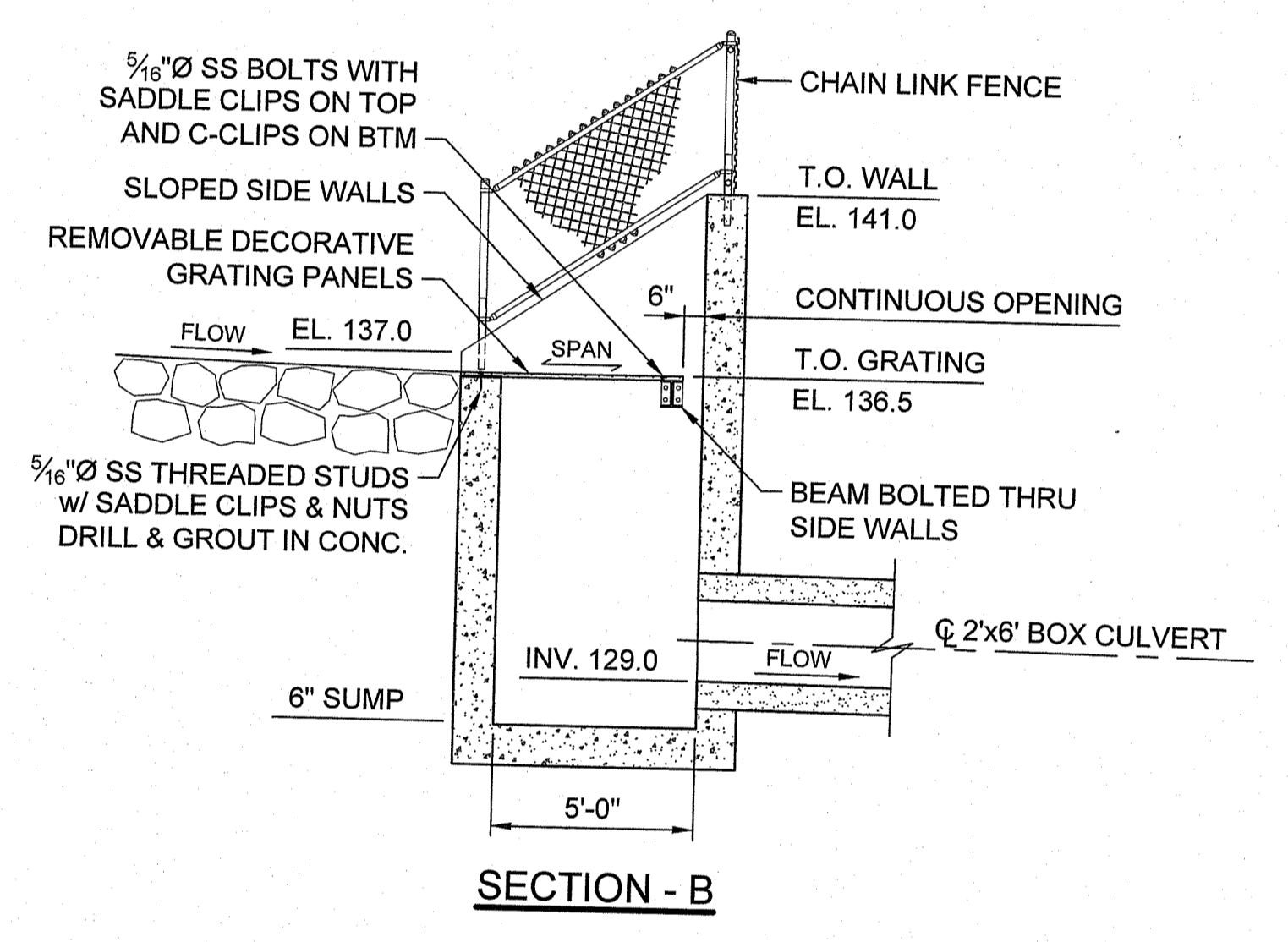
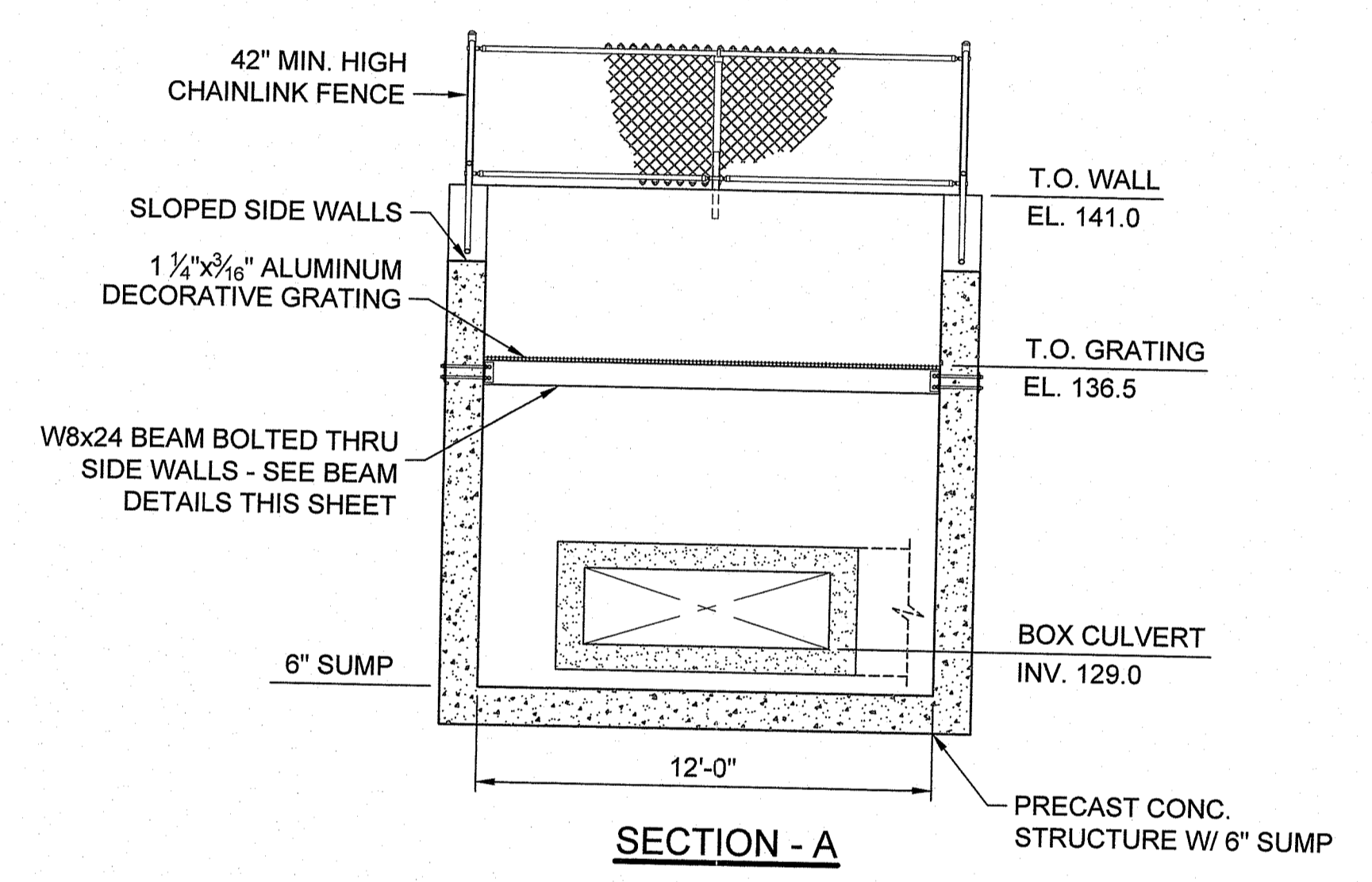
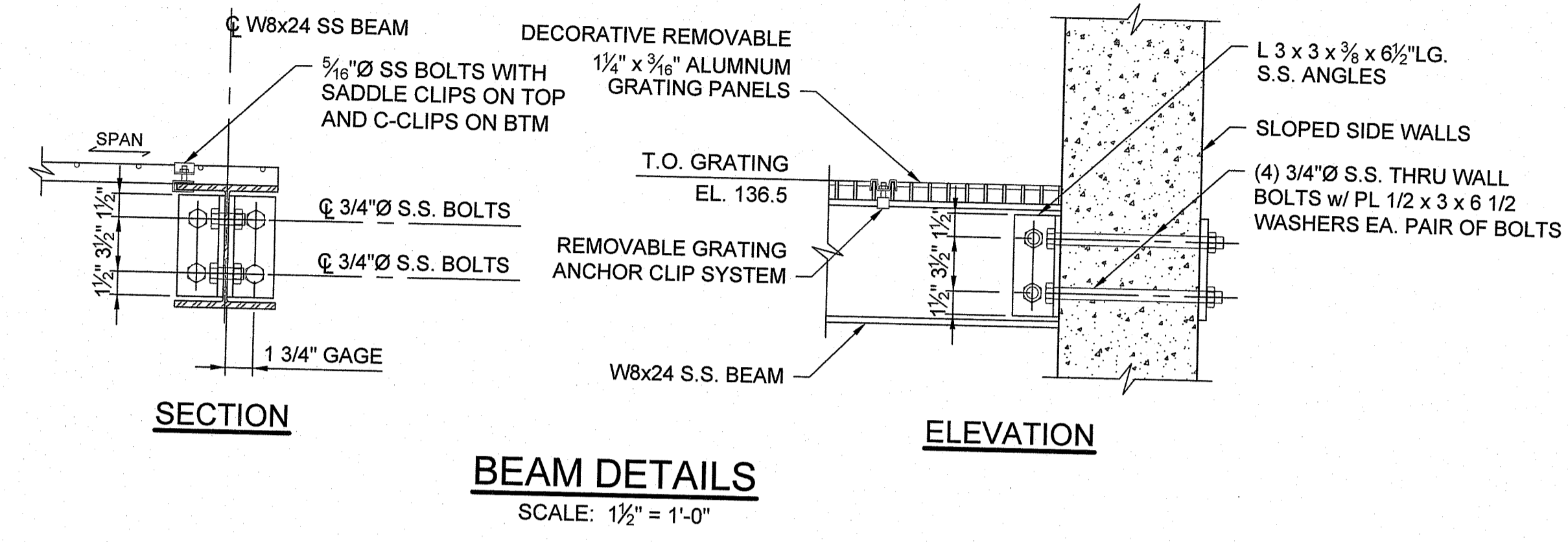
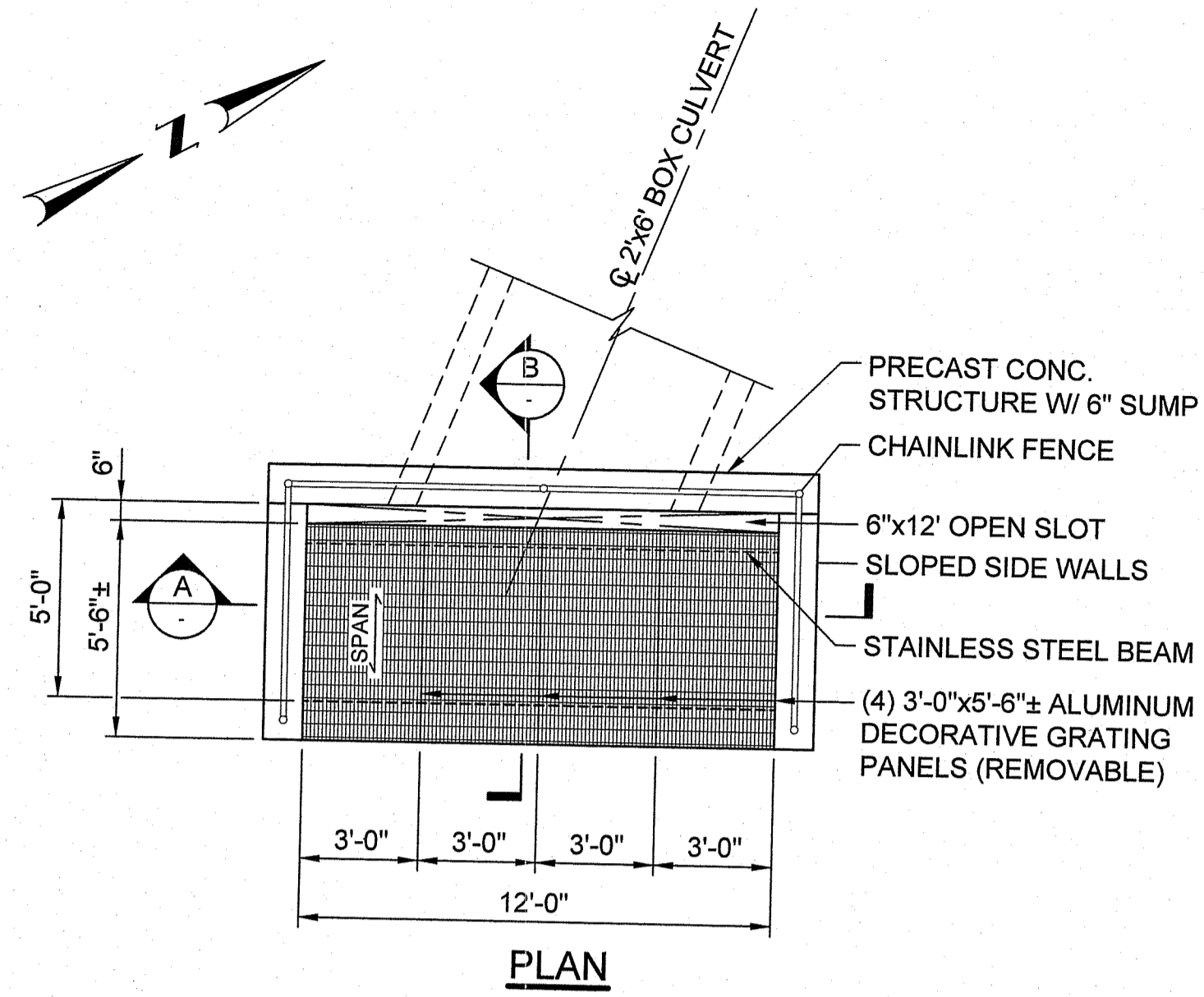
DRAWING NUMBER

15

SHEET 15 OF 16



FILED: 08/16/2021 11:14 AM, US0606



DISCHARGE STRUCTURE NO. 2
SCALE: 1/4" = 1'-0"

NOTE:
FORMLINER SHALL BE APPROVED BY
THE UNIVERSITY OF RHODE ISLAND
PRIOR TO PURCHASE.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED DEC 17 2021 FILE # 21-0104
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Martin D. Wemec

PROJECT

**BUTTERFIELD ROAD &
HOPE COMMONS
DRAINAGE IMPROVEMENTS
KINGSTON, RHODE ISLAND**

TODD A. RAVENHILL
REGISTERED PROFESSIONAL ENGINEER
15228

CLIENT

UNIVERSITY OF RHODE ISLAND

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE

DETAILS - 4

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1908/1946

DATE: JUNE 2021

SCALE: AS SHOWN

DRAWN BY: JLH

CHECKED BY: TAR

DRAWING NUMBER

16

SHEET 16 OF 16

Environmental Management
AUG 16 2021
Office of Water Resources