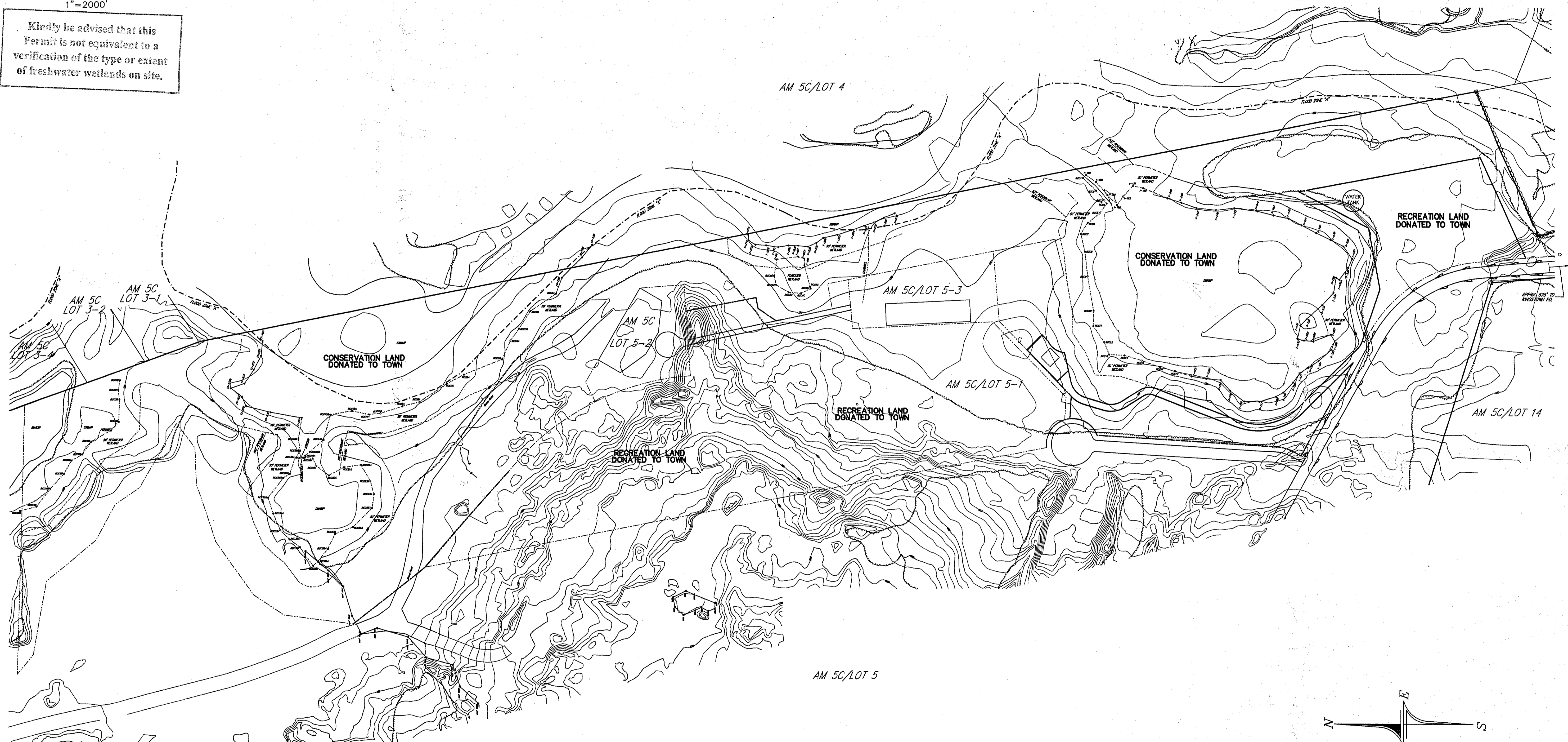


LOCATION MAP
1"=2000'

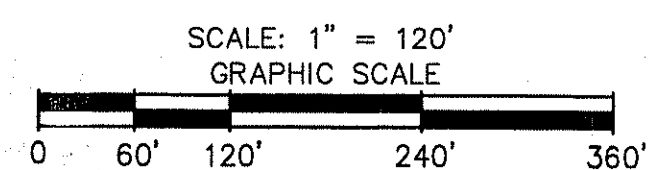
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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
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DATED OCT 14 2015 FILE # 15-085
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APPROVED PLANS MUST BE AT CONSTRUCTION SITE

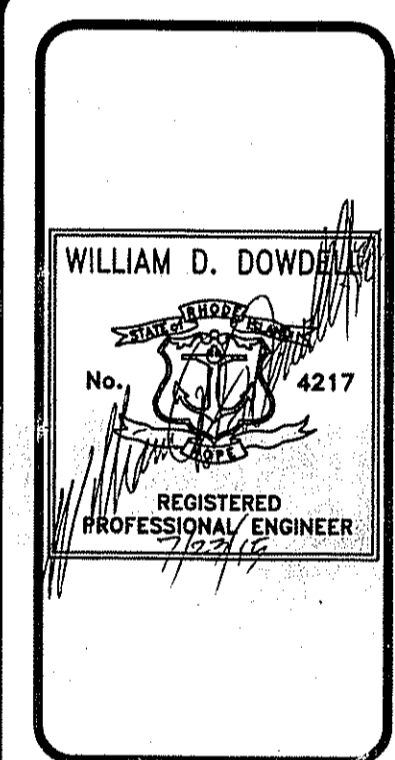
MAPPING NOTE:
THIS SURVEY AND PLAN CONFORM TO A CLASS III STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.

NOTE
ALL BASE TOPOGRAPHIC AND PLANIMETRIC MAPPING WAS PROVIDED BY THE TOWN OF RICHMOND BASED ON 2008 PLANS BY RESOURCE CONTROLS, 474 BROADWAY, PAWTUCKET, RI 02880



OVERALL EXISTING CONDITIONS PLAN
ASSESSOR'S MAP 5C LOT 5-1
RICHMOND HERITAGE TRAIL
SITUATED IN THE TOWN OF
RICHMOND, RHODE ISLAND
PREPARED FOR
RICHMOND CONSERVATION COMMISSION

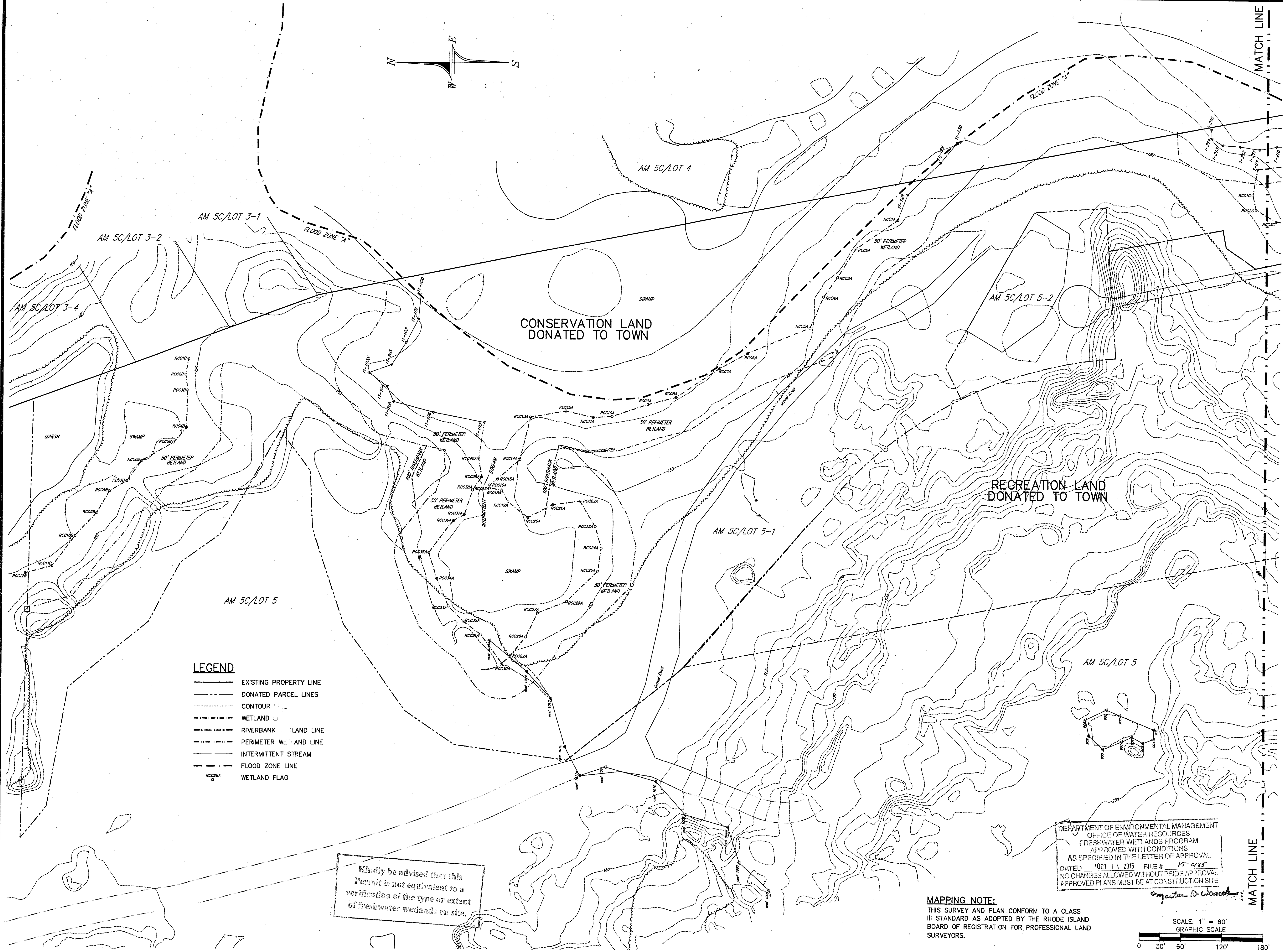
NO.	REVISION	DATE
1.	FLAGS 15A - 21A	06/22/15
2.	SHEET & FLAG NOS.	07/23/15



DOWDELLE
DOWDELLE ENGINEERING, INC.
CIVIL & ENVIRONMENTAL ENGINEERS
SURVEYORS & LAND PLANNERS
P.O. BOX 1684 • 3949 OLD POST ROAD
CHARLESTOWN, RHODE ISLAND 02815
(401) 364-1027

JOB NO. 3011	DRAWN BY: R.L.C.
DWG. NO. 3011-ECP1	CHECKED: W.D.D.
	APPROVED: W.D.D.
SCALE: 1"=120'	DATE: JUNE 9, 2015

SHEET:
1
1 OF 8 SHEETS

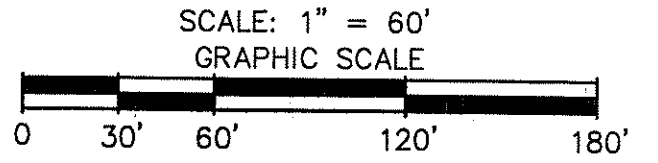


- LEGEND**
- EXISTING PROPERTY LINE
 - - - DONATED PARCEL LINES
 - CONTOUR LINE
 - - - WETLAND LINE
 - - - RIVERBANK WETLAND LINE
 - - - PERIMETER WETLAND LINE
 - - - INTERMITTENT STREAM
 - - - FLOOD ZONE LINE
 - WETLAND FLAG

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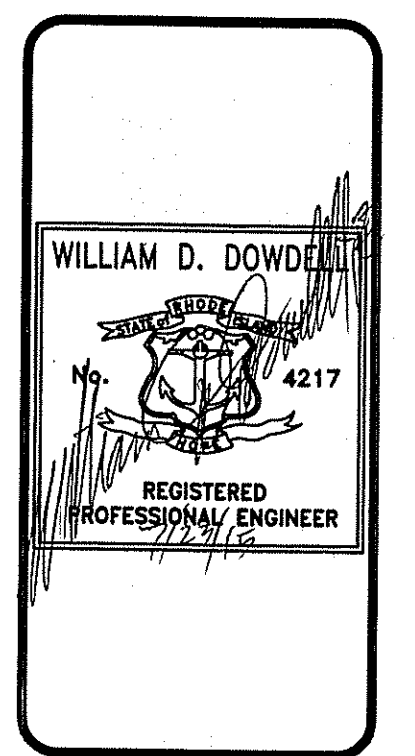
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED 10/14/2015 FILE # 15-085
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 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

MAPPING NOTE:
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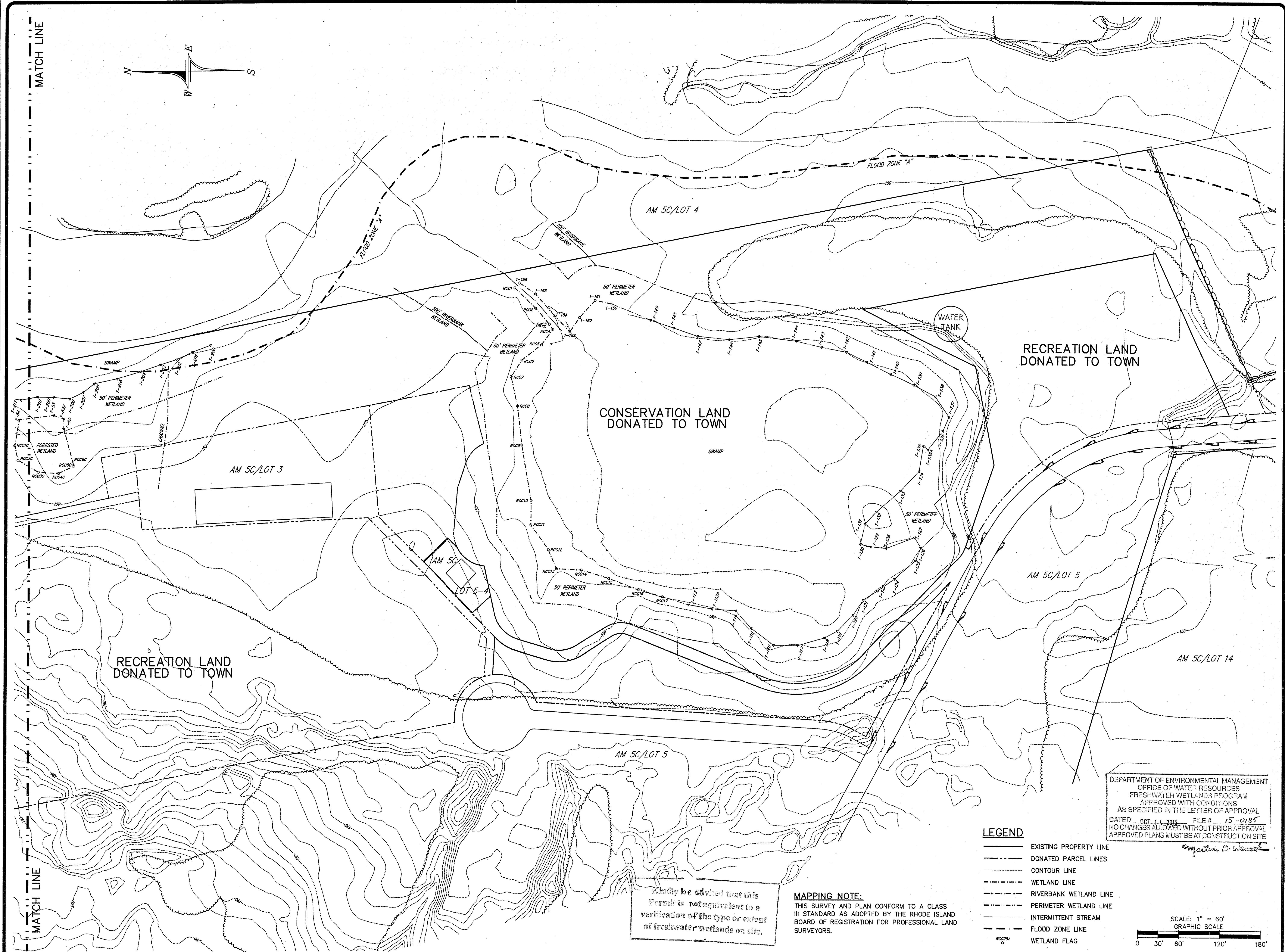
EXISTING CONDITIONS PLAN
 ASSESSOR'S MAP 5C LOT 5-1
 RICHMOND HERITAGE TRAIL
 SITUATED IN THE TOWN OF
 RICHMOND, RHODE ISLAND
 PREPARED FOR
 RICHMOND CONSERVATION COMMISSION

NO.	REVISION	DATE
1.	FLAGS 15A - 21A	06/22/15
2.	SHEET NUMBER	07/23/15



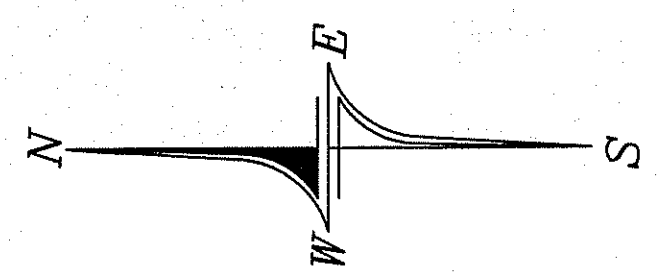
DOWDELL
 DOWDELL ENGINEERING, INC.
 CIVIL & ENVIRONMENTAL ENGINEERS
 SURVEYORS & LAND PLANNERS
 P.O. BOX 1884 # 3949 OLD POST RD
 COVENTRY, RHODE ISLAND 02813
 (401) 384-1027

JOB NO. 3011	DRAWN BY: R.L.C.
DWG. NO. 3011-ECP1	CHECKED: W.D.D.
SCALE: 1"=60'	APPROVED: W.D.D.
SHEET: 2	DATE: JUNE 9, 2015
2 OF 9 SHEETS	



MATCH LINE

MATCH LINE



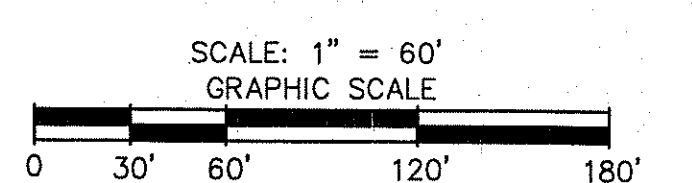
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MAPPING NOTE:
THIS SURVEY AND PLAN CONFORM TO A CLASS III STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.

LEGEND

- EXISTING PROPERTY LINE
- - - - - DONATED PARCEL LINES
- CONTOUR LINE
- - - - - WETLAND LINE
- - - - - RIVERBANK WETLAND LINE
- - - - - PERIMETER WETLAND LINE
- - - - - INTERMITTENT STREAM
- - - - - FLOOD ZONE LINE
- WETLAND FLAG

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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William D. Dowdell



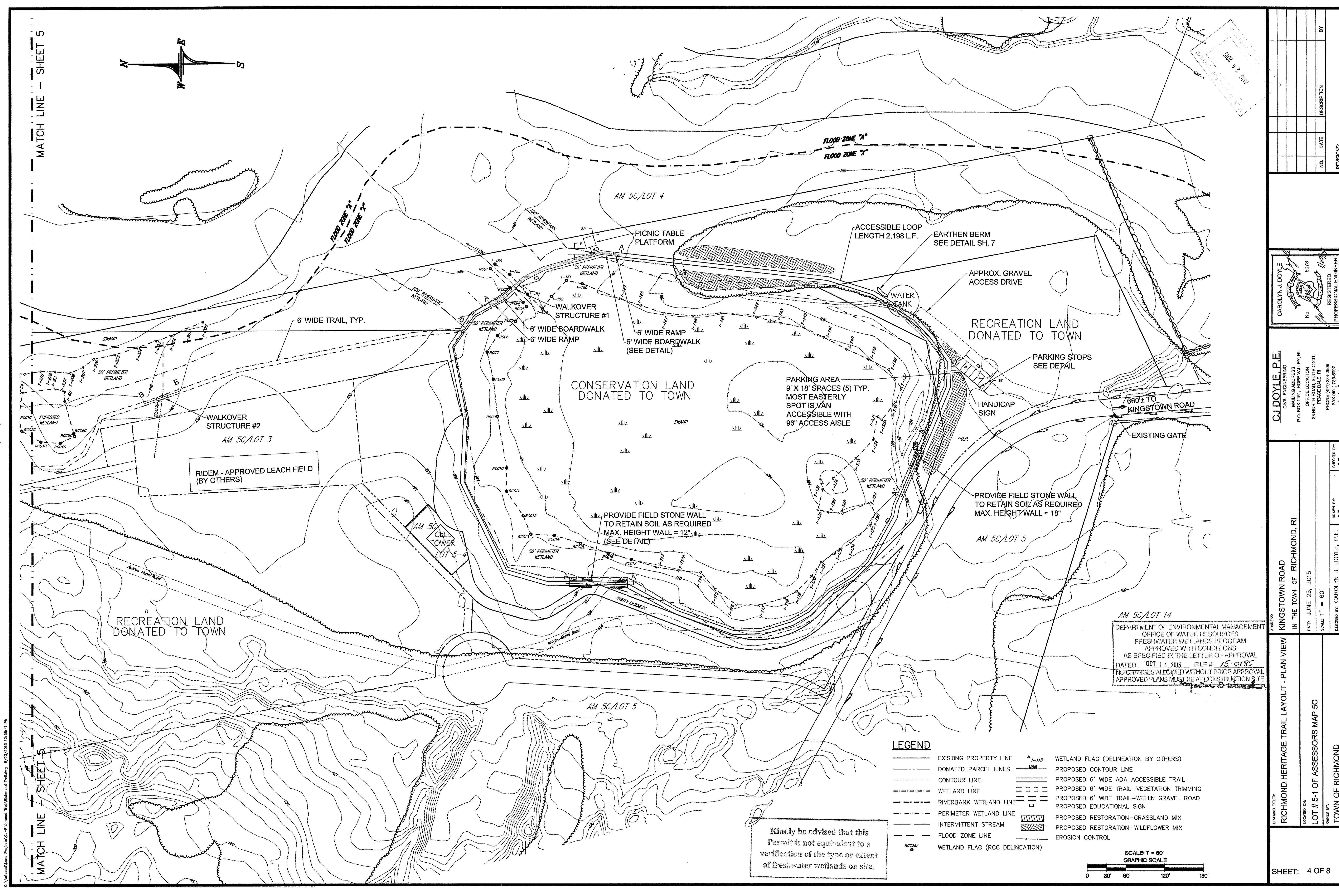
EXISTING CONDITIONS PLAN
ASSESSOR'S MAP 5C LOT 5-1
RICHMOND HERITAGE TRAIL
SITUATED IN THE TOWN OF
RICHMOND, RHODE ISLAND
PREPARED FOR
RICHMOND CONSERVATION COMMISSION

NO.	REVISION	DATE
1.	SHEET & FLAG NOS.	07/23/15

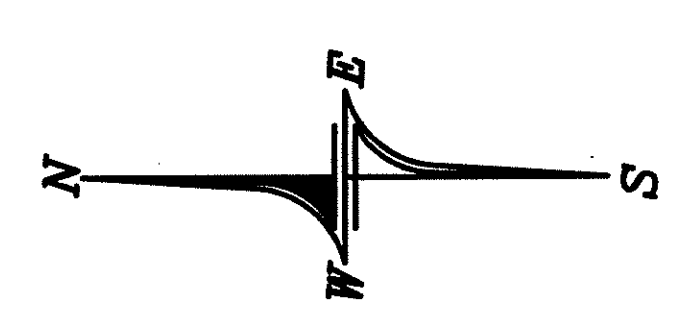
WILLIAM D. DOWDELL
No. 4217
REGISTERED PROFESSIONAL ENGINEER

DOWDELL
ENGINEERING, INC.
CIVIL & ENVIRONMENTAL ENGINEERS
SURVEYORS & LAND PLANNERS
P.O. BOX 1684 • 3949 OLD POST ROAD
CHARLESTOWN, RHODE ISLAND 02813
(401) 364-1027

JOB NO. 3011	DRAWN BY: R.L.C.
DWG. NO. 3011-ECP1	CHECKED: W.D.D.
SCALE: 1"=60'	APPROVED: W.D.D.
SHEET:	DATE: JUNE 9, 2015
3	
3 OF 9 SHEETS	



MATCH LINE - SHEET 5



5102 2 2 5114

NO.	DATE	DESCRIPTION	BY

C.J. DOYLE, P.E.
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 FAX (401) 783-8997
 cjd@cmjdoyle.com

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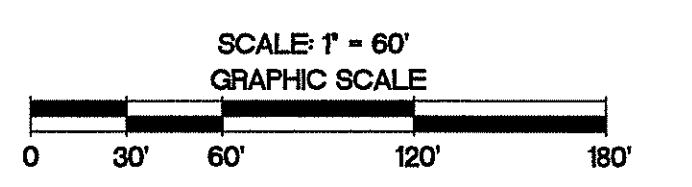
C.J. DOYLE, P.E.
 CIVIL ENGINEERING
 MAILING ADDRESS
 P.O. BOX 1161, HOPE VALLEY, RI 02878
 OFFICE LOCATION
 33 NORTH PEACE DALE, RI 02878
 PHONE (401) 284-2909
 FAX (401) 783-8997
 cjd@cmjdoyle.com

AM 5C/LOT 14
 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
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 DATED OCT 14 2015 FILE # 15-0185
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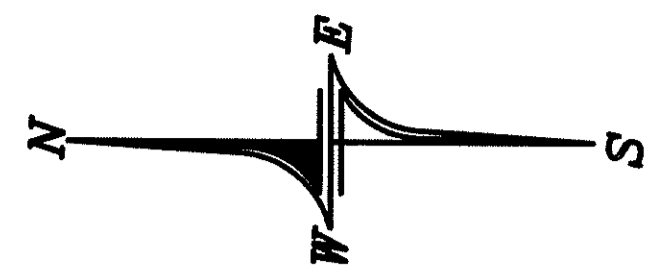
LEGEND

—	EXISTING PROPERTY LINE	—	WETLAND FLAG (DELINEATION BY OTHERS)
---	DONATED PARCEL LINES	---	PROPOSED CONTOUR LINE
...	CONTOUR LINE	---	PROPOSED 6' WIDE ADA ACCESSIBLE TRAIL
---	WETLAND LINE	---	PROPOSED 6' WIDE TRAIL-VEGETATION TRIMMING
---	RIVERBANK WETLAND LINE	---	PROPOSED 6' WIDE TRAIL-WITHIN GRAVEL ROAD
---	PERIMETER WETLAND LINE	---	PROPOSED EDUCATIONAL SIGN
---	INTERMITTENT STREAM	---	PROPOSED RESTORATION-GRASSLAND MIX
---	FLOOD ZONE LINE	---	PROPOSED RESTORATION-WILDFLOWER MIX
---	WETLAND FLAG (RCC DELINEATION)	---	EROSION CONTROL

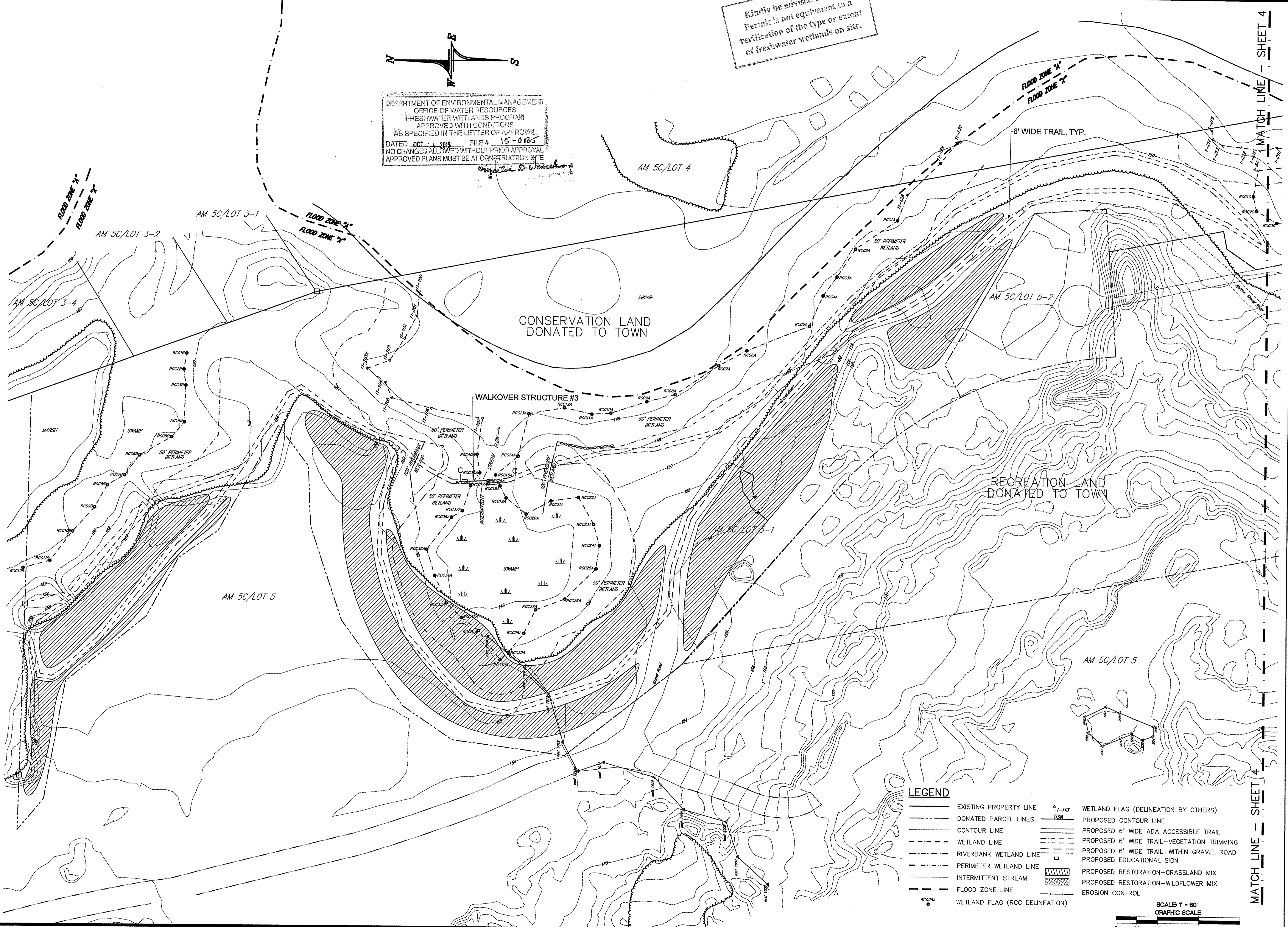
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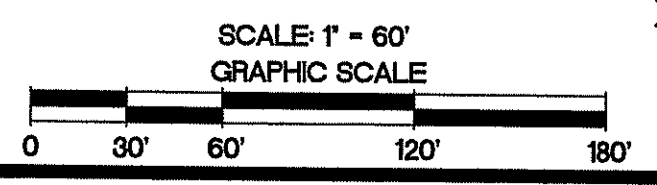


DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Project Engineer



LEGEND

- EXISTING PROPERTY LINE
- - - DONATED PARCEL LINES
- CONTOUR LINE
- - - WETLAND LINE
- - - RIVERBANK WETLAND LINE
- - - PERIMETER WETLAND LINE
- - - INTERMITTENT STREAM
- - - FLOOD ZONE LINE
- WETLAND FLAG (RCC DELINEATION)
- ▲ 1-113 WETLAND FLAG (DELINEATION BY OTHERS)
- PROPOSED CONTOUR LINE
- PROPOSED 6' WIDE ADA ACCESSIBLE TRAIL
- PROPOSED 6' WIDE TRAIL-VEGETATION TRIMMING
- PROPOSED 6' WIDE TRAIL-WITHIN GRAVEL ROAD
- PROPOSED EDUCATIONAL SIGN
- ▨ PROPOSED RESTORATION-GRASSLAND MIX
- ▩ PROPOSED RESTORATION-WILDFLOWER MIX
- EROSION CONTROL



NO.	DATE	DESCRIPTION	BY

CJ DOYLE, P.E.
 CIVIL ENGINEERING
 MAILING ADDRESS
 P.O. BOX 161, HOPE VALLEY, RI 02881
 33 NORTH PEACE DALE, RI 02881
 PHONE (401) 284-2928
 FAX (401) 783-5897
 cjoyle@cox.net

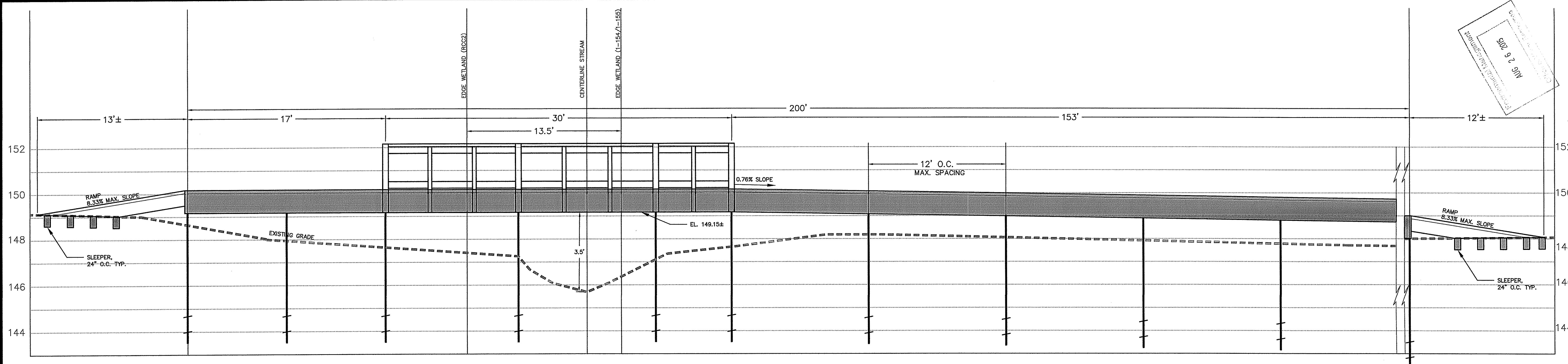
CJ DOYLE, P.E.
 CIVIL ENGINEERING
 MAILING ADDRESS
 P.O. BOX 161, HOPE VALLEY, RI 02881
 33 NORTH PEACE DALE, RI 02881
 PHONE (401) 284-2928
 FAX (401) 783-5897
 cjoyle@cox.net

ADDRESS: KINGSTOWN ROAD
 IN THE TOWN OF RICHMOND, RI
 DATE: JUNE 25, 2015
 SCALE: 1" = 60'
 DESIGNED BY: CAROLYN J. DOYLE, P.E.
 DRAWN BY: C.J.D.
 CHECKED BY: C.J.D.

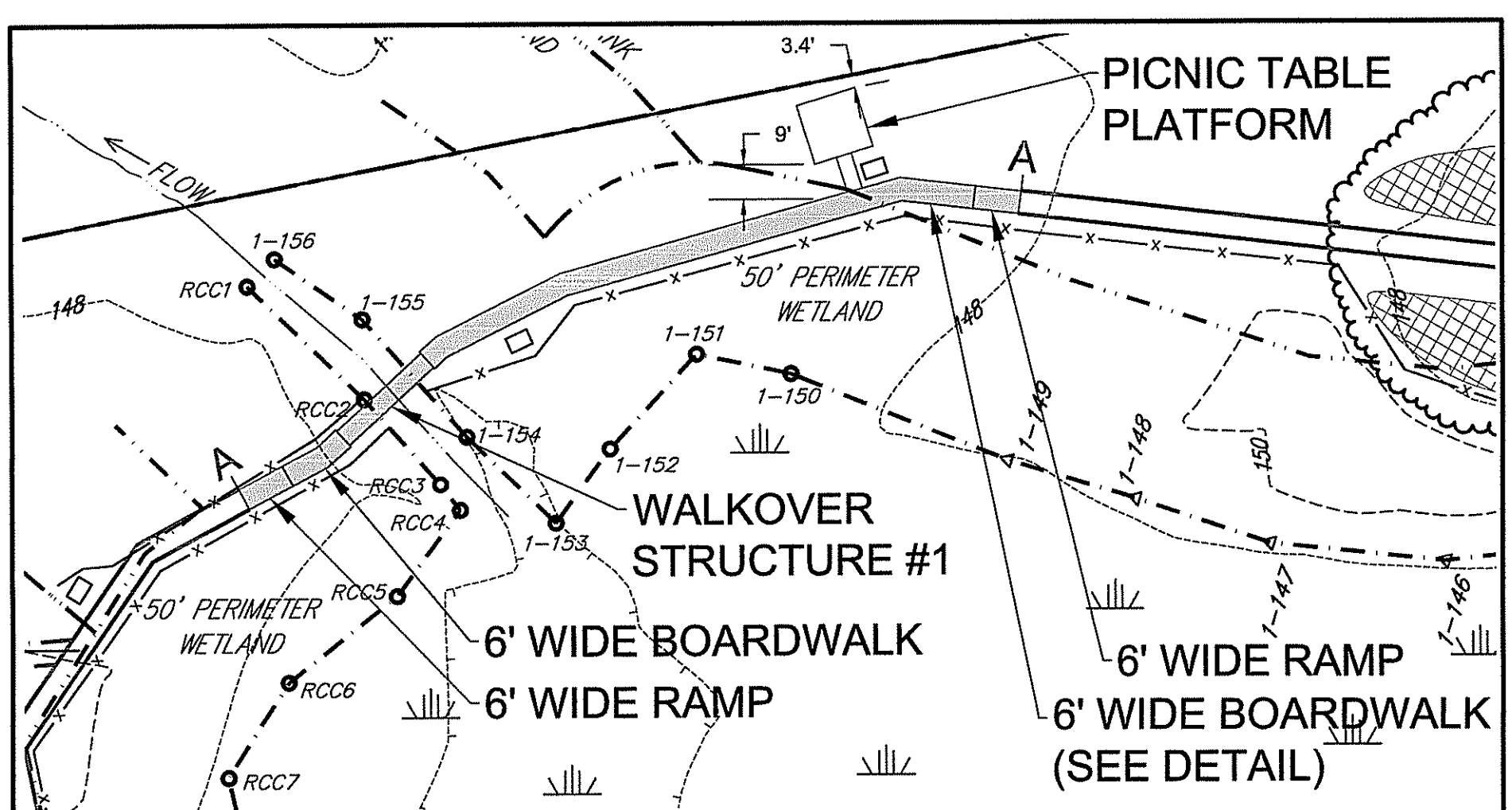
DRAWING TITLE: RICHMOND HERITAGE TRAIL LAYOUT - PLAN VIEW
 LOCATED ON: LOT # 5-1 OF ASSESSORS MAP 5C
 OWNED BY: TOWN OF RICHMOND

G:\Users\land\Projects\2015\2015-11-20-17 PM

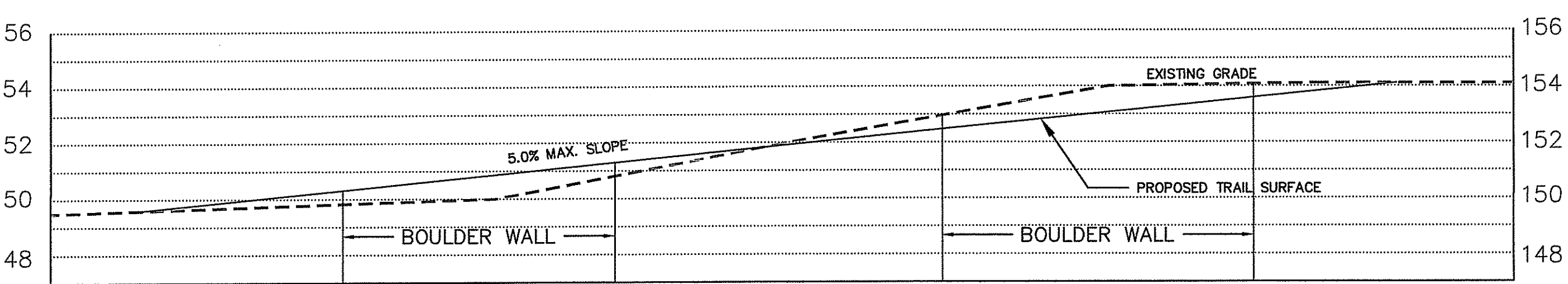
© 2015 CJ DOYLE, P.E.



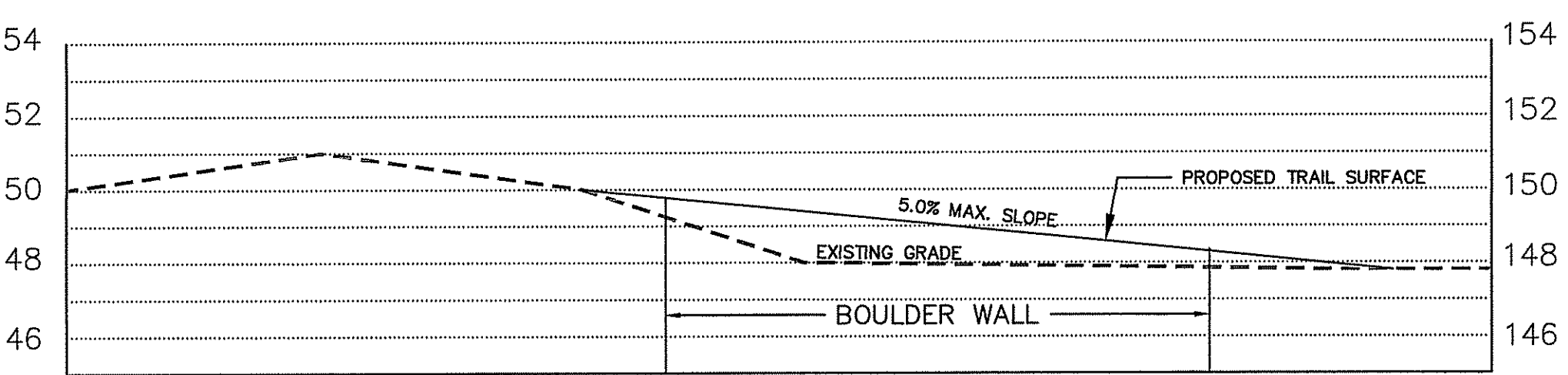
**DETAIL SECTION A-A
THROUGH WALKOVER STRUCTURE #1**
SCALE: HOR. 1" = 4'
VER. 1" = 2'



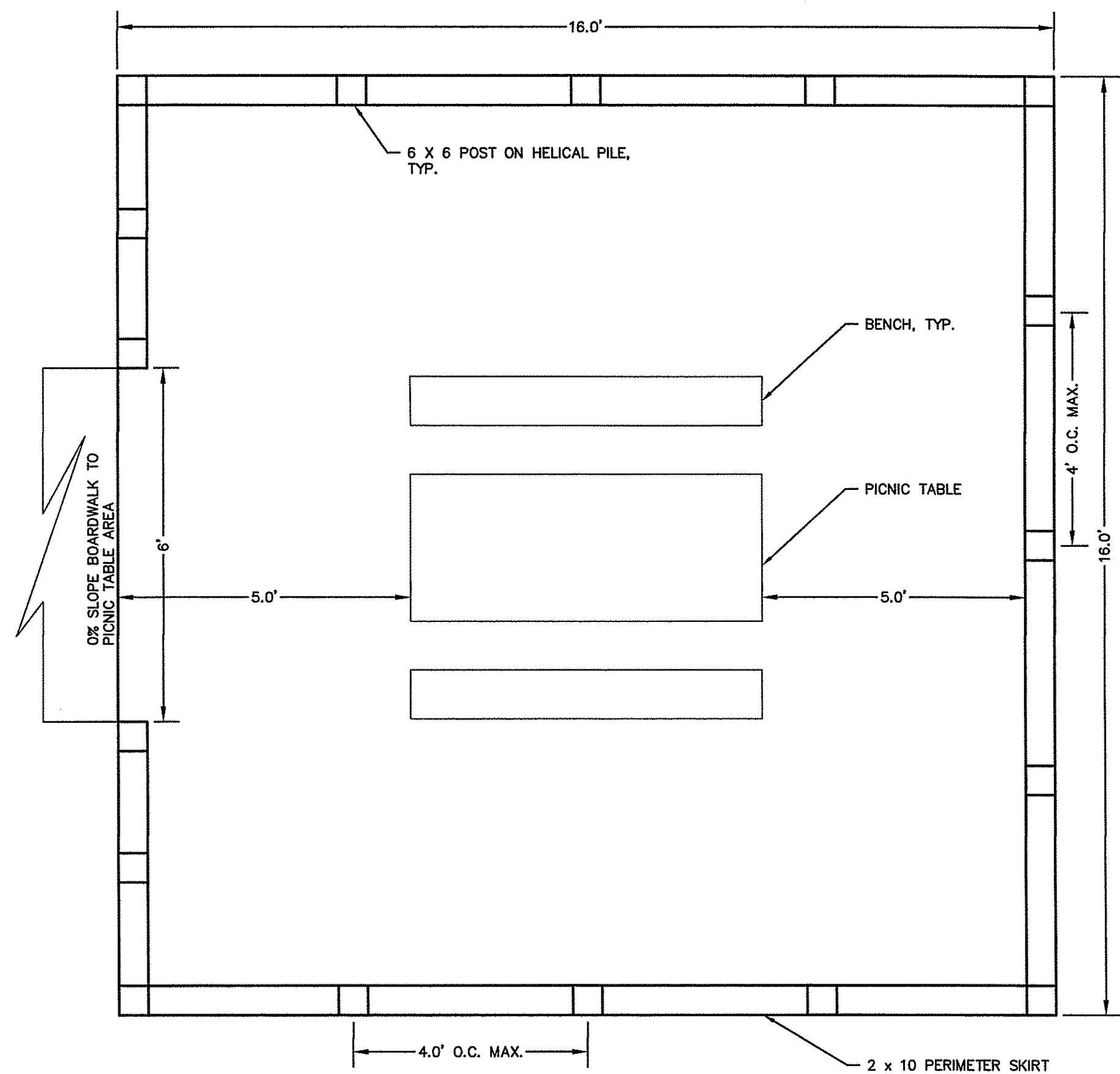
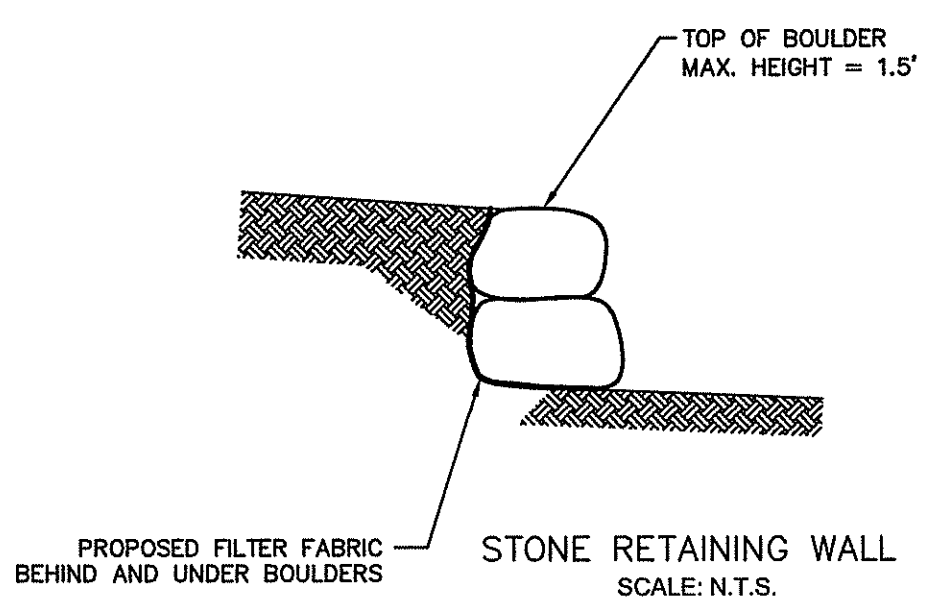
PLAN - WALKOVER #1
SCALE: 1" = 40'



DETAIL TRAIL SECTION A'-A'
SCALE: HOR. 1" = 8'
VER. 1" = 4'



DETAIL TRAIL SECTION A''-A''
SCALE: HOR. 1" = 8'
VER. 1" = 4'



PICNIC TABLE AND PLATFORM
NO SCALE

- NOTES:**
1. ADA COMPLIANT PICNIC TABLE SHALL BE 6' LONG WITH TWO 6' LONG BENCHES AND BOTH ENDS ACCESSIBLE FOR A WHEELCHAIR. TABLE SHALL BE 30" WIDE, BENCHES 10" WIDE; ALL WITH OPEN STEEL MESH TOPS. PICNIC TABLE SHALL BE MODEL "WUT" AS MANUFACTURED BY PILOTROCK OR EQUAL.
 2. ATTACHMENT TO THE WOOD PLATFORM SHALL BE WITH THE USE OF MANUFACTURER'S RECOMMENDED STRAPS AND ANCHORS.
 3. BEAMS SHALL BE 3 X 6 (2-2 X 6), SPACED 8' O.C. MAX. & RUN PERPENDICULAR TO THE JOISTS. JOISTS SHALL BE 3 X 6 (2-2 X 6). JOISTS SHALL BE SPACED A MAX. OF 16" O.C. JOISTS SHALL BE FASTENED ON THE INTERIOR OF THE PLATFORM AT EVERY BEAM WITH STEEL 11 3/8" X 1 1/2" TWIST STRAPS AND 12D GALVANIZED NAILS.
- 6" X 6" SUPPORT POSTS FOR THE PLATFORM SHALL BE SPACED A MAX. OF 4' O.C. SKIRT ON PLATFORM SHALL BE 2 X 10.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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CJ DOYLE, P.E.
CIVIL ENGINEERING

MAILING ADDRESS: P.O. BOX 1161 HOPE VALLEY, RI 02832
OFFICE LOCATION: 33 NORTH ROAD, STE C-201A, PEACE DALE, RI
PHONE (401) 284-2019 FAX (401) 783-9997
cjdoyle@cox.net

NO.	DATE	DESCRIPTION	BY
SECTIONS & DETAILS - 1			
LOCATED ON:			
LOT 5-1		PLAT 5C	
OWNED BY:			
TOWN OF RICHMOND			
ADDRESS:			
KINGSTOWN ROAD			
IN THE TOWN OF RICHMOND, RI			
JUNE 25, 2015		DESIGNED BY:	
CAROLYN J DOYLE, P.E.,		5078	
SCALE: AS SHOWN		CHECKED BY:	
DRAWN BY: CJD		CJD	
DRAWING No.		REGISTERED PROFESSIONAL ENGINEER	
SHEET 6 OF 8			

PLANT COMMUNITY RESTORATION SITE PREPARATION AND SEEDING

Seed Mix A - Wildflowers/Pollinating Plants

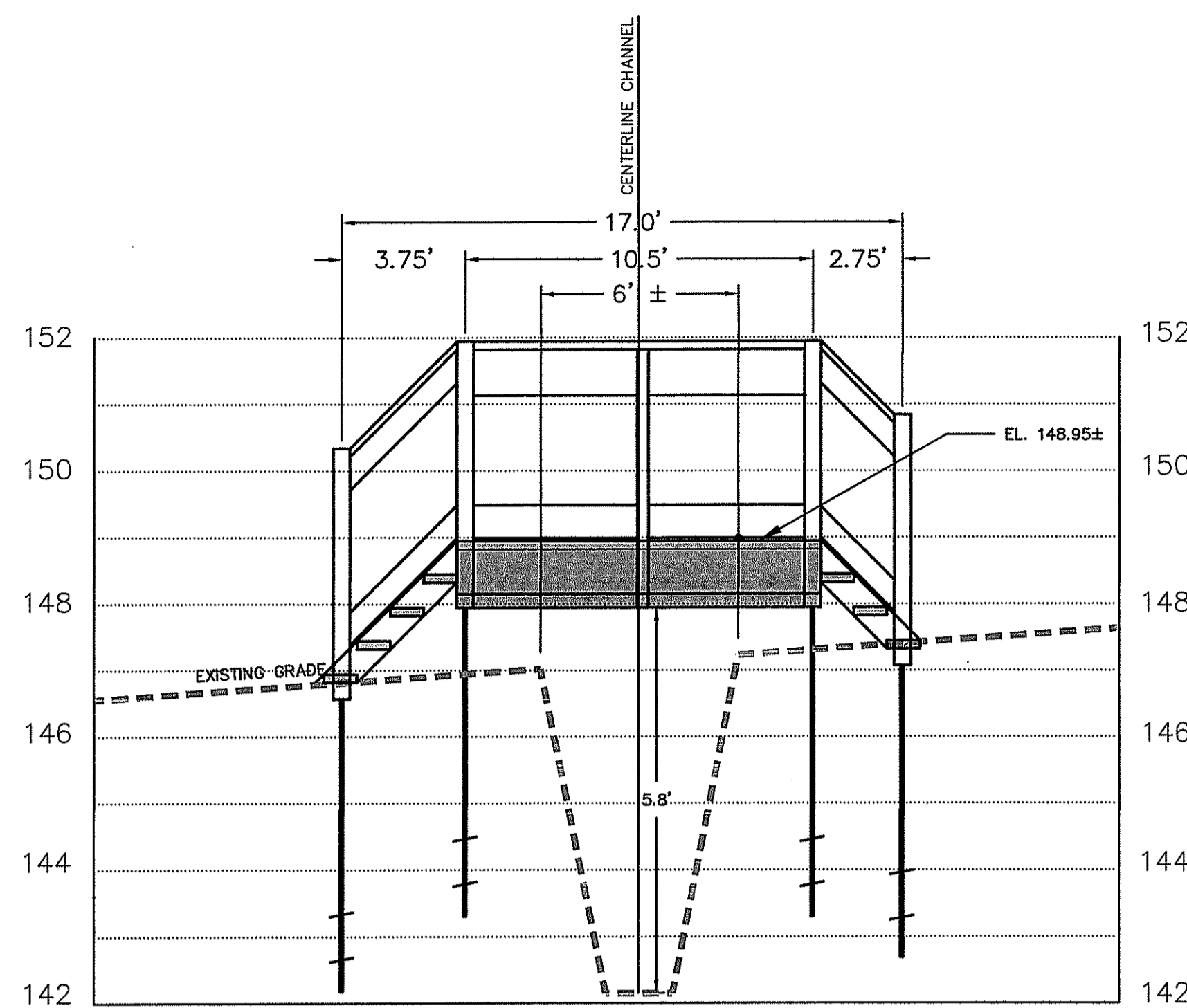
Species	Seeding Rate Lbs./acre
Indian hemp (<i>Apocynum cannabinum</i>)	2
Common milkweed (<i>Asclepias syriaca</i>)	3
False indigo (<i>Baptisia australis</i>)	2
Partidge pea (<i>Chamaecrista fasciculata</i>)	7
Purple coneflower (<i>Echinacea purpurea</i>)	5
Evening primrose (<i>Oenothera biennis</i>)	2
Smooth blue aster (<i>Symphoricarpos laevis</i>)	1
Butterfly milkweed (<i>Asclepias tuberosa</i>)	1.25
Showy goldenrod (<i>Solidago speciosa</i>)	0.50
Tall blazing star (<i>Liatris aspera</i>)	1
Little bluestem (<i>Schizachyrium scoparium</i>)	5

Seed Mix B - Grassland

Species	Seeding Rate Lbs./acre
Switch grass (<i>Panicum virgatum</i>)	8.50
Little bluestem (<i>Schizachyrium scoparium</i>)	11.00

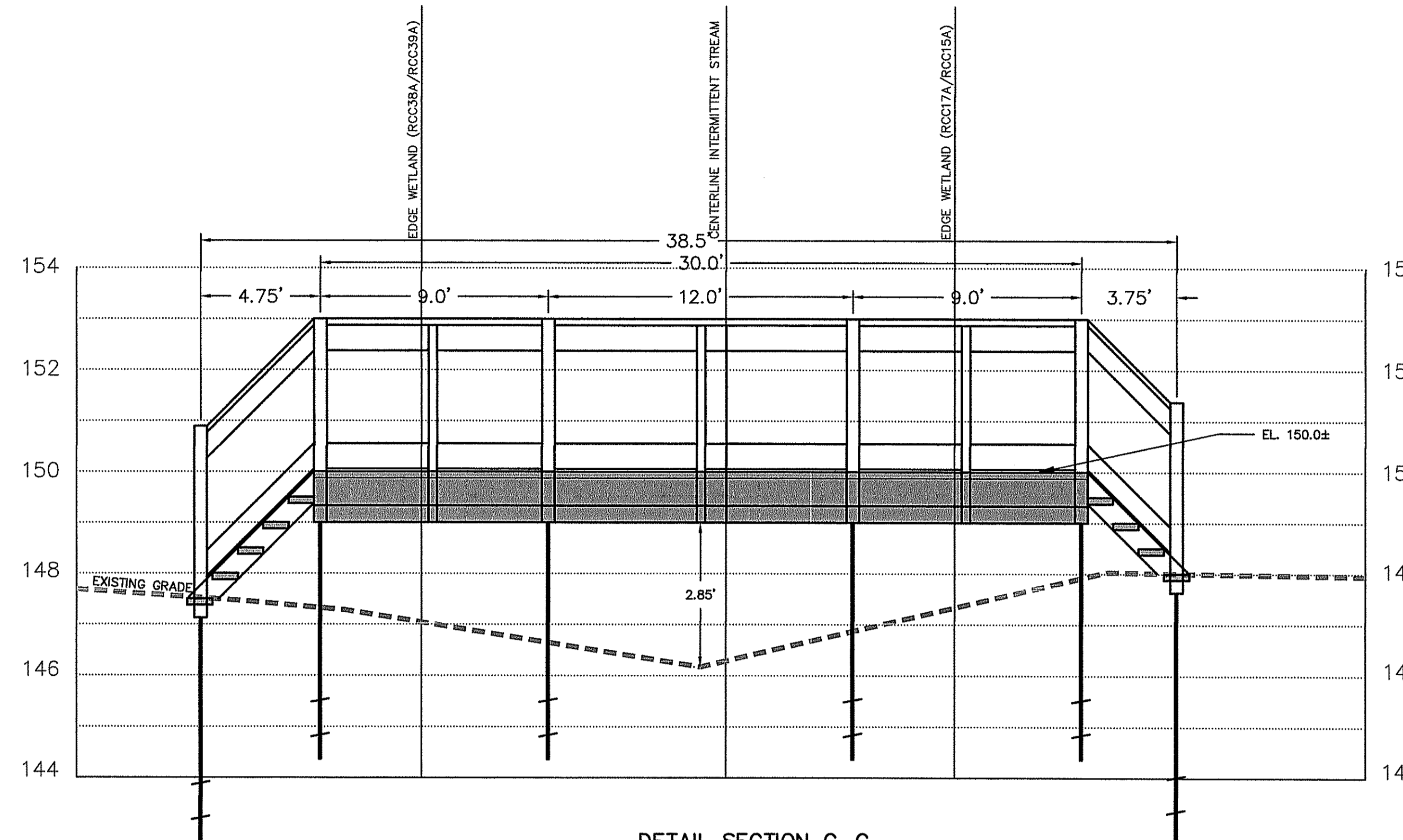
Site Preparation (Refer to Sheets 4 and 5 for Seeding Areas)

- Designated areas shall be mowed and cleared of existing weedy vegetation.
- Organic compost (e.g., Casella Organics or equivalent) shall be placed in designated sites at a rate of 175 cy/acre.
- Compost shall be installed in prepared sites during period of October 15 - March 15 and with no snow or ice covered conditions.
- Haybale check dam and/or other erosion and sediment control measures shall be installed in swales or other site locations to prevent compost transport in runoff. Contractor shall have 4 haybales kept onsite for this purpose.
- Seeding shall be completed during the period of April 15 - May 15.



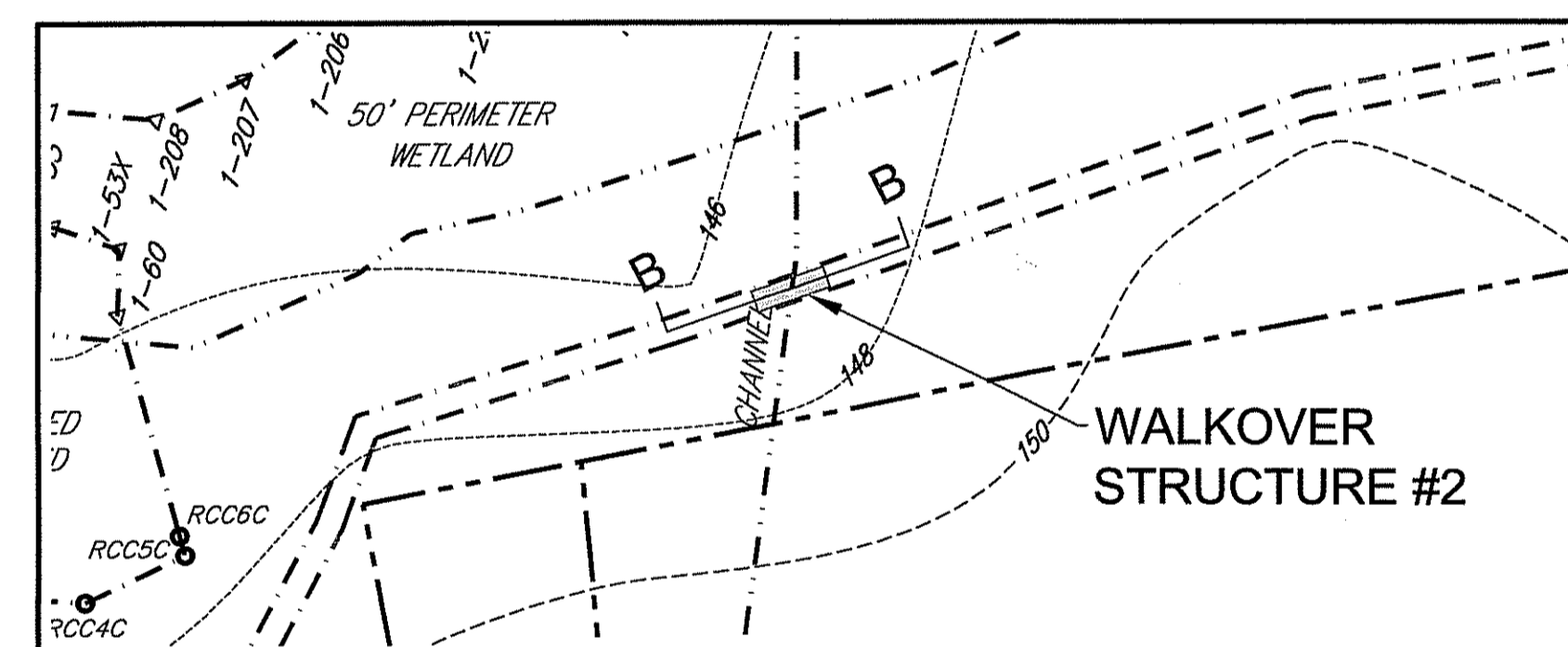
DETAIL SECTION B-B
THROUGH WALKOVER STRUCTURE #2

SCALE: HOR. 1" = 4'
VER. 1" = 2'



DETAIL SECTION C-C
THROUGH WALKOVER STRUCTURE #3

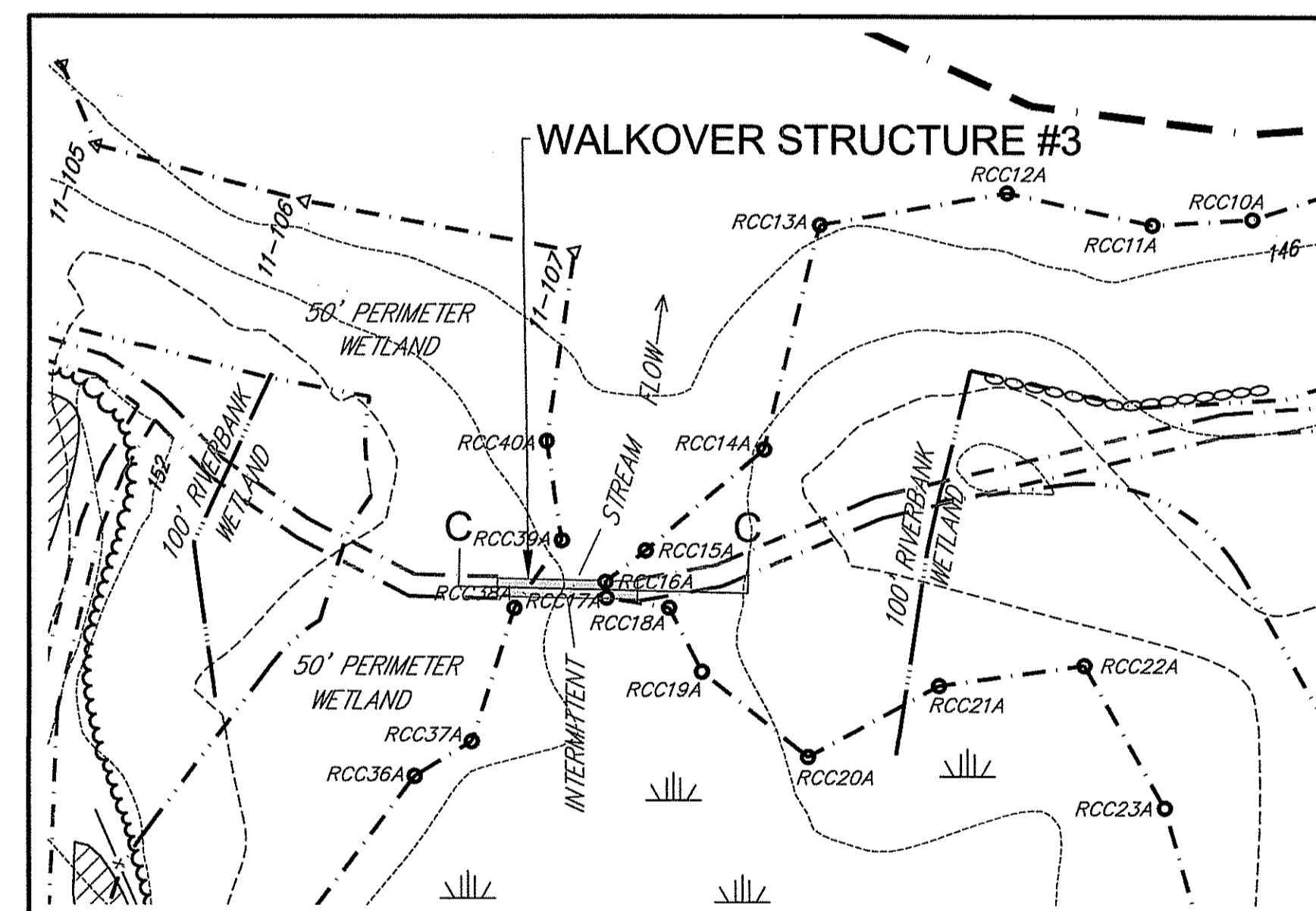
SCALE: HOR. 1" = 4'
VER. 1" = 2'



PLAN - WALKOVER #2

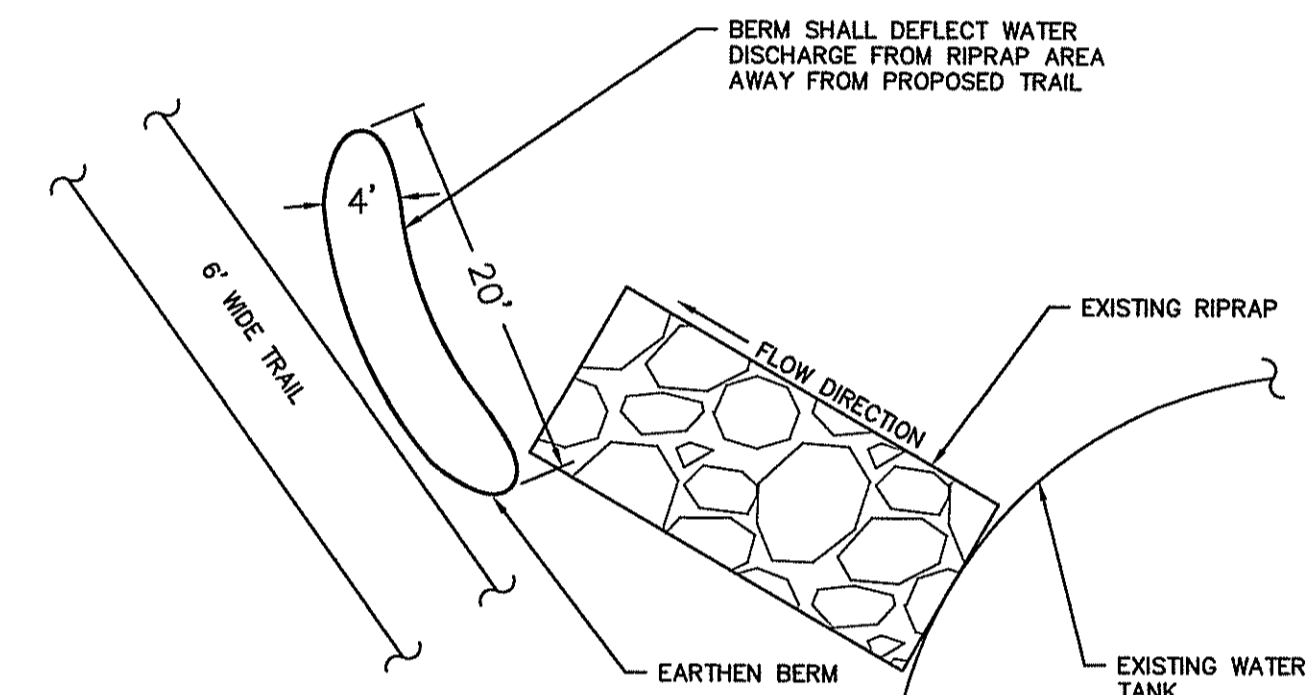
SCALE: 1" = 40'

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PLAN - WALKOVER #3

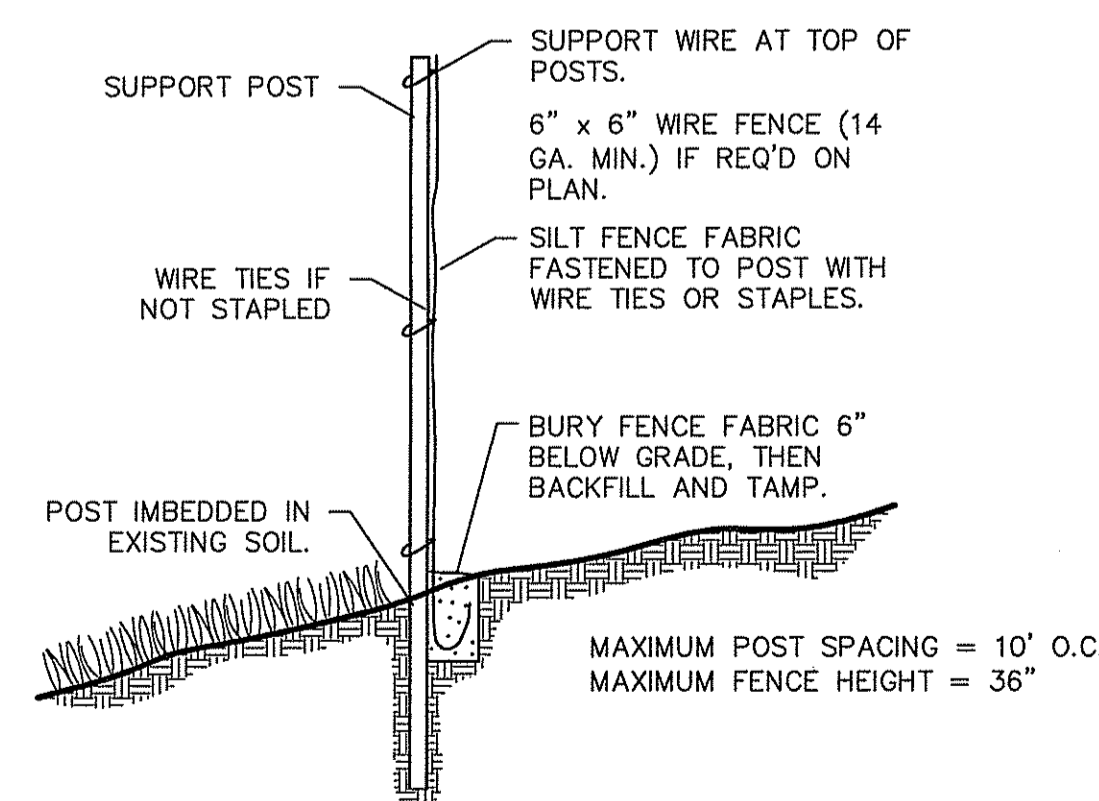
SCALE: 1" = 40'



- EARTHEN BERM SHALL BE FIELD FIT TO DEFLECT ANY WATER DISCHARGE FROM WATER TANK AWAY FROM THE PROPOSED TRAIL.
- BERM SHALL BE 12" HIGH AND OF THE DIMENSIONS SHOWN ABOVE.
- STABILIZE WITH GRASSLAND SEED MIX.

DETAIL - EARTHEN BERM

NO SCALE



SILT FENCE DETAIL
NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL NOTES:

Temporary and/or permanent erosion control devices such as baled hay, silt fencing, etc. shall be installed prior to any clearing or excavation. Hay bales or silt fencing shall be placed immediately down slope and adjoining areas of soil disturbance and stockpiles. Installation of all erosion control devices shall be conducted in accordance to detail specifications.

Clearing of existing vegetation shall be done in a controlled manner so as to avoid extensive areas of defoliated terrain subject to erosion. Areas so disturbed shall be brought to final grades and stabilized as soon as possible.

During construction the contractor shall be responsible for maintaining drainage and runoff flow during storms and periods of rainfall.

All erosion control devices shall be inspected and maintained on a regular basis during construction, especially after each rainfall.

Due to changing characteristics of the site caused by and during construction additional erosion control measures may be required as site conditions warrant.

If construction is suspended, all disturbed areas shall be seeded and all necessary erosion control devices shall be in place and in good working order. If seeding is not possible then erosion control mats shall be placed over all disturbed soil. Erosion control blankets (mats) shall be installed according to the manufacturer's recommendations. Erosion control blankets (mats) shall be manufactured by North American Green) or approved equivalent and installed according to the manufacturer's recommendations.

All erosion control methods, materials and maintenance shall be done in accordance with the "Rhode Island Soil Erosion and Sediment Control Handbook".

Unless otherwise noted in the restoration notes, all areas which are disturbed during construction are to be brought to finished grade with at least 6" minimum depth of good quality loam and all soil amendments deemed necessary. The area shall be seeded with a quick germinating grass seed such as URI #2 or approved equivalent.

The contractor shall provide for all seeded areas to be watered and in good condition until a good healthy and uniform growth is established over the entire soil disturbance area.

Note per DEM (permit condition number 15):

The temporary limit of disturbance for construction purposes shall be no greater than four (4) feet from the centerline of the new trail. The permanent limit of disturbance shall be limited to the six-foot wide trail and no more than the extent of the restoration areas shown on the site plan.



TOP VIEW

END VIEW

PARKING AREA NOTES

- PARKING AREA IS EXISTING GRAVEL SURFACE HAVING BEEN USED FOR ACCESS TO THE WATER TANK DURING CONSTRUCTION.
- PARKING AREA SHALL BE CONFIGURED AS SHOWN ON THE PLAN.
- MAX. CROSS SLOPE SHALL BE 2%, REGRADE ONLY IF NECESSARY TO MEET THE 2% SLOPE.
- PROVIDE HANDICAP SIGN FOR ADA ACCESSIBLE PARKING SPOT.

DETAIL - PARKING STOPS

- PARKING STOPS SHALL BE OF THE DIMENSIONS SHOWN AND MADE OF PRECAST CONCRETE WITH INTERNAL REBAR. STOPS SHALL BE ANCHORED IN PLACE WITH 1/2 INCH REBAR SPIKE, 20 INCHES LONG IN EACH HOLE IN THE STOP. USE 5/8 INCH WASHER BETWEEN TOP OF SPIKE AND CONCRETE STOP.
- PARKING AREA SHALL BE CONFIGURED AS SHOWN ON THE PLAN.
- MAX. CROSS SLOPE SHALL BE 2%, REGRADE ONLY IF NECESSARY TO MEET THE 2% SLOPE.
- PROVIDE HANDICAP SIGN FOR ADA ACCESSIBLE PARKING SPOT.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
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AS SPECIFIED IN THE LETTER OF APPROVAL
DATED 06/11/2015 FILE # 15-0185
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

CJ DOYLE, P.E.
CIVIL ENGINEERING

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cjd@cmx.net

NO.	DATE	DESCRIPTION	BY

DRAWING TITLED:

SECTIONS & DETAILS - 2

LOCATED ON:

LOT 5-1 PLAT 5C

OWNED BY:

TOWN OF RICHMOND

ADDRESS:

KINGSTOWN ROAD

IN THE TOWN OF RICHMOND, RI

JUNE 25, 2015

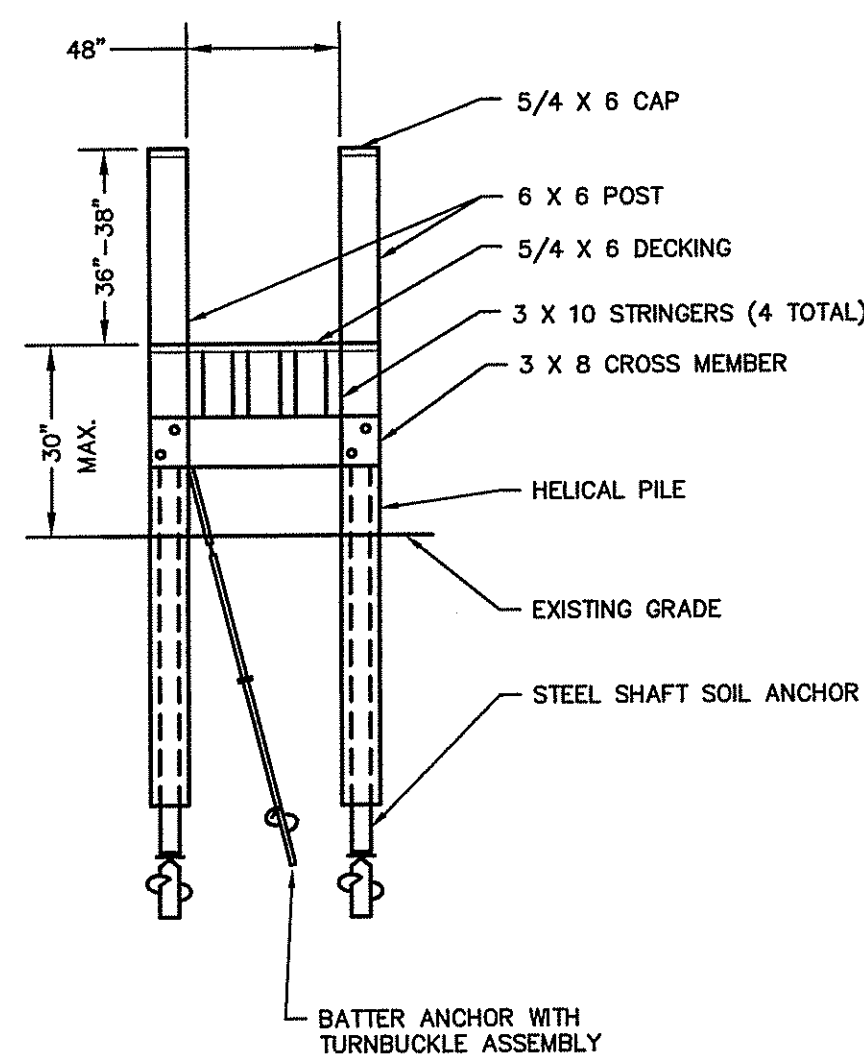
DESIGNED BY: CAROLYN J DOYLE, P.E.,

SCALE: AS SHOWN

DRAWN BY: CJD CHECKED BY: CJD

REGISTERED PROFESSIONAL ENGINEER

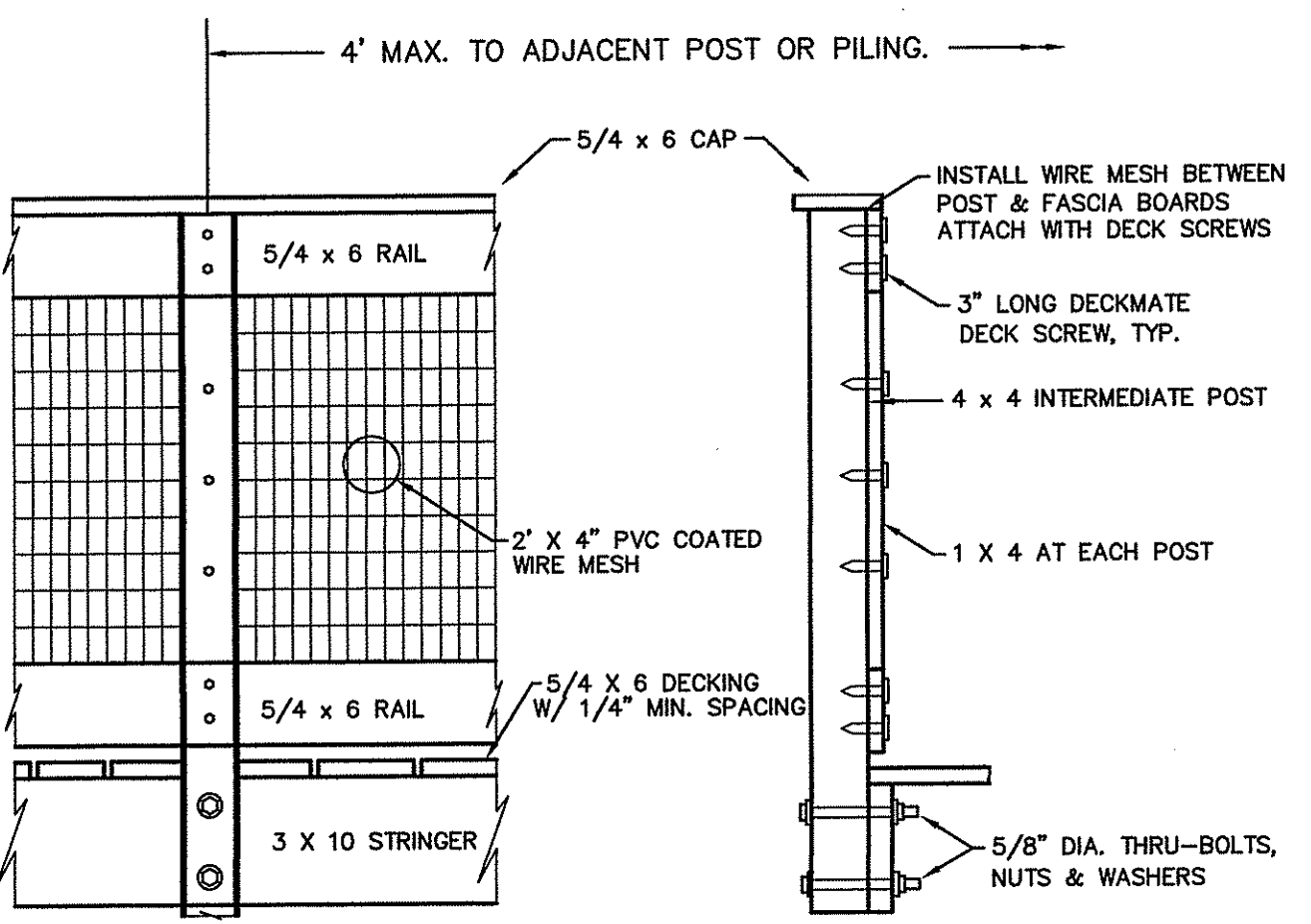
SHEET 7 OF 8



- CONTRACTOR SHALL PROVIDE ONE DIAGONAL BRACE IF DECK IS 3-4.5 FEET ABOVE THE GROUND AND TWO DIAGONAL BRACES AS CROSS BRACES IF THE DECK IS GREATER THAN 4.5 FEET ABOVE THE GROUND.
- PROVIDE 5" ADA CURBING ON BOTH SIDES OF WALKOVER STRUCTURE #1.
- WALKOVER STRUCTURE #1 SHALL HAVE 6" RAMP AND BOARDWALK PER DETAILS ON THIS SHEET.

DETAIL CROSS SECTION WALKOVER STRUCTURE

NO SCALE



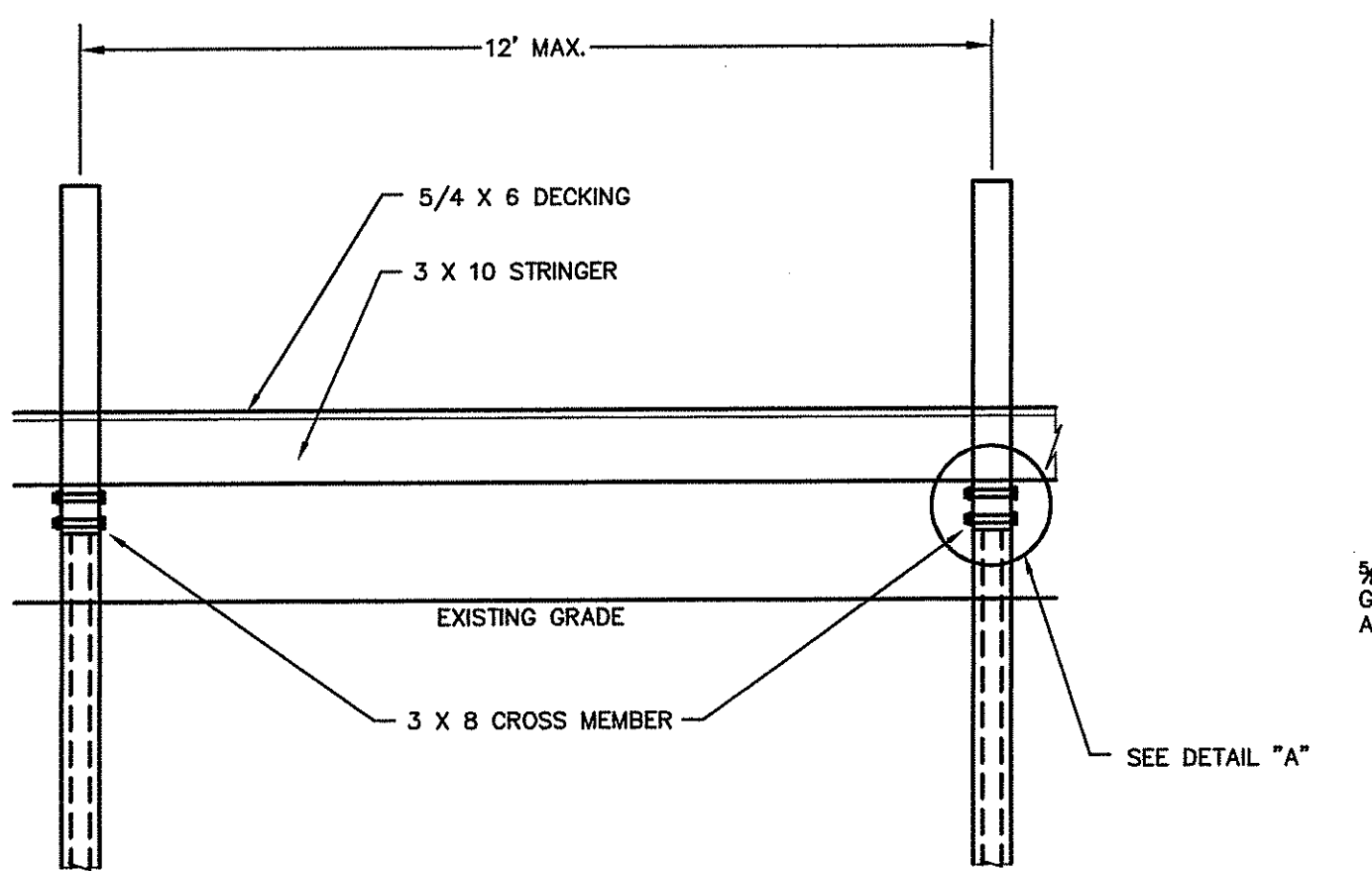
SIDE VIEW

END VIEW

- HAND RAIL TO BE INSTALLED ON BOTH SIDES OF STAIRS/LANDINGS AND AROUND PLATFORM.
- 2 X 4 RAILS TO BE FASTENED TO PILES WITH 3/8" DIA. LAG BOLTS AND WASHERS.
- WIRE MESH SHALL BE 14 GAUGE (GALVANIZED STEEL CORE) WITH BLACK PVC COATING.

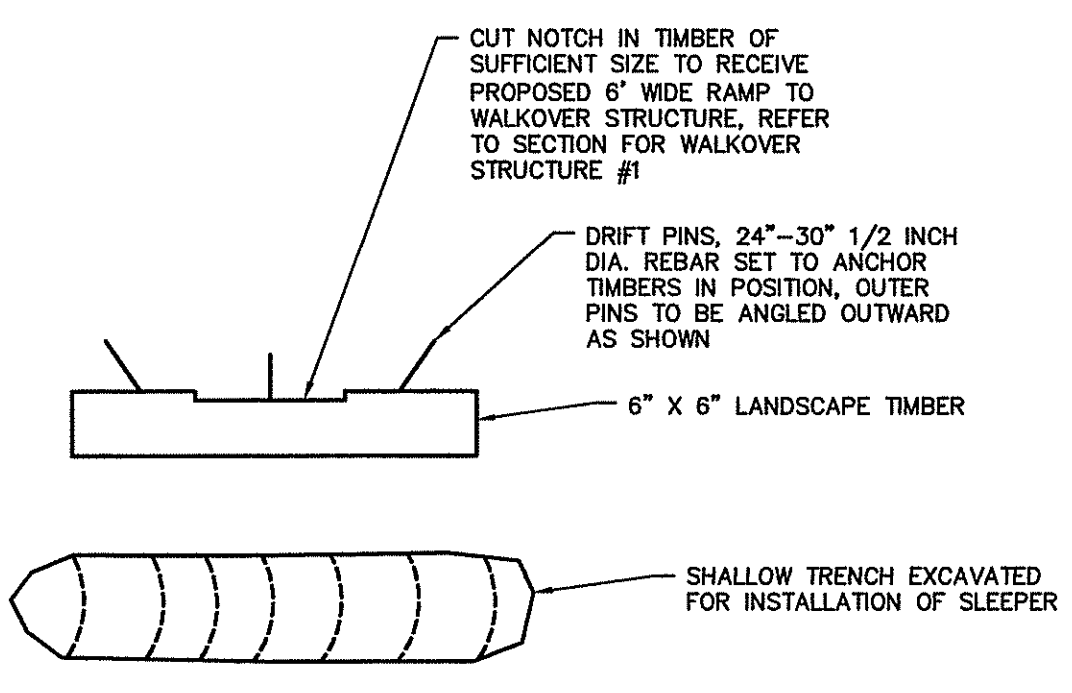
HAND RAILING DETAIL

SCALE: NONE



- PILING SPACING SHALL BE MAX. 12' ALONG STAIRS/WALKOVER STRUCTURE.

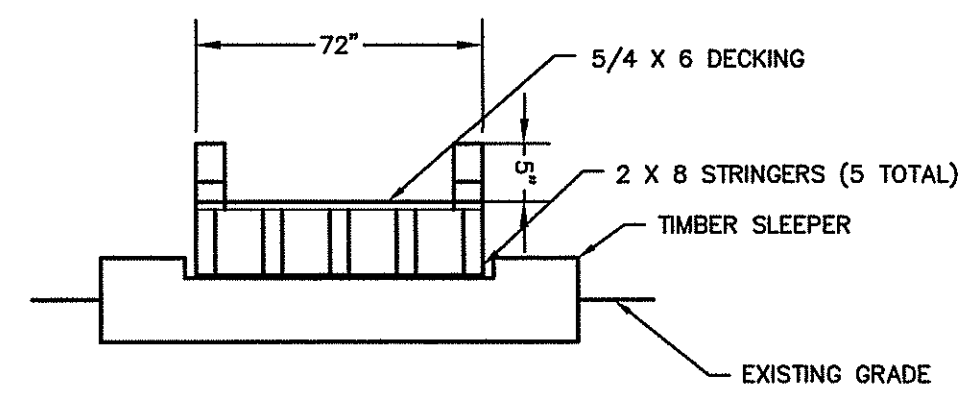
- NOTES:**
- ALL NOTES AND DETAILS SHOWN ARE TYPICAL FOR SIMILAR APPLICATIONS. CONTRACTOR SHALL FIELD VERIFY ALL SITE CONDITIONS AND DIMENSIONAL DATA PRIOR TO CONSTRUCTION. ANY DISCREPANCY NOTED SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER (TOWN OF RICHMOND).
 - THE REQUIRED NUMBER OF TREADS AND RISERS ARE TO BE CONFIRMED IN THE FIELD AT THE TIME OF CONSTRUCTION. STAIRS SHOWN HAVE AN 8" RISER AND 12" TREAD.
 - HANDRAILS ARE REQUIRED ON ALL STAIRS AND ALL LOCATIONS WHERE THE DECK IS MORE THAN 30" ABOVE THE GRADE.
 - ALL LUMBER SHALL BE SOUTHERN YELLOW PINE AND PRESSURE TREATED WITH CCA AT A RATE OF 0.6 LBS. PER CUBIC FOOT. OTHER TYPES OF MATERIALS MAY BE USED FOR THE DECKING AND RAILINGS AS LONG AS LOAD AND WEATHER RESISTANT CHARACTERISTICS ARE EQUIVALENT TO THE MATERIAL DESIGNED ON THESE PLANS.
 - THESE WALKOVER STRUCTURES SHALL SUPPORT A LIVE LOAD OF 40 LBS./SQUARE FOOT.
 - USE OF HEAVY EQUIPMENT WITHIN THE WETLAND, 50' PERIMETER WETLAND OR 100' RIVERBANK WETLAND IS PROHIBITED. THE HELICAL PILES SHALL BE PLACED ON UNDISTURBED SOIL AT THE BASE OF EVERY PILE AS INDICATED ON THE PLANS AND DETAILS. INTERMEDIATE POSTS SHALL BE REQUIRED WHERE SPACING BETWEEN PILES EXCEEDS 6'. ALL HELICAL PILES SHALL BE BACKFILLED AND TAMPED TO FINISHED GRADE. HELICAL PILES SHALL BE VIKING MODEL #TS238254; EMPIRE PIERS 2.375 OD - 0.190 ROUND SHAFT HELICAL PIER OR EQUIVALENT AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATION AND TO THE MINIMUM TORQUE RECOMMENDATION. HELICAL PILES WILL BE OF VARIOUS DEPTHS AT THE CONCLUSION OF THE CONSTRUCTION. A SIGNED AND STAMPED SHOP DRAWING BY A REGISTERED PROFESSIONAL ENGINEER REGISTERED AND AUTHORIZED TO DO BUSINESS IN THE STATE OF RHODE ISLAND IS REQUIRED FOR THE WALKOVER STRUCTURES AND HELICAL PILE INSTALLATION. SHOP DRAWING SHALL INCLUDE ALL CONNECTION DETAILS, MATERIALS AND INSTALLATION METHODS FOR THE CONSTRUCTION.
 - ALL CONSTRUCTION SHALL PROGRESS FROM THE UPLAND, WORKING TOWARDS THE WETLAND OFF EXISTING CONSTRUCTED PORTIONS OF THE WALKOVER STRUCTURE. PATH ALIGNMENT ON EITHER SIDE OF THE WALKOVER STRUCTURE SHALL BE CONFIRMED PRIOR TO CONSTRUCTION OF THE WALKOVER STRUCTURE.
 - ALL METAL FASTENERS SHALL BE HOT-DIPPED GALVANIZED OR MARINE GRADE STAINLESS STEEL. IT IS RECOMMENDED THAT A RUST PREVENTIVE BE APPLIED TO ALL METAL FASTENERS AT LEAST ONCE PER YEAR OR AS NEEDED.
 - WALKOVER STRUCTURE SHALL BE IN ACCORDANCE WITH ALL OSHA REGULATIONS, ESPECIALLY, IN THE HANDLING AND DISPOSAL OF PRESSURE TREATED WOOD MATERIALS.



- SLEEPERS SHALL BE SPACED A MAXIMUM OF 24" ON CENTER.

DETAIL - TIMBER SLEEPER

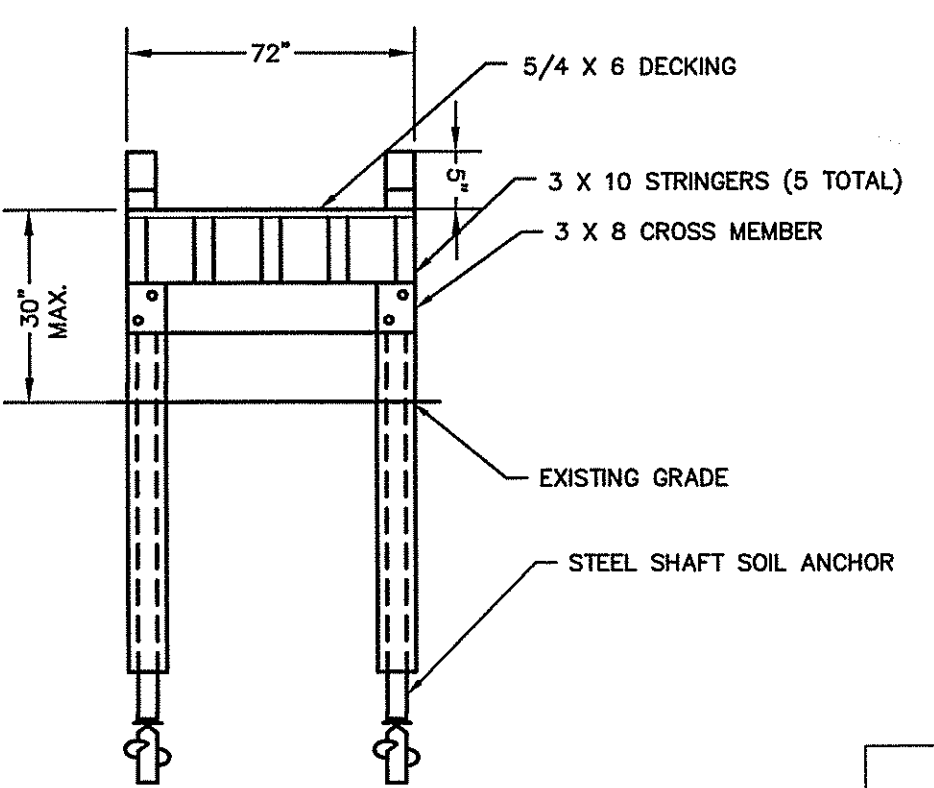
NO SCALE



- STRINGERS SHALL BE A MAX. OF 18" O.C.

DETAIL RAMP SECTION FOR WALKOVER STRUCTURE #1

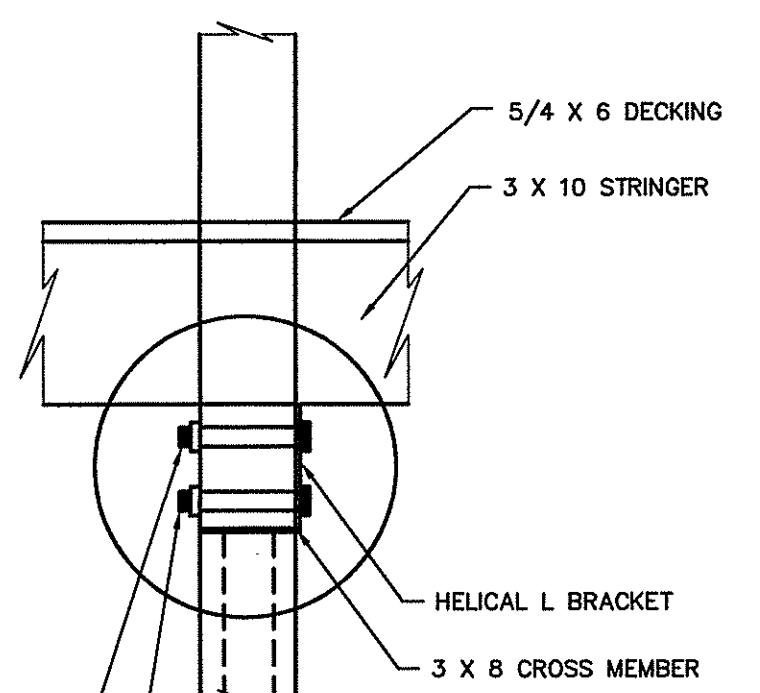
NO SCALE



- STRINGERS SHALL BE A MAX. OF 18" O.C.

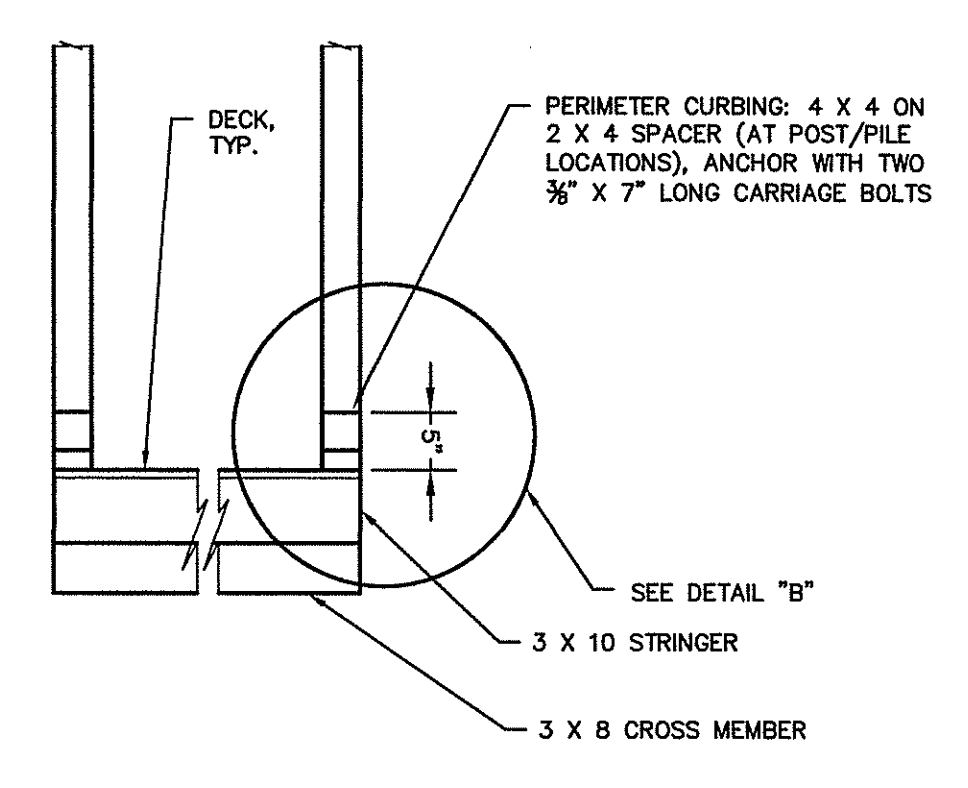
DETAIL BOARDWALK SECTION FOR WALKOVER STRUCTURE #1

NO SCALE



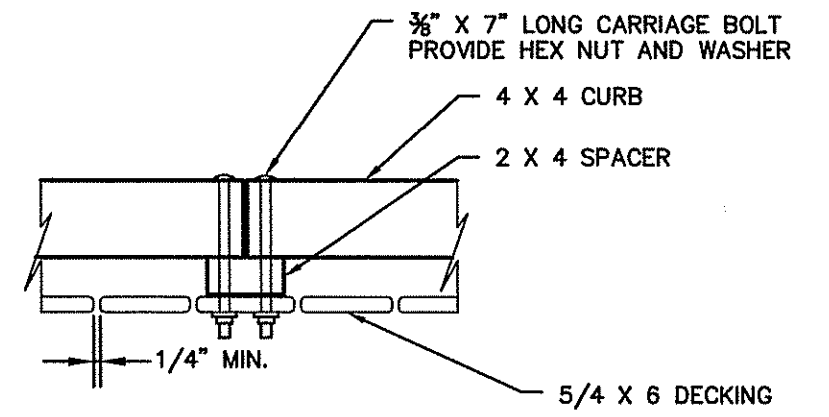
BOLT DETAILS

NO SCALE



ADA CURBING DETAIL

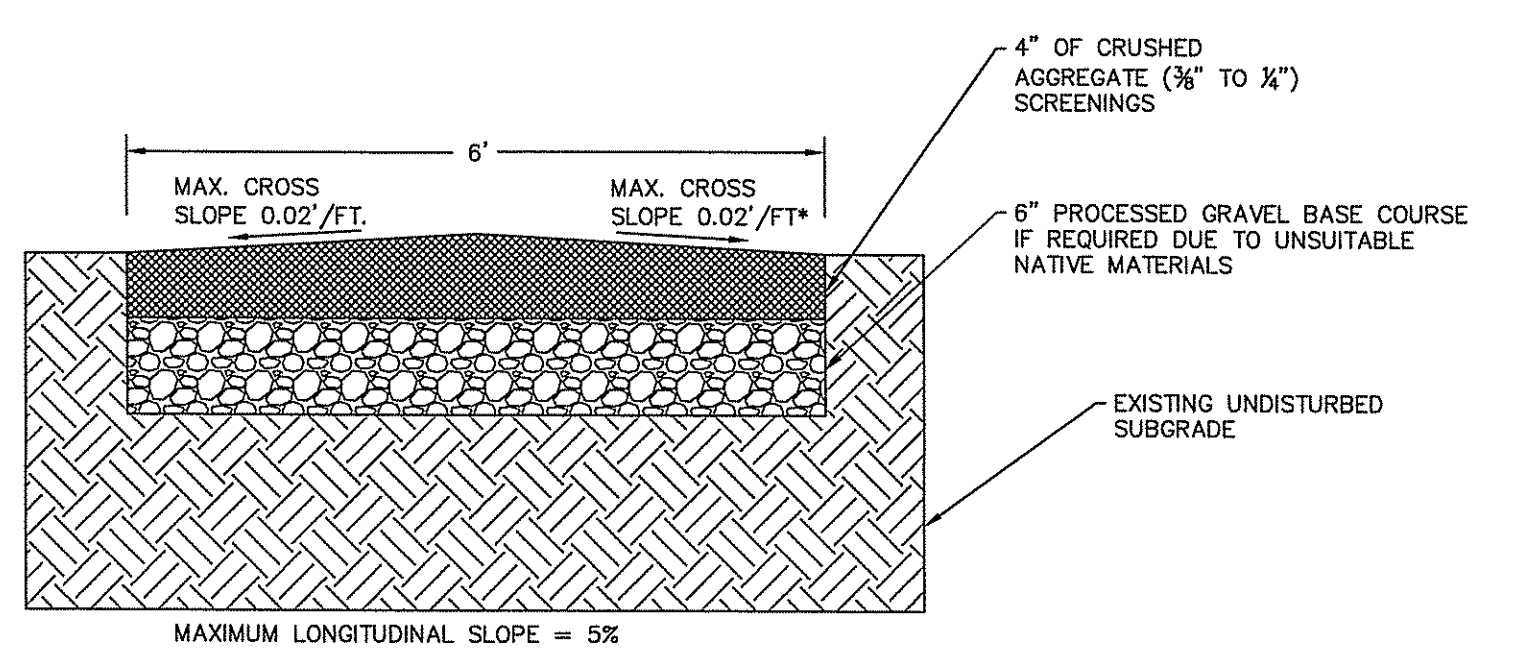
NO SCALE



CURB FASTENING DETAILS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 14 2015 FILE # 15-0195
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

- TRAIL CONSTRUCTION NOTES:**
- THE APPROXIMATE TRAIL CENTERLINE HAS BEEN FLAGGED FOR FIELD REFERENCE. SOME FIELD FIT WILL BE REQUIRED TO SUIT.
 - TRAIL CONSTRUCTION SHALL COMMENCE FROM THE AREA OF THE PROPOSED-PARKING LOT AND WORK TOWARD THE WETLANDS WALKOVER STRUCTURES. LOCATIONS OF PILE-SUPPORTS, STAIRS, RAMPS, ETC. SHALL BE CONFIRMED PRIOR TO COMMENCING CONSTRUCTION OF ANY OF THE WALKOVER STRUCTURES.
 - BRUSH SHALL BE CLEARED AND TREE LIMBS PRUNED AS NECESSARY FOR THE TRAIL CONSTRUCTION. THE TRAIL ALIGNMENT SHALL BE MODIFIED AT SPECIFIC LOCATIONS TO AVOID REMOVAL OF TREES WITH DIAMETER AT BREAST HEIGHT OF 8 INCHES OR GREATER.
 - ACCESSIBLE TRAIL LOOP SHALL BE CONSTRUCTED WITH A STONEDUST SURFACE (SEE DETAIL). FINISH ACCESSIBLE TRAIL SURFACE AS REQUIRED BY REGULATION SHALL RESIST DEFORMATION BY INDENTATIONS AND SHALL NOT BE PERMANENTLY AFFECTED BY EXPECTED WEATHER CONDITIONS AND SHALL SUSTAIN NORMAL WEAR AND TEAR FROM THE EXPECTED USES BETWEEN PLANNED MAINTENANCE. MAXIMUM LONGITUDINAL SLOPE SHALL NOT EXCEED 5%. GROSS SLOPE SHALL NOT EXCEED 2%. THE SURFACE OF THE TRAIL SHALL BE AS SMOOTH AS POSSIBLE WITH MINIMAL TREAD OBSTACLES. NO TREAD OBSTACLE CAN BE GREATER THAN 2" IN HEIGHT (MEASURED VERTICALLY) WITH A 1/2" VERTICAL HEIGHT BEING OPTIMUM.
 - LOCATION OF EXISTING UTILITIES IN OR NEAR THE TRAIL IS UNKNOWN. VERIFY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING RI DIGSAFE AT 888-DIG-SAFE.
 - SOILS IN THE AREA OF THE PROPOSED TRAIL SYSTEM ARE GENERALLY VERY STONY OR GRAVELLY FINE SANDY LOAMS TO SANDY LOAMS, IN HYDROLOGIC GROUP A OR B EXCEPT IN AND AROUND WETLAND AREAS. THEREFORE, NATIVE IN PLACE SOILS MAY BE USED FOR GRAVEL BASE UNLESS DEEMED UNSUITABLE BY THE OWNER (TOWN OF RICHMOND).
 - BALANCE OF TRAIL OUTSIDE OF THE ADA ACCESSIBLE LOOP SHALL BE CLEARED OF STONES OR GROUND DEBRIS, SMALL GROWTH REMOVED WITHIN THE 6" WIDE TRAIL, LIMBS PRUNED TO ACCOMMODATE PEDESTRIAN TRAFFIC AND NATIVE SOIL SURFACE TO REMAIN UNLESS DEEMED UNSUITABLE (I.E. PEAT OR ORGANICS) BY THE OWNER (TOWN OF RICHMOND). NATIVE SOIL SURFACE SHALL BE COMPACTED TO THE DESIRED FINISH GRADE. IN THE EVENT THAT THE SURFACE IS UNSUITABLE 6" OF PROCESSED GRAVEL SHALL BE PLACED AND COMPACTED TO THE DESIRED FINISH GRADE. USE 10 CY FOR BIDDING PURPOSES.

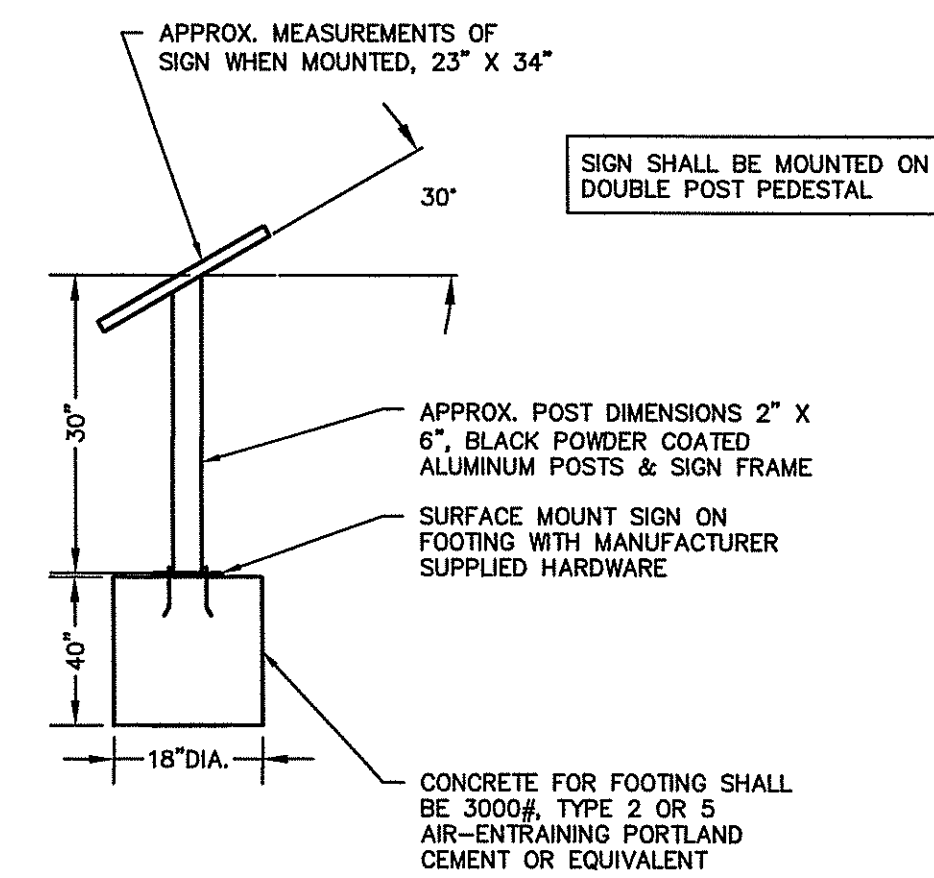


TYPICAL ADA TRAIL CROSS SECTION

NO SCALE

CRUSHED AGGREGATE GRADATION	
U.S. SIEVE NO.	PERCENT PASSING BY WEIGHT
# 3/8"	100
# 4	90-100
# 8	75-80
# 16	55-65
# 30	40-50
# 50	25-35
# 100	15-20
# 200	10-15

- ADA ACCESSIBLE LOOP TRAIL NOTES:**
- THIS IS A TYPICAL TRAIL SECTION FOR THE ADA ACCESSIBLE LOOP.
 - CRUSHED AGGREGATE SHALL MEET GRADATION SHOWN HEREIN. TESTING RESULTS SHALL BE SUBMITTED TO THE TOWN OF RICHMOND TO DOCUMENT THE GRADATION.
 - INTENDED CONSTRUCTION SEQUENCE: REMOVE TOPSOIL, ORGANICS, ROCK, ROOTS, AND ANY OTHER UNSUITABLE MATERIALS (I.E. PEAT OR ORGANICS). EXCAVATE TO THE DESIRED BASE ELEVATION. PLACE 6" PROCESS GRAVEL, COMPACT WITH MECHANICAL SIDEWALK PAVER OR VIBRATORY COMPACTOR TO 95% MAXIMUM COMPACTION. INSTALL AND GRADE 3" SCREENINGS, ROLL & COMPACT TO 95% MAXIMUM COMPACTION. COMPACTION TESTING SHALL BE PROVIDED TO THE TOWN OF RICHMOND IF REQUESTED.
 - LENGTH OF ADA ACCESSIBLE TRAIL FOR THE PROPOSED PROJECT IS 2.195±. WIDTH IS 6' EXCEPT AT WALKOVER STRUCTURES.
 - BALANCE OF TRAIL SYSTEM IS 4.400± IN LENGTH. WIDTH IS 6' EXCEPT AT WALKOVER STRUCTURES.
 - EXCESS EXCAVATED MATERIAL SHALL BE USED ONSITE PER DIRECTION BY TOWN OF RICHMOND OR REMOVED AND DISPOSED OF OFFSITE AT THE TOWN'S DISCRETION.



DETAIL EDUCATIONAL SIGNS

NO SCALE

- SIGNS SHALL MANUFACTURED AS CUSTOM HIGH PRESSURE LAMINATE (CHPL) COMPOSED OF SEVERAL LAYERS OF PHENOLIC RESIN IMPREGNATED KRAFT FILLER PAPER, A DIGITALLY IMAGED GRAPHIC, A LAYER OF MELAMINE RESIN, SURFACED BY A LAYER OF TRANSLUCENT EXTERIOR UV/GRAFFITI OVERLAY PROTECTION.
- THE ENTIRE PANEL, INCLUDING EXTERIOR OVERLAY, MUST BE BONDED UNDER HEAT AND EXTREME PRESSURE TO FORM A COMPOSITE PANEL.
- THE FINISH MUST BE SMOOTHLY TEXTURED WITH REFLECTIVITY OF 30+ OR -5 GLOSS UNITS.
- THE CHPL GRAPHICS MUST BE WARRANTED FOR A MINIMUM OF 10 YEARS AGAINST FADING, DE-LAMINATION AND WEATHER DETERIORATION WITHOUT ANY REQUIREMENT FOR APPLICATION OF SEALANT.
- PANELS MUST BE ABLE TO BE CLEANED WITH ANY SOLVENT AND NOT RESTRICT USE OF PRODUCTS CONTAINING LACQUER THINNER OR ACETONE.
- ALL CUTTING AND FINISHING TO BE DONE USING A CNC ROUTER.
- GRAPHICS MUST BE MADE USING 12-COLOR HIGH DEFINITION PRINTING TECHNOLOGY.
- VENDOR SHALL PROVIDE A SAMPLE FROM A SUPPLIED FILE TO CONFIRM QUALITY.
- CONTRACTOR SHALL PROVIDE AND INSTALL CONCRETE FOOTING, SIGN POST AND FRAME. DIGITAL IMAGE FOR THE SIGN SHALL BE PROVIDED BY THE TOWN OF RICHMOND. INSTALLATION OF THE PLAQUE SIGN IN THE FRAME SHALL BE BY THE TOWN OF RICHMOND.
- LOCATION OF SIGNS SHALL BE AS SHOWN ON THE PLANS CONFIRMED IN THE FIELD BY THE TOWN OF RICHMOND.
- INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
- SIGNAGE SHALL BE BY FOSSIL INDUSTRIES INC., IZONE GRAPHICS OR EQUIVALENT.

VIKING
HELICAL ANCHORS

The World's Strongest Anchor

Model TS238254: 2 3/8" OD (0.254" Wall) Helical Anchor System
Technical Specification Notes

Shaft Material: 2.375" OD x 0.254" Wall
ASTM A519
Yield Strength = 80 ksi (minimum)

Helix Blades: ASTM A572 Grade 50 x 3/8" Thick (1/2" or 3/4" Thick Available)
Yield Strength = 50 ksi (minimum)
Helix blade geometry in accordance with ICC-ES AC308

Helix Plate Weldment: Fillet Weld per ANSI/AWS D1.1
Welding Process: GMAW (Pulse arc)
Electrode: ER70S-6 0.045 diameter
Gas: 90% Argon, 10% CO₂

Box Connection: AISI 4125M; Q&T to HRC 28-32 x 2 3/8" OD
Yield Strength = 107 ksi (minimum)

Pin Connection: AISI 4140; Q&T to HRC 28-32
Yield Strength = 107 ksi (minimum)

Tube/Connection Weldment: Inertia Friction Weld per ANSI/AWS C8.1
Full Strength Metallurgical Bond

Coupling Bolts: ASTM A325 3.5" x 0.625" dia. bolt and nut
Yield Strength = 92 ksi (minimum)

Anchor Finish: Available plain or hot-dip galvanized coating per ASTM A123

New Construction Helical Anchor Capacities
Mechanical Axial Shaft Capacities:
Ultimate Tension Strength = 125 KIP
Compression Load Limit = 135 KIP

Limited Axial Design Capacities based on Ultimate Torsional Resistance of Anchor Shaft = 9,000 ft-lbs
Ultimate Capacity Based on Torque = 90 KIP
Torque Factor (k) = 9 - 10

7615 Smetana Lane, Ste. 140 ... Eden Prairie, MN 55344
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NO.	DATE	DESCRIPTION	BY

DRAWING TITLED:
DETAILS - 3

LOCATED ON:
LOT 5-1 PLAT 5C

OWNED BY:
TOWN OF RICHMOND

ADDRESS:
**KINGSTOWN ROAD
IN THE TOWN OF RICHMOND, RI**

JUNE 25, 2015
DESIGNED BY:
CAROLYN J DOYLE, P.E.,

SCALE: AS SHOWN
DRAWN BY:
CJD

CHECKED BY:
CJD

DRAWING NO.
SHEET 8 OF 8

CAROLYN J. DOYLE
No. 5078
REGISTERED PROFESSIONAL ENGINEER