

Newell Boathouse Renovations

Boston, Massachusetts

Notice of Intent – Supplemental Information

April 27, 2022



Submitted to:

Boston Conservation Commission
1 City Hall Square
Room 709
Boston, MA 02108

Applicant:

Harvard University
FAS – Office of Physical
Resources and Planning
60 JFK Street
Cambridge, MA

Applicant's Representative:



34 William Way
Bellingham, MA 02019
(508) 966 9092
childseng.com

TABLE OF CONTENTS

Formal Response to Hearing Comments

ATTACHMENT A – Revised Project Plans

ATTACHMENT B – Revised Cut and Fill Volumes

ATTACHMENT C – Riverfront Mitigation Calculations

ATTACHMENT D – Pile Removal Letter

ATTACHMENT E – Pile Driving Letter

ATTACHMENT F – Alternative Analysis – Boat Storage

ATTACHMENT G – Phosphorus Calculations

ATTACHMENT H – Bike Path Figure

Item	Comment	Response	Att
1	The Notice of Intent indicates that the project will alter 13,705 sqft of BLSF and 2,033 cu ft of flood storage will be lost as a result. 310 CMR 10.57(4)(a)(1) states "Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows." In response to how this performance standard is being met, the NOI provides only a qualitative statement. In other instances where work has proposed a loss of flood storage in such urbanized areas of the city, the Commission has requested a Hydrologic and Hydraulic (H&H) Study be performed and submitted to substantiate the claims that there will be not be an increase in the horizontal extent and level of flood waters during peak flows	The design team reviewed the site further and has expanded the swale to ensure that no flood storage volume has been lost within Bordering Land Subject to Flooding. We have attached the revised figure showing the cut and fill volumes as well as the updated plans with the larger swale.	A, B
2	The NOI states "the ratio of restoration to mitigation exceeds 13:1, providing much greater restoration than required." Are you proposing restoration in accordance with 310 CMR 10.58(5)(f) or mitigation in accordance with 310 CMR 10.58(5)(g)	After discussing with staff we are proposing mitigation (g) for an additional 125SF of impact so, at a 2:1 ratio, we will be providing 250 SF of mitigation that will be done on site. The mitigation will be in the form of taking the lawn area to the south end of the site and creating a planted area the is much more ecologically viable. We have including our calculations as part of this submittal, and show the mitigation area on the revised landscape drawings.	A,C
3	Should the Commission find that the work proposed does conform to the Riverfront Area performance standards at 310 CMR 10.58(5), the Commission "shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons."	We understand that the mitigation area will be subject to a continuing condition.	-
4	Regarding the plan set, each sheet indicates that the MAHW line and Bank are coincident but the MS sheets indicate that the Bank is a separate topo line at elevation 9ft. Which is correct?	The MS drawings have been updated and any confusing or conflicting notes have been removed. The MAHW line is correct and was flagged as part of the topographic survey done for the project. The updated drawings are attached.	A
5	In addition to the Norway Maple, what other invasive species are present onsite? What treatment methods are proposed to remove the invasives?	No invasive species have been documented in the project area other than the Norway Maples. These trees are proposed to be removed and stumps ground out.	-
6	Can you confirm how many trees are being removed? Does that include trees with less than 6in DBH? Can you confirm how many trees are being planted as part of the project?	Twenty-six (26) existing trees are proposed to be removed. Six (6) of these trees are less than 6" in diameter. Twenty-eight (28) trees are proposed as part of the project.	-
7	How close are the mature oak trees to the building? What distance is determined to be "too close" to the building?	There is a 32" caliper Pin Oak located about 3' from the existing building façade, though the root flare appears to extend under the building. This tree is proposed to be removed, primarily due to the significant canopy overhang of the existing building (roughly 20').	-
8	What is the reasoning for cutting the piles at the mudline rather than pulling them?	The existing piles are solid timber piles, pulling the pile will create a void in the soil. As many of the piles are on the slope that leads away from the building foundation the concern in it may create movement in the building foundation if removed so we would like to cut the piles at the mudline. We have included a letter to support this and also plan to include the locations of the remaining existing piles on the as-built plans.	D
9	What methods will be used to drive the new timber piles?	The contractor driving the piles will be Black Dog Divers, we have attached a letter from them. They plan to start by vibrating in the piles then impacting to the final elevations.	E
10	Besides a floating boom, what other mitigation measures are proposed during in-water work to limit turbidity and other potential impacts?	A debris boom will be installed to contain the work area, including the barges. The boom will be anchored in place and maintained throughout the project. Environmentally friendly hydraulic oils will be used in all the equipment over or near the water. All equipment, including the boom, will be checked for condition/damage before and after each shift. In addition, multiple spill kits will be located on the barge, boat and surrounding areas to mitigate any exposure if there was an incident.	-

Item	Comment	Response	Att
11	What is the total change in impervious surface cover within each resource area?	<p><u>25' Riverfront area</u>: net reduction of 379 sf of impervious area</p> <p><u>50' Waterfront</u> (includes area within 25' Riverfront): net increase of 120 sf of impervious area</p> <p><u>100' Buffer</u> (includes area within 50' Waterfront and 25' Riverfront): net increase 1,721 sf of impervious area</p>	-
12	To this date, the Commission has not allowed a structure to be constructed in the Waterfront Area. What other locations were considered for the boat racks, and how was the proposed location settled on?	The design calls for an existing structure that is located in both the Riverfront Area and Waterfront Area to be removed and replaced by two smaller covered boat racks that are also further back from the river and out of the Riverfront Area. We have attached a specific alternatives analysis detailing more of the design input that went into the decision for the current location.	F
13	Commissioner Sullivan requested additional phosphorus reduction and additional flood storage.	Please see attached for the narrative and calcs relating to phosphorus reduction from the SW Report. There have been some minor revisions since the SW Report was submitted. As mentioned in Item 1, we have revised our design to provide a net cut within the flood plain. Please see attached for our revised flood storage figure.	G,B
14	Commissioner Ghirin requested a revised plan showing the boat rack structures removed entirely from the Waterfront Area.	The attached alternatives analysis shows one of the options with the boat racks out of the waterfront area.	F
15	Commissioner Thiruvengadam requested clarifying the locations of some of the items on the plan, specifically the bike path and pedestrian areas.	We have added some additional labeling and included a sheet with the bike path highlighted. We also believe that the Commissioner also asked for an educational sign to be placed next to the bioretention basin, this is acceptable to us and it has been added to the updated landscape plan.	A,H
16	The value for compensatory flood storage stated at the hearing was substantially less than the value stated in the Notice of Intent. Please clarify this as well.	We have updated the cut and fill figures as part of ensuring no flood storage is lost. The revised figures are attached.	B
17	Staff also wants to touch base with the project team, specifically about the restoration/mitigation components of the project and how they comply with the Riverfront Area performance standards. This can happen at any time before the next hearing.	We met with Staff on Monday (4/25) to review the Riverfront Area, our Supplement Information submittal includes the results of that conversation about the mitigation in the RA.	C

ATTACHMENT A
Revised Project Plans

STORM WATER PROJECT INFORMATION

TOTAL LIMIT OF WORK AREA = 133,649 SF
 EXISTING IMPERVIOUS AREA WITHIN LIMIT OF WORK = 24,177 SF
 PROPOSED IMPERVIOUS AREA WITHIN LIMIT OF WORK = 35,532 SF
 REQUIRED WATER QUALITY VOLUME = 2,953 CF
 PROVIDED WATER QUALITY VOLUME = 4,067 CF

BIORETENTION BASIN
 ROOF AREA = 5,081 SF
 SIDEWALK AREA = 1,641 SF
 REQUIRED WATER QUALITY VOLUME (ROOF/SIDEWALK) = 560 CF
 PROVIDED WATER QUALITY VOLUME = 2,187 CF

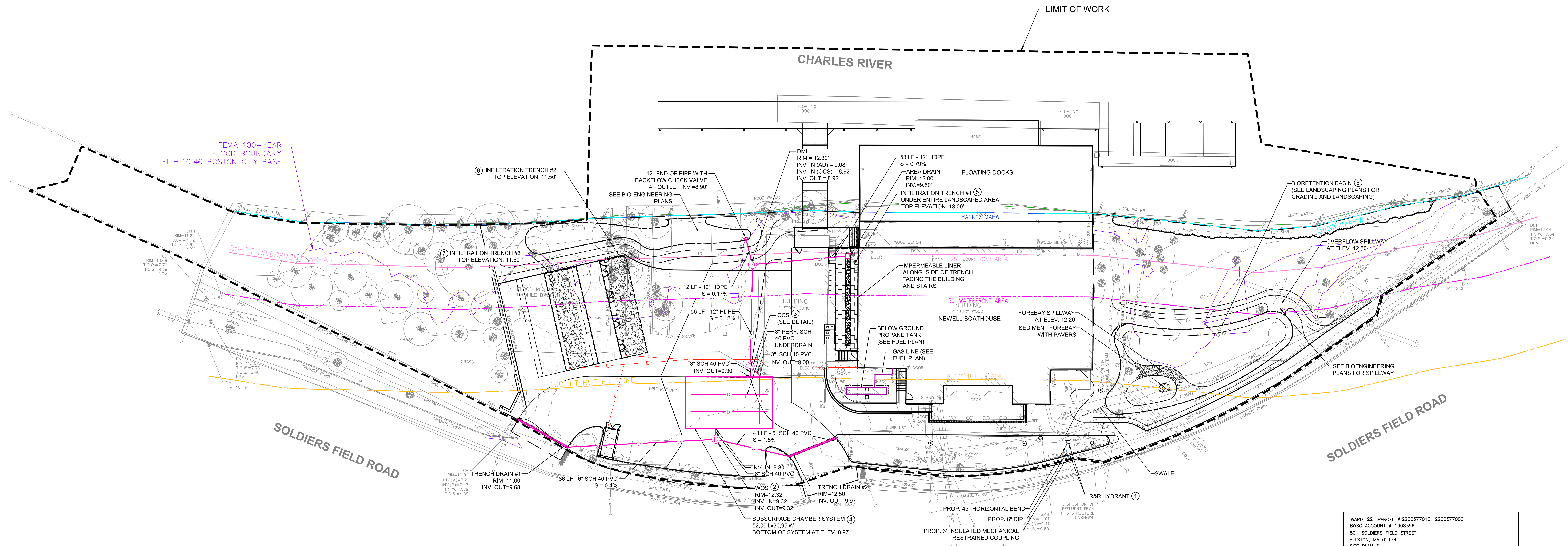
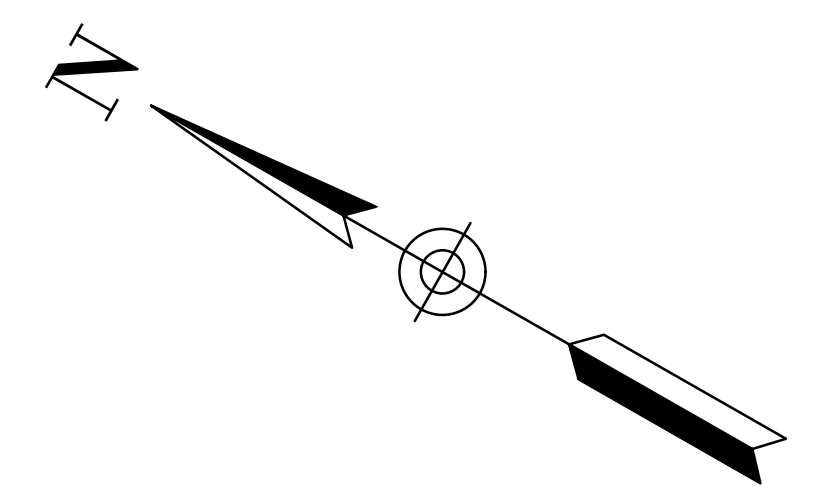
SUBSURFACE CHAMBERS
 IMPERVIOUS AREA = 11,825 SF
 REQUIRED WATER QUALITY VOLUME = 986 CF
 PROVIDED WATER QUALITY VOLUME = 987 CF

STORM WATER PROJECT INFORMATION

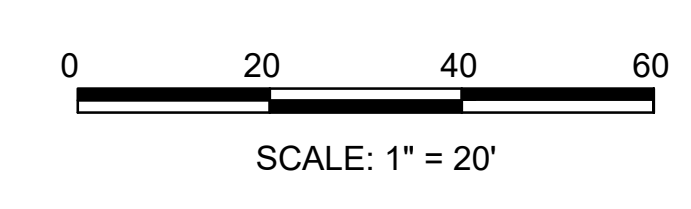
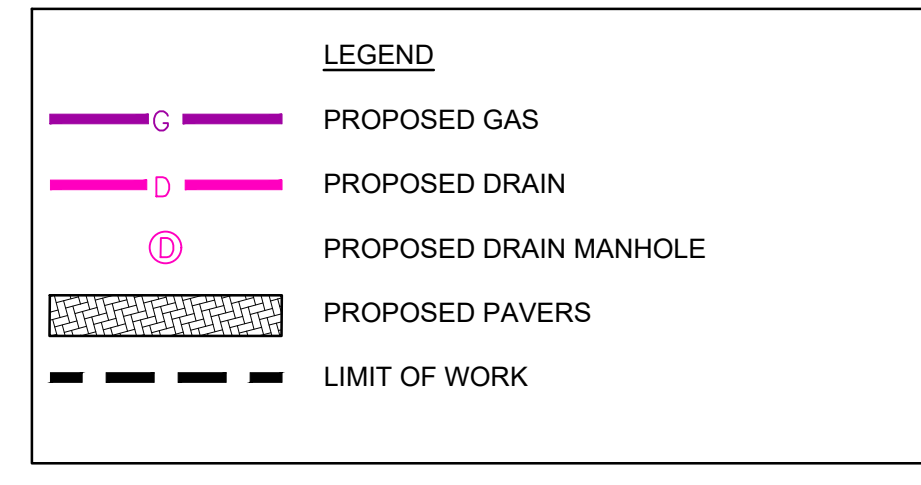
INFILTRATION TRENCH #1
 ROOF AREA = 3,425 SF
 SIDEWALK AREA = 1,983 SF
 REQUIRED WATER QUALITY VOLUME (ROOF/SIDEWALK) = 453 CF
 PROVIDED WATER QUALITY VOLUME = 614 CF

INFILTRATION TRENCH #2
 ROOF AREA = 1,553 SF
 REQUIRED WATER QUALITY VOLUME = 129 CF
 PROVIDED WATER QUALITY VOLUME = 139 CF

INFILTRATION TRENCH #3
 ROOF AREA = 1,554 SF
 REQUIRED WATER QUALITY VOLUME = 129 CF
 PROVIDED WATER QUALITY VOLUME = 140 CF



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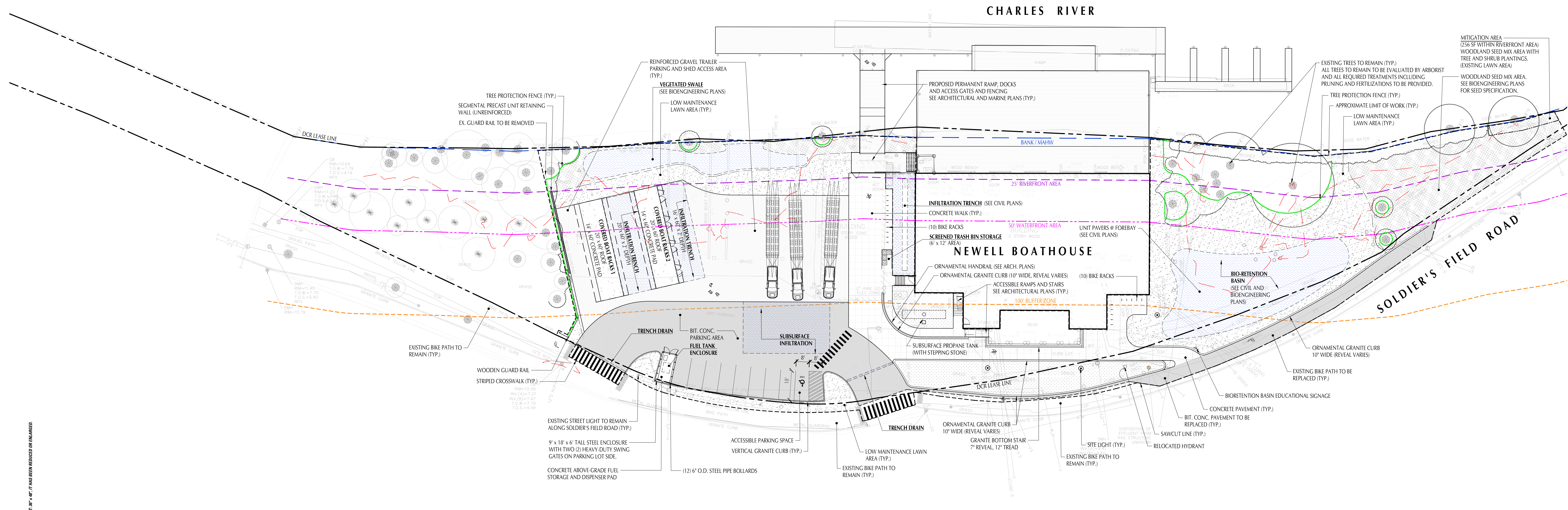
BWSC INSPECTION	
1 HYDRANT	2 WATER QUALITY STRUCTURE (WQS)
DATE: _____	DATE: _____
INSPECTOR: _____	INSPECTOR: _____
3 OUTLET CONTROL STRUCTURE (OCS)	4 SUBSURFACE CHAMBER SYSTEM
DATE: _____	DATE: _____
INSPECTOR: _____	INSPECTOR: _____
5 INFILTRATION TRENCH (#1)	6 INFILTRATION TRENCH (#2)
DATE: _____	DATE: _____
INSPECTOR: _____	INSPECTOR: _____
7 INFILTRATION TRENCH (#3)	8 BIORETENTION BASIN
DATE: _____	DATE: _____
INSPECTOR: _____	INSPECTOR: _____

WARD 22, PARCEL # 2200577010, 2200577000
 BWSC ACCOUNT # 1308366
 801 SOLDIERS FIELD STREET
 ALLSTON, MA 02134
 SITE PLAN # _____
 DIMES
 PRESIDENT & FELLOWS OF HARVARD COLLEGE
 1350 MASSACHUSETTS AVENUE #980
 CAMBRIDGE, MA 02138
 CONTACT: EDWARD MILCH
 TEL : 617-496-2331

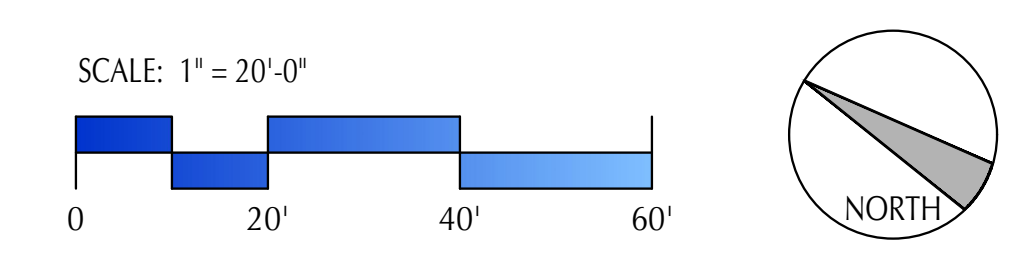
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LAYOUT, MATERIALS AND LANDSCAPE NOTES

- EXISTING CONDITIONS BASED ON PLAN TITLED 'NOI SUBMISSION NEWELL - EXISTING CONDITIONS' DATED AUGUST 27, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC.
- SEE CIVIL PLANS FOR SUBGRADE DRAINAGE AND STORMWATER MANAGEMENT.
- ALL LINE AND GRADE WORK PER DRAWINGS AND SPECIFICATIONS SHALL BE LAID OUT BY A REGISTERED CIVIL ENGINEER OR SURVEYOR ENGAGED BY THE CONTRACTOR.
- ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
- ALL DIMENSIONS ARE FROM FACE OF BUILDING, WALL OR CURB UNLESS OTHERWISE NOTED.
- THE DIMENSIONS SHOWN ON THE DRAWINGS SHOW DESIGN INTENT AND MUST BE FIELD VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS. SHOP DRAWINGS FOR ALL PAVEMENT AND CURBING LAYOUT SHALL BE BASED UPON ACTUAL LAYOUT AND FIELD MEASUREMENT BY THE CONTRACTOR.
- AT ALL LOCATIONS WHERE EXISTING CURBING, BITUMINOUS CONCRETE OR CONCRETE PAVING ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- EXPANSION JOINT FILLER AND SEALANT SHALL BE PLACED WHERE PAVEMENT MEETS CURBING, WALLS OR OTHER VERTICAL ELEMENTS, INCLUDING LIGHT BASES, HYDRANTS, BUILDINGS AND BUILDING COLUMNS, WALLS, STAIRS AND AT OTHER VERTICAL CONDITIONS AS SHOWN ON THE DRAWINGS.
- LAYOUT OF EXPANSION JOINTS SHOWN IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR LAYOUT BASED ON FIELD VERIFIED MEASUREMENTS. LAYOUT OF EXPANSION JOINTS SHALL BE REVIEWED IN THE FIELD BY THE OWNER'S REPRESENTATIVE PRIOR TO POURING CONCRETE.
- CONTRACTOR SHALL STAKE THE CENTERLINE AND EDGES OF ALL ELEMENTS IN THE FIELD FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
- RESTORE EXISTING CONDITIONS, INCLUDING REPAIRING, RESETTling SITE IMPROVEMENTS AND SEEDING, AS NECESSARY IN AREAS OF PROPOSED UTILITY IMPROVEMENTS.
- CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING THE LOCATIONS OF ANY EXISTING SITE ELEMENTS TO BE RESET IN THEIR SAME HORIZONTAL LOCATION.
- PROVIDE SLEEVES UNDER NEW PAVEMENT AS SHOWN ON THE DRAWINGS.
- PROVIDE SITE LIGHTING INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- PROVIDE BIKE RACKS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- INCLUDE IN THE PRICING AN ADDITIONAL \$5,000 SIGNAGE ALLOWANCE.



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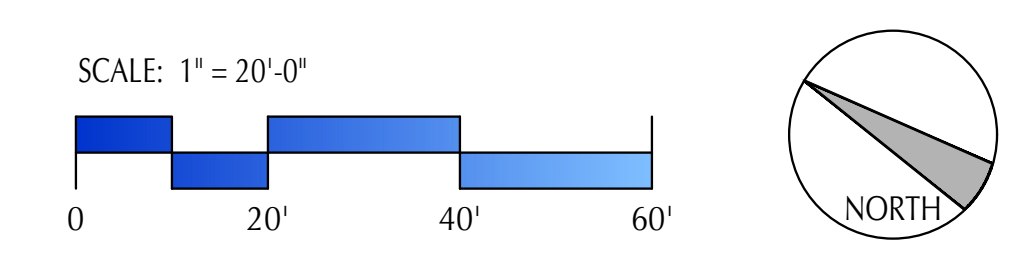
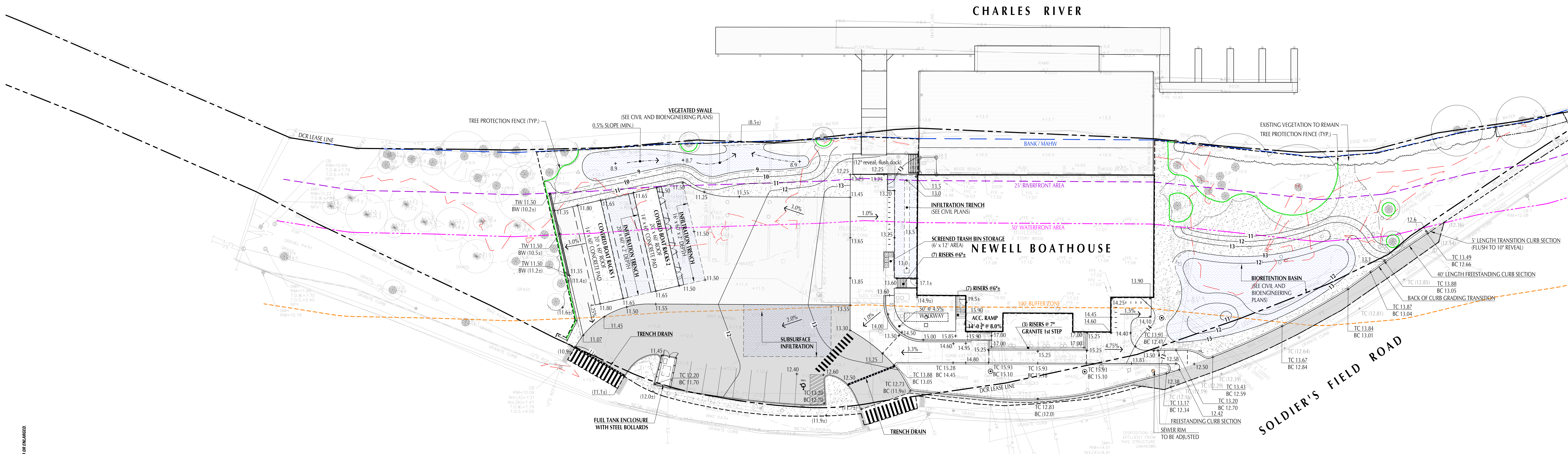


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<p>Bruner/Cott ARCHITECTS</p> <p>225 Friend Street Boston, MA 02114 617.492.8400 bruner-cott.com</p>	<p>PETERSON ARCHITECTS</p> <p>156 Mt. Auburn Street Cambridge, MA 02138 617.254.2218 peterson-architects.com</p>	<p>Shadley Associates Landscape Architects and Planning Consultants</p> <p>1730 Massachusetts Avenue Lexington, MA 02420 781.652.8809 shadleyassociates.com</p>	<p>HATCH</p> <p>27 School Street, Boston, MA 02108 hatch.com</p>	<p>Newell Boathouse Renovation Project # 17-017 / 20183.0-00</p> <p>2022-3-25 Rev. 1</p>	<p>Permit Plans</p> <table border="1"> <thead> <tr> <th>Rev.</th> <th>Date</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2022-04-27</td> <td>Vegetated Swale + Mitigation Area</td> </tr> </tbody> </table>	Rev.	Date	Remarks	1	2022-04-27	Vegetated Swale + Mitigation Area	<p>Harvard University Athletics 801 Soldiers Field Road Allston, Massachusetts 02134</p>	<p>L-100</p>
Rev.	Date	Remarks											
1	2022-04-27	Vegetated Swale + Mitigation Area											

GRADING NOTES

- EXISTING CONDITIONS BASED ON PLAN TITLED "NOI SUBMISSION NEWELL - EXISTING CONDITIONS" DATED AUGUST 27, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC.
- CONTRACTOR SHALL EMPLOY A LICENSED SURVEYOR OR REGISTERED ENGINEER TO VERIFY AND LAYOUT ALL GRADES AS SHOWN ON THE DRAWINGS.
- PRIOR TO COMMENCING ANY EXCAVATION WORK, THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE "DIG SAFE" NOTIFICATION PROCEDURES PROMOTED BY RESPECTIVE UTILITY COMPANIES. THE "DIG SAFE" TELEPHONE NUMBER FOR MASSACHUSETTS IS 1-888-DIG-5454.
- VERIFY ALL EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK. THE STARTING OF WORK INDICATES THE CONTRACTOR HAS REVIEWED AND ACCEPTED EXISTING CONDITIONS.
- CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY LOCATIONS WITH CONFLICTS BETWEEN UTILITY PLANS AND GRADING PLANS.
- CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING, PROVIDING VERTICAL CURVES OR ROUNDINGS AT THE TOP AND BOTTOM OF SLOPES.
- PITCH EVENLY BETWEEN SPOT GRADES. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM SLOPE OF ONE EIGHTH INCH (1/8") PER FOOT. ANY SITE CONDITIONS OR ISSUES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE PRIOR TO CONTINUING THE WORK. NEW PAVEMENT AREAS MUST HAVE POSITIVE DRAINAGE TOWARDS THE STREET CURB OR TOWARDS DRAINAGE STRUCTURES.
- CONTRACTOR SHALL PROVIDE DUST CONTROL FOR EARTHWORK OPERATIONS AS APPROVED BY THE OWNER'S REPRESENTATIVE.
- ALL GRADING SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LOCAL AND FEDERAL LAWS AND GUIDELINES FOR UNIVERSAL ACCESSIBILITY, INCLUDING ADA IN CASE OF CONFLICT BETWEEN REGULATIONS, THE GUIDELINE PROVIDING GREATER ACCESS SHALL APPLY.
- MAINTAIN THE INTEGRITY OF THE EXISTING DRAINAGE SYSTEM AT ALL TIMES.
- THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISHED GRADES AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MANHOLES, DRAINAGE STRUCTURES, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED ON THE UTILITY DRAWINGS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- RIM ELEVATIONS OF ALL DRAINAGE STRUCTURES AND OTHER UTILITY STRUCTURES SHALL BE SET FLUSH WITH FINAL SURROUNDING GRADES SO AS NOT TO CAUSE A TRIP EDGE.
- FINAL SHAPING OF ALL EARTHWORK SHALL BE DIRECTED AND APPROVED IN THE FIELD BY THE OWNER'S REPRESENTATIVE, INCLUDING THE SUBGRADE IN THE PLANT BEDS, PRIOR TO PLACING ANY LOAM.



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PLANT SCHEDULE

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
DECIDUOUS SHADE TREES					
AR	3	Acer rubrum	Red Maple	3 - 3 1/2" CAL.	
UA	4	Ulmus Americana 'Valley Forge'	American Elm	4 - 4 1/2" CAL.	
TA	3	Tilia americana	American Linden / Basswood	3 - 3 1/2" CAL.	
QA	1	Quercus alba	White Oak	4 - 4 1/2" CAL.	
QR	2	Quercus rubra	Red Oak	4 - 4 1/2" CAL.	
ORNAMENTAL TREES					
AC	6	Amelanchier canadensis	Shadblow Serviceberry	2 - 2 1/2" CAL.	MULTI-STEM
BP	9	Betula papyrifera	Paper Birch	3 - 3 1/2" CAL.	
CF	3	Benthamidia (cornus florida L.)	Flowering Dogwood	2 - 2 1/2" CAL.	
SHRUBS					
CR	2	Cornus racemosa	Grey Dogwood	24 - 36" HT.	
IG	12	Ilex glabra	inkberry	36 - 48" HT.	42" O.C.
JC	180	Juniperus communis var. depressa Pursh	Common Juniper	1 GAL.	36" O.C.
LB	2	Lindera benzoin	Grey Dogwood	24 - 36" HT.	
YC	3	Vaccinium corybosum	Highbush Blueberry	24 - 36" HT.	
GROUNDCOVERS, HERBACEOUS PERENNIALS, ORNAMENTAL GRASSES					
PV	65	Panicum virgatum	Switchgrass	#3 CONT.	36" O.C.
SS	150	Schizachyrium scoparium	Little Bluestem	1 GAL.	24" O.C.

NOTE: ALL PROPOSED PLANTS INCLUDING SEED MIXES SELECTED FROM THE "LANDSCAPE RESTORATION PLANT LISTS" DEVELOPED AND PROVIDED BY THE DEPARTMENT OF CONSERVATION & RECREATION (DCR) CHARLES RIVER BASIN RIVERBANK VEGETATION MANAGEMENT PLAN, AND/OR "THE VASCULAR PLANT OF MASSACHUSETTS, A COUNTY CHECKLIST" FIRST REVISION.

PLANTING NOTES

- EXISTING CONDITIONS BASED ON PLAN TITLED "NOI SUBMISSION NEWELL - EXISTING CONDITIONS" DATED AUGUST 27, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC.
- CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING AND INSTALLED UTILITY LINES PRIOR TO PLANTING AND REPORT ANY CONFLICTS TO THE OWNER'S REPRESENTATIVE.
- ALL NEW PLANT MATERIAL SHALL CONFORM TO THE "AMERICAN STANDARD FOR NURSERY STOCK", LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION, EXCEPT AS NOTED IN THE SPECIFICATIONS. IN ADDITION, ALL PLANT MATERIAL SHALL BE OF SPECIMEN QUALITY.
- ALL NEW WOODY STEM PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN UNLESS OTHERWISE NOTED ON THE PLANT LIST.
- CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS. IF MINOR DISCREPANCIES EXIST BETWEEN THE NUMBER OF PLANTS DRAWN ON THE PLANTING PLAN AND THE NUMBER OF PLANTS IN THE PLANT SCHEDULE, THE PLANTING PLAN SHALL GOVERN.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT, AND CULTURE AND MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE.
- ALL NEW TREES SHALL BE TAGGED AND APPROVED BY THE OWNER'S REPRESENTATIVE AT THE NURSERY PRIOR TO DIGGING OR DELIVERY TO THE SITE. FOR SHRUBS AND SMALLER MATERIALS, REPRESENTATIVE TAGGING BY THE LANDSCAPE ARCHITECT WILL BE ACCEPTABLE.
- NO TREES SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING. TREES SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS THEY BORE TO FINISH GRADE BEFORE BEING DUG IN THE NURSERY. PRIOR TO PLANTING, REMOVE THE TOP OF THE BURLAP AND CONFIRM THAT PLANT ROOT CROWNS ARE NOT COVERED BY SOIL FROM THE NURSERY.
- STAKE LOCATION OF ALL PROPOSED PLANTS FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF PLANTING.
- MULCH TREES AND PLANTING BEDS PER DETAILS AND SPECIFICATIONS.
- ALL NEW TREES SHALL BE GUARANTEED BY THE CONTRACTOR FROM THE TIME OF WRITTEN ACCEPTANCE. SEE SPECIFICATIONS FOR LENGTH OF GUARANTEE.
- ALL LAWN AREAS DISTURBED BY CONSTRUCTION OPERATIONS INSIDE AND OUTSIDE THE LIMIT OF WORK SHALL BE LOAMED AND SEEDED AS SPECIFIED.
- ALL AREAS TO BE SEEDED SHALL RECEIVE SOIL PREPARATION AS SPECIFIED PRIOR TO SEEDING, UNLESS OTHERWISE NOTED ON PLAN.
- ALL EXISTING TREES TO REMAIN SHALL BE PRUNED AND FERTILIZED BY A CERTIFIED ARBORIST.
- NO PHOSPHORUS-BASED FERTILIZERS ARE TO BE USED OR INTRODUCED ON SITE.
- ALL PROPOSED TURFGRASS LAWN AREAS SHALL INCLUDE 6" COMPACTED DEPTH OF LOAM OR RENOVATED EXISTING SOIL, AND THEN SEEDED WITH NATURAL PERFECTION MIX BY COLONIAL SEED / LAVOIE HORTICULTURE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

"NATURAL PERFECTION" LOW MAINTENANCE GRASS MIXTURE

Manufactured by Colonial Seed / LaVoie Horticulture

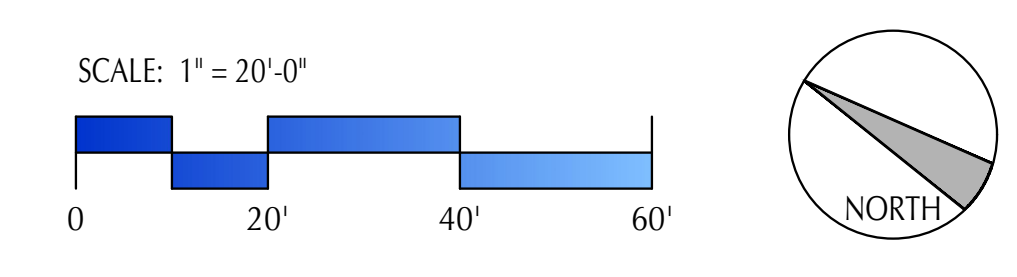
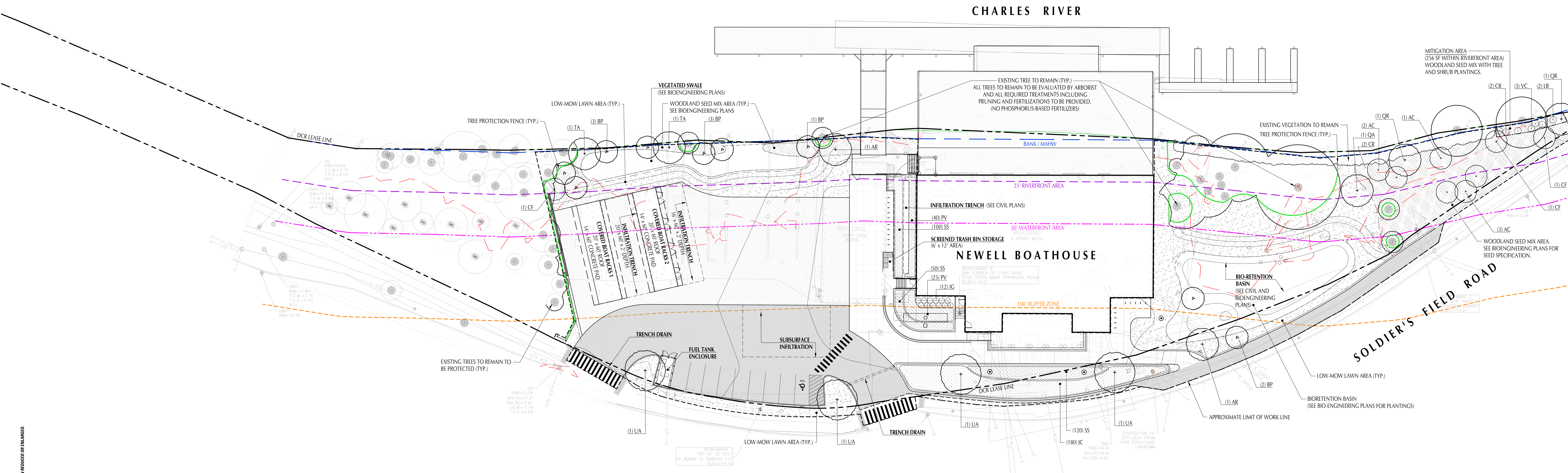
Ingredients: Sheep Fescue, Blue X Hard Fescue, Blue Fescue, Hard Fescue

Adapted: Sun/Shade, Dry Droughty Soils, Low PH, and Low Fertility.

Uses: Ideal mix for low maintenance lawns, windsoff coastal expanses, and naturalized golf course roughs. At low rates Natural Perfection works well as a grass base for wildflowers, or legumes to be added from plugs or seed in year 2-3 upon successful weed suppression.

Features: Natural Perfection is the lowest growing lawn mix available; very fine textured with a wispy look that has gained broad acceptance, and tolerant of extreme drought. Natural Perfection can grow in low fertility/low PH soils. Fertilizer and water will improve the vigor and overall appearance of Natural Perfection. However when the area produces a layer of organic matter in year 2-3 these species can survive with NO FERTILIZER/NO WATER and one MOWING/YEAR in sandy soils.

Seeding Rate: Lawn Areas to be seeded at a rate of 4 pounds / 1,000 square feet.



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<p>Bruner/Cott ARCHITECTS</p> <p>225 Friend Street Boston, MA 02114 617.492.8400 bruner-cott.com</p>	<p>PETERSON ARCHITECTS</p> <p>156 Mt Auburn Street Cambridge, MA 02138 617.254.2218 peterson-architects.com</p>	<p>Shadley Associates Landscape Architecture & Planning Consultants</p> <p>1730 Massachusetts Avenue Lexington, MA 02420 781.652.8809 shadleyassociates.com</p>	<p>HATCH</p> <p>27 School Street, Boston, MA 02108 617.452.4300 www.hatch.com</p>	<p>Newell Boathouse Renovation Project # 17-017 / 2018.03.00</p> <p>Harvard University Athletics 80 Soldiers Field Road Allston, Massachusetts 02134</p>	<p>2022-3-25 Permit Plans</p> <table border="1"> <thead> <tr> <th>Rev.</th> <th>Date</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2022-04-27</td> <td>Vegetated Swale + Mitigation Area</td> </tr> </tbody> </table>	Rev.	Date	Remarks	1	2022-04-27	Vegetated Swale + Mitigation Area
Rev.	Date	Remarks									
1	2022-04-27	Vegetated Swale + Mitigation Area									

PLANT SCHEDULE - VEGETATED SWALE:

Symbol	Qty	Scientific Name	Common Name	Spacing	Size	Wetland Status
AI	100	<i>Asclepias incarnata</i>	Swamp Milkweed	12"	Plug	OBL
CL	200	<i>Carex lurida</i>	Lurid Sedge	12"	Plug	OBL
CV	150	<i>Carex vulpinoidea</i>	Fox Sedge	12"	Plug	OBL
EPE	150	<i>Eupatorium perfoliatum</i>	Boneset	12"	Plug	FACW
ER	150	<i>Elymus riparius</i>	Riverbank Wild Rye	12"	Plug	FACW
IV	100	<i>Iris versicolor</i>	Blue Flag	12"	Plug	OBL
JC	100	<i>Juncus canadensis</i>	Canada Rush	12"	Plug	OBL
JE	100	<i>Juncus effusus</i>	Soft Rush	12"	Plug	OBL
LC	100	<i>Lobelia cardinalis</i>	Cardinal Flower	12"	Plug	FACW
OS	150	<i>Onoclea sensibilis</i>	Sensitive Fern	12"	Plug	FACW
RL	100	<i>Rudbeckia laciniata</i>	Green Coneflower	12"	Plug	FACW
SP	100	<i>Schoenoplectus pungens</i>	Three Square Bulrush	12"	Plug	FACW
SN	150	<i>Symphoricarum novae-angliae</i>	New England Aster	12"	Plug	FACW
VH	150	<i>Verbena hastata</i>	Blue Vervain	12"	Plug	FACW
1700 Total Quantity						

PLANT SCHEDULE - BIORETENTION BASIN:

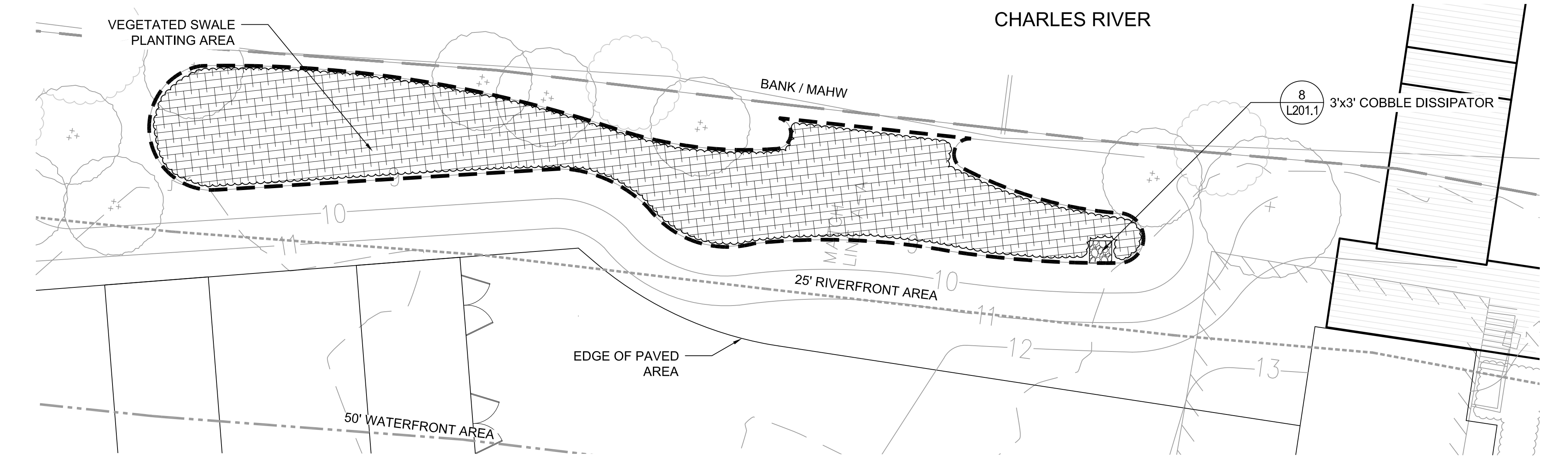
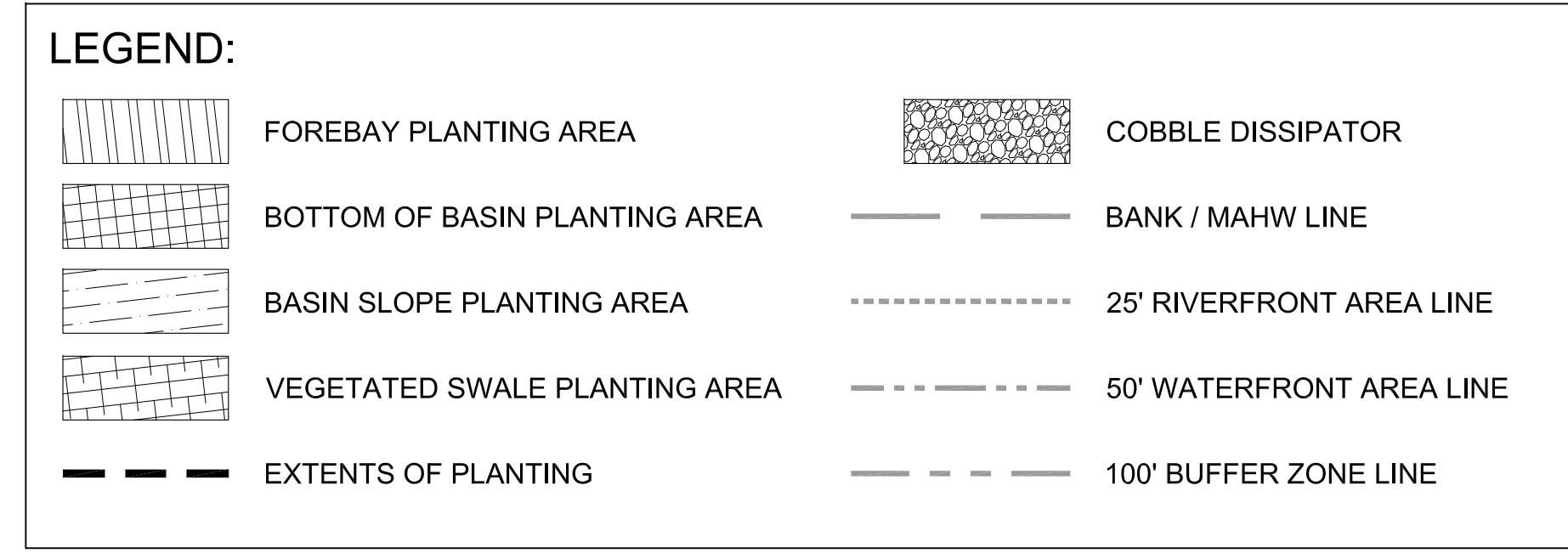
Symbol	Qty	Scientific Name	Common Name	Spacing	Size	Wetland Status
CL	50	<i>Carex lurida</i>	Lurid Sedge	12"	Plug	OBL
CV	100	<i>Carex vulpinoidea</i>	Fox Sedge	12"	Plug	OBL
IV	50	<i>Iris versicolor</i>	Blue Flag	12"	Plug	OBL
JC	50	<i>Juncus canadensis</i>	Canada Rush	12"	Plug	OBL
JE	100	<i>Juncus effusus</i>	Soft Rush	12"	Plug	OBL
VH	50	<i>Verbena hastata</i>	Blue Vervain	12"	Plug	FACW
Bottom of Basin - Bioretention Basin Soil (12" Depth)						
Symbol	Qty	Scientific Name	Common Name	Spacing	Size	Wetland Status
AC	300	<i>Anemone canadensis</i>	Windflower	12"	Plug	FACW
EPE	300	<i>Eupatorium perfoliatum</i>	Boneset	12"	Plug	FACW
LS	300	<i>Liatris spicata</i>	Marsh Blazing Star	12"	Plug	FAC+
PV	300	<i>Panicum virgatum</i>	Switchgrass	12"	Plug	FAC
SN	300	<i>Symphoricarum novae-angliae</i>	New England Aster	12"	Plug	FACW
SR	300	<i>Solidago rugosa</i>	Rough Goldenrod	12"	Plug	FAC
VH	300	<i>Verbena hastata</i>	Blue Vervain	12"	Plug	FACW
ZA	300	<i>Zizia aurea</i>	Golden Alexanders	12"	Plug	FAC
Side Slope of Basin - Planting Soil (12" Depth)						
Symbol	Qty	Scientific Name	Common Name	Spacing	Size	Wetland Status
AC	150	<i>Anemone canadensis</i>	Windflower	12"	Plug	FACW
AT	150	<i>Asclepias tuberosa</i>	Butterfly Weed	12"	Plug	N/A
AV	200	<i>Andropogon virginicus</i>	Broom Sedge	12"	Plug	FACU
EP	150	<i>Echinacea purpurea</i>	Purple Coneflower	12"	Plug	FACU
RF	150	<i>Rudbeckia fulgida</i>	Black-eyed Susan	12"	Plug	FAC
SB	150	<i>Solidago bicolor</i>	Silverrod	12"	Plug	UPL
SS	200	<i>Schizachyrium scoparium</i>	Little Bluestem	12"	Plug	FACU
SNE	150	<i>Solidago nemoralis</i>	Gray Goldenrod	12"	Plug	UPL
SN	150	<i>Symphoricarum novae-angliae</i>	New England Aster	12"	Plug	FACW
VH	150	<i>Verbena hastata</i>	Blue Vervain	12"	Plug	FACW
ZA	150	<i>Zizia aurea</i>	Golden Alexanders	12"	Plug	FAC
4550 Total Quantity						

WOODLAND SEED MIX:

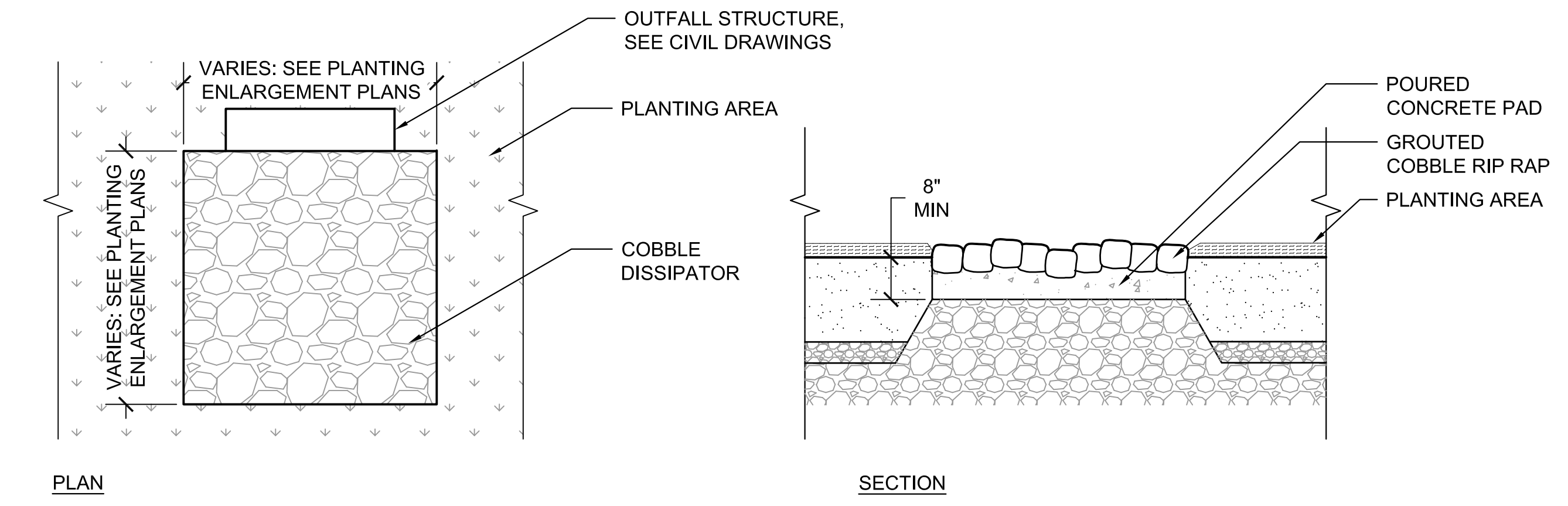
THE WOODLAND SEED MIX SHALL BE MANUFACTURED BY NEW ENGLAND WETLAND PLANTS OF AMHERST, MASSACHUSETTS, OR APPROVED EQUAL. THE SEED MIX SHALL CONSIST OF THE FOLLOWING SPECIES AND PERCENTAGES:

BOTANICAL NAME	COMMON NAME	% BY WEIGHT
FESTUCA RUBRA	CREeping RED FESCUE	38.0%
AGROSTIS SCABRA	ROUGH BENTGRASS	29.0%
AGROSTIS PERENNANS	AUTUMN BENTGRASS	15.0%
JUNCUS TENUIS	PATH RUSH	10.0%
EURYBIA DIVARICATUS	WHITE WOOD ASTER	5.0%
SYMPHYOTRICHUM CORDIFOLIUM	HEART LEAVED ASTER	3.0%

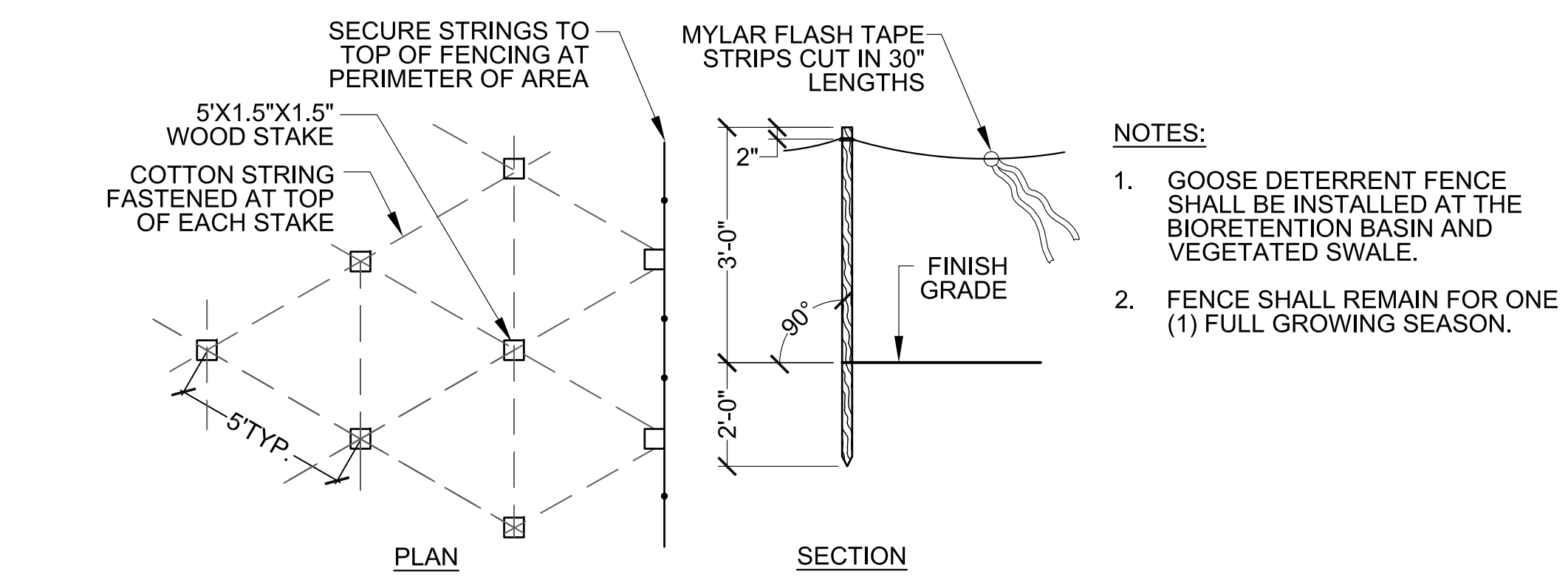
* SEEDING RATE SHALL BE 35 POUNDS PER ACRE OR 1 POUND PER 1,000 SQUARE FEET. *



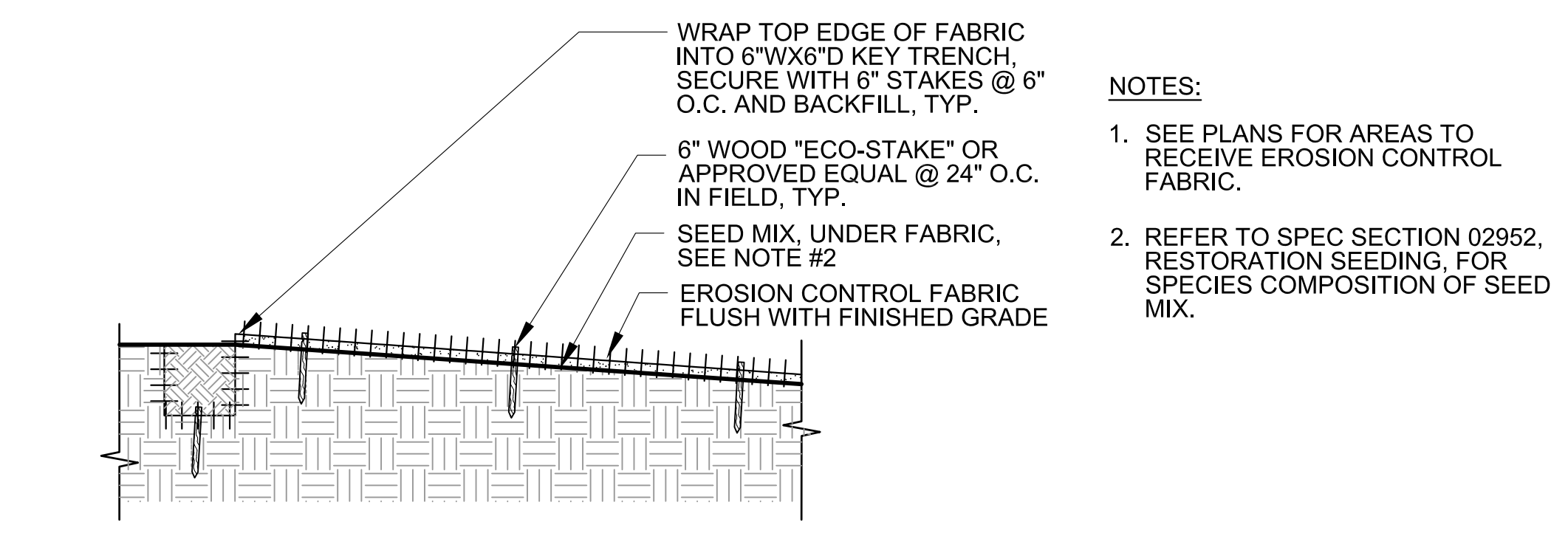
4 VEGETATED SWALE PLANTING PLAN
SCALE: 1" = 10'-0"



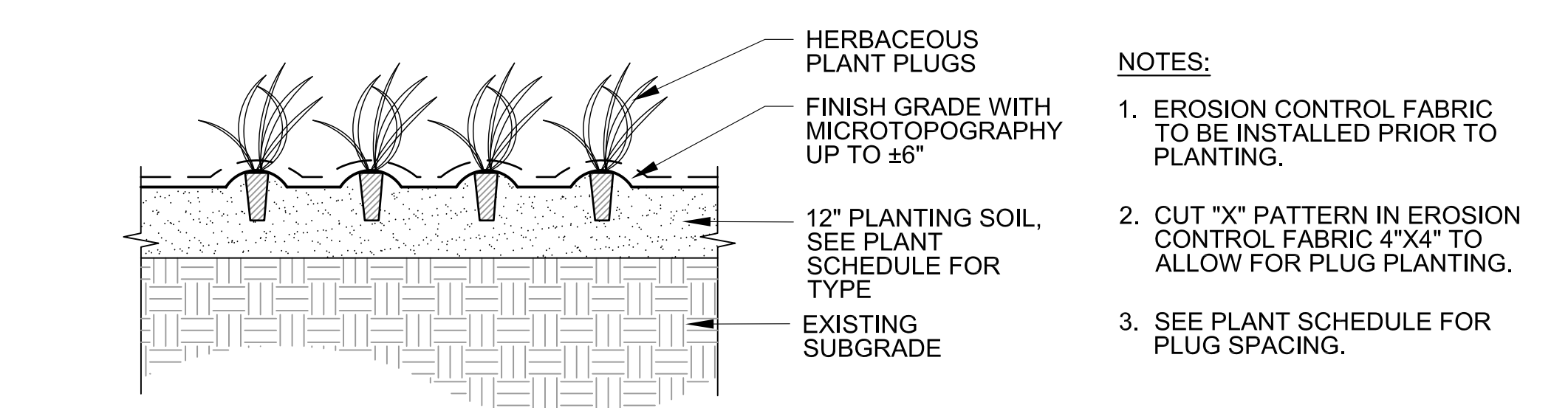
8 COBBLE DISSIPATOR
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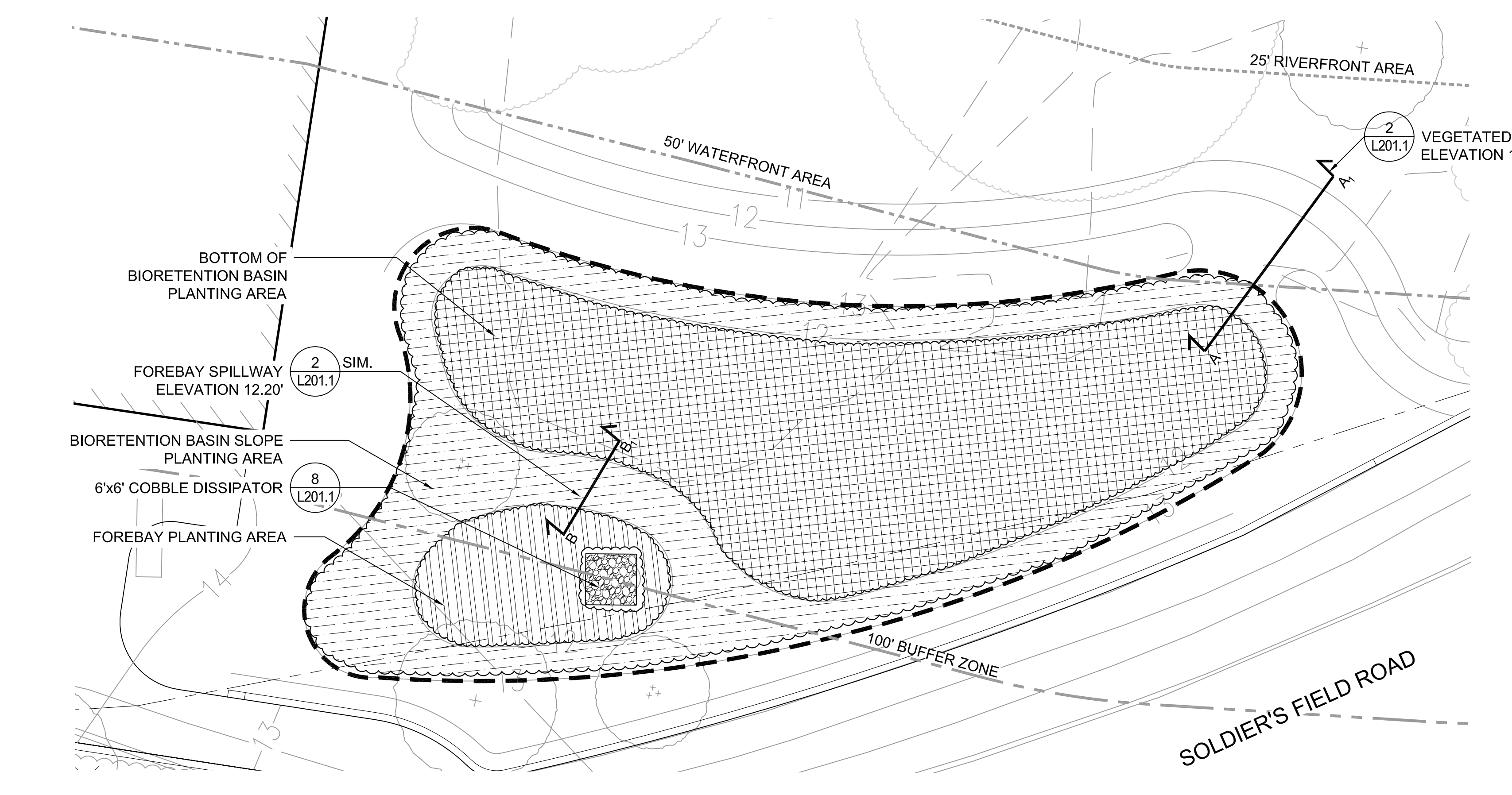
7 GOOSE DETERRENT FENCE
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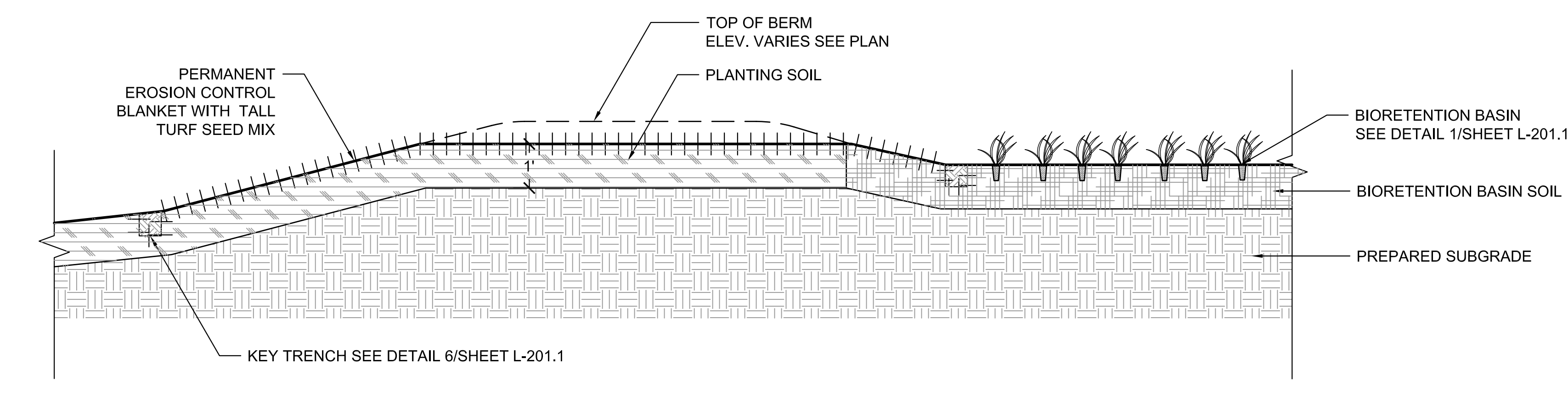
6 EROSION CONTROL BLANKET WITH KEY
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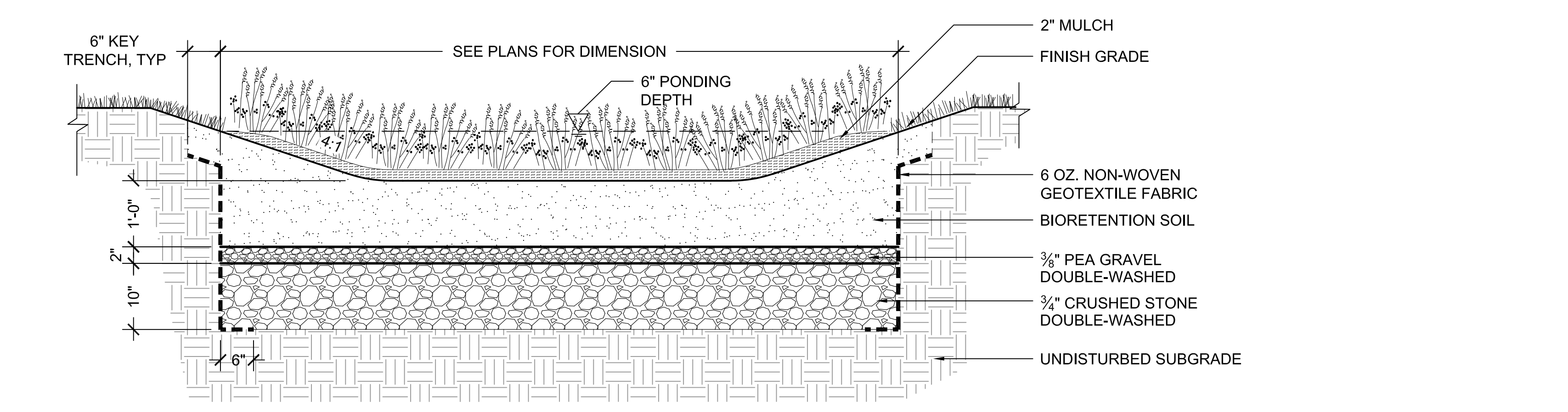
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3 BIORETENTION BASIN PLANTING PLAN
SCALE: 1" = 10'-0"



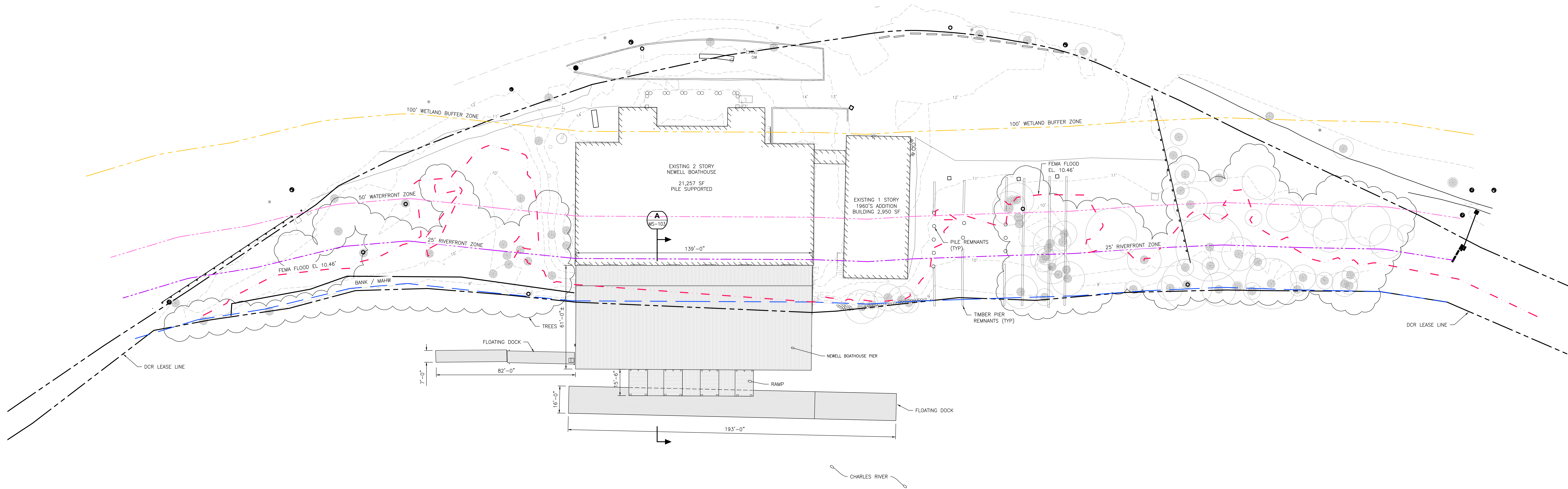
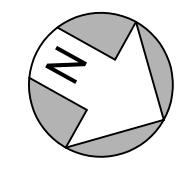
2 VEGETATED SPILLWAY, TYPICAL
SCALE: NOT TO SCALE



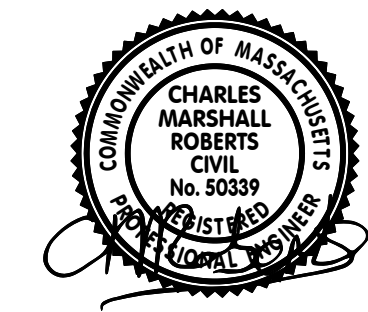
1 BIORETENTION BASIN
SCALE: NOT TO SCALE

IF THIS SHEET IS REVISED, THE REVISED DATE SHALL BE INDICATED IN THE REVISIONS.

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NEWELL EXISTING DECK PLAN
SCALE: 1"=20'-0"

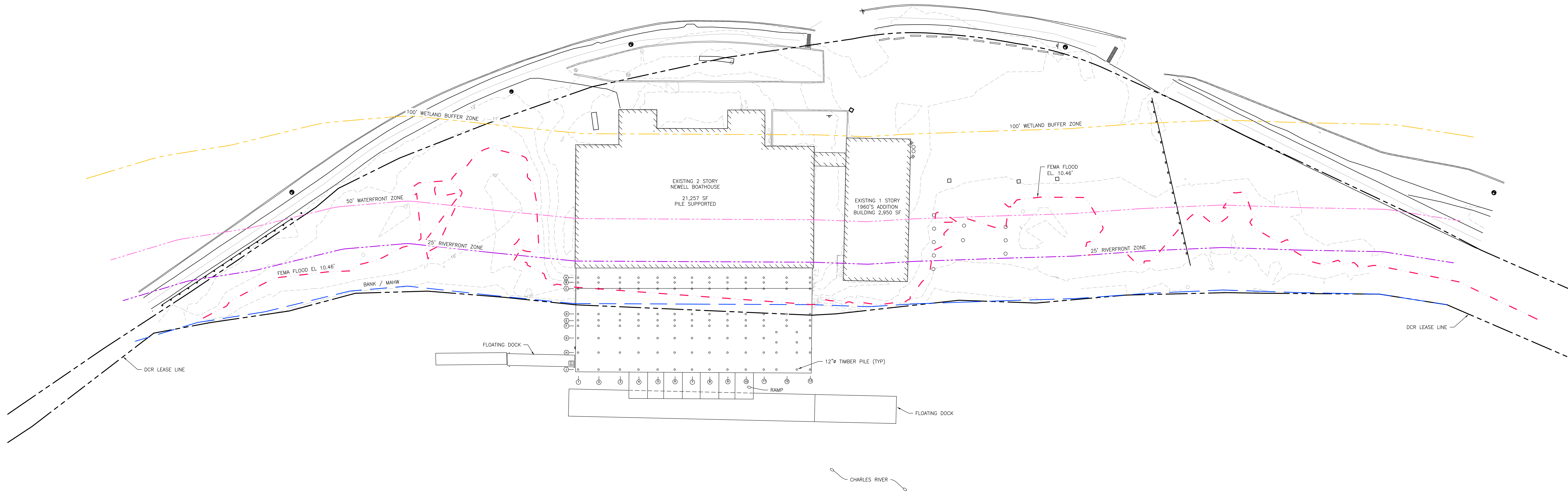
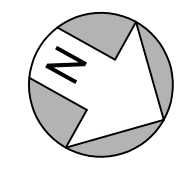


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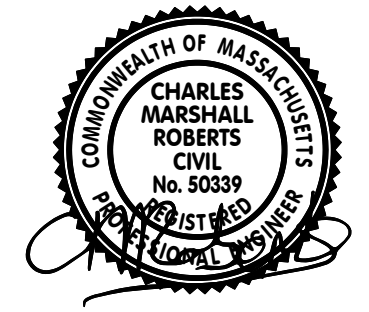
<p>Bruner/Cott ARCHITECTS</p> <p>225 Friend Street Boston, MA 02114 617.472.2400 brunercott.com</p>	<p>PETERSON ARCHITECTS</p> <p>154 Mt Auburn Street Cambridge, MA 02139 617.264.2288 peterson-architects.com</p>	<p>CHILDS ENGINEERING</p> <p>34 William Way Bedfordham, MA 02019 508.766.7072 childseng.com</p>	<p>Newell Boathouse Renovation Project # 12.017</p> <p>Harvard University Athletics 801 Soldiers Field Road, Allston, Massachusetts, 02134</p>	<table border="1"> <thead> <tr> <th>Rev.</th> <th>Date</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4/27/22</td> <td>WATERLINE CLARIFICATION</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Rev.	Date	Remarks	1	4/27/22	WATERLINE CLARIFICATION													<p>NEWELL EXISTING DECK PLAN</p>
Rev.	Date	Remarks																					
1	4/27/22	WATERLINE CLARIFICATION																					

MS-101



NEWELL EXISTING PILE PLAN
SCALE: 1"=20'-0"

- LEGEND**
- (A) PILE ROW DESIGNATION
 - (I) PILE BENT DESIGNATION
 - (O) 12" TIMBER PILE TO BE CUT AT MUDDLINE

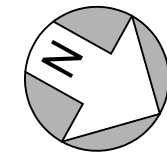


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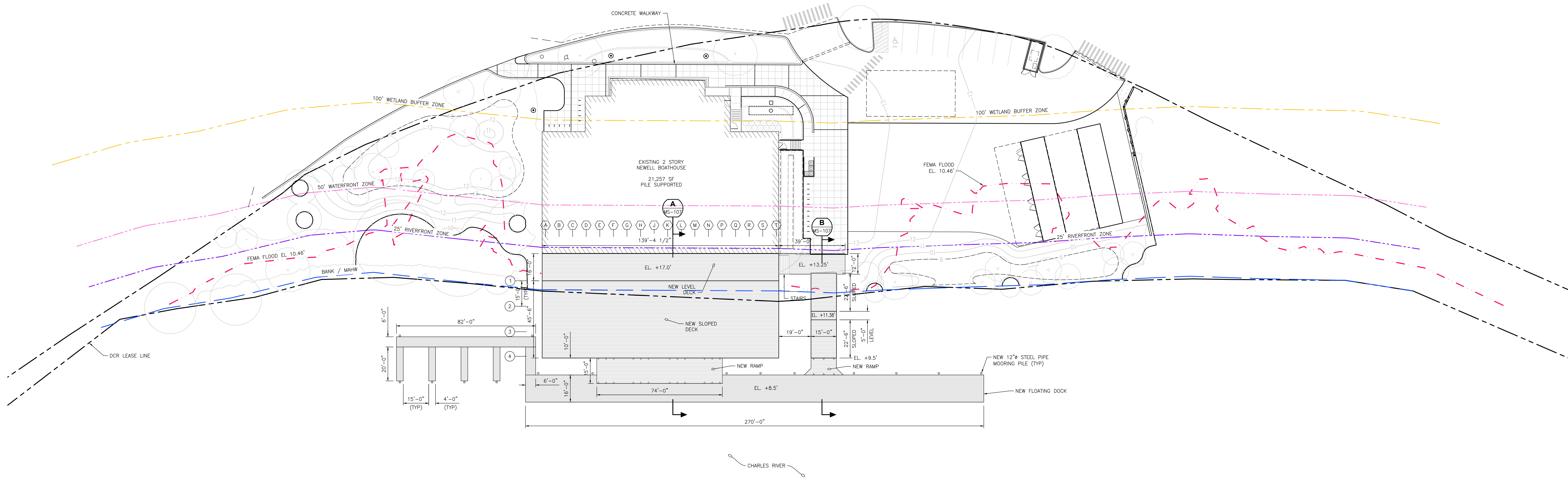
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Rev.	Date	Remarks																		
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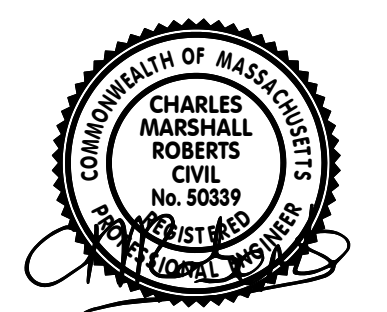
SOLDIER'S FIELD RD



NEWELL PROPOSED DECK PLAN
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PETERSON
ARCHITECTS



Newell Boathouse Renovation
Project # 12.017

2022.1.25 **Permit Plans**

Rev.	Date	Remarks
1	4/27/22	WATERLINE CLARIFICATION

Newell Proposed Deck Plan

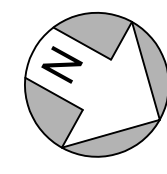
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brunercott.com

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617.264.2288
peterson-architects.com

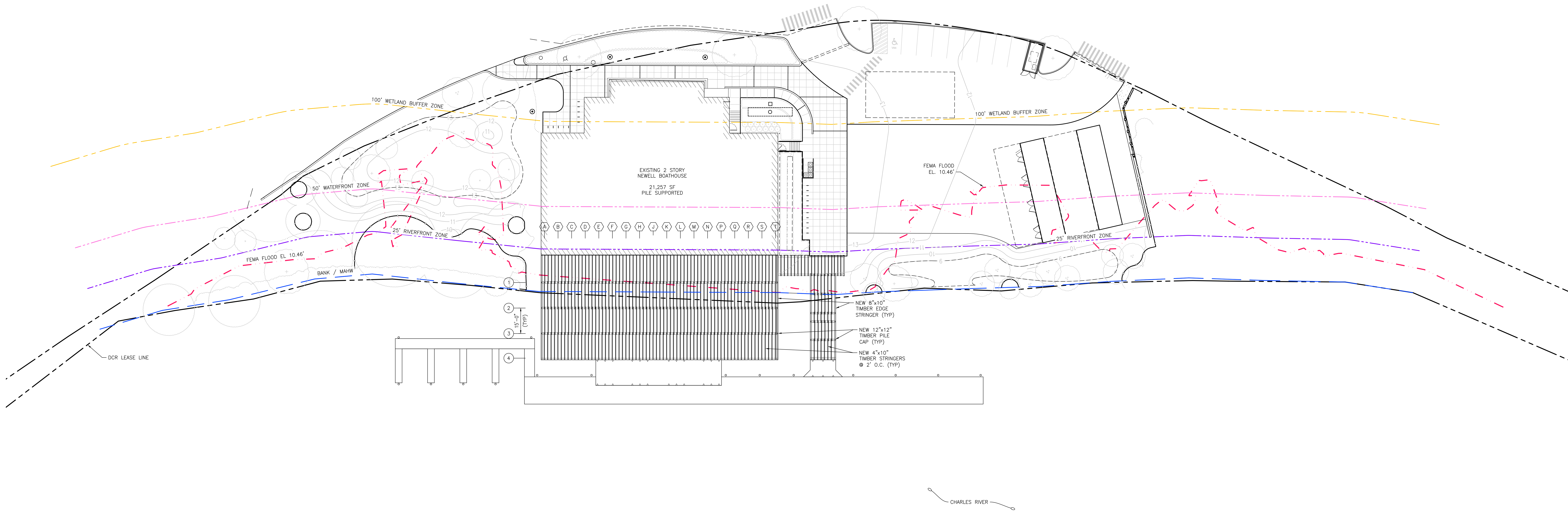
34 William Way
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childseng.com

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Allston, Massachusetts 02134

MS-104



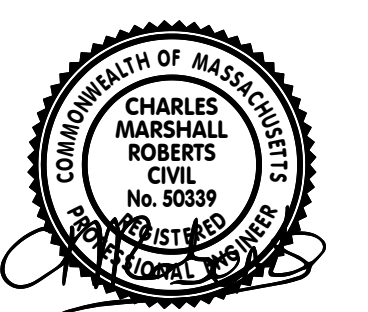
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NEWELL PROPOSED FRAMING PLAN
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Newell Boathouse Renovation
Project # 12.017

2022.2.25 **Permit Plans**

Rev.	Date	Remarks
1	4/27/22	WATERLINE CLARIFICATION

Newell Proposed Framing Plan

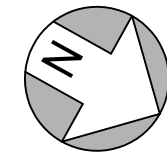
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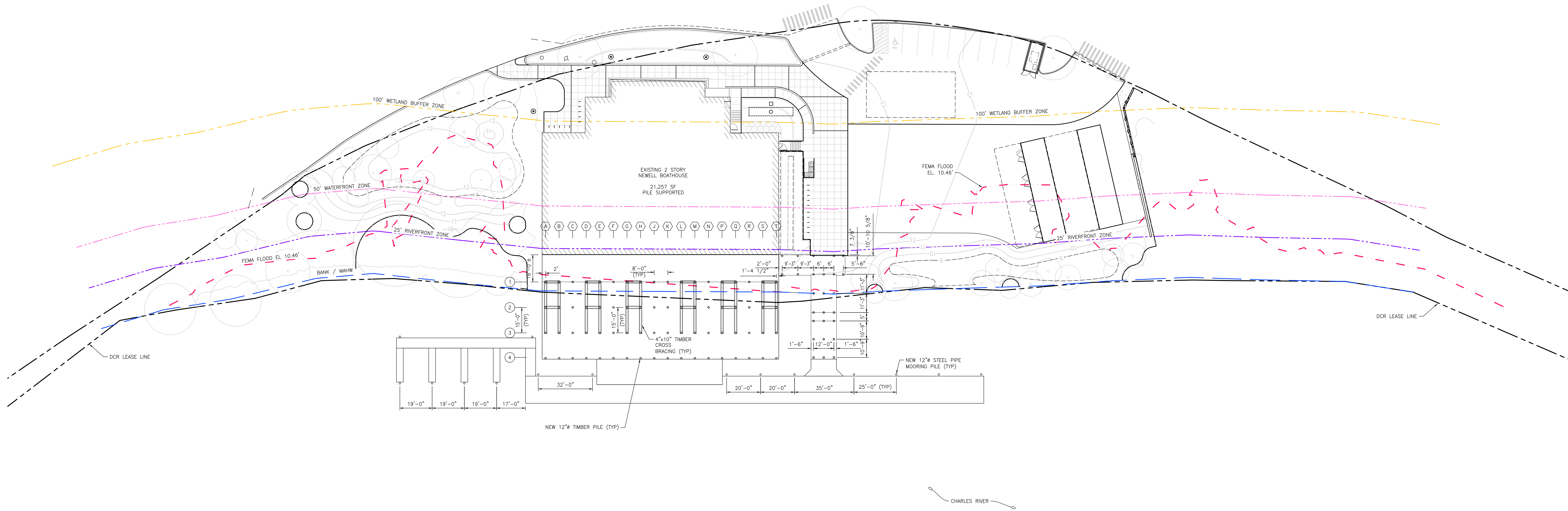
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MS-105



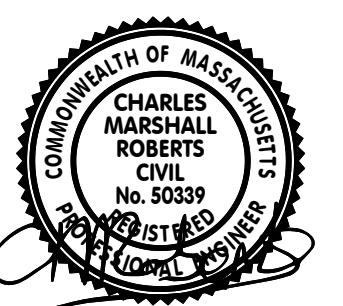
SOLDIER'S FIELD RD



NEWELL PROPOSED PILE PLAN
SCALE: 1"=20'-0"

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Newell Boathouse Renovation
Project # 12.017

2022.125 **Permit Plans**

Rev. Date Remarks

1 4/27/22 WATERLINE CLARIFICATION

Newell Proposed Pile Plan

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peterson-architects.com

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801 Soldiers Field Road,
Allston, Massachusetts, 02134

MS-106

ATTACHMENT B
Revised Cut and Fill Volumes

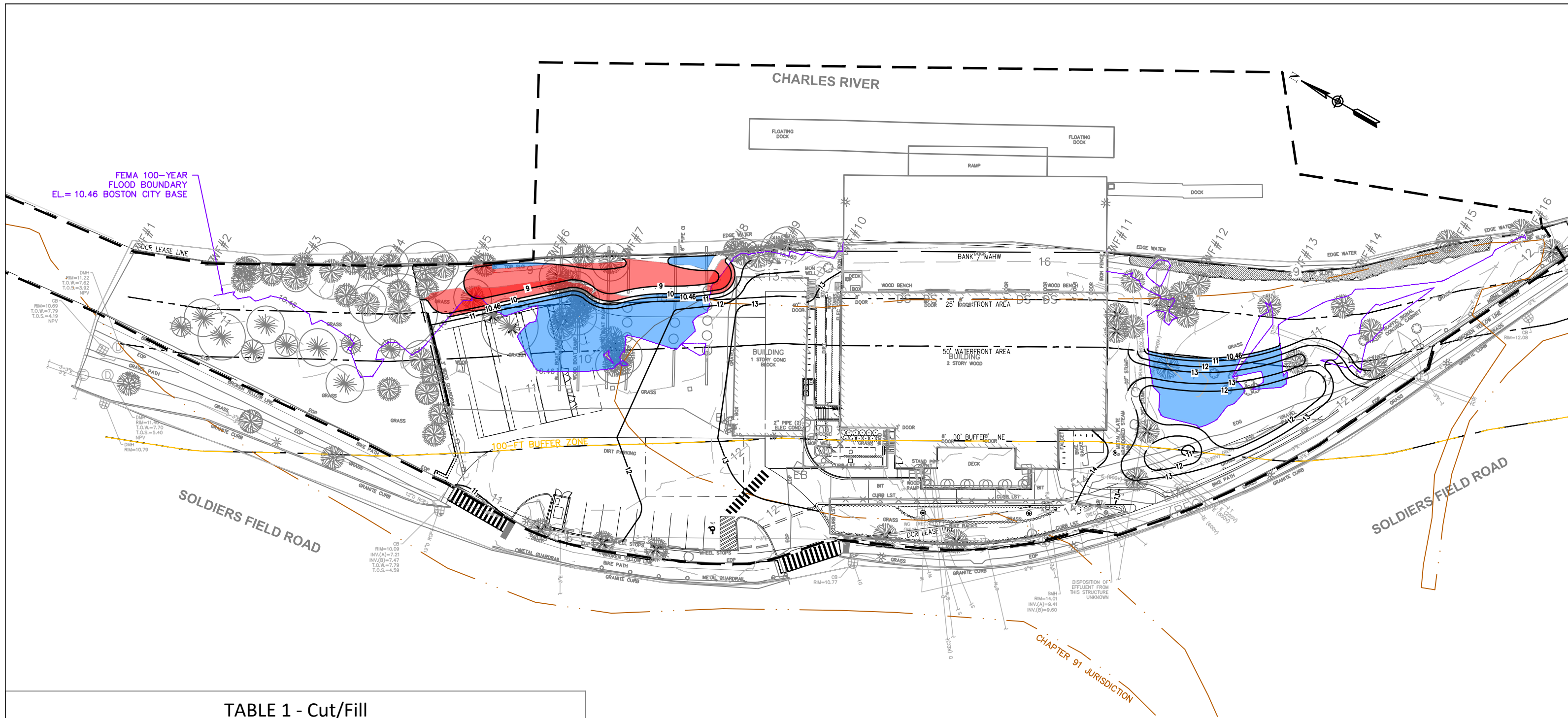
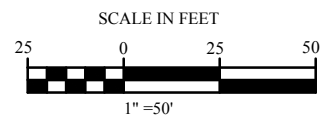


TABLE 1 - Cut/Fill

100-yr Flood Elevation = 10.46

Elevation	Cut Volume (CF)	Fill Volume (CF)	Incremental Net Cut/Fill Volume (CF)
8-9	810	85	-725
9-10	1254	116	-1138
10-10.46	256	1104	849
Total	2319	1305	-1014

LEGEND
■ CUT
■ FILL



FLOOD STORAGE CUT AND FILL

NEWELL BOATHOUSE
 BOSTON, MASSACHUSETTS

PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
 CIVIL AND STRUCTURAL ENGINEERS
 100 AMES POND DRIVE, TEWKSBURY, MA (978) 923-0400
 24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
HARVARD UNIVERSITY ATHLETICS
 801 SOLDIER FIELD ROAD
 ALLSTON, MA 02134

SCALE: 1" = 50'
 DATE: 4/26/2022
 REVISED:

PROJECT NO. 21030
 DRAWN BY: SB
 CHECKED BY: JT/DS

FIGURE 2

ATTACHMENT C
Riverfront Mitigation Calculations

This Riverfront Area Mitigation Calculation is being provided as supplement information to provide documentation as to how the areas came about. It should also be noted that we greatly appreciate the input and advice from the Boston conservation Commission staff while trying to unravel the nuances of this section of the regulations.

From the Regulations:

(5) Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation

Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas.

A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds. Work to redevelop previously developed riverfront areas shall conform to the following criteria:

(a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.

(b) Stormwater management is provided according to standards established by the Department.

(c) Within 200 foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25 foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

(d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:

- 1. removal of all debris, but retaining any trees or other mature vegetation;*
- 2. grading to a topography which reduces runoff and increases infiltration;*
- 3. coverage by topsoil at a depth consistent with natural conditions at the site; and*
- 4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site;*

(g) When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not

conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 through 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Energy and Environmental Affairs.

(h) The issuing authority shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons.

Supplemental Clarification on (f) and (g):

As part of the project, we are proposing to remove the adjacent block building that currently has 435 SF within the riverfront area. In addition, we are removing the existing 12x12 timber blocks of which there is 140 SF in the riverfront area.

This totals 575 SF of degraded riverfront area under (f)

We are also proposing to add 700 SF of new structure, as part of the accessible ramp to the floats and access up to the main dock, within the riverfront area.

This would total 700 SF.

Therefore, the difference is we are adding an additional 125 SF of structure to the riverfront area. As it is additional, we have assumed it falls under (g) for mitigation at a ratio of 2:1.

Therefore, the total mitigation area would be 250 SF.

As defined under 10.04:

Mitigation means rectifying an adverse impact by repairing, rehabilitating or restoring the affected resource area or compensating for an adverse impact by enhancing or providing replacement resource areas.

We are proposing to take a section of the site on the southern end that is currently lawn where an existing line of riverbank plantings end and add plantings into that area to enhance the area and turn it into a more ecologically friendly area. More details are shown on the revised landscape drawings in Attachment A.

ATTACHMENT D
Pile Removal Letter

April 27, 2021

Nicholas Moreno
Boston Conservation Commission
1 City Hall Square, Room 709
Boston, MA 02201

Re: Newell Boathouse Pile Cutoff

Dear Mr. Moreno,

This letter outlines the design intent of not pulling the timber piles, as was done with past repairs. As is common in the marine environment the areas exposed to oxygen above the mudline have much more advanced deterioration than areas below the mudline where there is often minimal deterioration. We believe that pulling the timber piles could cause unnecessary structural destabilization of the building foundation recommend at a minimum cutting them off at the mudline.

If you have any questions or would like additional information, please don't hesitate to reach out.

Respectfully Submitted,
CHILDS ENGINEERING CORPORATION



Charlie M. Roberts, P.E., D. PE
President

ATTACHMENT E
Pile Driving Letter



PO Box 4474 • Portsmouth, NH 03802
195 West Road • Portsmouth, NH 03801
OFFICE: 603-431-3732 • FAX: 603-436-2524

04/25/2022

Harvard Boathouse- Pile Driving Operations Plan

Treated timber piles will be used for the foundation of the fixed pier at both the Weld and Newell boathouses. The piles will be installed using a barged-mounted crane. False work (typically steel beams used as a template to keep the piles in proper line and grade) will be installed first. After which, each timber pile will be installed with a hydraulically driven vibratory hammer down to refusal.

After a group of piles are down to refusal with the vibratory hammer, they will be finished out to meet the required capacity using a self-contained hydraulic drop hammer. The process will continue until all the piles are installed.

A debris boom will be installed to contain the work area, including the barges. The boom will be anchored in place and maintained throughout the project. Environmentally friendly hydraulic oils will be used in all the equipment over or near the water. All equipment is checked for condition/damage before and after the shift. In addition, multiple spill kits will be located on the barge, boat and surrounding areas to mitigate any exposure if there was an incident.

ATTACHMENT F
Alternative Analysis – Boat Storage

This alternatives analysis is being provided as supplement information to provide greater background to the decisions being made on the proposed location of the covered boat racks.

The current programming a Newell Boathouse is exclusively focused on the Men's Varsity Team, however with the renovation of the boathouse and addition of the covered boat racks the aim is to open up the programming to a larger base of Harvard University students and faculty for recreational based rowing activities. The additional covered boat racks will allow the boats to support this program to be stored on site.

During the design process many alternatives we reviewed and discussed taking into account the needs and concerns of the environmental, regulatory, historical, DCR (owner), and tenant (Harvard Athletics) needs.

Option 1 – Reuse Existing Building

The existing building to the north of the boathouse (see Image 1) houses a rowing tank and was used in the past for training. The structure sits within both the riverfront and waterfront zones given its age. In early planning efforts Harvard studied renovating the building but it quickly became economically infeasible given the hazardous materials and level of deferred maintenance involved. Additionally, feedback from several regulatory agencies during early planning identified a strong preference for removing the building to open up view corridors and present the shoreline in a more open way. Taking this approach also allows for the removal of two existing UST's that are in the buffer zone. In our internal analysis we felt that the Commission would rather see the building pulled back further from the river (proposed covered boat racks) rather than re-use the existing row tank building in its current location. It is our opinion that the decision to remove the building and its affiliated storage tanks greatly improve the overall resource area regardless of the relocation of the boat racks being in waterfront area by a small margin. It's still a considerable improvement in the resource area.

Option 2 – Removal of Existing Building and Replace outside of Resource Areas

Another option that was considered and was also asked for us to show by the Commission, was the relocation of the covered boat racks (see Image 2) outside of the Waterfront Area. This involved removed the existing structure in the riverfront and waterfront area and replacing it with two smaller covered boat racks. Both the design team and DCR liked the idea of removing the existing building and providing smaller, more open and easily assessable boat racks, that could be located further back from the river with a more minimal footprint. In early planning having it located further back from the river had been considered but one of the key points brought up during our reviews with DCR was to try and minimize the amount of disturbance in the overall resource area and limit the amount of tree removal. A key marker is the existing timber barrier along the edge of the site that was identified as something we should stay within. As can be seen in the attached drawing, there would need to be additional trees removed and more disturbance created in order to be able to accommodate the covered boat racks. Therefore, this option was not used and the goal was to keep them within the currently defined project limits. See Figure 1 for a graphical representation of this option. It should also be noted that the DCR was very concerned with limited space on this site and at

other sites within the Reservation, to be used for replacement tree replanting. This was another reason to try and limit the removal of existing trees.

Option 3 – Removal of Existing Building and Replace with Less Disturbance

This option included the removal of the existing building as described in Option 2, but the intent was to keep the boat storage racks between the timber barrier and the boathouse so to minimize the amount of the site used and minimize tree removal. This option had various configuration within the site and is the option currently shown on the site plan. This was also tweaked based on comments with BCC Staff at a pre-application meeting. This option keeps the racks out of the riverfront area while allowing the racks to be located far enough back from the road and parking area to enable the boat to be maneuvered carefully and safely from the racks to the water. This option also minimizes any potential incidents with users of the bike path due to its orientation and separation. While the design team felt that this option would provide the most balance by removing a structure close to the water and replacing it with the covered boat racks that need to ideally be as close to the water as possible, while avoiding more disturbance and tree removal that would be necessary if it was moved outside of the waterfront area. See Figure 2 for a graphical representation of this option.

Option 3.1 - Removal of Existing Building Replace with Less Disturbance of the Resource area, Further from River

We have also provided a slightly modified version of the one that is shown currently on the plans. This pulls the racks as far back from the river as possible without having to impact any additional area outside of the timber barrier and minimizes tree removal. This does make it more difficult to maneuver the boats when loading and unloading the racks, while also pushing the path of travel with the boats closer to the busy parking lot. Essentially, options 3 and 3.1 represent an in-kind replacement, albeit much less impactful to the resource area, of an existing structure as opposed to being a new structure just introduced in the resource area. See Figure 3 for a graphical representation of this option. Our table below supports the reduction in impact by option.

Summary of Impacts

Area Impacts (SF)	Option 1	Option 2	Option 3	Option 3.1
Riverfront	402	0	0	0
Waterfront	958	5 (roof)	865	714
Buffer	1590	2390	1535	1686
Total	2950	2400	2400	2400

Covered Boat Rack – Alternatives Analysis
Newell Boathouse Renovation



Image 1 - Existing Building next to Boathouse

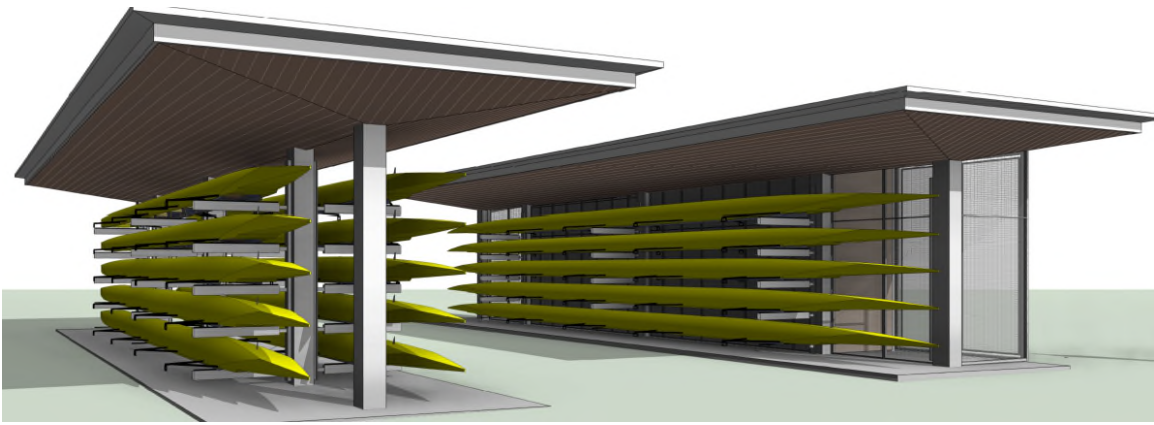


Image 2 - Rendering of the Covered Boat Racks

LAYOUT, MATERIALS AND LANDSCAPE NOTES

- EXISTING CONDITIONS BASED ON PLAN TITLED "NOI SUBMISSION NEWELL - EXISTING CONDITIONS" DATED AUGUST 27, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC.
- SEE CIVIL PLANS FOR SUBGRADE DRAINAGE AND STORMWATER MANAGEMENT.
- ALL LINE AND GRADE WORK PER DRAWINGS AND SPECIFICATIONS SHALL BE LAID OUT BY A REGISTERED CIVIL ENGINEER OR SURVEYOR ENGAGED BY THE CONTRACTOR.
- ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
- ALL DIMENSIONS ARE FROM FACE OF BUILDING, WALL, OR CURB UNLESS OTHERWISE NOTED.
- THE DIMENSIONS SHOWN ON THE DRAWINGS SHOW DESIGN INTENT AND MUST BE FIELD VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS. SHOP DRAWINGS FOR ALL PAVEMENT AND CURBING LAYOUT SHALL BE BASED UPON ACTUAL LAYOUT AND FIELD MEASUREMENT BY THE CONTRACTOR.
- AT ALL LOCATIONS WHERE EXISTING CURBING, BITUMINOUS CONCRETE OR CONCRETE PAVING ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- EXPANSION JOINT FILLER AND SEALANT SHALL BE PLACED WHERE PAVEMENT MEETS CURBING, WALLS OR OTHER VERTICAL ELEMENTS, INCLUDING LIGHT BASES, HYDRANTS, BUILDINGS AND BUILDING COLUMNS, WALLS, STAIRS AND AT OTHER VERTICAL CONDITIONS AS SHOWN ON THE DRAWINGS.
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- CONTRACTOR SHALL STAKE THE CENTERLINE AND EDGES OF ALL ELEMENTS IN THE FIELD FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
- RESTORE EXISTING CONDITIONS, INCLUDING REPAIRING, RESETTling SITE IMPROVEMENTS AND SEEDING, AS NECESSARY IN AREAS OF PROPOSED UTILITY IMPROVEMENTS.
- CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING THE LOCATIONS OF ANY EXISTING SITE ELEMENTS TO BE RESET IN THEIR SAME HORIZONTAL LOCATION.
- PROVIDE SLEEVES UNDER NEW PAVEMENT AS SHOWN ON THE DRAWINGS.
- PROVIDE SITE LIGHTING INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- PROVIDE BIKE RACKS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- INCLUDE IN THE PRICING AN ADDITIONAL \$5,000 SIGNAGE ALLOWANCE.

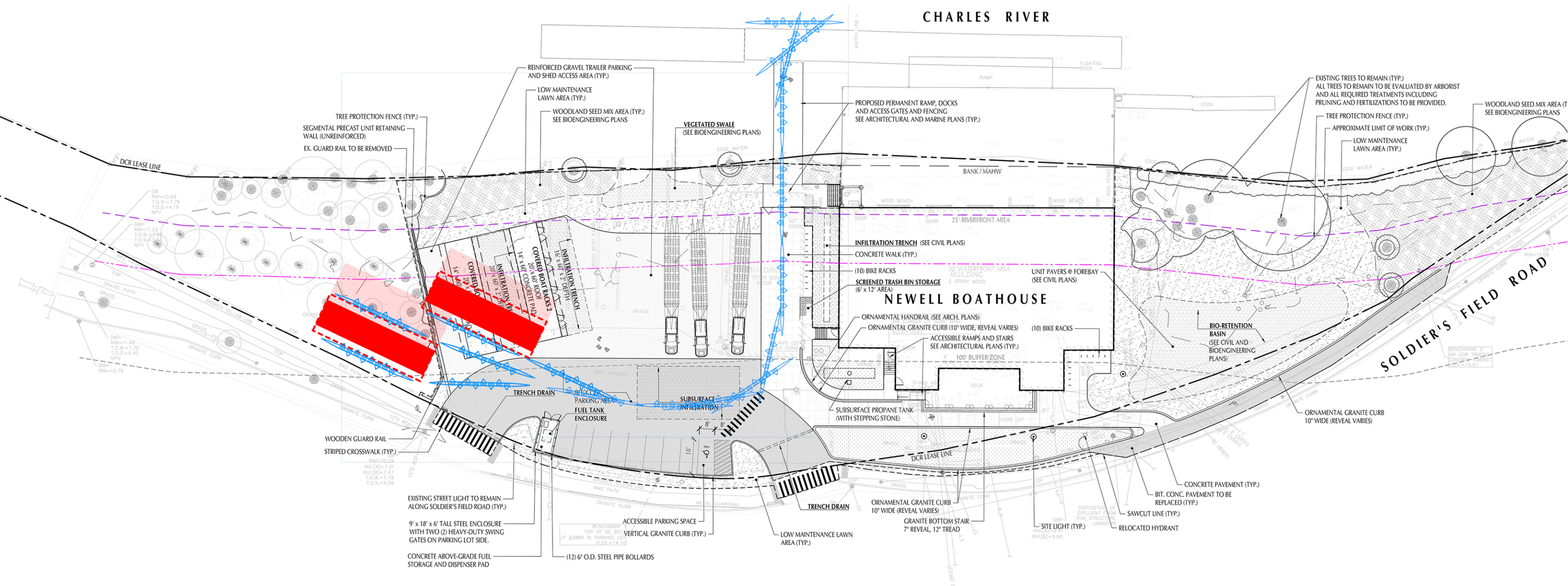


Figure 1 - Option 2

LAYOUT, MATERIALS AND LANDSCAPE NOTES

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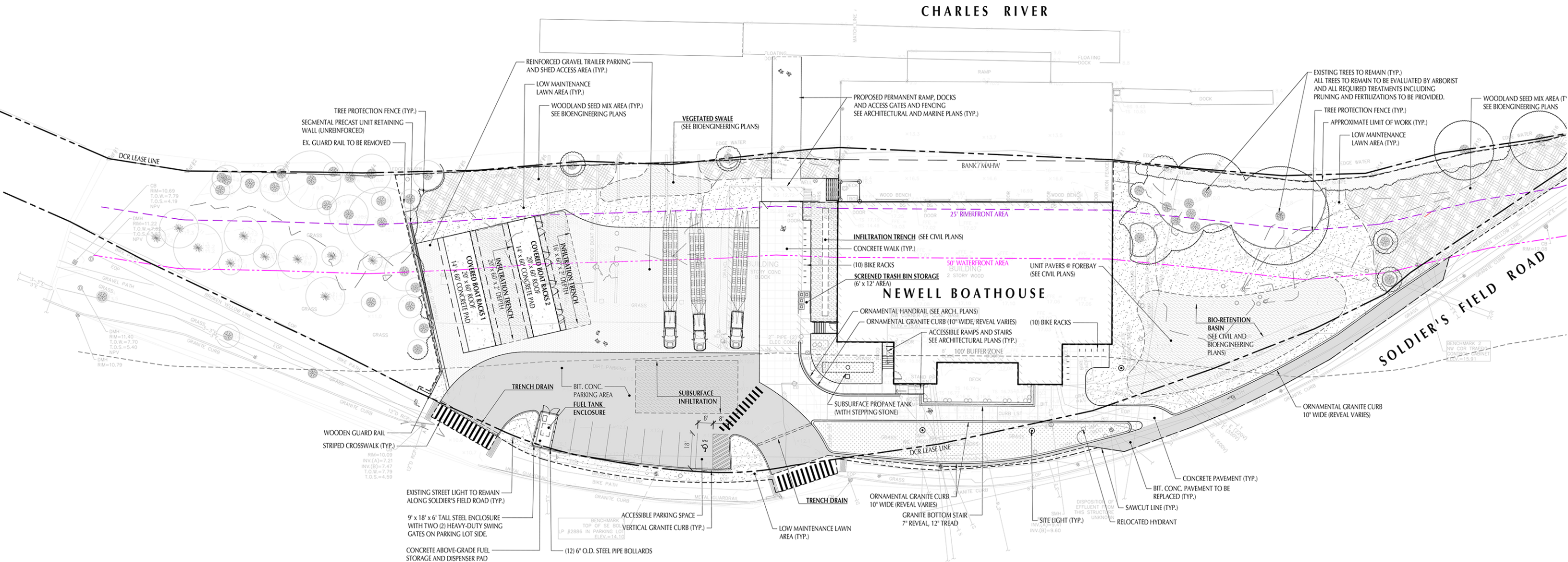
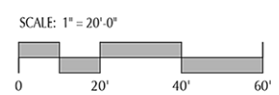


Figure 2 - Option 3 (Currently shown on plans)



LAYOUT, MATERIALS AND LANDSCAPE NOTES

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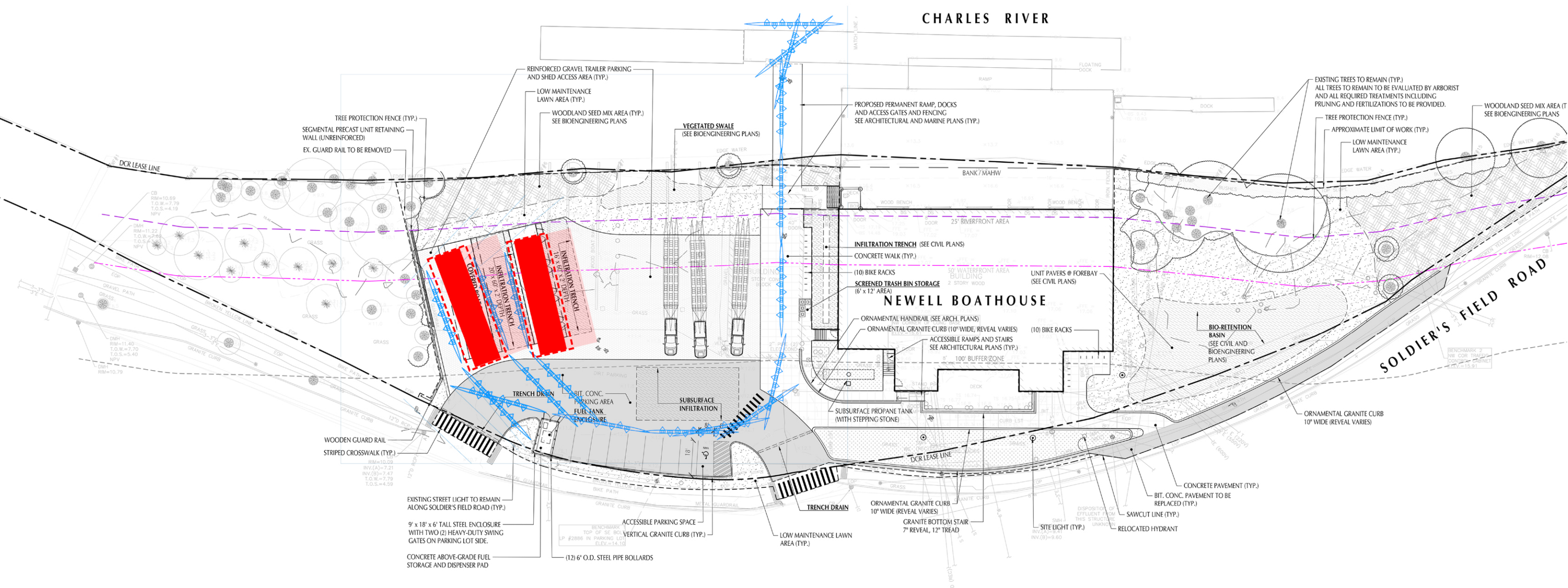


Figure 3 - Option 3.1

ATTACHMENT G
Phosphorus Calculations

13.0 COMPLIANCE WITH THE CHARLES RIVER TMDL

The site is located within the Lower Charles River Basin which has a TMDL for phosphorous and pathogens. The “Total Maximum Daily Load for Nutrients in the Lower Charles River Basin, Massachusetts CN 301.0” report, by DEP and EPA Region 1, dated June 2007 states that the Lower Charles River TMDL requires an overall 54 percent reduction in the phosphorous (TP) load. Table ES-2, Summary of Phosphorous TMDL for the Lower Charles River, in this report, breaks up the different components of the river and assigns a phosphorous reduction based on the Waste Load Allocation. The phosphorous reduction required for the site falls under Other Drainage Areas and requires a 65% phosphorous reduction. In addition to the total TMDL reduction for the Lower Charles River, there are specific TMDL’s for land uses within the Charles River. This project is designated as Low Density Residential for land use. The TMDL for Low Density Residential requires 45% TP reduction as noted in Table 4 of the report noted above. To be conservative, the project has assumed a 65% TP reduction.

13.1 PHOSPHOROUS (TP) REDUCTION

The Project will exceed the 65% TP reduction for the Lower Charles River with the implementation of a subsurface system, bioretention basin and three infiltration trenches. The Structural BMP specification per the Massachusetts Stormwater Handbook identifies 30 to 90 percent TP removal for bioretention basins and 40 to 70 percent TP removal for infiltration trenches.

In addition to the MA Stormwater Handbook BMP specification, calculations are included comparing the provided recharge volume against the required total phosphorous per the Technical Report BMP Performance Curves in the Stormwater Best Management Practices (BMP) Performance Analysis by Tetra Tech, Inc., dated December 2008 for The United States Environmental Protection Agency – Region 1. The TP performance curve parameters are based off the following:

- BMP Performance Curve: Bioretention Basin, Infiltration Trench
- Land Use: Low Density Residential
- Soil Infiltration Rate: 0.27 in/hr (for “C” soils)
- Pollutant Removal Percentage (TP) Required : 65%
- Minimum Depth of Runoff required to be treated to meet 65% TP Removal: 0.37 inches

The Project Site will treat 4.07 inches of runoff in the bioretention basin as demonstrated in the TMDL Phosphorous Reduction calculations, resulting in over 88% TP removal. The site will also treat 1.35, 1.06, and 1.35 inches of runoff in infiltration trenches 1, 2, and 3 respectively resulting in a minimum of 90% TP removal. The total combined TP removal for all BMPs for the site exceeds the Lower Charles River TMDL TP reduction requirement. A copy of the BMP Performance curves, and reduction calculations are included in Appendix C.

13.2 PATHOGEN REDUCTION

The “*Final Pathogen TMDL for the Charles River Watershed*” report, by DEP and EPA Region 1, dated January 2007 state that pathogen indicators consist of illicit connection of sewage to storm drains (discharging in dry or wet weather or both), failing sewer infrastructure, Combined Sewer Overflows (CSO’s) and storm water discharges (included sheet flow runoff) are the leading sources of bacterial surface water pollution in the Charles Watershed. The proposed program will address pathogen pollution with the following mitigation measures:

- Illicit Connections:

There are no known illicit discharges at the Site.

- Failing Sewer Infrastructure:

There is currently no indication of any failing sewer infrastructure at the Site.

- Combined Sewer Overflows (CSOs):

There are no CSO’s at the Site.

- Stormwater Runoff:

As stated previously, the Project will improve the water quality of runoff prior to discharging to the Charles River. Currently, runoff from the existing paved surfaces discharges with little to no treatment into the Charles River. Stormwater runoff will be managed through a system of BMPs including a bioretention area, infiltration trenches, and propriety water quality structure with a subsurface system. Stormwater runoff from paved areas will be treated where feasible to meet the requirements as outlined in the Massachusetts Stormwater Handbook. BMPs will achieve TSS removal greater than 80%. All DEP Stormwater Management Standards will be met.

Based on the above implementation measures the Project as designed will reduce the TMDL for pathogens (bacterial pollution) to the maximum extent practicable within the Charles River.



TMDL - PHOSPHOROUS REDUCTION CALCULATIONS (DEP/EPA Method)

Date: March 25, 2022
Revised: April 25, 2022
Project: Newell Boathouse
Project No: 21030
Location: Boston, MA

Prepared By: MW/SB
Checked By: JT/DHS

Objective: Meet the Lower Charles River Watershed TMDL for Phosphorous using a conservative 65% removal rate

Methodology: Stormwater BMP Performance Analysis by Tetra Tech, December 2008 Distributed by EPA Region 1

Design

Criteria: The depth of runoff treated equals a depth of runoff corresponding to the pollutant removal based on the BMP used, land use and soil infiltration.

Required TMDL: TMDL for Lower Charles Basin = 65% (MassDEP & EPA Region 1 Assessment)
 BMP Performance Curve = Infiltration Basin
 Land Use = Low Density Residential
 Soil Infiltration = 0.27 in/hr

Minimum depth of Runoff Required = 0.42 inches (Infiltration Trench see BMP curve)
 Minimum depth of Runoff Required = 0.64 inches (Bioretention Basin see BMP curve)

Calculation

Results:

Designation	Depth Required (inches)	Depth Provided (inches)
Drainage Area to Bioretention Basin	0.64	4.07
Drainage Area to Infiltration Trench #1	0.42	1.35
Drainage Area to Infiltration Trench #2	0.42	1.06
Drainage Area to Infiltration Trench #3	0.42	1.35

Runoff Treated:

$$\text{Depth of Runoff Treated} = \frac{R_v}{12 \times A_{imp}}$$

R_v = Provided Recharge Volume
 A_{imp} = Impervious Area

Drainage Area to Bioretention Basin

R_v = storage below lowest outlet (orifice) = 2,008 cf (Elev. 12.50, see hydrocad table)
 $A_{imp}^* = 5,914$ sf
Depth of Runoff Treated = 4.07 inches

Drainage Area to Infiltration Trench #1

R_v = storage below lowest outlet (orifice) = 614 cf
 $A_{imp}^* = 5,438$ sf
Depth of Runoff Treated = 1.35 inches

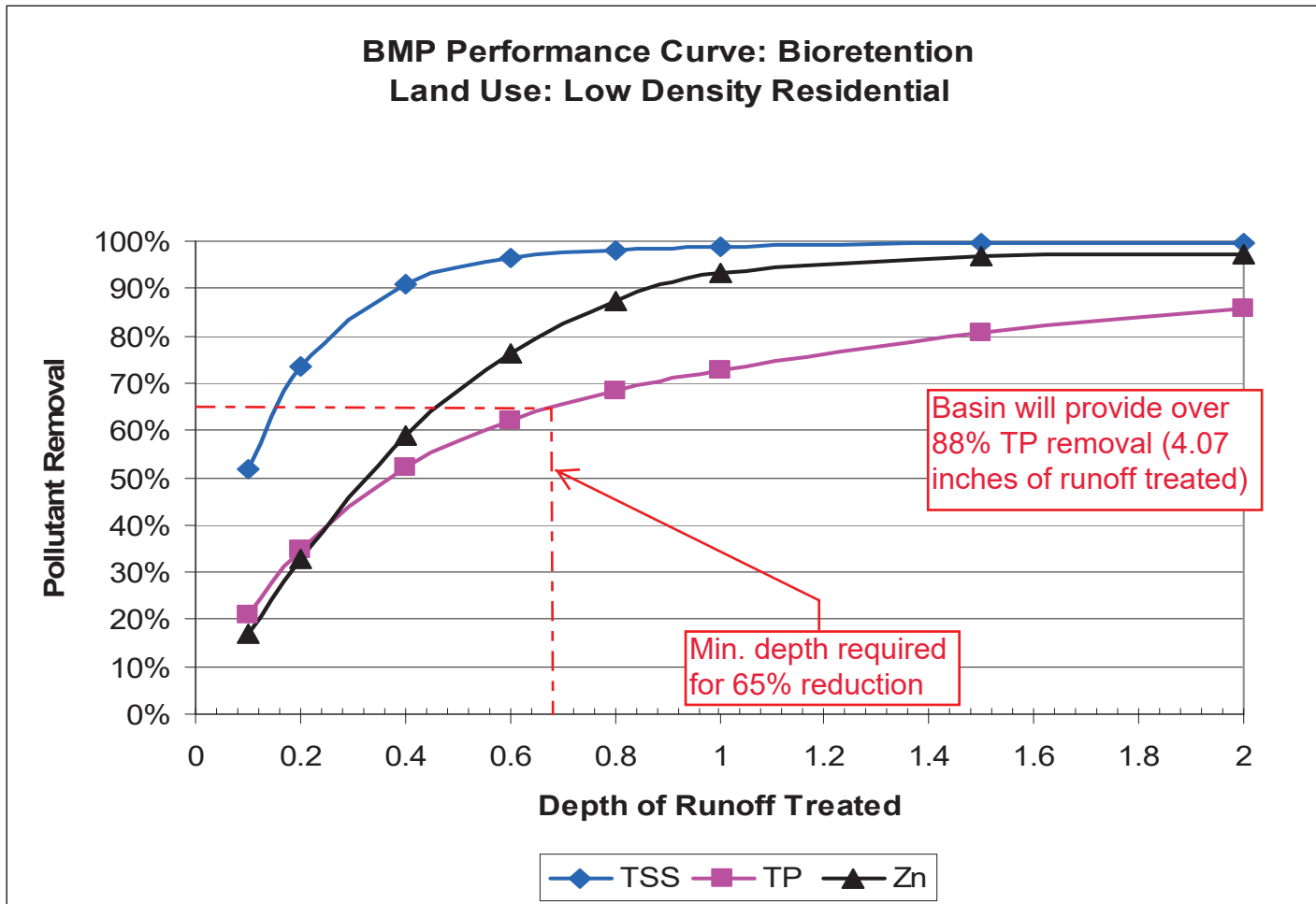
Drainage Area to Infiltration Trench #2

R_v = storage below lowest outlet (orifice) = 144 cf
 $A_{imp}^* = 1,625$ sf
Depth of Runoff Treated = 1.06 inches

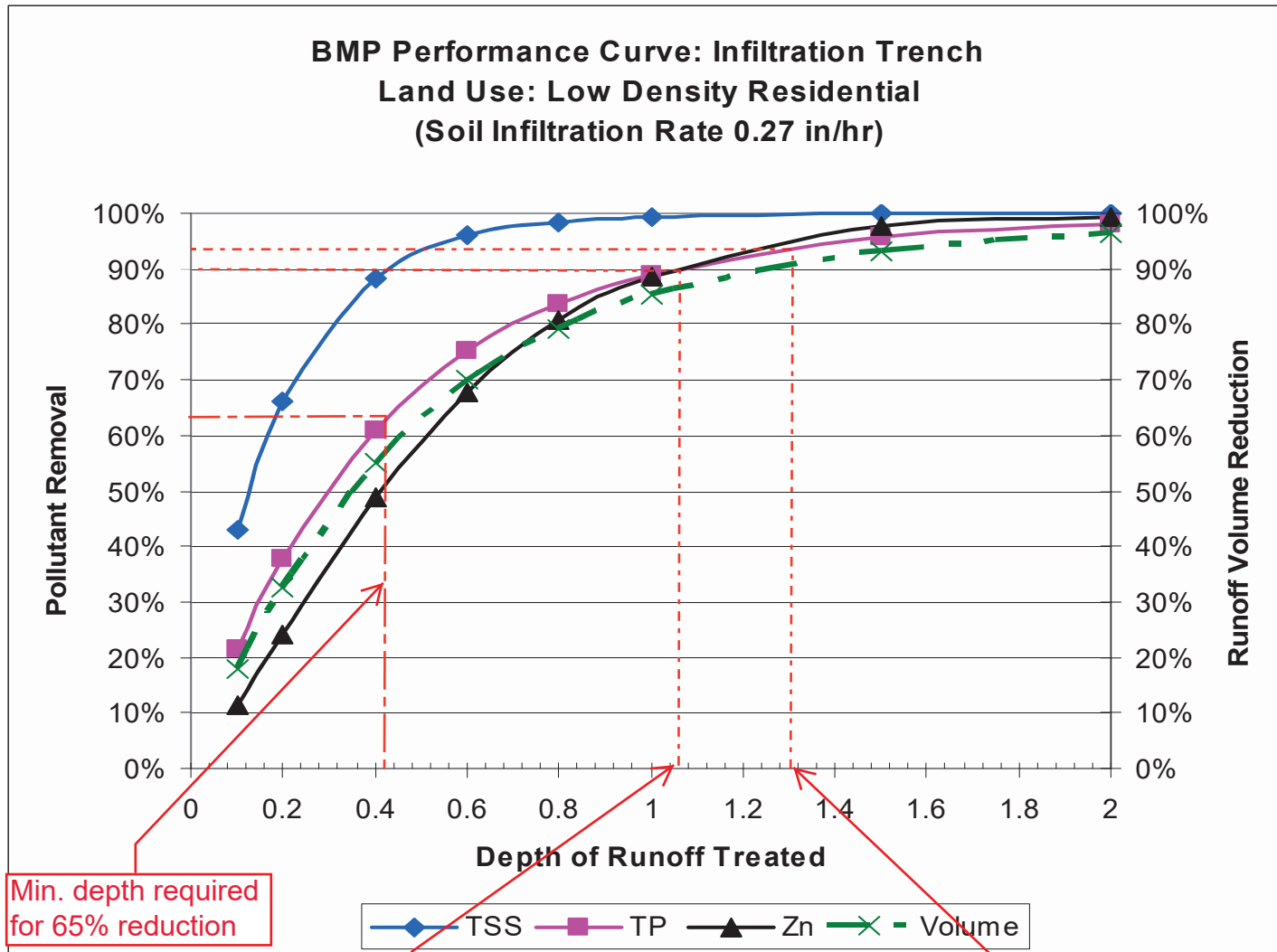
Drainage Area to Infiltration Trench #3

R_v = storage below lowest outlet (orifice) = 180 cf
 $A_{imp}^* = 1,604$ sf
Depth of Runoff Treated = 1.35 inches

BMP Performance Curve: Bioretention



BMP Performance Curve: Infiltration Trench



Min. depth required for 65% reduction

Infiltration Trench #2 provides 90% TP removal

Infiltration Trench #1 and #3 provide approximately 92% TP removal

Proposed Conditions ADS_SB

Prepared by S. Barre - Green International

HydroCAD® 10.10-6a s/n 06415 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Rainfall=8.83"

Printed 3/25/2022

Page 1

Stage-Area-Storage for Pond 1P: Bioretention Basin

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.00	0	11.53	348	12.06	792
11.01	7	11.54	355	12.07	815
11.02	13	11.55	361	12.08	839
11.03	20	11.56	368	12.09	862
11.04	26	11.57	374	12.10	886
11.05	33	11.58	381	12.11	910
11.06	39	11.59	388	12.12	935
11.07	46	11.60	394	12.13	959
11.08	53	11.61	401	12.14	984
11.09	59	11.62	407	12.15	1,009
11.10	66	11.63	414	12.16	1,034
11.11	72	11.64	420	12.17	1,059
11.12	79	11.65	427	12.18	1,084
11.13	85	11.66	434	12.19	1,110
11.14	92	11.67	440	12.20	1,136
11.15	99	11.68	447	12.21	1,162
11.16	105	11.69	453	12.22	1,188
11.17	112	11.70	460	12.23	1,215
11.18	118	11.71	466	12.24	1,242
11.19	125	11.72	473	12.25	1,268
11.20	131	11.73	480	12.26	1,296
11.21	138	11.74	486	12.27	1,323
11.22	145	11.75	493	12.28	1,350
11.23	151	11.76	499	12.29	1,378
11.24	158	11.77	506	12.30	1,406
11.25	164	11.78	512	12.31	1,434
11.26	171	11.79	519	12.32	1,463
11.27	177	11.80	526	12.33	1,491
11.28	184	11.81	532	12.34	1,520
11.29	191	11.82	539	12.35	1,549
11.30	197	11.83	545	12.36	1,578
11.31	204	11.84	552	12.37	1,607
11.32	210	11.85	558	12.38	1,637
11.33	217	11.86	565	12.39	1,667
11.34	223	11.87	572	12.40	1,697
11.35	230	11.88	578	12.41	1,727
11.36	237	11.89	585	12.42	1,757
11.37	243	11.90	591	12.43	1,788
11.38	250	11.91	598	12.44	1,819
11.39	256	11.92	604	12.45	1,850
11.40	263	11.93	611	12.46	1,881
11.41	269	11.94	618	12.47	1,912
11.42	276	11.95	624	12.48	1,944
11.43	283	11.96	631	12.49	1,976
11.44	289	11.97	637	12.50	2,008
11.45	296	11.98	644	12.51	2,040
11.46	302	11.99	650	12.52	2,073
11.47	309	12.00	657	12.53	2,105
11.48	315	12.01	679	12.54	2,138
11.49	322	12.02	701	12.55	2,171
11.50	329	12.03	724	12.56	2,204
11.51	335	12.04	746	12.57	2,238
11.52	342	12.05	769	12.58	2,272

STORAGE VOLUME
BELOW LOWEST OUTLET



12.50 2,008

ATTACHMENT H
Bike Path Figure

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- ALL DIMENSIONS ARE FROM FACE OF BUILDING, WALL, OR CURB UNLESS OTHERWISE NOTED.
- THE DIMENSIONS SHOWN ON THE DRAWINGS SHOW DESIGN INTENT AND MUST BE FIELD VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS. SHOP DRAWINGS FOR ALL PAVEMENT AND CURBING LAYOUT SHALL BE BASED UPON ACTUAL LAYOUT AND FIELD MEASUREMENT BY THE CONTRACTOR.
- AT ALL LOCATIONS WHERE EXISTING CURBING, BITUMINOUS CONCRETE OR CONCRETE PAVING ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- EXPANSION JOINT FILLER AND SEALANT SHALL BE PLACED WHERE PAVEMENT MEETS CURBING, WALLS OR OTHER VERTICAL ELEMENTS, INCLUDING LIGHT BASES, HYDRANTS, BUILDINGS AND BUILDING COLUMNS, WALLS, STAIRS AND AT OTHER VERTICAL CONDITIONS AS SHOWN ON THE DRAWINGS.
- LAYOUT OF EXPANSION JOINTS SHOWN IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR LAYOUT BASED ON FIELD VERIFIED MEASUREMENTS. LAYOUT OF EXPANSION JOINTS SHALL BE REVIEWED IN THE FIELD BY THE OWNER'S REPRESENTATIVE PRIOR TO POURING CONCRETE.
- CONTRACTOR SHALL STAKE THE CENTERLINE AND EDGES OF ALL ELEMENTS IN THE FIELD FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
- RESTORE EXISTING CONDITIONS, INCLUDING REPAVING, RESETTLE SITE IMPROVEMENTS AND SEEDING, AS NECESSARY IN AREAS OF PROPOSED UTILITY IMPROVEMENTS.
- CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING THE LOCATIONS OF ANY EXISTING SITE ELEMENTS TO BE RESET IN THEIR SAME HORIZONTAL LOCATION.
- PROVIDE SLEEVES UNDER NEW PAVEMENT AS SHOWN ON THE DRAWINGS.
- PROVIDE SITE LIGHTING INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- PROVIDE BIKE RACKS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS IN LOCATIONS AND QUANTITIES AS SHOWN.
- INCLUDE IN THE PRICING AN ADDITIONAL \$5,000 SIGNAGE ALLOWANCE.

