FUSS & O'NEILL

May 8, 2023

Ms. Diane Williamson, AICP, CFM
Director of Community Development
Town of Bristol
10 Court Street
Bristol, RI 02809

RE: Response to Comments
Preliminary Plan Application Major Development
Bristol Yarn Mill
Assessor's Plat 10, Lots 41, 42, 43, 44, 49, 50, 60, 61, 62, 68, 71, 73,74 & 76
Bristol, Rhode Island

Dear Ms. Williamson:

Fuss & O'Neill has prepared this letter on behalf of the Applicant, Brady Sullivan Properties, LLC, in response to your comments issued in a letter dated December 21, 2022. Comments and questions from the letter are listed below in italics and followed by our responses.

1. *Plans need to indicate the parking spaces, aisles, and driveway dimensions with an indication of any dimensions that will need a waiver from the Planning Board (B12), including both the basement parking and the surface parking lots. The plans also state that the loading space is required; however, there does not appear to be one shown on the plan. The architectural plan submitted, Sheet AO-1, is not consistent with the engineer's site plan, sheet CS-101, as to the parking layout on the north side of the mill property.*

   Response: A loading space for a 30-foot delivery truck has been added to the parking lot at the north end of the mill on sheet CS-101. The existing on-street loading space on Thames Street, along with pavement markings, signage, bollards, and lift platform, will be removed (refer to sheet CP-101). A waiver is required from Bristol Zoning Ordinance Article VIII Sec. 28-251(2) for the proposed loading space which much be at least 14 feet wide and 60 feet long. The proposed space is at least 12 feet wide at the building (existing condition) and wider in the space entry beyond the building face. The proposed space pavement markings are 26 feet long. The loading spaces is designed to accommodate up to a 30-foot (single-unit, SU-30) truck to safely enter and exit the loading space. The pavement markings are 26 feet long to align with the ends of the passenger vehicle parking spaces.

   The lower-level park of the mill building (refer to Basement Parking Plan sheet A0-1) is comprised of standard parking spaces that are 9 feet wide by 18 feet long and compact parking spaces that are 8 feet wide x 18 feet long. There are 42 compact spaces in the building, which

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Rhode Island
Vermont

represents approximately 14.2% of the total parking spaces for the proposed development. The aisle widths vary from approximately 16 feet 6 inches to 23 feet 4 inches. In addition, 9 motorcycle and 24 bicycle parking spaces are provided. These spaces are excluded from the parking calculations to demonstrate compliance with the Town's parking requirements in the Zoning Ordinance.

The Applicant acknowledges that it will be necessary for facility management staff to appropriately assign spaces to residents based on vehicle size due to the constraints of the building layout and its structural elements. Structural modifications, including removal of some columns, will be completed to accommodate the proposed vehicle parking plan. It may be necessary to eliminate some parking spaces to accommodate more large vehicles. The Applicant is currently providing 294 parking spaces compared to the minimum 141 parking spaces required by the Bristol Zoning Ordinance.

Based on these conditions, the Applicant requests Planning Board approval of the dimensions and layout of the parking area shown on the Basement Parking Plan sheet A0-1, including relief from the minimum off-street parking dimensions in the Bristol Zoning Ordinance. In addition, the Applicant requests a condition of approval to reduce the amount of parking on the Basement Parking Plan by no greater than 25 spaces without Planning Board approval.

2. *Plans need to indicate a label indicating the historic designation of the property (B14);*

   Response: A note has been added to the Zoning table on the Site Plan sheet CS-101 under stating the project's parcels are located with the Town of Bristol's Historic District.

3. *Plans need to indicate the location of any proposed permanent bounds (B18);*

   Response: There are no proposed permanent bounds for the project.

4. *Plans need to include the dimension and area of land proposed to be conveyed to the Town for public purposes (B26).*

   Response: A copy of a boundary survey for Plat 10 Lot 32 prepared by Waterman Engineering Co. on December 4, 2000, is enclosed**.**

5. *Plans need to include a notation of the special conditions of approval imposed by the Planning Board at Master Plan (B28).*

   Response: The special conditions of the Master Plan approval issued by the Planning Board have been added to the General Notes and Legend sheet CN-001.

6. *Plans need to include a notation of any permits and agreements with State and Federal Reviewing agencies (B29).*

   Response: There are no approved permits or agreements with State and Federal Reviewing agencies. The applicant has submitted an Application for State Assent to CRMC and an Application for Stormwater Construction Permit and Water Quality Certification to RIDEM. RIDEM issued a notification that authorization to discharge construction site stormwater runoff will automatically be in effect upon issuance of State Assent from CRMC (see attached).

7. *Plans are needed for sidewalk re-construction (C4).*

   Response: A detail for a concrete sidewalk is provided on the Civil Details sheet CD-502. The locations for concrete sidewalk reconstruction are labeled and marked on the Site Plan sheet CS-101.

8. *Landscaping Plan are needed, as detailed in Appendix F of the regulations, include being stamped and signed by a Landscape Architect (C7); The plan indicate that some relief may be needed for the proposed landscaping which may require variances, please clarify. If variances are needed, they are required prior to Preliminary. The rendering submitted shows street trees along Thames Street which are not shown on the Landscaping Plan. Also, please note that the landscaping plan will be referred to the Conservation Commission for a recommendation on the plantings (C20).*

   Response: The Landscape Plans, which includes Planting Plan sheet LP-101, Enlargement Planting Plan sheet LP-102, Enlargement Planting Plan sheet LP-102, and Landscaping Details sheet CD-512, have been stamped by a licensed professional Landscape Architect. There are no street trees proposed on the west side of Thames Street along the building. The rendering has been revised to be consistent with the site plans.

9. *A plan showing the fire hydrant location, approved by the Fire Chief, is needed (C8).*

   Response: Fuss & O'Neill submitted a drawing entitled *Exhibit 1 Fire Hydrant Location Plan* to the Bristol Fire Department for review. Chief Michael DeMello, CFO issued an email on February 2 that finds the existing hydrants acceptable without any concerns. Chief DeMello identified additional requirements of the Applicant, which includes providing information

about the proposed building's fire suppression system and easement at the north end of the site when available. The referenced drawing and email are enclosed with this letter.

10. *Construction schedule identifying expected start and finish times for major construction tasks is needed (C9).*

    Response: The project constructions schedule under the Construction Sequence section on General Notes and Legend sheet CN-001 has been revised to an expected start date of April 2024 and completion date of April 2026. Depending on the actual receipt of all required permits, construction could commence in the Fall of 2023 and could include mobilization, building renovations, and some underground construction if weather permits and complies with winter road construction restrictions. There may be additional restrictions imposed as conditions of approval by CRMC, RI Energy, Bristol County Water Authority (BCWA), and the Town of Bristol.

11. *Please clarify on the plan if any temporary improvements are proposed (C10).*

    Response: There are no temporary improvements proposed.

12. *A traffic flow plan showing the circulation pattern for the basement parking is needed. The architectural basement parking plans submitted don't show a circulation pattern as the arrows appear to be one-way (C11).*

    Response: The Applicant has revised the architectural drawings (refer to Basement Parking Plan sheet A0-1) to show the intended circulation pattern in the lower level of the building.

13. *Attorney's certificate certifying title is needed (D3).*

    Response: The Applicant's attorney, John P. McCoy of Bengtson & Jestings LLP, provided a copy of the title certificate to the Department of Community Development by email on February 3, 2023.

14. *A list of consultants to be used on the project is needed (D4).*

    Response: The Cover Sheet GI-001 has been revised to include the project's consultants including the architect, civil engineer, environmental services, and land surveyor.

15. *Legal documents are needed including propose easements, walkway agreement, private maintenance (including recycling, garbage, snow removal, and drainage) deed covenant, deed restriction on the mill property and the surface parking lot to connect the two parcels, deed restriction to the Town of Bristol that no structure will be building on the surface parking lot; deed for the parking lot on the corner of Church and Thames (D10);*

Response: The Applicant's attorney, John P. McCoy of Bengtson & Jestings LLP, provided draft copies of Declaration of Restrictions and Service Agreement to the Department of Community Development by email on February 3, 2023 and February 27, 2023, respectively. We understand that a copy of the Stone Harbour development's public access easement will be used as a template for the Bristol Yarn Mill's public access along the shoreline.

16. *Affidavit from a qualified professional state that there are no freshwater wetlands or perimeter wetlands present on the property is needed (D12).*

Response: An affidavit stating there are no RIDEM freshwater wetlands or perimeter wetland present on the property is enclosed with this letter.

17. *Written confirmation that the BCWA has reviewed the plan is able to provide water service is needed (D15).*

Response: A letter from Susan Rabideau, Engineering Project Manager of Bristol County Water Authority, dated April 25, 2023 (enclosed) states that BWCA will provide domestic and fire water service to the Bristol Yarn Mill development. The letter includes several conditions including replacing 640 feet of water main, providing a detailed analysis of domestic water and fire suppression flows, and performing hydrant flow tests.

18. *Written confirmation that the BWPCF certifying that the development can tie into the Bristol Sewer Service is needed (D15).*

Response: A letter from Jose DaSilva, Superintendent of Bristol Water Pollution Control Facility, dated December 16, 2022 (enclosed) states that BWPCF will provide sanitary sewer service to the Bristol Yarn Mill development. The letter includes conditions that are consistent with the pre-application and Master Plan comments previously stated by BWPCF.

19. *CRMC Assent, RIDEM RAWP approval, RIDEM Stormwater Construction, and RIDEM Water Quality Certifications is needed (D22).*

Response: As described in the response to comment #6, RIDEM issued a notification that authorization to discharge construction site stormwater runoff will automatically be in effect upon issuance of State Assent from CRMC (see enclosed). The requirement to submit the CRMC Assent and RIDEM Stormwater Construction Permit and Water Quality Certification with the Preliminary Plan application was waived by the Planning Board at its meeting on February 9, 2023. These permits will be required as conditions of approval for the Preliminary Plan. The RIDEM RAWP Remedial Approval Letter (File No. SR-02-2085) dated May 5, 2023 from RIDEM is enclosed.

20. *On the Application form (line #4) and on the Owner's authorization, Lot Number 50 and 71 are missing (D19).*

    Response: The application form has been revised to include Plat 10, Lots 50 and 71 (see enclosed).

21. *Fiscal Impact Statement and Peer Review fee of $5,130 for same is needed (#1 and Planning Board Conditions at Master Plan).*

    Response: The fee for the fiscal impact review was provided by the Applicant to the Community Development Department under separate cover. The Fiscal Impact Statement dated December 2022 is enclosed.

22. *Historic District Certificate of Appropriateness is needed (8).*

    Response: A copy of the Certificate of Appropriateness will be submitted by Brady Sullivan under a separate cover.

23. *On Sheet CS-101, the first sentence in the first note under "Relief approved at Master Plan and by Town Council" is not applicable. The commercial square footage was per the Town Council original zone change decision which was modified with the recent zoning amendment. Please edit accordingly. Also, please review the commercial area proposed which indicated 6,292 square feet of commercial space --- zoning amendment required 6,300 square feet of commercial.*

    Response: The note has been removed from Sheet CS-101. The area of the commercial space has been revised to 6,479 square feet on the architectural drawings to comply with the Master Plan condition of approval.

24. *Please clarify the notes on the plan that all for "demo by others".*

    Response: The notes on the Site Demolition Plan sheet CP-101 to raze an existing concrete masonry block building and raze a platform/catwalk have been revised. This work will be done by the Applicant's contractor during construction of the project.

25. *Please clarify the seawall improvements at the end of Constitution Street that are labeled "by others".*

    Response: Details associated with the seawall improvements at the end of Constitution Street are provided on Details sheet CD-511 and the "By others" label has been removed from Drainage Plan sheet CG-102. The Applicant will complete these proposed improvements.

26. *The Drainage O and M report appears to be missing a plan in Appendix A.*

Response: The BMP Location Plan identified as Figure 4 is included in Appendix A of the Long-Term Operation & Maintenance Report.

If you have any questions or require additional information, please contact me at (401) 861-3073 or Ajohnson@fando.com.

Sincerely,

Amy Johnson, PE
Project Engineer

/rlz

Enclosures (12 copies of each)::

Civil Permitting Plan Set, Fuss & O'Neill, December 6, 2022 (Revised Marh 7, 2023) – 27 sheets
Architectural Plan Set, Brady Sullivan, January 27, 2023 – 5 sheets
Boundary Survey, Plat 10 Lot 32, Waterman Engineering, December 4, 2000
RIDEM RIPDES Authorization, RI STW/WQC File 23-021
Email from Chief of Bristol Fire Dept., accepting Hydrant & Emergency Access Plan, Feb. 3, 2023
Fire Hydrant Plan, Fuss & O'Neill, January 2023 – 1 sheet
Wetlands Affidavit by Shawn Martin, March 28, 2023
Letter from Jose DaSilva, Bristol Water Pollution Control Facility, December 16, 2022
Letter from Susan Rabideau, Bristol County Water Authority, April 25, 2023
Application Form and Submission Checklist for Major Land Developments and Major Subdivisions (revised)
Fiscal Impact Analysis, FJS Associates, Ltd., Dec. 2022
Bristol Historic District Commission Certification of Appropriateness and Final Approval
Long-Term Operation & Maintenance Report, revised January 13, 2023
RIDEM Remedial Approval Letter File No. SR-02-2085, May 5, 2023
Traffic Impact Study Peer Review (previously submitted under separate cover)

STAMPED PRELIMINARY PLAN SET
REVISED 3/27/23

BRISTOL YARN MILL

THAMES STREET & HOPE STREET · BRISTOL · RHODE ISLAND

ASSESSOR'S PLAT 10 LOTS 41, 42, 43, 44, 49, 50, 60, 61, 62, 68, 71, 73, 74, 76

PERMITTING PLAN

DECEMBER 6, 2022

REVISED: MARCH 27, 2023

PREPARED FOR

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL STREET
MANCHESTER, NH 03101
603.622.6223
WWW.BRADYSULLIVAN.COM

PREPARED BY

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
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SHEET INDEX

SHEET No.	SHEET TITLE
GI-001	COVER SHEET
CN-001	GENERAL NOTES AND LEGEND
1 OF 3	BOUNDARY & TOPOGRAPHIC SURVEY
2 OF 3	BOUNDARY & TOPOGRAPHIC SURVEY
3 OF 3	BOUNDARY & TOPOGRAPHIC SURVEY
CP-101	SITE DEMOLITION PLAN
CE-101	SOIL EROSION & SEDIMENTATION CONTROL PLAN
CS-101	SITE PLAN
CS-102	SITE CIRCULATION PLAN
CG-101	GRADING PLAN
CG-102	DRAINAGE PLAN
CU-101	WATER & SEWER PLAN
LP-101 - LP-103	PLANTING PLANS
CD-501 - CD-502	PLANTING DETAILS
CD-503 - CD-511	CIVIL DETAILS
CD-512	LANDSCAPING DETAILS

CONSULTANTS

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NOBIS GROUP
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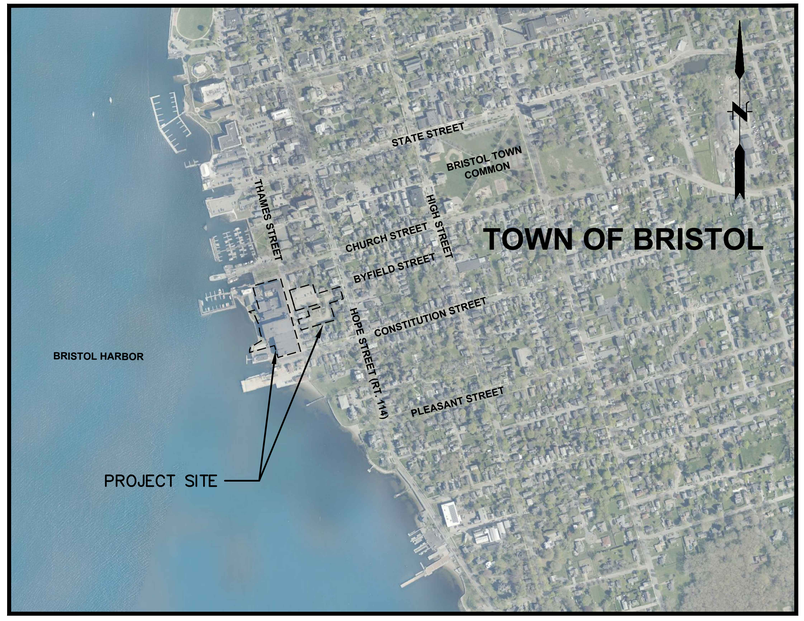
CONCORD, NH
03301
603.224.4182

ARCHITECTURAL:
BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL STREET
MANCHESTER, NH
03101
630.622.6223

SURVEYOR:
CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA
01772
508.948.3000



LOCATION MAP
SCALE: 1" = 500'

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
3/27/2023

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE _____ DATE _____

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

GI-001

SHEET 1 OF 27

File Path: J:\DWG\P2006\1150\A22\Civil\Plan\Permitting Plans\20061150A22_COV01.dwg, Layout: GI-001, Plotted: Tuesday, March 28, 2023. User: kmccombs Plotter: DWG TO PDF.PC3 CTB File: FO.STB

LEGEND

EXIST	PROP	
		PROPERTY LINE/RIGHT-OF-WAY
		CENTERLINE
	LOD	LIMIT OF DISTURBANCE
		EASEMENT
		BUILDING SETBACK
		STATE HIGHWAY BASELINE
10+00	10+00	BASELINE
		ZONING LINE
		EDGE OF WATER
WF1 WF2		WETLAND LINE
		BUFFER ZONE
		WETLAND SYMBOL
		GRAVEL ROAD
		EDGE OF PAVEMENT
		BITUMINOUS CURB
		CONCRETE CURB
		PRECAST CONC. CURB
		VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAW CUT
MATCH LINE SEE SHEET 2 OF 2		MATCH LINE
SWL	SWL	SOLID WHITE LINE
SYL	SYL	SOLID YELLOW LINE
BWL	BWL	BROKEN WHITE LINE
BYL	BYL	BROKEN YELLOW LINE
SWCHL	SWCHL	SOLID WHITE CHANNELIZING LINE
SYCHL	SYCHL	SOLID YELLOW CHANNELIZING LINE
DYL	DYL	DOUBLE YELLOW LINE
STOP	STOP	STOP LINE
		GUARD RAIL
		STOCKADE FENCE
		WIRE FENCE
		CHAIN LINK FENCE
		TREE LINE
		SHRUB LINE
		STONE WALL
		RETAINING WALL
2	4	MINOR CONTOUR
10	20	MAJOR CONTOUR
TS	TS	TOP of SLOPE
BS	BS	BOTTOM of SLOPE
		BUILDING
		BOLLARD
		SIGN
		DOUBLE SIGN
PM	PM	PARKING METER
10	10	PARKING COUNT
		CROSSWALK
		CONC. PAVEMENT
		NORMAL PAVEMENT
		HEAVY DUTY PAVEMENT
		ADA OR ACCESSIBLE RAMP
		HANDICAP PARKING
VAN	VAN	VAN-ACCESSIBLE HANDICAP PARKING
x 21.25 TC 21.25 BC	x 21.25 TC 21.25 BC	TOP & BOTTOM ELEVATION
21.25 x21.25	21.25 x21.25	SPOT ELEVATION w/LEADER
x21.25	x21.25	SPOT ELEVATION
		SOIL BORING
		MONITORING WELL
		TEST PIT LOCATION
		IRON PIPE
		DRILL HOLE
IP	IP	IRON PIN
		MONUMENT
		MAIL BOX
		CONTROL POINT

EXIST	PROP	
12" D	D	DRAINAGE LINE
12" S	S	SEWER LINE
OHE	OHE	OVERHEAD ELECTRIC, TELEPHONE & FIRE ALARM
W	W	WATER LINE
FP	FP	FIRE PROTECTION LINE
G	G	GAS LINE
E	E	UNDERGROUND ELECTRIC
T	T	TELEPHONE LINE
C	C	CABLE TV
E/T/C	E/T/C	ELECTRIC, TELEPHONE & CABLE TV LINES
CB		CATCH BASIN
DCB		DOUBLE CATCH BASIN
DI		DRAIN INLET
DMH	D	DRAIN MANHOLE
		TRENCH DRAIN
		PLUG/STUB
		FLARED END SECTION
		HEADWALL
GT	GT	GREASE TRAP
CS	CS	CONTROL STRUCTURE
SMH	S	SEWER MANHOLE
CO		CLEAN OUT
WM	W	WATER MANHOLE
WG	WG	WATER GATE
GV		GATE VALVE
SHUT		WATER SHUTOFF
		THRUST BLOCK
		REDUCER
		TEE
TSV	TSV	TAPPING SLEEVE, VALVE, & BOX RISER
		PRESSURE REDUCER
		SIAMESE CONNECTION (FIRE DEPARTMENT CONNECTION)
		FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WELL
GG	GG	GAS GATE
GM	GM	GAS METER
E	E	ELECTRIC MANHOLE
EB	EB	ELECTRIC BOX
EM	EM	ELECTRIC METER
T	T	TRANSFORMER
		LIGHT BOLLARD
		FLOOD LIGHT
		LIGHT POLE (1 LUMINARIES)
		LIGHT POLE (2 LUMINARIES)
		LIGHT POLE (3 LUMINARIES)
		LIGHT POLE (4 LUMINARIES)
		WALL PACK
T	T	TELEPHONE MANHOLE
TS	TS	TRAFFIC SIGNAL
S	S	SIGNAL BOX
FACP	FACP	FIRE ALARM CONTROL PANEL
FB	FB	FIRE ALARM BOX
		UTILITY POLE
		GUY POLE
HH	HH	HAND HOLE
PB	PB	PULL BOX
	SF	SILT FENCE
		HAYBALES
		HAYBALE CHECK DAMS

LEGEND NOTE

SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SHOWN ON THE DRAWINGS TO SCALE OR TO THEIR ACTUAL DIMENSION OR LOCATION. COORDINATE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS, AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

GENERAL NOTES

1. REFERENCES:
   - A. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2018 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "STATE STANDARD SPECIFICATIONS" SHALL REFER TO THE LATEST EDITION OF THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
   - B. THE STATE OF RHODE ISLAND STANDARD DETAILS, 2015 EDITION, AND ALL CURRENT REVISIONS, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "STATE STANDARD DETAILS" OR "R.I. STD. ###" SHALL REFER TO THE LATEST EDITION OF THE STATE OF RHODE ISLANDS STANDARD DETAILS.
   - C. THE STATE OF RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, 2016 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" SHALL REFER TO THE LATEST EDITION OF THE STATE OF RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK.
   - D. THE STATE OF RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL, COASTAL MANAGEMENT PROGRAM "RED BOOK" (650-RICP-20-00-01), 2022 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO.
   - E. THE STATE OF RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL, COASTAL MANAGEMENT PROGRAM "METRO BAY REGION SPECIAL AREA MANAGEMENT PLAN" (650-RICR-20-00-5),2022 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO.
   - F. THE SITE-SPECIFIC SOIL EROSION AND SEDIMENT CONTROL PLAN (SESC PLAN) PREPARED BY FUSS & O'NEILL, INC., DATED NOVEMBER 4, 2022, IS MADE A PART HEREOF, AS IF ATTACHED HERETO.
2. EXISTING CONDITIONS:
   - A. SURVEY:
     PROPERTY BOUNDARY AND TOPOGRAPHICAL INFORMATION WERE OBTAINED FROM A PLAN TITLED BOUNDARY AND TOPOGRAPHIC SURVEY, BY CONTROL POINT ASSOCIATES, INC., DATED SEPTEMBER 28, 2021.
   - B. FLOOD ZONE:
     THE SUBJECT SITE LIES WITHIN ZONE "AE", A SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY 1% ANNUAL-CHANCE FLOOD EVENT, WITH BASE FLOOD ELEVATION OF 12 FT; & ZONE "VE", A SPECIAL FLOOD ZONE AREA, WITH BASE FLOOD ELEVATION OF 14 FT, & ZONE X, WITH 0.2% ANNUAL CHANCE FLOOD HAZARD, AREA OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE, PER FLOOD INSURANCE RATE MAP (FIRM) 44001C0014H, EFFECTIVE JULY 7, 2014.
   - C. UTILITIES:
     THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE NOT YET BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE.
3. MATERIAL:
   - A. CURBING:
     CURBING SHALL BE GRANITE (R.I. STD. 7.3.0), CONCRETE (R.I. STD. 7.1.0) OR BITUMINOUS BERM (R.I. STD. 7.5.1) AND IN ACCORDANCE WITH SECTION M.09 OF THE STATE STANDARD SPECIFICATIONS.
   - B. BITUMINOUS CONCRETE PAVEMENT:
     BITUMINOUS PAVEMENTS SHALL MEET REQUIREMENTS OF PART 400 OF THE STATE STANDARD SPECIFICATIONS.
   - C. CEMENT CONCRETE SIDEWALKS:
     ALL PORTLAND CEMENT CONCRETE USED IN THE CONSTRUCTION OF THE CEMENT CONCRETE SIDEWALKS SHALL BE CLASS A(AE) AND CONFORM TO THE REQUIREMENTS AS SET FORTH IN SUBSECTIONS 601.01.1 AND 601.03.1 OF THE STATE STANDARD SPECIFICATIONS.
   - D. SIGNAGE:
     ALL SIGNAGE SHALL MEET MUTCD REQUIREMENTS AND COMPLY WITH STANDARDS IN RIDOT SECTIONS T.15. AND M.16.
4. UTILITIES:
   - A. STORM DRAINAGES:
     STORM DRAIN PIPING SHALL BE SMOOTH LINED BE DOUBLE-WALL HIGH DENSITY POLYETHYLENE PIPE, (n=0.012) WITH WATERTIGHT JOINTS. THE SIZES OF ALL PIPES ARE NOTED ON THE PLANS.

     ALL CATCH BASINS SHALL BE PRECAST CONCRETE, AS SPECIFIED ON THE DETAIL SHEETS, WITH BICYCLE SAFE GRATES, R.I. STANDARD 6.3.2, OR APPROVED EQUAL.
   - B. SEWER:
     ALL SEWER PIPE, UNLESS OTHERWISE SPECIFIED, SHALL BE POLYVINYL CHLORIDE (SDR 35).

     CLEAN OUTS SHALL BE INSTALLED WHERE THE DISTANCE FROM THE BUILDING TO THE MAIN SEWER IS GREATER THAN 100 FEET OR WHERE BENDS GREATER THAN 45° ARE PROPOSED. CLEAN OUTS SHALL BE MADE BY INSTALLING "Y" AND ONE-EIGHTH BENDS OF THE SAME DIAMETER AS THE BUILDING SEWER, OR A MAXIMUM OF FOUR INCHES. THE CLEAN OUT SHALL BE BROUGHT UP FROM THE BUILDING SEWER TO FINISH GRADE WITH A ROADWAY BOX.

     SEWER INSTALLATION PRACTICES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH TOWN OF BRISTOL DPW STANDARDS.
   - C. GAS AND ELECTRIC:
     COORDINATE AND INSTALL GAS, ELECTRIC, AND COMMUNICATIONS UTILITIES IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE APPROPRIATE UTILITY COMPANIES.
   - D. WATER:
     WATER MAINS SHALL BE CEMENT LINED DUCTILE IRON, DUCTILE IRON SHALL BE CLASS 52 AND CONFORM TO AWWA C151. CEMENT LINING SHALL CONFORM TO AWWA C104 AND HAVE DOUBLE THICKNESS. JOINTS AT FITTINGS, VALVES, AND HYDRANT LATERALS SHALL BE MECHANICAL JOINTS, AWWA C111, WITH NEOPRENE GASKETS. JOINTS AT OTHER LOCATIONS SHALL BE PUSH-ON TYPE. AWWA C111, WITH NEOPRENE OR SYNTHETIC RUBBER GASKETS. FITTINGS SHALL BE CEMENT-LINED, DUCTILE IRON, AWWA C110, WITH A 250 PSI MINIMUM.

     WATER SERVICE SHALL BE INSTALLED IN ACCORDANCE WITH BRISTOL COUNTY WATER AUTHORITY STANDARDS. WATER SERVICE, GREATER THAN 2-INCH DIAMETER, SHALL BE CLASS 52 CEMENT LINED DUCTILE IRON AND CONFORM TO AWWA C151. CEMENT LINING SHALL CONFORM TO AWWA C104 AND HAVE DOUBLE THICKNESS. JOINTS AT FITTINGS, VALVES, AND HYDRANT LATERALS SHALL BE MECHANICAL JOINTS, AWWA C111, WITH NEOPRENE GASKETS. JOINTS AT OTHER LOCATIONS SHALL BE PUSH-ON TYPE, AWWA C111, WITH NEOPRENE OR SYNTHETIC RUBBER GASKETS. FITTINGS SHALL BE CEMENT-LINED, DUCTILE IRON, AWWA C110, WITH A 250 PSI MINIMUM.

     CURB STOP BOXES SHALL BE IN CONFORMANCE WITH BRISTOL COUNTY WATER AUTHORITY STANDARDS.

     ALL WATER GATES AND VALVES SHALL BE NRS, MEET AWWA C500 AND C509 STANDARDS, AND OPEN TO THE LEFT. ALL WATER LINES SHALL HAVE A MINIMUM OF 4.5 FEET OF GROUND COVER AND A MINIMUM OF 10 FOOT HORIZONTAL SEPARATION FROM THE SEWER SYSTEM. WHERE THE WATER MAIN CROSSES ANY UTILITY A VERTICAL CLEARANCE OF 18 INCHES MUST BE MAINTAINED. AT CROSSINGS BETWEEN WATER AND SEWER LINES, THE SEWER LINE SHALL BE SLEEVED AND ENCASED IN CONCRETE FOR A DISTANCE OF AT LEAST 10-FEET IN EACH DIRECTION OF THE CROSSING.

ABBREVIATIONS

GENERAL

APPROX	APPROXIMATE
BIT	BITUMINOUS PAVEMENT
BW	BOTTOM OF WALL
CC	CONCRETE CURB
CCB	CAPE CODE BERM
ELEV	ELEVATION
EXIST	EXISTING
GC	GRANITE CURB
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PCC	PRECAST CONCRETE CURB
PROP	PROPOSED
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
TOS	TOP OF SLOPE
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB

UTILITY

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED POLYETHYLENE PIPE
DCB	DOUBLE CATCH BASIN
DI	DUCTILE IRON PIPE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV	INVERT ELEVATION
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UP	UTILITY POLE

GENERAL CONSTRUCTION REQUIREMENTS

1. THE SITE IS A REGULATED SITE UNDER THE RIDEM "RULES AND REGULATIONS FOR THE INVESTIGATION AND REMEDIATION OF HAZARDOUS MATERIALS RELEASES" ("REMEDIATION REGULATIONS"), AND A SITE-SPECIFIC REMEDIAL ACTION WORK PLAN (RAWP). COMPLY WITH THE RAWP AND RIDEM OFFICE OF WASTE MANAGEMENT REQUIREMENTS FOR ALL LAND DISTURBANCE ACTIVITIES AND CONSTRUCTION. ALL EXCESS EXCAVATED MATERIALS, EXCESS FILL, EXCESS CONSTRUCTION MATERIALS, AND DEBRIS SHALL BE REMOVED FROM THE SITE AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, AND RAWP.
   - 1.1. ALL EXISTING SOIL AT THE SITE IS CONSIDERED TO BE REGULATED SOIL, FALLS UNDER RIDEM JURISDICTION, AND AT THE END OF THE PROJECT, SHOULD BE COVERED BY A SOIL CAP. ALL EXCAVATED ON-SITE SOIL TO BE REMOVED FROM THE SITE BY THE CONTRACTOR MUST BE MANAGED IN ACCORDANCE WITH THE RAWP AND DISPOSED OF AT A RIDEM-APPROVED FACILITY.
   - 1.2. PRIOR TO IMPORTATION TO THE SITE, ALL EARTHEN MATERIAL, INCLUDING BUT NOT LIMITED TO BACKFILL, BEDDING, BORROW, GRANULAR MATERIAL, FILL, GRAVEL BORROW AND GRAVEL BASE, MUST BE LABORATORY ANALYZED AND APPROVED AS CLEAN FILL BY THE ENGINEER IN ACCORDANCE WITH THE RAWP.
2. THE SITE IS REGULATED UNDER OSHA 29 CFR 1910.120 AND 1926.65. ALL CONTRACTORS AND WORKERS SHALL MAINTAIN COMPLIANCE WITH HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER) TRAINING AND CERTIFICATION REQUIREMENTS.
3. CONTRACTOR IS RESPONSIBLE FOR PREPARING AND FOLLOWING A SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP) IN ACCORDANCE WITH OSHA 29 CFR 1910.120. A COPY MUST BE MAINTAINED ON-SITE AT ALL TIMES AND BE AVAILABLE FOR EXAMINATION BY THE OWNER AND ENGINEER, IF REQUESTED.THE SITE IS REGULATED UNDER OSHA 29 CFR 1910.120 AND 1926.65. ALL CONTRACTORS AND WORKERS SHALL MAINTAIN COMPLIANCE WITH HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER) TRAINING AND CERTIFICATION REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR PREPARING AND FOLLOWING A SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP) IN ACCORDANCE WITH OSHA 29 CFR 1910.120. A COPY MUST BE MAINTAINED ON-SITE AT ALL TIMES AND BE AVAILABLE FOR EXAMINATION BY THE OWNER AND ENGINEER, IF REQUESTED.
3. DISCHARGES FROM CONSTRUCTION SITE ARE REGULATED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT RHODE ISLAND POLLUTANT DISCHARGE SYSTEM ELIMINATION (RIPDES) PROGRAM. THE PROJECT SHALL COMPLY WITH THE CONDITIONS OF THE RIPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION SITE RUNOFF, AND THE TOWN OF BRISTOL CODE OF ORDINANCES, CHAPTER 29 ARTICLE III "SOIL EROSION, RUNOFF AND SEDIMENT CONTROL".
4. VERIFY THE PROPOSED LAYOUT WITH ITS RELATIONSHIP TO THE EXISTING SITE SURVEY AND CONFIRM ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS ARE CONSISTENT. NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY ERRORS, OMISSIONS OR DISCREPANCIES BEFORE COMMENCING OR PROCEEDING WITH WORK.
5. OBTAIN ALL NECESSARY PERMITS, INSPECTIONS, BONDS, ETC. AND OTHER APPROVAL RELATED ITEMS WITH THE LOCAL AND STATE MUNICIPALITIES. APPLICATION FEES SHALL BE PAID BY OWNER. NO CONSTRUCTION SHALL COMMENCE UNTIL SUCH PERMITS HAVE BEEN SECURED AND THE CONTRACTOR HAS SUPPLIED THE REQUIRED NOTICES.
6. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF IMPROVEMENTS FOR THIS PROJECT SHALL CONFORM TO THE CURRENT CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE LOCAL MUNICIPALITY AND THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
7. DEVIATIONS OR CHANGES FROM THESE PLANS WILL NOT BE ALLOWED UNLESS APPROVED BY THE ENGINEER/OWNER.
8. CONTACT 'DIG SAFE' AT 1-888-344-7233, 72 HOURS PRIOR, EXCLUDING WEEKENDS AND HOLIDAYS, TO ANY EXCAVATION PERFORMED ON SITE.
9. THE EXISTENCE AND/OR LOCATION OF UTILITIES SHOWN ON THESE PLANS MAY BE ONLY APPROXIMATELY CORRECT. MAKE EXPLORATORY EXCAVATIONS AND LOCATE ANY EXISTING UTILITIES AND NOTIFY OWNER/ENGINEER OF ANY DISCREPANCIES FROM CONTRACT DOCUMENTS. THE OWNER SHALL BE NOTIFIED AS TO THE RELOCATIONS REQUIRED PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING, AT HIS/HER EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
10. AN APPROVED SET OF PLANS, SIGNED SOIL EROSION AND SEDIMENT CONTROL PLAN (AKA STORMWATER POLLUTION PREVENTION PLAN), AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES.
11. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
12. IDENTIFY TREES TO BE REMOVED PRIOR TO CONSTRUCTION AND MARK THEM WITH CONSTRUCTION TAPE FOR REVIEW BY THE OWNER/ENGINEER. TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHEREVER FEASIBLE. DO NOT REMOVE TREES UNTIL REVIEWED AND APPROVED BY THE OWNER/ENGINEER.
13. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS.
14. RESTORE HARDSCAPE IMPROVEMENTS WITH MATCHING MATERIALS (I.E. ANY PAVEMENT, WALKS, CURBS, ETC.) THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.
15. RESTORE DISTURBED LANDSCAPE AREAS TO ORIGINAL CONDITION (I.E. SEEDED, SODDED, PLANTED) UNLESS OTHERWISE DIRECTED WITHIN CONTRACT DOCUMENTS.
16. ADJUST UTILITY COVERS, GRATES, AND HAND HOLES TO FINISH GRADE.
17. ALL EXCESS EXCAVATED MATERIALS, EXCESS FILL, EXCESS CONSTRUCTION MATERIALS, DEBRIS, AND WASTE SHALL BE REMOVED FROM THE SITE AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS.
18. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.
19. WORK IS RESTRICTED TO THE HOURS OF 7 AM TO 5 PM ON MONDAY THROUGH FRIDAY, EXCLUDING HOLIDAYS, UNLESS OTHERWISE APPROVED BY THE OWNER.

MASTER PLAN APPROVAL CONDITIONS

1. CHANGE OF CONDITIONS OF THE 2008 TOWN COUNCIL ZONING MAP APPROVAL AND ORDINANCE TEXT INCLUDING RESIDENTIAL AND COMMERCIAL DENSITY USES AS WELL AS MODIFICATION TO THE WIDTH OF THE PARKING SPACES AND THE DOUBLE STRIPING ON THE INTERIOR PARKING SPACES.
2. DEDICATION BY DEED OF THE PARKING LOT ON THE NORTHEAST CORNER OF CHURCH AND THAMES STREET, PLAT 10, LOT 32 TO THE TOWN OF BRISTOL FOR PUBLIC PARKING AS REQUIRED BY THE ZONING THAT THERE BE 10% OF THE LAND AREA TO BE SET ASIDE FOR PUBLIC INSTITUTIONAL USES AS REQUIRED BY SECTION 28-284(g).
3. CONNECTION OF THE PUBLIC WALKWAY TO THE MARITIME CENTER.
4. A TRAFFIC STUDY TO INCLUDE COUNTS TO BE TAKEN IN THE SUMMER MONTHS (JUNE, JULY, AUGUST, OR SEPTEMBER), AND TO BE SUBJECT TO PEER REVIEW OF THE PLANNING BOARD'S CONSULTANT ENGINEER, WITH THE REVIEW FEE TO BE REIMBURSED BY THE APPLICANT IN ACCORDANCE WITH THE REGULATIONS.
5. A REVISED FISCAL IMPACT STUDY SUBJECT TO THE PEER REVIEW OF A CONSULTANT SELECTED BY THE PLANNING BOARD WITH REVIEW FEE TO BE REIMBURSED BY THE APPLICANT IN ACCORDANCE WITH THE REGULATIONS.
6. DEED RESTRICTIONS ON BOTH THE MILL BUILDING PROPERTY AND THE SURFACE PARKING LOT ACROSS FROM THE MILL SO THAT PARKING IS CONNECTED TO THE MILL AND CANNOT BE SEPARATELY CONVEYED.
7. DEED RESTRICTIONS, RUNNING TO THE TOWN OF BRISTOL, ON THE SURFACE PARKING LOT THAT NO STRUCTURES BE BUILT ON THIS PROPERTY.
8. PARKING SPACES ON THE SURFACE PARKING LOT TO BE DOUBLE STRIPED.
9. ALL SERVICES TO THE RESIDENTIAL UNITS WILL BE PRIVATE INCLUDING RECYCLING AND GARBAGE PICK-UP, SNOW PLOWING, DRIVEWAY AND DRAINAGE MAINTENANCE. THIS SHALL BE A DEED CONVENANT IN LAND EVIDENCE RECORDS.

SOIL EROSION AND SEDIMENT CONTROL

1. A SITE-SPECIFIC SOIL EROSION AND SEDIMENT CONTROL PLAN (SESC PLAN) HAS BEEN PREPARED. THE SESC PLAN MUST BE REVIEWED AND SIGNED BY THE OWNER, OPERATOR (I.E CONTRACTOR), AND CONTRACTOR'S DESIGNATED SESC INSPECTOR. A HARD-COPY OF THE SIGNED SESC PLAN, INCLUDING ALL INSPECTION REPORTS, CORRECTIVE ACTION LOGS, AND ADDENDA, MUST BE KEPT ON SITE AT ALL TIMES THROUGHOUT CONSTRUCTION.
2. FOLLOW THE SITE-SPECIFIC SESC PLAN, SITE PREPARATION PLAN, EROSION AND SEDIMENT CONTROL SPECIFICATION, AS WELL AS RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK AND THE THE TOWN OF BRISTOL CODE OF ORDINANCES, CHAPTER 29 ARTICLE III "SOIL EROSION, RUNOFF AND SEDIMENT CONTROL", IN CONSTRUCTING THE EROSION AND SEDIMENT CONTROLS INDICATED ON THE PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES OR WORKS AND REHABILITATION MEASURES MUST CONFORM TO OR EXCEED THESE REQUIREMENTS.
3. THE TIMELY INSTALLATION, INSPECTION, AND MAINTENANCE/REPLACEMENT OF SEDIMENT AND EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION AND PERMIT COMPLIANCE IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETE AND ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL CONTINUE TO BE MAINTAINED IN EFFECTIVE CONDITION UNTIL SITE STABILIZATION.
4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN, OR AS DIRECTED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND LOCAL MUNICIPALITY, OR AS MAY BE REQUIRED TO PREVENT SEDIMENT FLOW TO STORM DRAINS OR SURFACE WATERS.
5. AN INSPECTION OF STORMWATER CONTROL MEASURES MUST BE CONDUCTED BY THE CONTRACTOR AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS, AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY STORM EVENT WHICH GENERATES AT LEAST 0.25 INCHES OF RAINFALL PER TWENTY-FOUR (24) HOUR PERIOD.
6. PREPARE AN INSPECTION REPORT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND TITLES OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SESC PLAN, AND CORRECTIVE ACTIONS WHICH MUST BE MADE. SUCH REPORTS MUST IDENTIFY ANY INCIDENTS OF NONCOMPLIANCE. WHERE AN INSPECTION DOES NOT IDENTIFY ANY INCIDENTS OF NONCOMPLIANCE, A INSPECTION REPORT MUST STILL BE PREPARED TO CERTIFY THAT THE SITE IS IN COMPLIANCE WITH THE SESC PLAN AND RIPDES PERMIT. THE INSPECTION REPORT MUST BE SIGNED BY THE INSPECTOR AND OPERATOR AND KEPT WITH THE ON-SITE SESC PLAN.
7. FOLLOWING AN INSPECTION, ALL CORRECTIVE ACTIONS MUST BE COMPLETED WITHIN SEVEN (7) CALENDAR DAYS. A CORRECTIVE ACTION LOG MUST BE SIGNED BY THE OPERATOR AND KEPT WITH THE ON-SITE SESC PLAN.
8. BASED ON THE RESULTS OF THE INSPECTIONS, THE SESC PLAN MUST BE REVISED AS APPROPRIATE, BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION. SUCH MODIFICATIONS MUST PROVIDE FOR IMPLEMENTATION OF ANY CHANGES TO THE SESC PLAN WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION.
9. IF AN INSPECTION REVEALS A DISCHARGE OF SEDIMENTS TO THE WATERS OF THE STATE OR A SEPARATE STORM SEWER SYSTEM, THE PERMITTEE MUST NOTIFY THIS OFFICE OF THE NATURE OF THE DISCHARGE, THE MEASURES TAKEN TO CLEAN UP THE DISCHARGE, AND THE MEASURES TAKEN TO PREVENT FUTURE RELEASES.
10. A HARD COPY OF THE COMPLETE SESC PLAN, INCLUDING ALL INSPECTION REPORTS, CORRECTIVE ACTION LOGS, AND ADDENDA, MUST BE RETAINED BY THE OWNER FOR AT LEAST FIVE (5) YEARS FROM THE DATE THAT THE SITE HAS UNDERGONE FINAL STABILIZATION.

SPILL PREVENTION AND RESPONSE PROCEDURE

1. ANY INADVERTENT OR DELIBERATE DISCHARGE OF WASTE OIL OR ANY OTHER POLLUTANT TO THE STORMWATER MANAGEMENT SYSTEM (I.E. INFILTRATION BEST MANAGEMENT PRACTICES, OR CLOSED-CONDUIT DRAINAGE SYSTEM THAT DISCHARGES TO MUNICIPAL SEPARATE STORM SEWER SYSTEM OR WATER BODY) REQUIRES IMMEDIATE NOTIFICATION TO THE RIDEM OIL POLLUTION CONTROL PROGRAM AT (401) 277-2284, AS PER THE OIL POLLUTION CONTROL REGULATIONS. DURING NON-WORKING HOURS, NOTIFICATION OF SPILLS CAN BE MADE TO THE RIDEM DIVISION OF ENFORCEMENT AT (401) 222-3070 (THE 24-HOUR EMERGENCY RESPONSE PHONE NUMBER).
2. ANY INCIDENT OF GROUNDWATER CONTAMINATION RESULTING FROM THE IMPROPER DISCHARGE OF POLLUTANTS TO THE STORMWATER MANAGEMENT SYSTEM SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AS WELL AS ANY OTHER PARTIES THAT THE RIDEM DETERMINES TO BE RESPONSIBLE FOR THE CONTAMINATION. PURSUANT TO STATE LAWS AND REGULATIONS, THE RIDEM MAY REQUIRE THE PROPERTY OWNER, CONTRACTOR, AND OTHER RESPONSIBLE PARTIES TO REMEDIATE ANY INCIDENTS THAT MAY ADVERSELY IMPACT GROUNDWATER QUALITY.
3. UPON TRANSFER OF THE PROPERTY, THE NEW OWNER SHALL BE INFORMED AS TO THE LEGAL RESPONSIBILITIES ASSOCIATED WITH STORMWATER MANAGEMENT SYSTEM, AS INDICATED ABOVE.

STORMWATER MAINTENANCE PROGRAM

1. OPERATION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM SHALL BE CONDUCTED IN ACCORDANCE WITH SITE-SPECIFIC LONG-TERM OPERATION & MAINTENANCE PLAN.

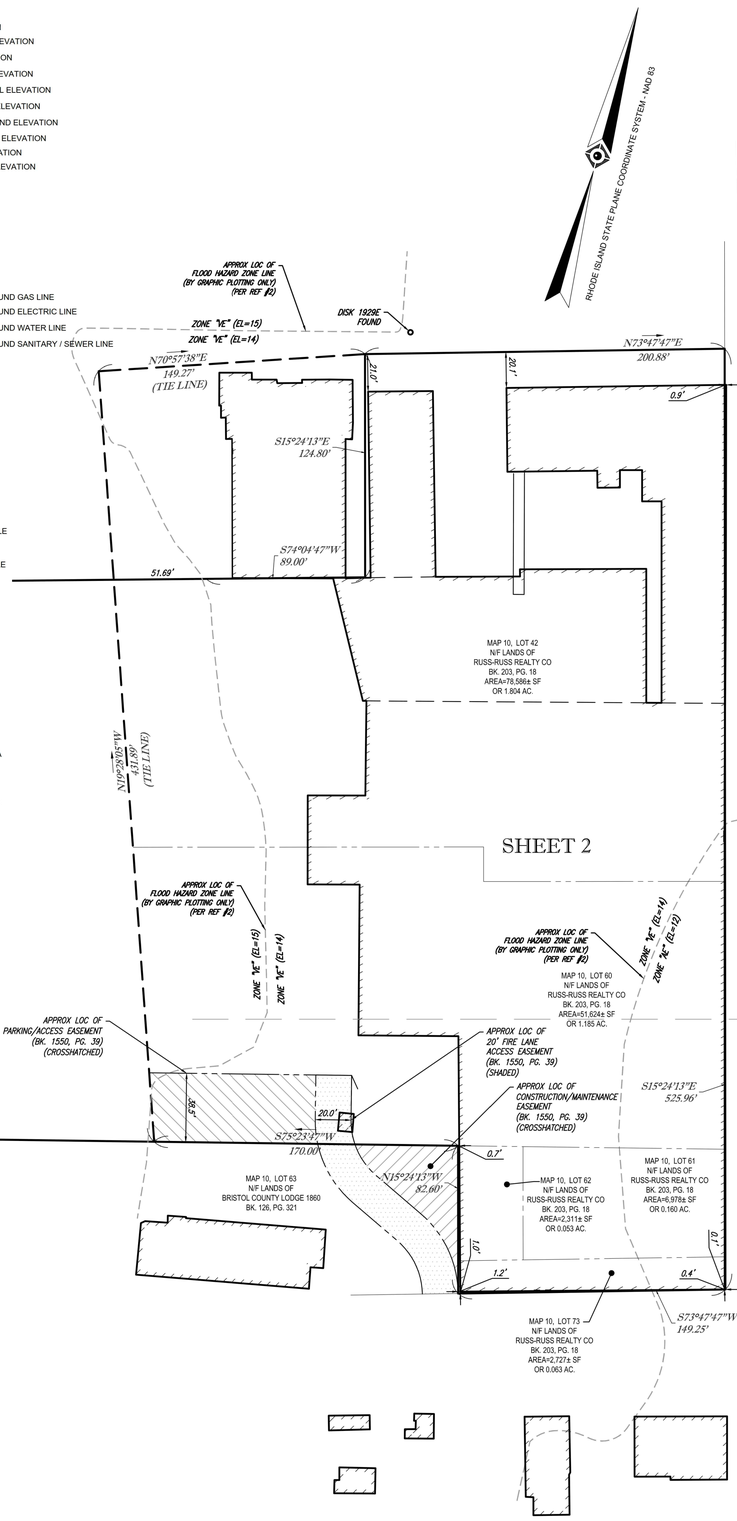
CONSTRUCTION SEQUENCE

CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT ARE EXPECTED TO COMMENCE IN APRIL 2024 AND WILL BE COMPLETED BY APRIL 2026. THE GENERAL SEQUENCE FOR EACH PHASE OF CONSTRUCTION IS AS FOLLOWS:

1. INSTALL PERIMETER SEDIMENT CONTROL BARRIERS, INLET PROTECTION, TREE PROTECTION AND PROPOSED CONSTRUCTION ACCESSES.
2. CLEAR AND GRUB SITE, REMOVE PAVEMENT, REMOVE MATERIALS TO BE DISPOSED OF, AND STOCKPILE ITEMS AS DEPICTED ON PL

LEGEND

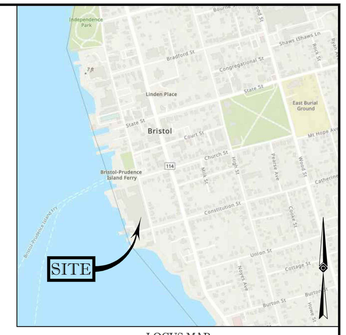
124 / 125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXISTING TOP OF CURB ELEVATION
× G 122.95	EXISTING GUTTER ELEVATION
× TW 123.45	EXISTING TOP OF WALL ELEVATION
× BW 122.95	EXISTING BOTTOM OF WALL ELEVATION
× TI 123.45	EXISTING TOP OF ISLAND ELEVATION
× BI 122.95	EXISTING BOTTOM OF ISLAND ELEVATION
× FF 123.45	EXISTING FINISHED FLOOR ELEVATION
× DS 123.45	EXISTING DOOR SILL ELEVATION
× [LG 125.45]	EXISTING LEGAL GRADE ELEVATION
	HYDRANT
WV	WATER VALVE
VALVE	UNKNOWN VALVE
GV	GAS VALVE
GM	GAS METER
EM	ELECTRIC METER
OH	OVERHEAD WIRES
G	APPROX. LOC. UNDERGROUND GAS LINE
E	APPROX. LOC. UNDERGROUND ELECTRIC LINE
W	APPROX. LOC. UNDERGROUND WATER LINE
S	APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
UP	UTILITY POLE
	AREA LIGHT
	SIGN
	BOLLARD
CLF	CHAIN LINK FENCE
DC	DEPRESSED CURB
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAVEMENT
LSA	LANDSCAPED AREA
MC (TYP)	METAL COVER TYPICAL
DMH	DRAINAGE/STORM MANHOLE
EMH	ELECTRIC MANHOLE
SMH	SANITARY/SEWER MANHOLE
MH	UNKNOWN MANHOLE
WMH	WATER MANHOLE
CB	CATCH BASIN OR INLET
	TREE & TRUNK SIZE
10	PARKING SPACE COUNT
	DEPRESSED CURB
SWL	SOLID WHITE LINE
DYL	DOUBLE YELLOW LINE
HT	HEIGHT
BLDG	BUILDING
BFPA	BUILDING FOOTPRINT AREA
NVP	NO VISIBLE PIPE
DHF	DRILL HOLE FOUND
PVC	POLYVINYL CHLORIDE PIPE
CI	CAST IRON PIPE
DI	DUCTILE IRON PIPE
INV	INVERT ELEVATION
GRT	GRATE ELEVATION
MBW	MASONRY BLOCK WALL



SEE SHEET 2 & 3 FOR TOPOGRAPHIC DETAIL

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF BRISTOL, BRISTOL COUNTY, MAP 10.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, BRISTOL COUNTY, RHODE ISLAND 9ALL JURISDICTIONS), PANEL 14 OF 18", MAP NUMBER 44001C0014H, MAP REVISED: JULY 7, 2014.
3. MAP ENTITLED "BOUNDARY SURVEY PLAN AP 10 - LOTS 60, 61, 62 & 73 THAMES STREET & CONSTITUTION STREET BRISTOL, RHODE ISLAND RUSS - RUSS REALTY CO. C/O ROBIN RUG COMPANY 125 THAMES STREET P.O. BOX 656 BRISTOL, RHODE ISLAND 02809", PREPARED BY: WATERMAN ENGINEERING CO., DATED: FEBRUARY 1, 2005, PROVIDED BY CLIENT.
4. MAP ENTITLED "BOUNDARY SURVEY PLAN A.P. 10, LOTS 43, 71, 74 & 76 HOPE STREET BRISTOL RHODE ISLAND KARIAN REALTY CO. P.O. BOX 656 BRISTOL, RHODE ISLAND", PREPARED BY: WATERMAN ENGINEERING CO., DATED: FEBRUARY 26, 2021, PROVIDED BY CLIENT.
5. MAP ENTITLED "PLAN OF LAND: THEODORE J. & HELEN T. ALIGLET, LOCATION: 12 BUTTERWORTH AVENUE BRISTOL, RHODE ISLAND", PREPARED BY: STEPHEN M. MURGO, DATED: JULY, 1992, PROVIDED BY CLIENT.
6. MAP ENTITLED "EXISTING CONDITIONS PLAN, BRISTOL YARN MILL, PLAT 10 LOTS 42, 60, 61, 62, 68, 73, 41, 43, 44, 49, 74 AND 76, 125 THAMES STREET, BRISTOL RHODE ISLAND", PREPARED BY FUSS & O'NEILL, DATED MAY 7, 2021
7. UNDERGROUND GAS MAPPING OF 125 THAMES STREET, PROVIDED BY NATIONAL GRID.
8. UNDERGROUND ELECTRIC MAPPING IN THE AREA PROVIDED BY NATIONAL GRID.
9. MAP ENTITLED "SURVEY OF LAND KARIAN REALTY, INC.", PREPARED BY: WATERMAN ENGINEERING CO., DATED: AUGUST 1990, ON FILE WITH THE TOWN OF BRISTOL PLANNING DEPARTMENT.
10. MAP ENTITLED "RUSS-RUSS REALTY CO. ROBIN RUG COMPLEX MASTER PLAN A.P. 10 / LOTS 41, 42, 44, 60, 61, 62, 68 & 73 125 THAMES STREET BRISTOL RHODE ISLAND", PREPARED BY: FUSS 7 O'NEILL, DATED: APRIL 18, 2008, PROVIDED BY CLIENT.
11. RECIPROCAL EASEMENT AGREEMENT, DATED MAY 6, 2010, AND RECORDED WITH THE BRISTOL COUNTY LAND RECORDS IN BOOK 1550, PAGE 39.



LOCUS MAP
© 2013 ESRI WORLD STREET MAPS
NOT TO SCALE

NOTES:

1. PROPERTY KNOWN AS LOTS 41, 42, 43, 44, 45, 48, 49, 60, 61, 62, 68, 73, 74 & 76 AS SHOWN ON THE TOWN OF BRISTOL, BRISTOL COUNTY, STATE OF RHODE ISLAND MAP NO. 10.
2. LOT 41 AREA = 12,854 SQUARE FEET OR 0.295 ACRES
   LOT 42 AREA = 78,586 SQUARE FEET OR 1.804 ACRES
   LOT 43 AREA = 8,856 SQUARE FEET OR 0.203 ACRES
   LOT 44 AREA = 7,939 SQUARE FEET OR 0.182 ACRES
   LOT 45 AREA = 4,410 SQUARE FEET OR 0.101 ACRES
   LOT 48 AREA = 3,583 SQUARE FEET OR 0.082 ACRES
   LOT 49 AREA = 13,900 SQUARE FEET OR 0.319 ACRES
   LOT 60 AREA = 51,624 SQUARE FEET OR 1.185 ACRES
   LOT 61 AREA = 6,978 SQUARE FEET OR 0.160 ACRES
   LOT 62 AREA = 2,311 SQUARE FEET OR 0.053 ACRES
   LOT 68 AREA = 4,613 SQUARE FEET OR 0.106 ACRES
   LOT 73 AREA = 2,727 SQUARE FEET OR 0.063 ACRES
   LOT 74 AREA = 5,098 SQUARE FEET OR 0.117 ACRES
   LOT 76 AREA = 7,177 SQUARE FEET OR 0.165 ACRES
   TOTAL AREA = 210,656 SQUARE FEET OR 4.835 ACRES
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.

   THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:

   QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.

   QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.

   QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.

   QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY, LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY A PORTION OF THE PROPERTY IS LOCATED IN FLOOD HAZARD ZONE "AE" (SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, BASE FLOOD ELEVATIONS DETERMINED, EL=12), & ZONE "X SHADED" (AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM %1 ANNUAL CHANCE FLOOD), & ZONE "X-UNSHADED" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), & ZONE "VE" (COSTAL FLOOD ZONE WITH VELOCITY HAZARD (WAVE ACTION); BASE FLOOD ELEVATIONS DETERMINED, EL.=14 & EL.=15) PER REF #2.
7. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS CBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS) TAKEN AT THE TIME OF THE FIELD SURVEY.

   TEMPORARY BENCH MARKS SET:

   TBM-A: X-CUT ON BONNET BOLT OF FIRE HYDRANT ALONG EASTERLY LINE OF THAMES STREET AT ELEVATION = 9.38'

   TBM-B: X-CUT ON BONNET BOLT OF FIRE HYDRANT ALONG NORTHERLY LINE OF CONSTITUTION STREET AT ELEVATION = 14.46'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
1	UPDATED PER RECEIPT OF CLIENT COMMENTS	--	A.L.S.	C.E.L.	10-01-2021

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR-00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 30, 2020 AS FOLLOWS:

1. TYPE OF BOUNDARY SURVEY: COMPREHENSIVE BOUNDARY SURVEY — MEASUREMENT SPECIFICATION: I
2. OTHER TYPE OF SURVEY: DATA ACCUMULATION SURVEY (TOPOGRAPHIC SURVEY) — MEASUREMENT SPECIFICATION: III
   VERTICAL CONTROL STANDARD — V-3
   TOPOGRAPHIC SURVEY ACCURACY — T-2
3. THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THIS PLAN IS AS FOLLOWS: PREPARE BOUNDARY SURVEY AND OBTAIN TOPOGRAPHIC INFORMATION FOR USE AS A BACKGROUND DOCUMENT FOR SITE PLAN PREPARATION.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL.

CHARLES E. LENT
RHODE ISLAND No. 1947
PROFESSIONAL LAND SURVEYOR

10-01-2021
DATE

CHARLES E. LENT
RHODE ISLAND PROFESSIONAL LAND SURVEYOR #1947
CERTIFICATE OF AUTHORIZATION #A350

FIELD DATE: 8-18-2021	BOUNDARY & TOPOGRAPHIC SURVEY				
FIELD BOOK NO.: 21-10 MA	BRISTOL YARN MILL				
FIELD BOOK PG.: 11-14	125 THAMES STREET LOTS 41, 42, 43, 44, 45, 48, 49, 60, 61, 62, 68, 73, 74, 76, MAP 10 TOWN OF BRISTOL , BRISTOL COUNTY STATE OF RHODE ISLAND				
FIELD CREW: B.S.B & J.D.O.	CONTROL POINT ASSOCIATES, INC.	ALBANY, NY 518-217-5010 CHALFONT, PA 215-712-9800 HAUPPAUGE, NY 631-580-2645 MANHATTAN, NY 646-780-0411 MT LAUREL, NJ 609-857-2099 WARREN, NJ 908-668-0099			
DRAWN: N.I.G.	352 TURNPIKE ROAD SOUTHBOROUGH, MA 01772 508.948.3000 - 508.948.3003 FAX WWW.CPASURVEY.COM				
REVIEWED: B.A.V.	APPROVED: C.E.L.	DATE: 9-28-2021	SCALE: 1" = 40'	FILE NO.: 03-210289-00	DWG. NO.: 1 OF 3

SHEET 3 OF 27

THE STATE OF RHODE ISLAND REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.
1-800-DIG-RITE (1-800-344-7483) IT'S FREE. CALL BEFORE YOU DIG!

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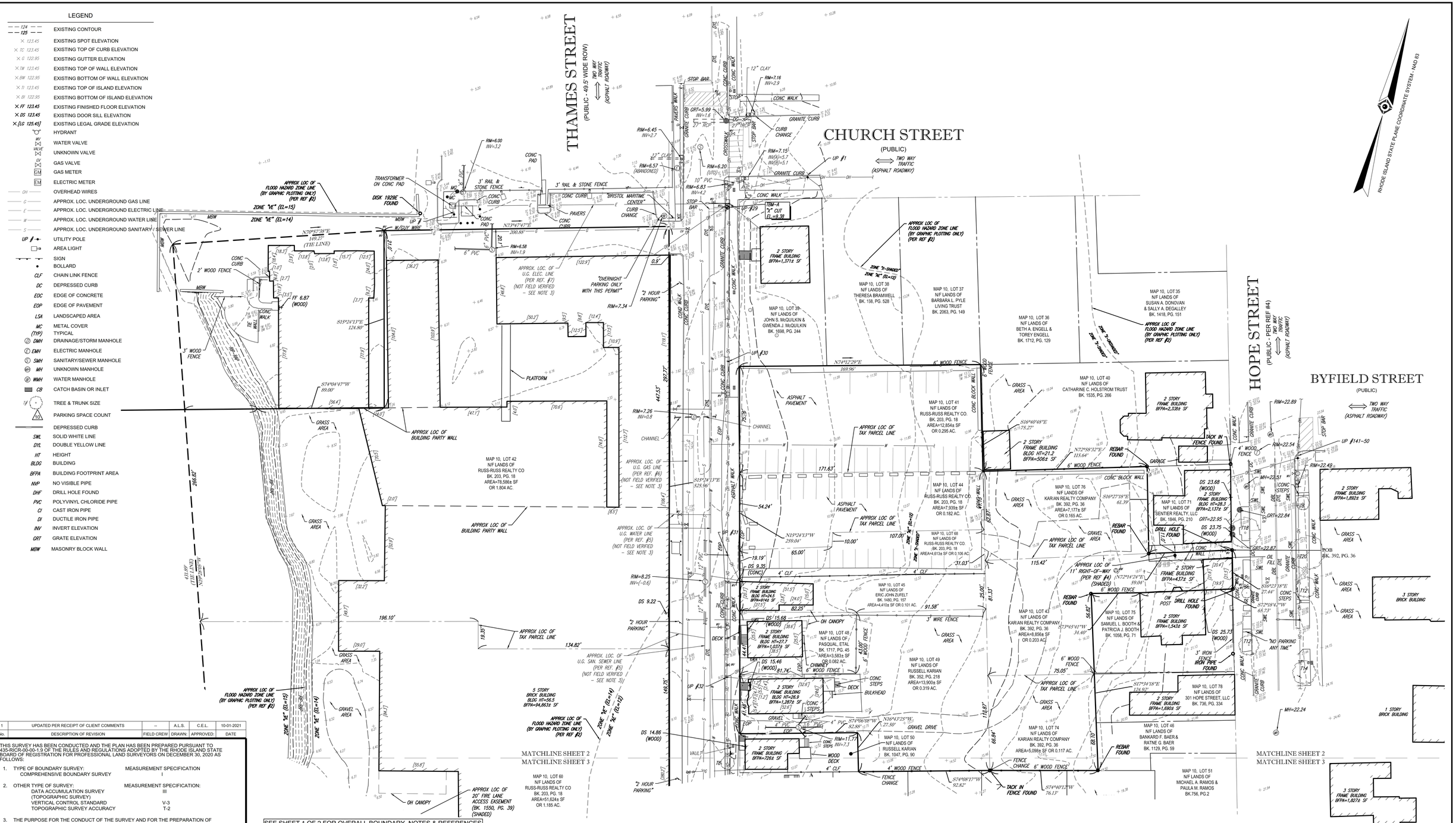
LEGEND

- 124 / 125 — EXISTING CONTOUR
- 123.45 — EXISTING SPOT ELEVATION
- TC 123.45 — EXISTING TOP OF CURB ELEVATION
- G 122.95 — EXISTING GUTTER ELEVATION
- TW 123.45 — EXISTING TOP OF WALL ELEVATION
- BW 122.95 — EXISTING BOTTOM OF WALL ELEVATION
- TI 123.45 — EXISTING TOP OF ISLAND ELEVATION
- BI 122.95 — EXISTING BOTTOM OF ISLAND ELEVATION
- FF 123.45 — EXISTING FINISHED FLOOR ELEVATION
- DS 123.45 — EXISTING DOOR SILL ELEVATION
- [LG 125.45] — EXISTING LEGAL GRADE ELEVATION
- HYDRANT
- WV — WATER VALVE
- VALVE — UNKNOWN VALVE
- GV — GAS VALVE
- GM — GAS METER
- EM — ELECTRIC METER
- OH — OVERHEAD WIRES
- G — APPROX. LOC. UNDERGROUND GAS LINE
- E — APPROX. LOC. UNDERGROUND ELECTRIC LINE
- W — APPROX. LOC. UNDERGROUND WATER LINE
- S — APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- UP — UTILITY POLE
- AREA LIGHT
- SIGN
- BOLLARD
- CLF — CHAIN LINK FENCE
- DC — DEPRESSED CURB
- EOC — EDGE OF CONCRETE
- EOP — EDGE OF PAVEMENT
- LSA — LANDSCAPED AREA
- MC — METAL COVER
- (TYP) — TYPICAL
- DMH — DRAINAGE/STORM MANHOLE
- EMH — ELECTRIC MANHOLE
- SMH — SANITARY/SEWER MANHOLE
- MH — UNKNOWN MANHOLE
- WMH — WATER MANHOLE
- CB — CATCH BASIN OR INLET
- TREE & TRUNK SIZE
- 10 — PARKING SPACE COUNT
- DEPRESSED CURB
- SWL — SOLID WHITE LINE
- DYL — DOUBLE YELLOW LINE
- HT — HEIGHT
- BLDG — BUILDING
- BFPA — BUILDING FOOTPRINT AREA
- NVP — NO VISIBLE PIPE
- DHF — DRILL HOLE FOUND
- PVC — POLYVINYL CHLORIDE PIPE
- CI — CAST IRON PIPE
- DI — DUCTILE IRON PIPE
- INV — INVERT ELEVATION
- GRT — GRATE ELEVATION
- MBW — MASONRY BLOCK WALL



No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
1	UPDATED PER RECEIPT OF CLIENT COMMENTS	--	A.L.S.	C.E.L.	10-01-2021

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1. TYPE OF BOUNDARY SURVEY: COMPREHENSIVE BOUNDARY SURVEY — MEASUREMENT SPECIFICATION I
2. OTHER TYPE OF SURVEY: DATA ACCUMULATION SURVEY (TOPOGRAPHIC SURVEY), VERTICAL CONTROL STANDARD, TOPOGRAPHIC SURVEY ACCURACY — MEASUREMENT SPECIFICATION: III, V-3, T-2
3. THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THIS PLAN IS AS FOLLOWS: PREPARE BOUNDARY SURVEY AND OBTAIN TOPOGRAPHIC AND PLANIMETRIC INFORMATION FOR USE AS A BACKGROUND DOCUMENT FOR SITE PLAN PREPARATION.

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CHARLES E. LENT — No. 1947 — PROFESSIONAL LAND SURVEYOR

10-01-2021

CHARLES E. LENT

RHODE ISLAND PROFESSIONAL LAND SURVEYOR #1947
CERTIFICATE OF AUTHORIZATION #A350

CONTROL POINT ASSOCIATES, INC. ALL RIGHTS RESERVED.
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FIELD DATE	8-18-2021
FIELD BOOK NO.	21-10 MA
FIELD BOOK PG.	11-14
FIELD CREW	B.S.B & J.D.O.
DRAWN:	N.I.G.
REVIEWED:	B.A.V.

BOUNDARY & TOPOGRAPHIC SURVEY

BRISTOL YARN MILL

125 THAMES STREET
LOTS 41, 42, 43, 44, 45, 48, 49, 60, 61, 62, 68, 73, 74, 76, MAP 10
TOWN OF BRISTOL , BRISTOL COUNTY
STATE OF RHODE ISLAND

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
WWW.CPASURVEY.COM

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CHALFONT, PA 215-712-9800
HAUPPAUGE, NY 631-580-2647
MANHATTAN, NY 646-780-0411
MT LAUREL, NJ 609-857-2099
WARREN, NJ 908-668-0099

APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
C.E.L.	9-28-2021	1" = 30'	03-210289-00	2 OF 3

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

811 DIG SAFE (1-888-344-7233) STOP CALL BEFORE YOU DIG

THE STATE OF RHODE ISLAND REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTHS SURFACE ANYWHERE IN THE STATE.

LEGEND

124 / 125	EXISTING CONTOUR
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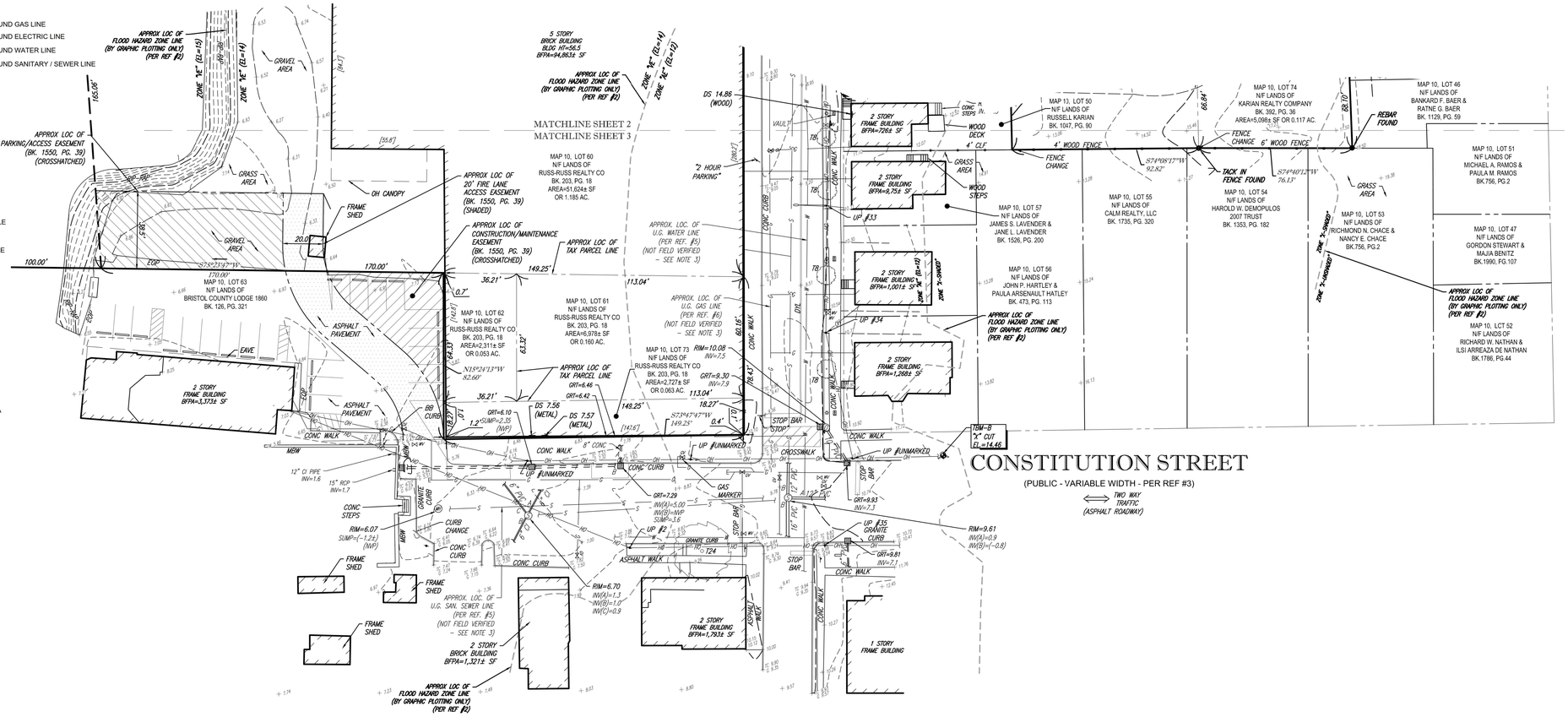

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

1	UPDATED PER RECEIPT OF CLIENT COMMENTS	--	A.L.S.	C.E.L.	10-01-2021
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CHARLES E. LENT
No. 1947
PROFESSIONAL LAND SURVEYOR

10-01-2021
DATE

CHARLES E. LENT
RHODE ISLAND PROFESSIONAL LAND SURVEYOR #1947
CERTIFICATE OF AUTHORIZATION #A350

BOUNDARY & TOPOGRAPHIC SURVEY

BRISTOL YARN MILL

125 THAMES STREET
LOTS 41, 42, 43, 44, 45, 48, 49, 60, 61, 62, 68, 73, 74, 76, MAP 10
TOWN OF BRISTOL, BRISTOL COUNTY
STATE OF RHODE ISLAND

FIELD DATE	FIELD BOOK NO.	FIELD BOOK PG.	FIELD CREW	DRAWN:
8-18-2021	21-10 MA	11-14	B.S.B & J.D.O.	N.I.G.

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REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
B.A.V.	C.E.L.	9-28-2021	1" = 30'	03-210289-00	3 OF 3

SHEET 5 OF 27

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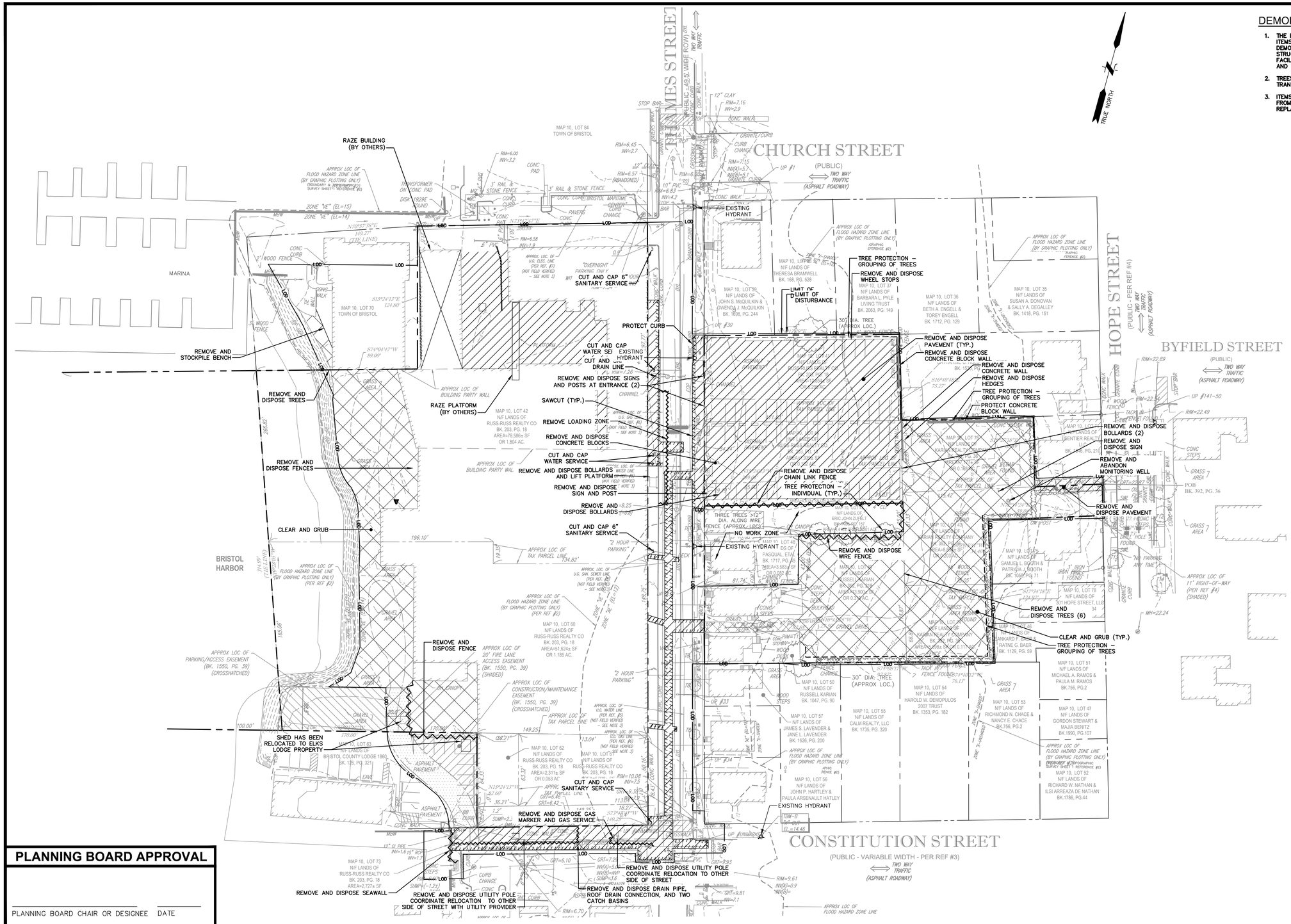
DEMOLITION NOTES

1. THE DEMOLITION PLAN IS PROVIDED FOR INFORMATION ONLY AND MAY NOT INDICATE ALL ITEMS REQUIRED TO BE DEMOLISHED. PERFORM A PRE-BID SITE INSPECTION. COORDINATE DEMOLITION OF UNIDENTIFIED UTILITIES OR STRUCTURES WITH OWNER. DEMOLISH STRUCTURES, SITE IMPROVEMENTS, UTILITIES, ETC. AS REQUIRED TO CONSTRUCT PROPOSED FACILITY AND UTILITY SERVICES. PROTECT ALL PUBLIC AND PRIVATE UTILITIES, SERVICES, AND STRUCTURES THAT ARE NOT DESIGNATED FOR REMOVAL.
2. TREES, BRUSH AND STUMPS REMOVED BY CLEARING & GRUBBING OPERATIONS SHALL BE TRANSPORTED OFF THE PROJECT SITE TO AN APPROVED DISPOSAL LOCATION.
3. ITEMS TO BE STOCKPILED ON-SITE FOR REUSE OR TO BE RELOCATED SHALL BE PROTECTED FROM CONSTRUCTION OPERATIONS. IF DAMAGED DURING CONSTRUCTION THEY SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COST TO THE OWNER.



PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAVD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

SITE DEMOLITION PLAN

BRISTOL YARN MILL

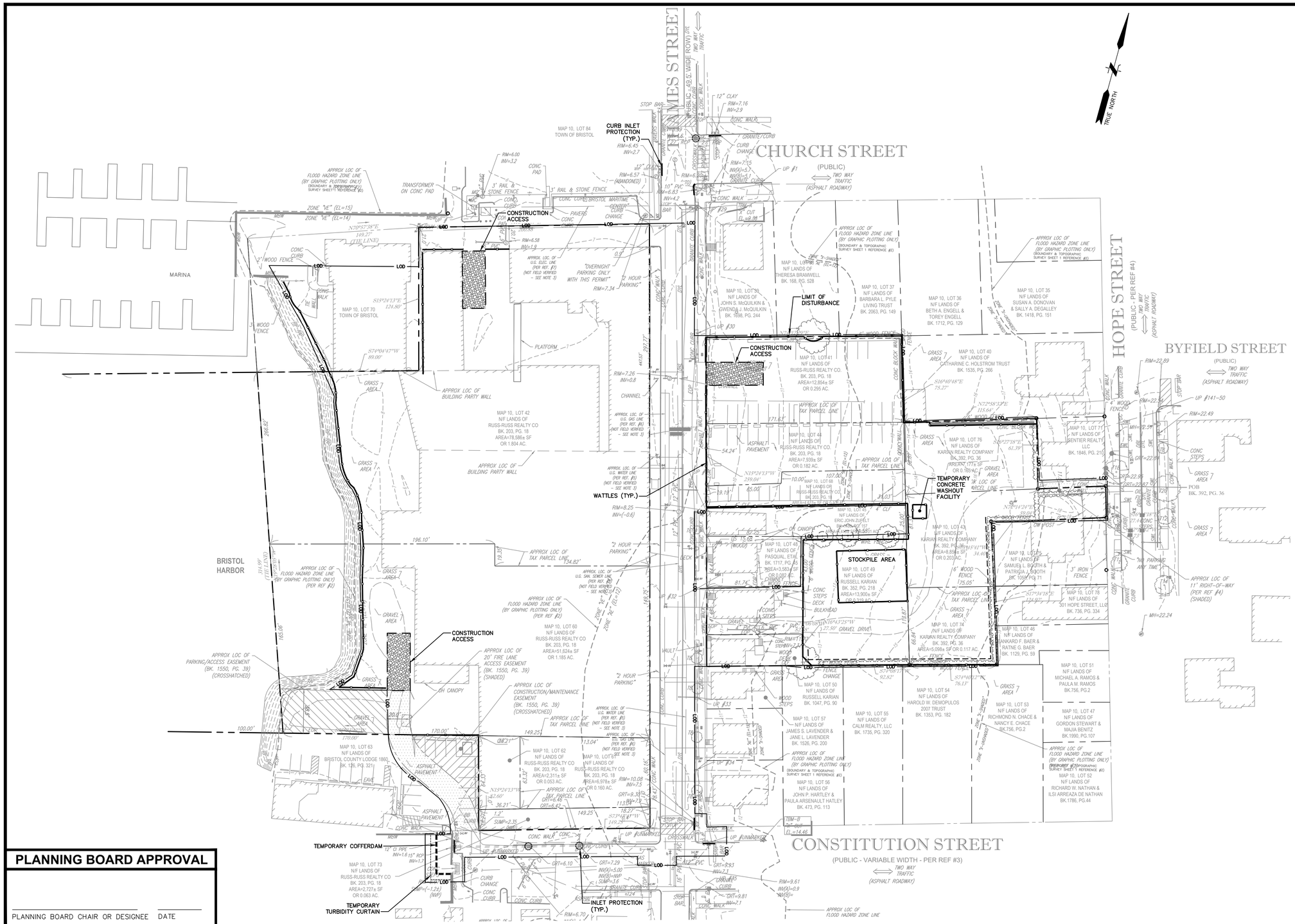
125 THAMES STREET BRISTOL, RHODE ISLAND

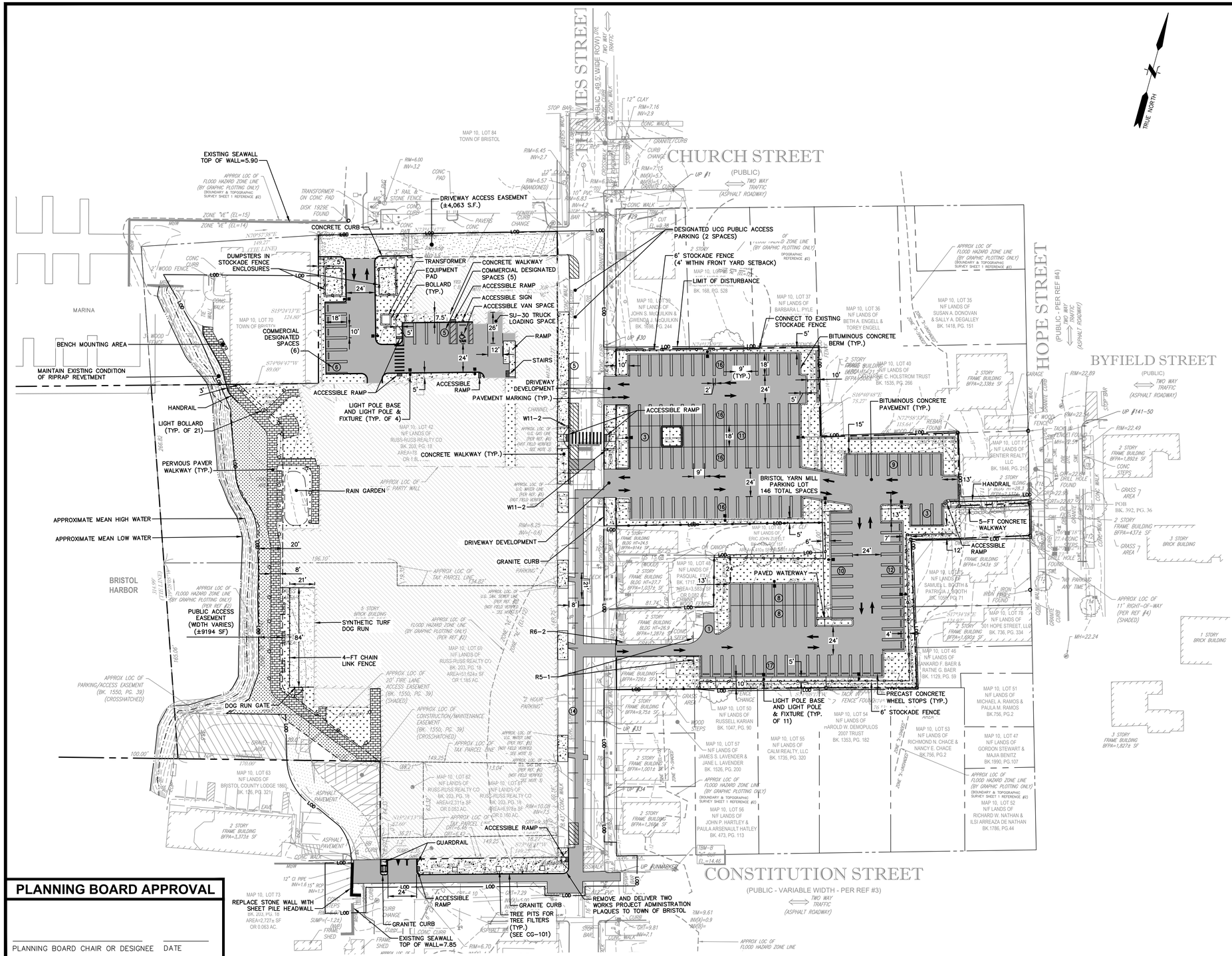
PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CP-101

SHEET 6 OF 27

File Path: \\private\DFS\CadProj\DWG\P2006\1150\A22\Civil\Plan\Permitting Plans\20061150A22_DMO01.dwg Layout: CP-101 Plotted: Fri, March 24, 2023 - 3:46 PM User: kmccombs
Plotter: NONE CTB File: FO.STB
LAYER STATE:
MS VIEW:


CHURCH STREET
(PUBLIC)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
HOPE STREET
(PUBLIC - PER REF #4)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
BYFIELD STREET
(PUBLIC)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
CONSTITUTION STREET
(PUBLIC - VARIABLE WIDTH - PER REF #3)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
TRUE NORTH
MARINA
BRISTOL HARBOR
MAP 10, LOT 70
TOWN OF BRISTOL
MAP 10, LOT 84
TOWN OF BRISTOL
MAP 10, LOT 63
N/F LANDS OF
BRISTOL COUNTY LODGE 1866
BK. 135, PG. 321
MAP 10, LOT 73
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=2,727± SF
OR 0.063 AC.
MAP 10, LOT 42
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=78,586± SF
OR 1.804 AC.
MAP 10, LOT 60
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=51,624± SF
OR 1.185 AC.
MAP 10, LOT 62
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=2,311± SF
OR 0.053 AC.
MAP 10, LOT 68
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=1,804± SF
OR 0.041 AC.
MAP 10, LOT 69
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=1,804± SF
OR 0.041 AC.
MAP 10, LOT 39
N/F LANDS OF
JOHN S. McQUILKIN &
GWENDLN J. McQUILKIN
BK. 1898, PG. 244
MAP 10, LOT 41
N/F LANDS OF
RUSS-RUSS REALTY CO.
BK. 203, PG. 18
AREA=12,894± SF
OR 0.295 AC.
MAP 10, LOT 44
N/F LANDS OF
RUSS-RUSS REALTY CO.
BK. 203, PG. 18
AREA=7,939± SF
OR 0.182 AC.
MAP 10, LOT 45
N/F LANDS OF
ERIC JOHN ZUFELT
BK. 2007, PG. 157
AREA=3,881± SF
OR 0.089 AC.
MAP 10, LOT 48
N/F LANDS OF
PASQUAL ETAL
BK. 1717, PG. 45
AREA=3,583± SF
OR 0.082 AC.
MAP 10, LOT 49
N/F LANDS OF
RUSSELL KARIAN
BK. 352, PG. 218
AREA=13,900± SF /
OR 0.319 AC.±
MAP 10, LOT 37
N/F LANDS OF
BARBARA L. PYLE
LIVING TRUST
BK. 2063, PG. 149
MAP 10, LOT 36
N/F LANDS OF
BETH A. ENGELL &
TOREY ENGELL
BK. 1712, PG. 129
MAP 10, LOT 35
N/F LANDS OF
SUSAN A. DONOVAN
& SALLY A. DEGALLEY
BK. 1418, PG. 151
MAP 10, LOT 40
N/F LANDS OF
CATHARINE C. HOLSTROM TRUST
BK. 1535, PG. 266
MAP 10, LOT 76
N/F LANDS OF
KARIAN REALTY COMPANY
BK. 392, PG. 36
(PARENT (TTS SF
OR 0.782 AC.)
MAP 10, LOT 43
N/F LANDS OF
KARIAN REALTY COMPANY
BK. 392, PG. 36
AREA=8,854± SF
OR 0.203 AC.
MAP 10, LOT 46
N/F LANDS OF
LANKARD F. BAER &
RATNE G. BAER
BK. 1129, PG. 59
MAP 10, LOT 54
N/F LANDS OF
HAROLD W. DEMOPULOS
2007 TRUST
BK. 1353, PG. 182
MAP 10, LOT 55
N/F LANDS OF
CALM REALTY, LLC
BK. 1735, PG. 320
MAP 10, LOT 57
N/F LANDS OF
JAMES S. LAVENDER &
JANE L. LAVENDER
BK. 1526, PG. 200
MAP 10, LOT 56
N/F LANDS OF
JOHN P. HARTLEY &
PAULA ARSENAULT HATLEY
BK. 473, PG. 113
MAP 10, LOT 59
N/F LANDS OF
RUSSELL KARIAN
BK. 1047, PG. 90
MAP 10, LOT 53
N/F LANDS OF
RICHMOND N. CHACE &
NANCY E. CHACE
BK. 756, PG.2
MAP 10, LOT 51
N/F LANDS OF
MICHAEL A. RAMOS &
PAULA M. RAMOS
BK.755, PG.2
MAP 10, LOT 47
N/F LANDS OF
GORDON STEWART &
MAJA BENITZ
BK. 1990, PG.107
MAP 10, LOT 52
N/F LANDS OF
RICHARD W. NATHAN &
ILSI ARREAZA DE NATHAN
BK.1786, PG.44
MAP 19, LOT 5
N/F LANDS OF
SAMUEL L. BOOTH &
PATRICIA L. BOOTH
BK. 1054, PG.71
MAP 10, LOT 78
N/F LANDS OF
301 HOPE STREET, LLC
BK. 736, PG. 334
MAP 10, LOT 1
N/F LANDS OF
SENTIER REALTY
LLC
BK. 1846, PG. 210
CONSTRUCTION ACCESS
CONSTRUCTION ACCESS
CONSTRUCTION ACCESS
LIMIT OF DISTURBANCE
TEMPORARY CONCRETE WASHOUT FACILITY
STOCKPILE AREA
CURB INLET PROTECTION (TYP.)
WATTLES (TYP.)
TEMPORARY COFFERDAM
TEMPORARY TURBIDITY CURTAIN
INLET PROTECTION (TYP.)
APPROX LOC OF BUILDING PARTY WALL
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1 REFERENCE #2)
APPROX LOC OF 20' FIRE LANE ACCESS EASEMENT (BK. 1550, PG. 39) (SHADED)
APPROX LOC OF PARKING/ACCESS EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF CONSTRUCTION/MAINTENANCE EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF U.G. ELEC. LINE (PER REF. #7) (NOT FIELD VERIFIED - SEE NOTE 3)
APPROX LOC OF U.G. GAS LINE (PER REF. #6) (NOT FIELD VERIFIED - SEE NOTE 3)
APPROX LOC OF U.G. WATER LINE (PER REF. #5) (NOT FIELD VERIFIED - SEE NOTE 3)
APPROX LOC OF U.G. SAN. SEWER LINE (PER REF. #3) (NOT FIELD VERIFIED - SEE NOTE 3)
"OVERNIGHT PARKING ONLY WITH THIS PERMIT"
"2 HOUR PARKING"
"NO PARKING ANY TIME"
PLATFORM
CHANNEL
STOCKPILE AREA
GRASS AREA
GRAVEL AREA
ASPHALT PAVEMENT
CONC WALK
CONC STEPS
CONC PAD
CONC CURB
GRANITE CURB
CURB CHANGE
WOOD FENCE
3' RAIL & STONE FENCE
6' WOOD FENCE
3' IRON FENCE
CHAIN LINK FENCE
STONE WALL
CONC BLOCK WALL
BRICK WALL
BULKHEAD
DECK
OH CANOPY
GAZEBO
GRAVEL DRIVE
4" CLF
TBM-A
Elev.=14.46
TBM-B
Elev.=14.46
UP #1
UP #30
UP #32
UP #33
UP #34
UP #141-50
UP #UNNAMED
MH=22.24
MH=22.59
MH=22.97
MH=22.90
MH=22.89
MH=22.49
MH=22.96
MH=22.91
MH=22.96
MH=22.97
MH=22.96
MH=22.96
MH=22.96



ZONING DIMENSION TABLE

CRITERIA	REQUIRED PER ZONING DISTRICT W	D	WPUD	PROPOSED (BUILDING SITE – LOTS 42,60,61,62,73)
MINIMUM LOT AREA	5,000 SF			142,226± SF (3.265 AC)
MINIMUM LOT AREA PER DWELLING UNIT	4,000 SF	2,500 SF	N/A	N/A
MINIMUM FRONTAGE	50'			149.25' CONSTITUTION STREET (MIN.)
MIMIMUM LOT WIDTH	50'			149.25' CONSTITUTION STREET (MIN.)
FRONT SETBACK	0'			–0.90'
SIDE SETBACK	0'			0.0'
REAR SETBACK	10'			30±' (TO APPROX. MEAN HIGH WATER)
MAX. BUILDING HEIGHT	35' (3 STORIES)			55' MAX.–4 STORIES (EXISTING)
MAX. LOT COVERAGE BY STRUCTURES	70%			83,153 S.F./142,226 S.F. = 58.5% (PROP.) 87,296 S.F./142,226 S.F. = 61.4% (EXIST.)
MAX. TOTAL COVERAGE	85%	95%	N/A	97,606 S.F./142,226 S.F. = 68.6%
MAX. FLOOR AREA RATIO	1.5	1.4	N/A	227,286 S.F./142,226 S.F. = 1.6±
IMPERVIOUS COVER	PARKING LOT SITE			51,237 S.F./66,327 S.F. = 77.2%

NOTES:
1. MILL BUILDING PROPERTIES COMBINED AREA IS APPROXIMATELY 142,226 SQUARE FEET.
2. TOTAL LAND AREA INCLUDED IN REDEVELOPMENT IS APPROXIMATELY 227,286 SQUARE FEET.
3. ALL PROJECT PARCELS ARE LOCATED WITHIN TOWN OF BRISTOL HISTORIC DISTRICT.

PARKING SUMMARY

	USE	REQUIRED	PROPOSED
RESIDENTIAL PARKING SPACES (ON–SITE)		127	137
RESIDENTIAL PARKING SPACES (OFF–SITE)		0	143
COMMERCIAL PARKING SPACES (ON–SITE)		11	11
317 HOPE STREET (LOT 71) – ZONE D	RES/COMM	0	0
325 HOPE STREET (LOT 43) – ZONE D	COMM	0	0
60 THAMES STREET (LOT 50) – ZONE W	SF RES	1	1
70 THAMES STREET (LOT 49) – ZONE W	MF RES	2	2
TOTAL PARKING SPACES:		141	294

RESIDENTIAL PARKING REQUIREMENT: 1 SPACE/D.U. (127 RESIDENTIAL W AND REHAB LDP ZONES)

COMMERCIAL PARKING REQUIREMENT: 1 SPACE/600 S.F. GFA (0 SPACES REQ'D FOR RESIDENTIAL, OFFICE, SERVICE, RETAIL, OR INSTITUTIONS WITHIN D ZONE) (6,479 S.F. / 600 S.F. = 11 SPACES

LOADING SPACE REQUIREMENT: 1 SPACE/3,000–19,999 S.F. OF GFA (6,479 S.F. = 1 SPACE

NOTES:
1. PARKING AND LOADING REQUIREMENTS SHALL COMPLY WITH ARTICLE VIII SEC. 28–251.
2. ON–STREET PARKING ON THAMES STREET IS NOT INCLUDED IN THE CALCULATIONS.
3. THERE ARE 42 TOTAL COMPACT VEHICLE PARKING SPACES, 9 DESIGNATED MOTORCYCLE SPACES AND 24 BICYCLE SPACES WITHIN THE BASEMENT LEVEL OF 125 THAMES STREET. COMPACT PARKING SPACES ACCOUNTS FOR 14.2% OF TOTAL PARKING COUNT. MOTORCYCLE AND BICYCLE PARKING IS NOT INCLUDED IN THE CALCULATIONS.

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

NOTE:

MEAN HIGH WATER AND MEAN LOW WATER LINES SHOWN ARE APPROXIMATE BASED ON TIDAL DATUMS FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION TIDE STATION NUMBER 8452154 LOCATED IN BRISTOL, RI.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
3/27/2023

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

SITE PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CS-101

SHEET 8 OF 27

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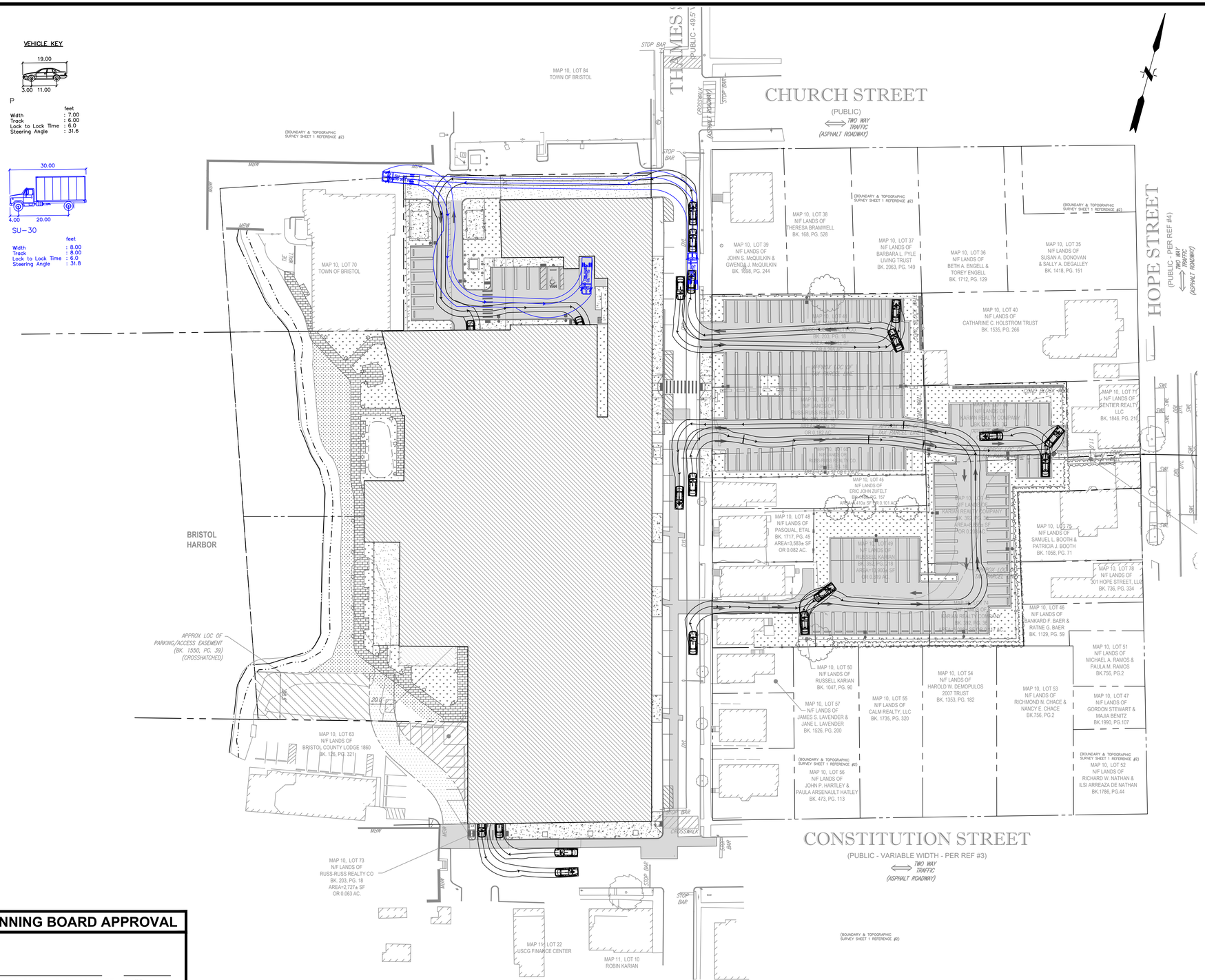

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

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2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

SITE CIRCULATION PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CS-102

SHEET 9 OF 27

File Path: \\private\dfs\Cad\Proj\DWG\P20061150\A22\Civil\Plan\Permitting Plans\20061150A22_STP02-TURN.dwg Layout: CS-102 Plotted: Fri, March 24, 2023 - 4:04 PM User: kmccombs
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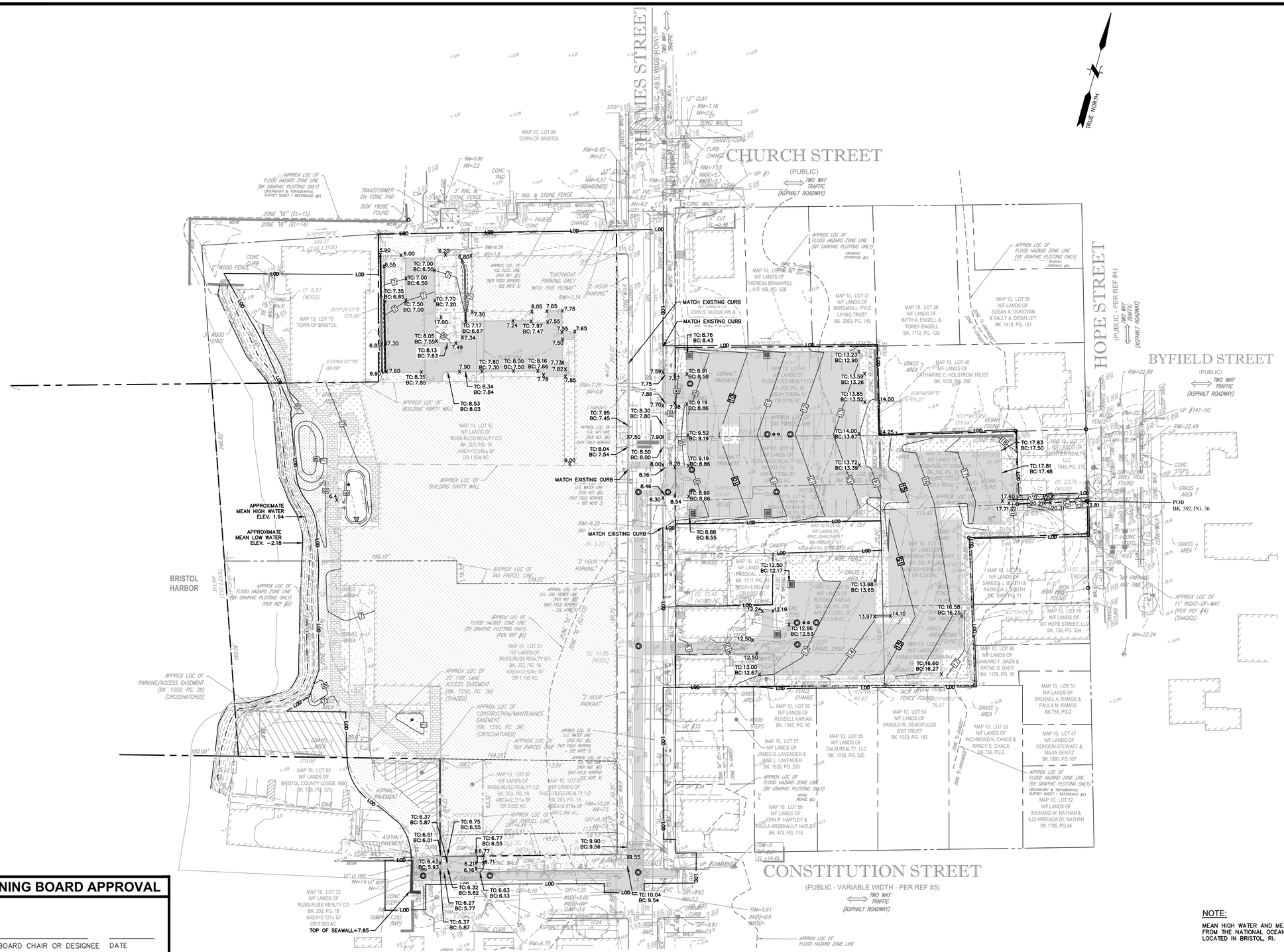

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

NOTE:

MEAN HIGH WATER AND MEAN LOW WATER LINES SHOWN ARE APPROXIMATE BASED ON TIDAL DATUMS FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION TIDE STATION NUMBER 8452154 LOCATED IN BRISTOL, RI.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN — No. 7487 — REGISTERED PROFESSIONAL ENGINEER (CIVIL) — 3/27/2023

SCALE: HORZ.: 1"= 40' VERT.:
DATUM: HORZ.:NAD 1983 VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

GRADING PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CG-101

SHEET 10 OF 27

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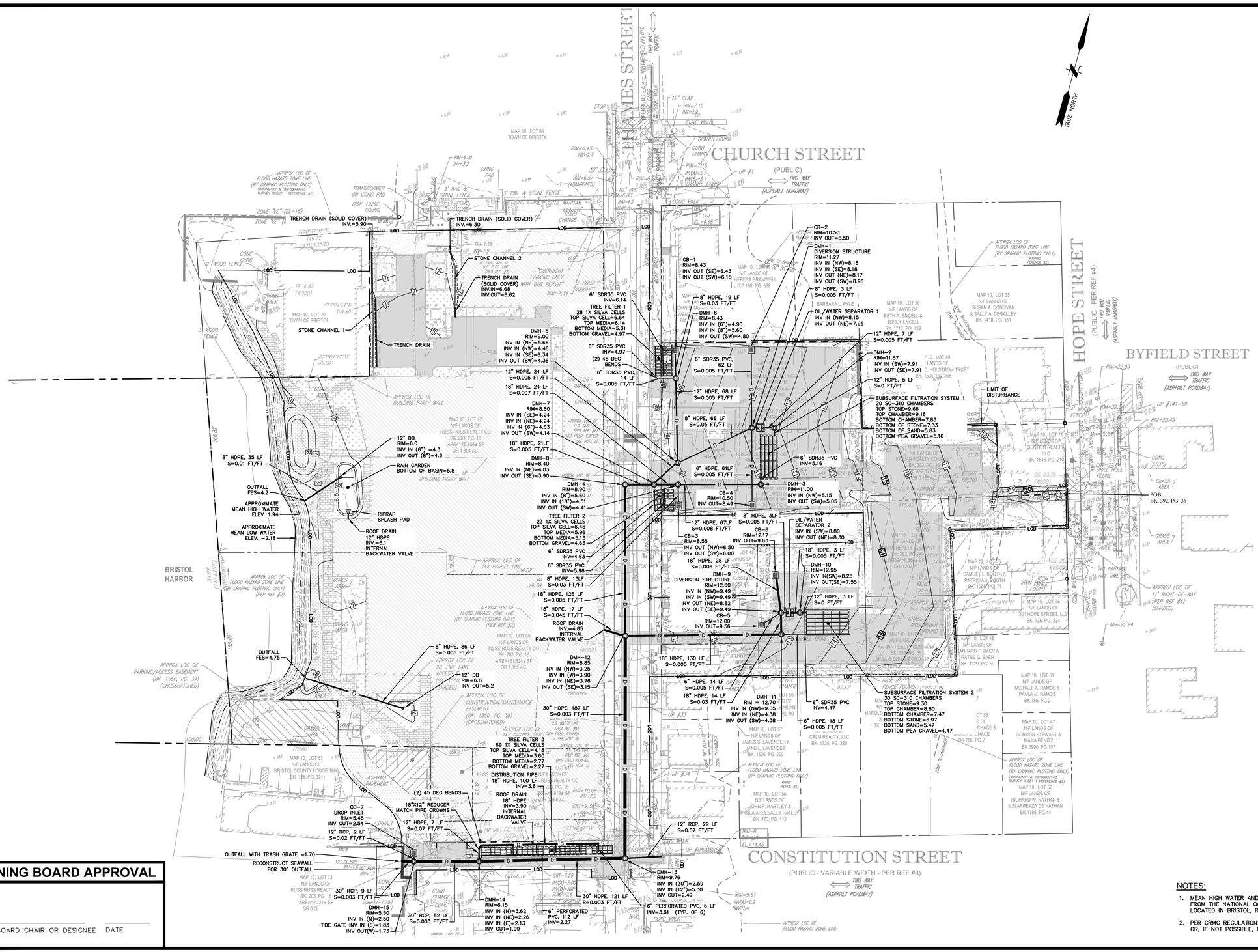

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
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2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN No. 7487 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

DRAINAGE PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CG-102

SHEET 11 OF 27

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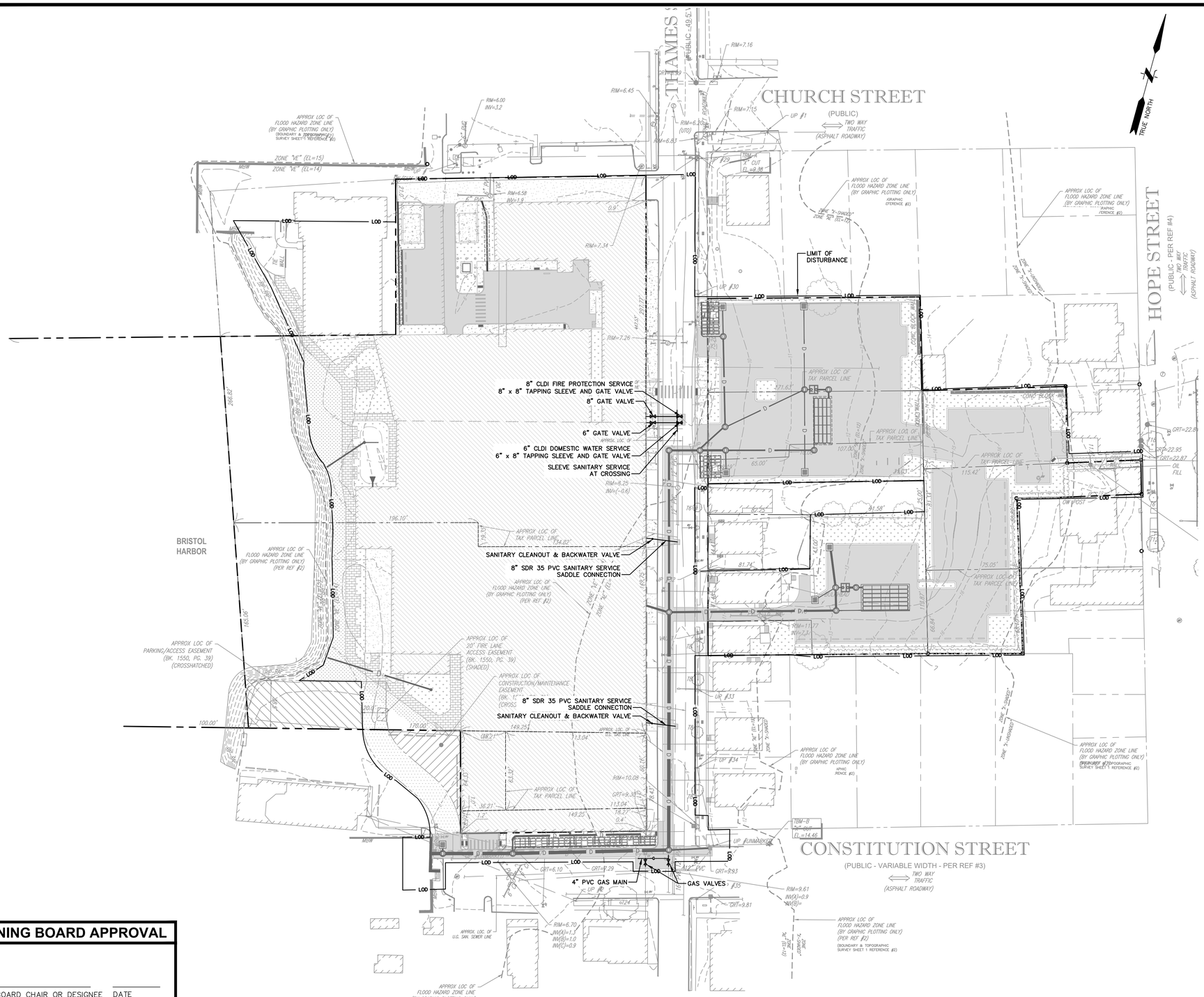
THAMES STREET
(PUBLIC - 49.5')
CHURCH STREET
(PUBLIC)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
HOPE STREET
(PUBLIC - PER REF #4)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
CONSTITUTION STREET
(PUBLIC - VARIABLE WIDTH - PER REF #3)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
BRISTOL HARBOR
TRUE NORTH
LIMIT OF DISTURBANCE
8" CLDI FIRE PROTECTION SERVICE
8" x 8" TAPPING SLEEVE AND GATE VALVE
8" GATE VALVE
6" GATE VALVE
6" CLDI DOMESTIC WATER SERVICE
6" x 8" TAPPING SLEEVE AND GATE VALVE
SLEEVE SANITARY SERVICE AT CROSSING
SANITARY CLEANOUT & BACKWATER VALVE
8" SDR 35 PVC SANITARY SERVICE SADDLE CONNECTION
8" SDR 35 PVC SANITARY SERVICE SADDLE CONNECTION
SANITARY CLEANOUT & BACKWATER VALVE
4" PVC GAS MAIN
GAS VALVES
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1 REFERENCE #2)
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (PER REF #2)
APPROX LOC OF PARKING/ACCESS EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF 20' FIRE LANE ACCESS EASEMENT (BK. 1550, PG. 39) (SHADED)
APPROX LOC OF CONSTRUCTION/MAINTENANCE EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF U.G. SAN. SEWER LINE
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (PER REF #2)
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1 REFERENCE #2)
ZONE "VE" (EL=15)
ZONE "VE" (EL=14)
ZONE "X-SHADED"
ZONE "X-UNSHADED"
TBM-A X CUT EL=9.38
TBM-B X CUT EL.=14.46
UP #1
UP #29
UP #30
UP #33
UP #34
UP #35
UP #36
UP #37
UP #LINDARGE
UR #33
RIM=7.16
RIM=6.45
RIM=6.00 INV=3.2
RIM=6.30 (UTO)
RIM=6.83
RIM=6.59 INV=1.9
RIM=7.34
RIM=7.26
RIM=8.25 INV=(-0.6)
RIM=6.70 INV(A)=1.3 INV(B)=1.0 INV(C)=0.9
RIM=10.08
RIM=9.61 INV(A)=0.9 INV(B)=
RIM=11.77 INV=7.3
GRT=6.10
GRT=9.29
GRT=9.93
GRT=9.81
GRT=9.34
GRT=22.87
GRT=22.95
GRT=22.87
196.82'
196.10'
165.06'
100.00'
170.00'
149.25'
134.22'
65.00'
107.00'
115.42'
81.74'
75.05'
118.87'
65.64'
36.21'
113.04'
18.27'
0.4'
OIL FILL
CONC BLOCK WALL
CMW (POST)
CMW "X-SHADED"
CMW "X-UNSHADED"
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1 REFERENCE #2)
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (PER REF #2)
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY) (GRAPHIC REFERENCE #2)
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APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY)
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF TAX PARCEL LINE
APPROX LOC OF U.G. SAN. SEWER LINE
APPROX LOC OF U.G. SAN. SEWER LINE
APPROX LOC OF PARKING/ACCESS EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF 20' FIRE LANE ACCESS EASEMENT (BK. 1550, PG. 39) (SHADED)
APPROX LOC OF CONSTRUCTION/MAINTENANCE EASEMENT (BK. 1550, PG. 39) (CROSSHATCHED)
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY)
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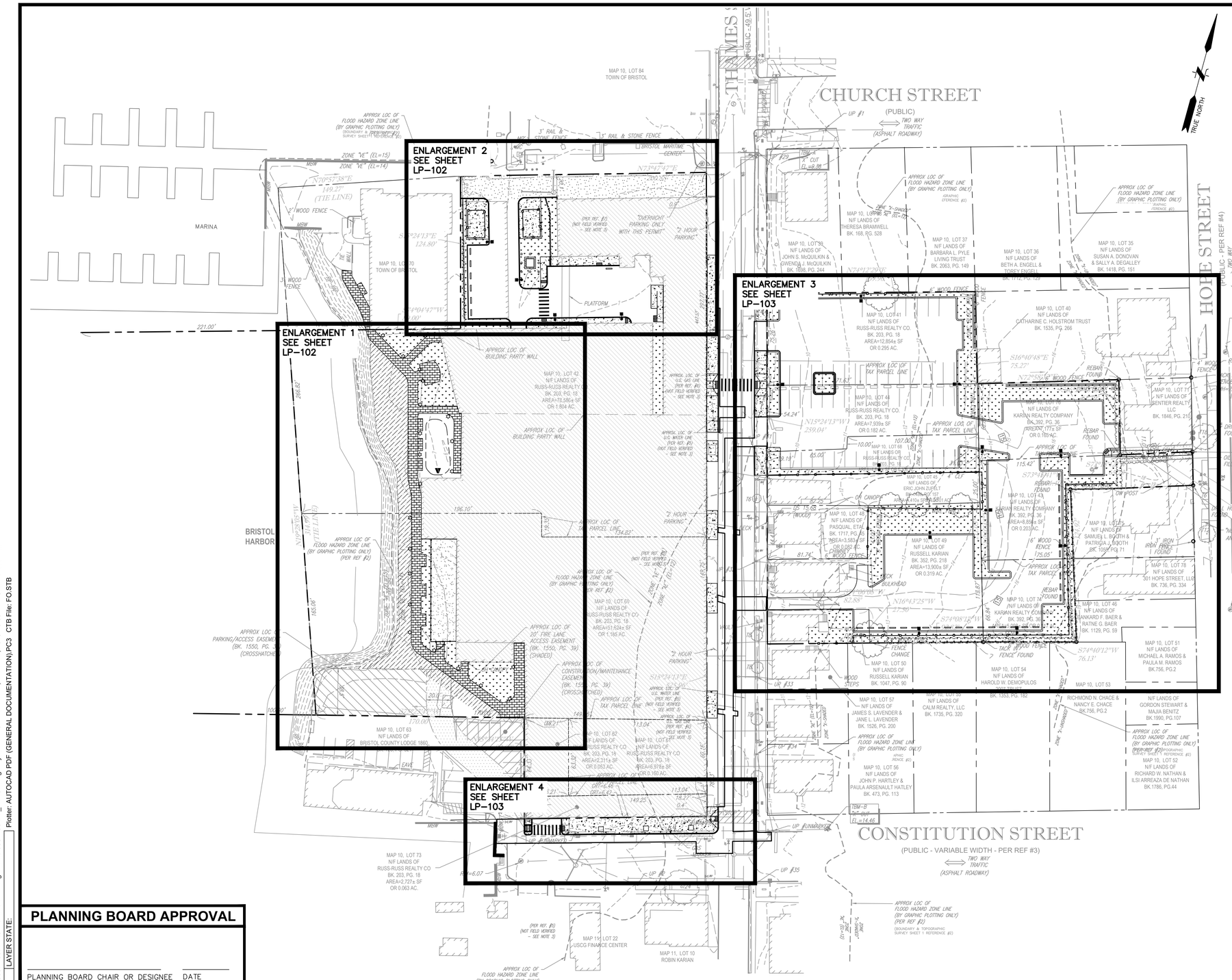
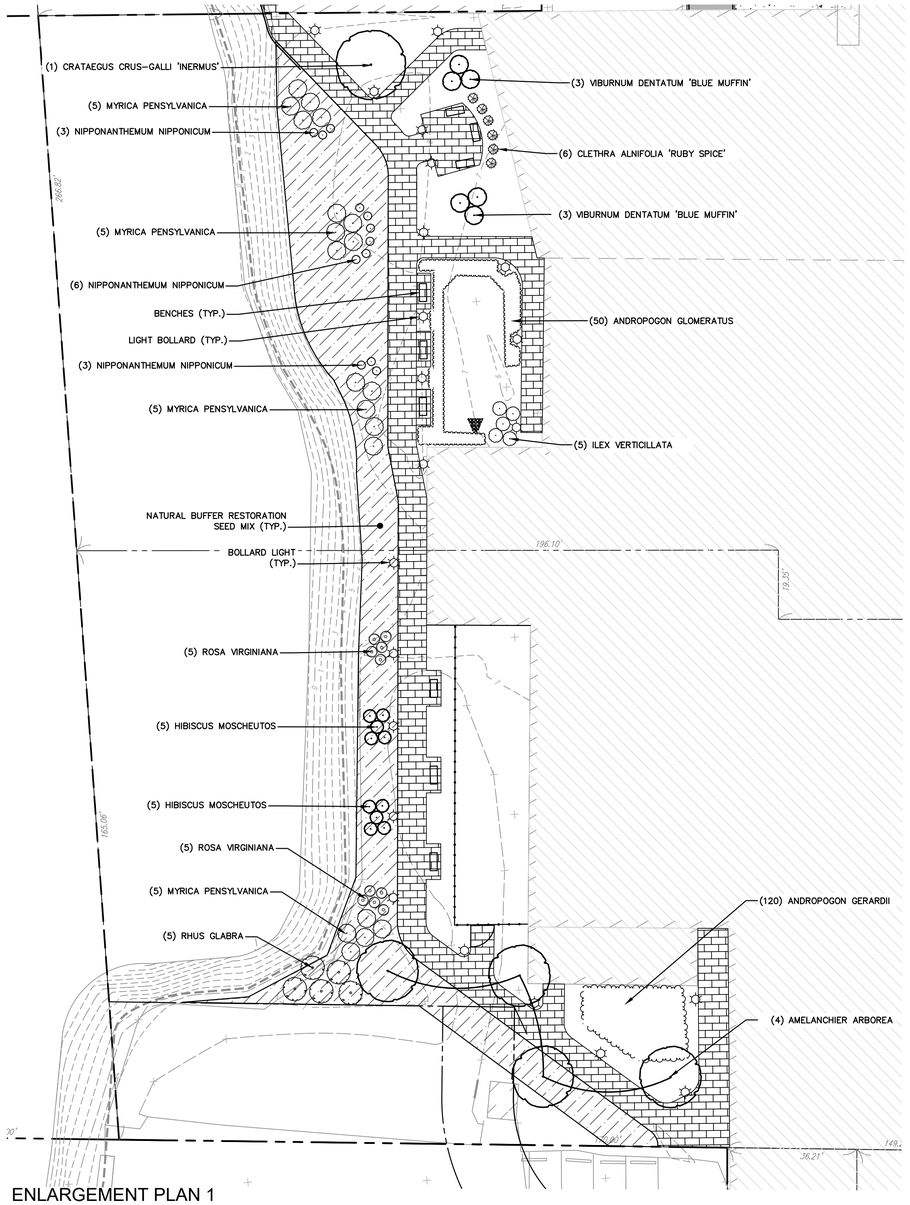
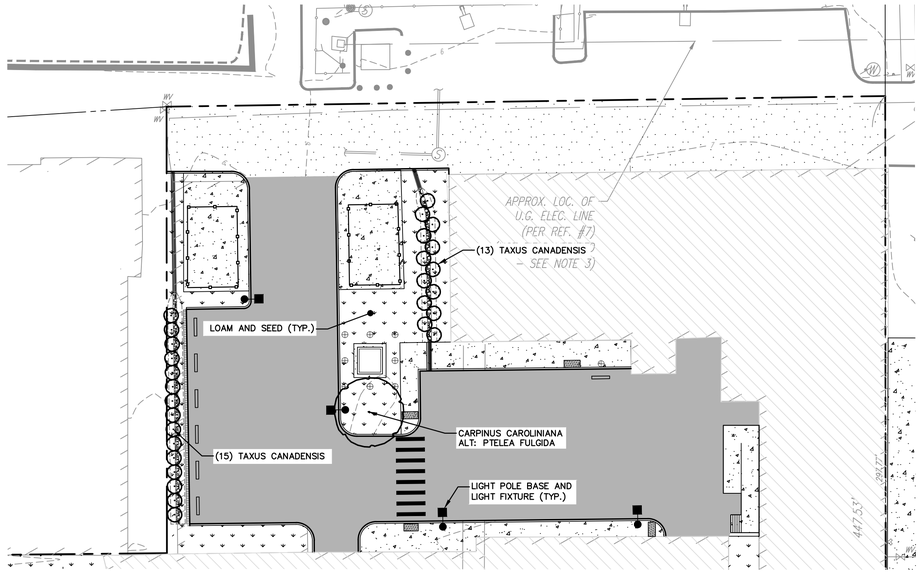
APPROX LOC OF FLOOD HAZARD ZONE LINE (BY GRAPHIC PLOTTING ONLY


ENLARGEMENT 1
SEE SHEET
LP-102
ENLARGEMENT 2
SEE SHEET
LP-102
ENLARGEMENT 3
SEE SHEET
LP-103
ENLARGEMENT 4
SEE SHEET
LP-103
CHURCH STREET
(PUBLIC)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
HOPE STREET
CONSTITUTION STREET
(PUBLIC - VARIABLE WIDTH - PER REF #3)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
THAMES STREET
(PUBLIC -49.5')
BRISTOL HARBOR
MARINA
TRUE NORTH
MAP 10, LOT 84
TOWN OF BRISTOL
MAP 10, LOT 70
TOWN OF BRISTOL
MAP 10, LOT 63
N/F LANDS OF
BRISTOL COUNTY LODGE 1860
MAP 10, LOT 42
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=73,586± SF
OR 1.804 AC.
MAP 10, LOT 61
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=51,624± SF
OR 1.185 AC.
MAP 10, LOT 62
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=2,311± SF
OR 0.053 AC.
MAP 10, LOT 73
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=2,727± SF
OR 0.063 AC.
MAP 10, LOT 68
N/F LANDS OF
RUSS-RUSS REALTY CO
BK. 203, PG. 18
AREA=7,939± SF
OR 0.182 AC.
MAP 10, LOT 44
N/F LANDS OF
RUSS-RUSS REALTY CO.
BK. 203, PG. 18
AREA=12,854± SF
OR 0.295 AC.
MAP 10, LOT41
N/F LANDS OF
RUSS-RUSS REALTY CO.
BK. 203, PG. 18
AREA=12,854± SF
OR 0.295 AC.
MAP 10, LOT 39
N/F LANDS OF
JOHN S. McQUILKIN &
GWENDOLYN J. McQUILKIN
BK. 1998, PG. 244
MAP 10, LOT 37
N/F LANDS OF
BARBARA L. PYLE
LIVING TRUST
BK. 2063, PG. 149
MAP 10, LOT 36
N/F LANDS OF
BETH A. ENGELL &
TOBEY ENGELL
BK. 1174, PG. 128
MAP 10, LOT 35
N/F LANDS OF
SUSAN A. DONOVAN
& SALLY A. DEGALLEY
BK. 1418, PG. 151
MAP 10, LOT 40
N/F LANDS OF
CATHARINE C. HOLSTROM TRUST
BK. 1535, PG. 266
MAP 10, LOT 45
N/F LANDS OF
ERIC JOHN ZUSELT
AREA=1,410± SF=0.581± AC
MAP 10, LOT 43
N/F LANDS OF
KARIAN REALTY COMPANY
BK. 392, PG. 36
AREA=8,864± SF
OR 0.203AC.
MAP 10, LOT 48
N/F LANDS OF
PASQUAL, ETAL
BK. 1717, PG. 43
AREA=3,983± SF
OR 0.092 AC.
MAP 10, LOT 49
N/F LANDS OF
RUSSELL KARIAN
BK. 392, PG. 218
AREA=13,900± SF
OR 0.319 AC.
MAP 10, LOT 50
N/F LANDS OF
RUSSELL KARIAN
BK. 1047, PG. 90
MAP 10, LOT 54
N/F LANDS OF
HAROLD W. DEMOPULOS
BK. 1353, PG. 182
MAP 10, LOT 53
MAP 10, LOT 57
N/F LANDS OF
JAMES S. LAVENDER &
JANE L. LAVENDER
BK. 1526, PG. 200
MAP 10, LOT 56
N/F LANDS OF
JOHN P. HARTLEY &
PAULA ARSENAULT HATLEY
BK. 473, PG. 113
MAP 10, LOT 55
N/F LANDS OF
CALM REALTY, LLC
BK. 1735, PG. 320
MAP 10, LOT 1
N/F LANDS OF
GENTIER REALTY
LLC
BK. 1946, PG. 210
MAP 19, LOT 15
N/F LANDS OF
SAMUEL L. BOOTH &
PATRICIA L. BOOTH
BK. 1054 PG 71
MAP 10, LOT 78
N/F LANDS OF
101 HOPE STREET, LLC
BK. 736, PG. 334
MAP 10, LOT 46
N/F LANDS OF
BANKARD F. BAER &
RATNE G. BAER
BK. 1129, PG. 59
MAP 10, LOT 51
N/F LANDS OF
MICHAEL A. RAMOS &
PAULA M. RAMOS
BK.756, PG.2
RICHMOND N. CHACE &
NANCY E. CHACE
BK.756, PG.2
N/F LANDS OF
GORDON STEWART &
MAJA BENITZ
BK.1990, PG.107
MAP 10, LOT 52
N/F LANDS OF
RICHARD W. NATHAN &
ILSI ARREAZA DE NATHAN
BK.1786, PG.44
MAP 11, LOT 22
USCG FINANCE CENTER
MAP 11, LOT 10
ROBIN KARIAN
APPROX LOC OF
FLOOD HAZARD ZONE LINE
(BY GRAPHIC PLOTTING ONLY)
(PER REF #2)
(BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1 REFERENCE #2)
ZONE "VE" (EL=15)
ZONE "VE" (EL=14)
APPROX LOC OF
BUILDING PARTY WALL
APPROX LOC OF
U.G. GAS LINE
(PER REF. #5)
(NOT FIELD VERIFIED
- SEE NOTE 3)
APPROX LOC OF
U.G. WATER LINE
(PER REF. #5)
(NOT FIELD VERIFIED
- SEE NOTE 3)
APPROX LOC OF
U.G. ELECTRIC LINE
(PER REF. #4)
(NOT FIELD VERIFIED
- SEE NOTE 3)
APPROX LOC OF
U.G. MIXER LINE
(PER REF. #5)
(NOT FIELD VERIFIED
- SEE NOTE 3)
APPROX LOC OF
TAX PARCEL LINE
APPROX LOC OF
20' FIRE LANE
ACCESS EASEMENT
(BK. 1550, PG. 39)
(SHADED)
APPROX LOC OF
CONSTRUCTION/MAINTENANCE
EASEMENT
(BK. 1550, PG. 39)
(CROSSHATCHED)
APPROX LOC OF
PARKING/ACCESS EASEMENT
(BK. 1550, PG. 39)
(CROSSHATCHED)
(PER REF. #3)
(NOT FIELD VERIFIED
- SEE NOTE 3)
"OVERNIGHT PARKING ONLY
WITH THIS PERMIT"
"2 HOUR
PARKING"
PLATFORM
TSM-A
4" CUT
EL=9.78
TSM-B
CUT
EL=14.46
"NO PARKING
ANY TIME"
DRILL HOLE
FOUND
REBAR
FOUND
IRON PIPE
FOUND
IRON
PIPE FOUND
FENCE
CHANGE
TACK IN
FENCE FOUND
WOOD
STEPS
CONC
STEPS
CONC
WALK
CONC
RAMP
CONC
CURB
BITUMINOUS
CURB
WOOD
FENCE
CHAIN
LINK
FENCE
VINYL
FENCE
GAZEBO
GAZEBO
CANOPY
BULKHEAD
DECK
EAVE
MHW
MLW
MHW=2.
MH=
RIM=2.
RIM=22.
INV=-92.59'
INV=
INV=
INV=



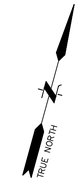
ENLARGEMENT PLAN 1

SCALE: 1" = 20'



ENLARGEMENT PLAN 2

SCALE: 1" = 20'



PLANT LIST

BOTANICAL NAME	COMMON NAME	QTY.	SIZE
ENLARGEMENT 1			
TREE			
CRATAEGUS CRUS-GALLI 'INERMUS'	THORNLESS COCKSPUR HAWTHORN	1	3.5" CALIPER
SHRUBS			
AMELANCHIER ARBOREA	DOWNY SERVICEBERRY	4	6-8' B&B
CLETHRA ALNIFOLIA 'RUBY SPICE'	SWEET PEPPERBUSH	6	3 GAL.
ILEX VERTICILLATA	WINTERBERRY	5	3 GAL.
MYRICA PENSYLVANICA	BAYBERRY	20	MIXED
NIPPONANTHEMUM NIPPONICUM	NIPPON DAISY	12	2 GAL.
RHUS GLABRA	SMOOTH SUMAC	5	3 GAL.
ROSA VIRGINIANA	VIRGINIA ROSE	10	2 GAL.
VIBURNUM DENTATUM 'BLUE MUFFIN'	ARROWWOOD VIBURNUM	6	3'-4' B&B
PERENNIALS/GRASSES			
ANDROPOGON GERARDII	BIG BLUESTEM	120	2 GAL.
ANDROPOGON GLOMERATUS	BUSH BLUESTEM	50	2 GAL.
HIBISCUS MOSCHEUTOS VAR.	SWAMP ROSA MALLOW	10	3 GAL.
ENLARGEMENT 2			
TREES			
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	1	3.5" CALIPER
SHRUBS			
TAXUS CANADENSIS	AMERICAN YEW	28	1 GAL.

NOTES:
1. ALL PLANTS TO BE LAID OUT IN FIELD AND PLACEMENT TO BE APPROVED PRIOR TO FINAL INSTALLATION BY L.A. AND OWNER.
2. INFILL ALL THE AREAS BETWEEN THE PLANTS ON THE WEST SIDE OF THE PUBLIC ACCESS WALKWAY WITH NATURAL BUFFER RESTORATION SEED MIX OR APPROVED EQUAL.
   2.1. SEEDING RATE: 35 POUNDS PER ACRE
   2.2. MOW ONCE ANNUALLY AFTER OCTOBER 1 OR PRIOR TO APRIL 15
   2.3. SEED MIX INCLUDES: COMMON EASTERN WILD-RYE (ELYMUS VIRGINICUS), CREEPING RED FESCUE (FESTUCA RUBRA), BIG BLUE-STEM (ANDROPROGON GERORDII), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), INDIAN GRASS (SORGHASTRUM NUTANS), SWITCH GRASS (PANICUM VIRGATUM), SAND DROPSEED (SPOROBOLUS CRYPTANDRUS), SMOOTH CORDGRASS (SPARTINA ALTERNIFLORA)

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SEAL

REGISTERED LANDSCAPE ARCHITECT No. 627

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

ENLARGEMENT PLANTING PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

LP-102

SHEET 14 OF 27

File Path: \\private\dfs\CadPro\DWG\P2006\1150\A22\Civil\Plan\Permitting Plans\20061150A22_LND01.dwg Layout: LP-102 Plotted: Fri, March 24, 2023 - 3:16 PM User: kmccombs
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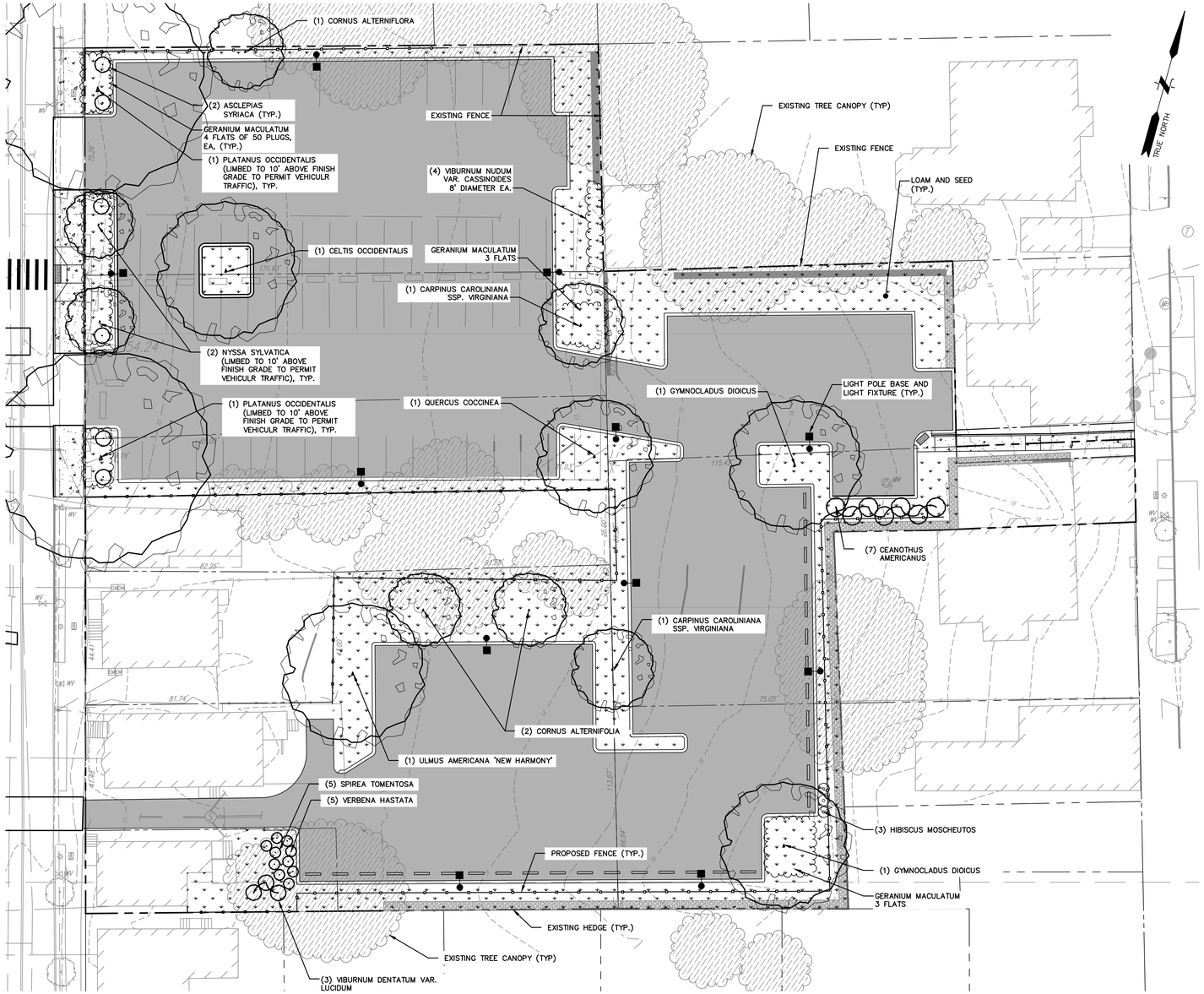
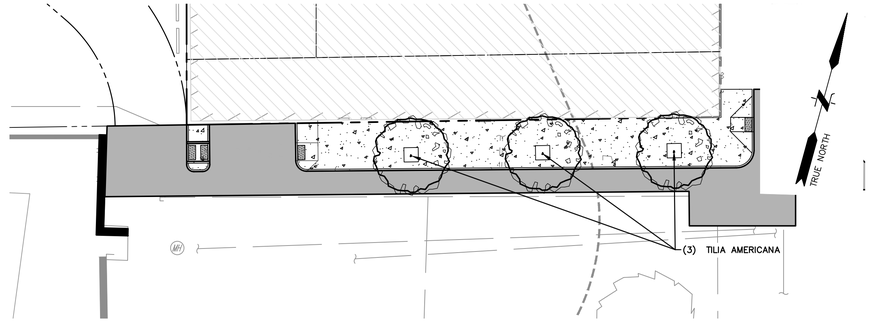


ENLARGEMENT PLAN 3

SCALE: 1" = 20'



ENLARGEMENT PLAN 4

SCALE: 1" = 20'

PLANT LIST

BOTANICAL NAME	COMMON NAME	QTY.	SIZE
ENLARGEMENT 3			
TREES			
CARPINUS CAROLINIANA SSP. VIRGINIANA	AMERICAN HORNBEAM	1	3.5" CALIPER
CELTIS OCCIDENTALIS	COMMON HACKBERRY	1	3.5" CALIPER
CORNUS ALTERNIFOLIA	PAGODA DOGWOOD	3	3.5" CALIPER
GYMNOCLADUS DIOICUS	KENTUCKY COFFEE TREE	2	3.5" CALIPER
NYSSA SYLVATICA	BLACK GUM	2	3.5" CALIPER
PLATANUS OCCIDENTALIS	COMMON SYCAMORE	2	3.5" CALIPER
QUERCUS COCCINEA	SCARLET OAK	1	3.5" CALIPER
TILIA AMERICANA	AMERICAN LINDEN	1	3.5" CALIPER
ULMUS AMERICANA 'NEW HARMONY'	NEW HARMONY AMERICAN ELM	1	3.5" CALIPER
SHRUBS			
ASCLEPIAS SYRIACA	COMMON MILKWEED	12	2 GAL.
CEANOTHUS AMERICANUS	NEW JERSEY TEA	7	2 GAL.
VIBURNUM DENTATUM VAR. LUCIDUM	SMOOTH ARROWWOOD VIBURNUM	3	3'-4' B&B
VREBENA HASTATA	BLUE VERVAIN	5	3 GAL.
VIBURNUM NUDUM VAR. CASSINOIDES	WITHE ROD VIBURNUM	4	3'-4' B&B
PERENNIALS/GRASSES			
GERANIUM MACULATUM	SPOTTED CRANE'S BILL	900	18 FLATS
HIBISCUS MOSCHEUTOS	SWAMP ROSE MALLOW	3	2 GAL.
SPIREA TOMENTOSA	STEEPLEBUSH	5	2 GAL.
ENLARGEMENT 4			
TREES			
SILVER LINDEN	TILIA TOMENTOSA	3	3.5" CALIPER

NOTE:
ALL PLANTS TO BE LAID OUT IN FIELD AND PLACEMENT TO BE APPROVED PRIOR TO FINAL INSTALLATION BY L.A. AND OWNER.

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SEAL

REGISTERED PROFESSIONAL STEPHANIE L. MUTTI No. 627 LANDSCAPE ARCHITECT

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

ENLARGEMENT PLANTING PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

LP-103

SHEET 15 OF 27

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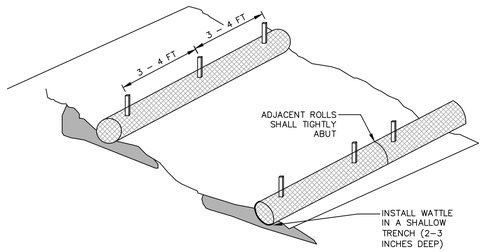
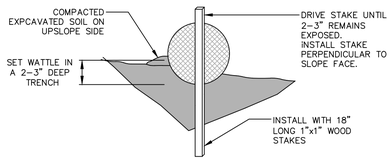


TYPICAL WATTLE INSTALLATION GUIDE

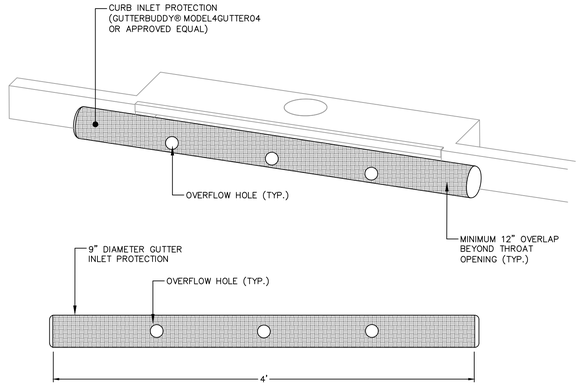


ENTRENCHMENT

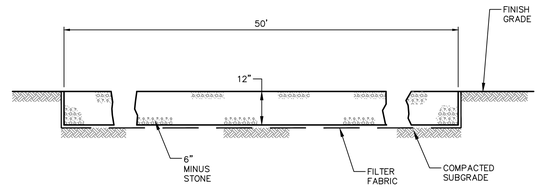
NOTES:

1. WATTLES SHALL BE TRENCHED APPROXIMATE 2-3 INCHES AND STAKED SUCH THAT WATTLES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE WATTLE AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6"FROM THE EACH END OF THE WATTLE. STAKES SHALL BE 1-INCH BY 1-INCH WOODEN STAKES WITH A LENGTH OF 18 INCHES. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE SIDE.
2. ENDS OF ADJACENT WATTLES SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. WATTLES SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER WATTLES.
3. WATTLES SHALL BE 12-INCH SEDIMAX-FR™ FILTRATION ROLL MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.

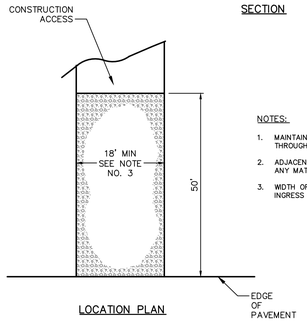
WATTLES
NOT TO SCALE



CURB INLET PROTECTION
NOT TO SCALE



SECTION

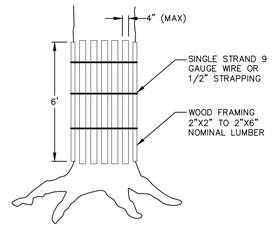


LOCATION PLAN

NOTES:

1. MAINTAIN ANTI-TRACKING APRON IN GOOD CONDITION THROUGHOUT CONSTRUCTION PERIOD.
2. ADJACENT ROADWAY SHALL BE SWEPT DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO PAVEMENT.
3. WIDTH OF APRON SHALL NOT BE LESS THAN WIDTH OF INGRESS OR EGRESS.

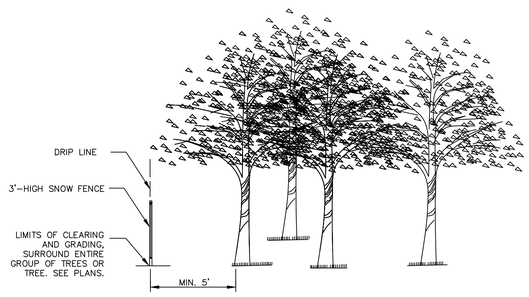
CONSTRUCTION ACCESS
NOT TO SCALE



NOTE:

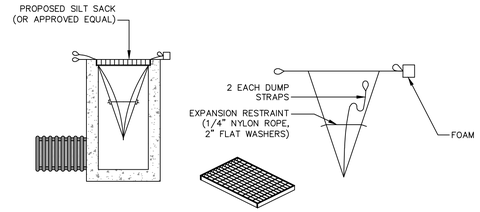
SHALL BE IN ACCORDANCE WITH SECTION L.11 OF THE STANDARD SPECIFICATIONS.

INDIVIDUAL TREE

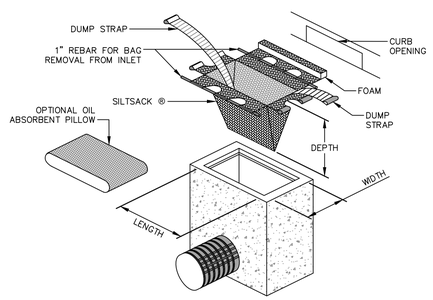


GROUPING OF TREES

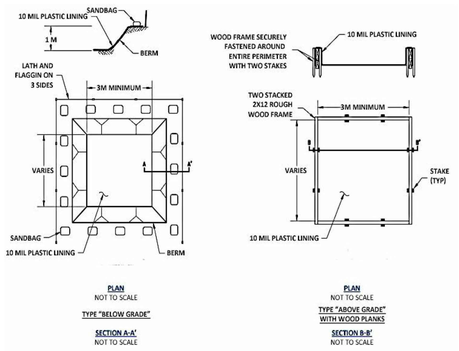
TREE PROTECTION
NOT TO SCALE



INSTALLATION DETAIL BAG DETAIL



CATCH BASIN INLET PROTECTION
NOT TO SCALE



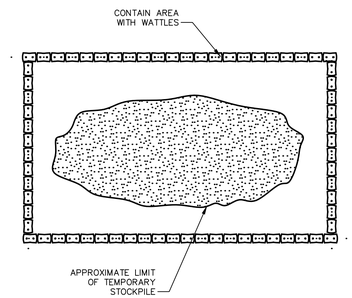
NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. FOR REFERENCE PURPOSES ONLY. NOT FOR CONSTRUCTION PURPOSES.

REFERENCE:

RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, ISSUED 1989 (REVISED 2014)

TEMPORARY CONCRETE WASHOUT FACILITY
NOT TO SCALE



TEMPORARY SOIL STOCKPILE
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN — No. 17487 — REGISTERED PROFESSIONAL ENGINEER (CIVIL) — 12/7/2023

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

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-501

SHEET 16 OF 27

File Path: \\private\DFS\Cad\Proj\DWG\P20061150\A22\Civil\Plan\Permitting Plans\20061150A22_DET01.dwg Layout: CD-501 Plotted: Fri, March 24, 2023 - 4:34 PM User: kmcombs
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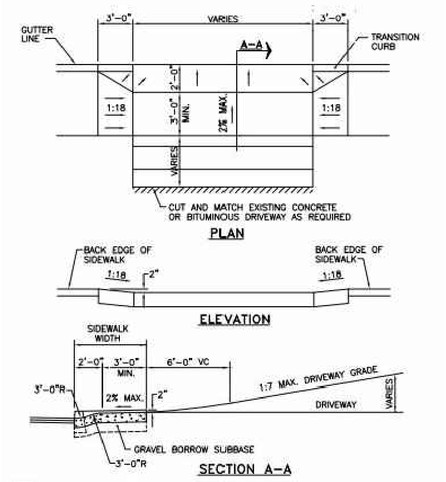
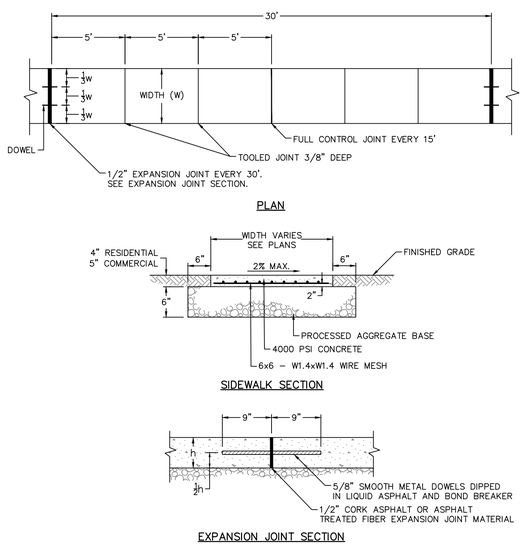
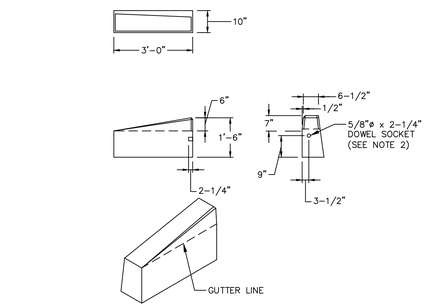


NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. WHEN DRIVEWAY IS BELOW BACK EDGE OF SIDEWALK PROFILE, STD. 43.4.1 MUST BE USED.

DRIVEWAY DEVELOPMENT
NOT TO SCALE

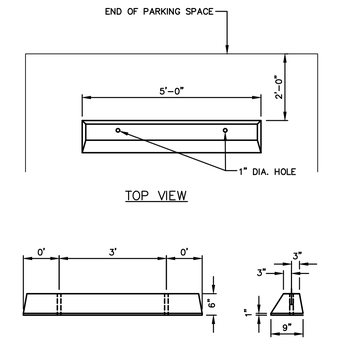


CONCRETE SIDEWALK
NOT TO SCALE



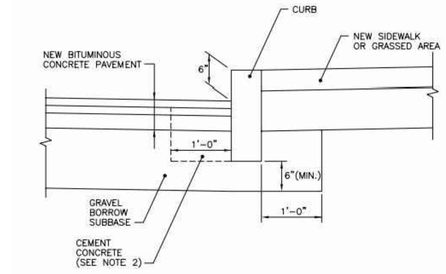
NOTE:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF R.I. STANDARD SPECIFICATIONS.
2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION, FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2"ø x 4" EPOXY COATED DOWEL.
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
5. LEFT AND RIGHT SECTIONS SHALL BE INSTALLED AS REQUIRED.

GRANITE TRANSITION CURB
NOT TO SCALE



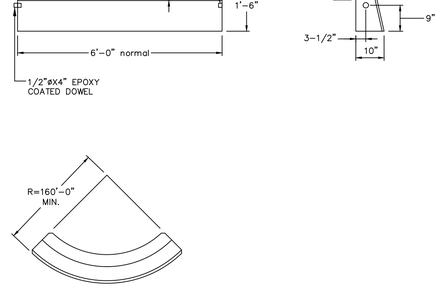
NOTES:
1. ALL SURFACES TO HAVE A SPONGE FLOAT FINISH.
2. EACH PRECAST CONCRETE CAR STOP SHALL BE FURNISHED WITH TWO 3/4"X 18" STEEL RODS.
3. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

PRECAST CONCRETE WHEEL STOPS
NOT TO SCALE



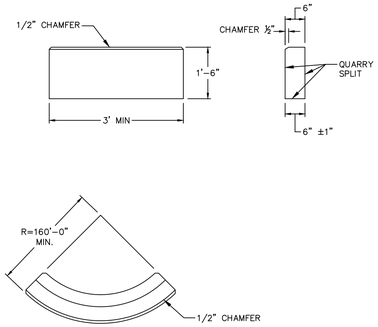
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. CEMENT CONCRETE SHALL BE USED ONLY WHEN THE CURB IS SET AFTER THE BASE AND/OR BINDER COURSES ARE IN PLACE, OTHERWISE THE CEMENT CONCRETE WILL BE ELIMINATED AND THE GRAVEL BROUGHT UP TO BOTTOM OF THE BASE COURSE.

CURB SETTING
NOT TO SCALE



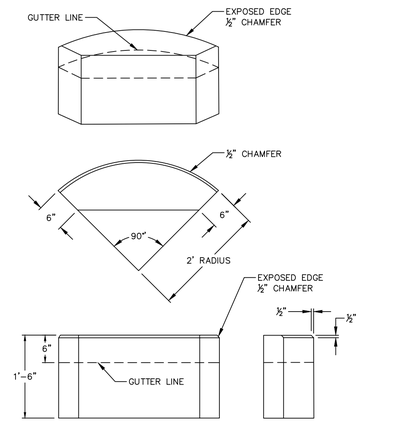
NOTE:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF R.I. STANDARD SPECIFICATIONS.
2. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
5. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

CONCRETE CURB
NOT TO SCALE



NOTE:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF R.I. STANDARD SPECIFICATIONS.
2. TOP SURFACE TO BE DRESSED BY SAW. REMAINDER MAY BE QUARRY SPLIT.
3. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR PIECES TO BE 3'-0".
4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.

GRANITE CURB
NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. TOP SURFACE TO BE DRESSED BY SAW. REMAINDER MAY BE QUARRY SPLIT.

GRANITE RADIUS CURB
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 17487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
9/27/2023

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

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-502

SHEET 17 OF 27

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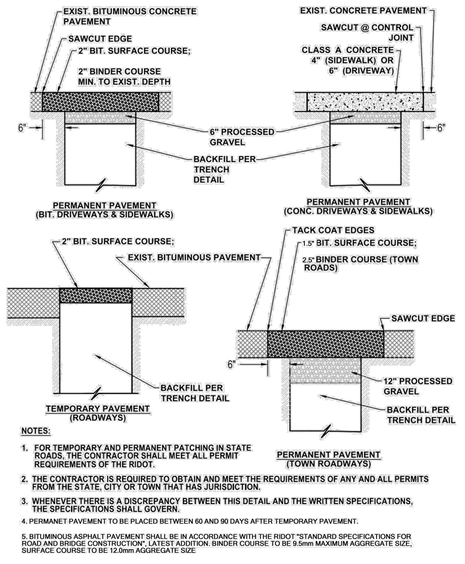
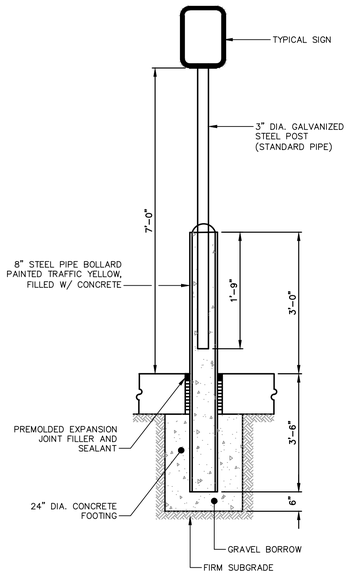


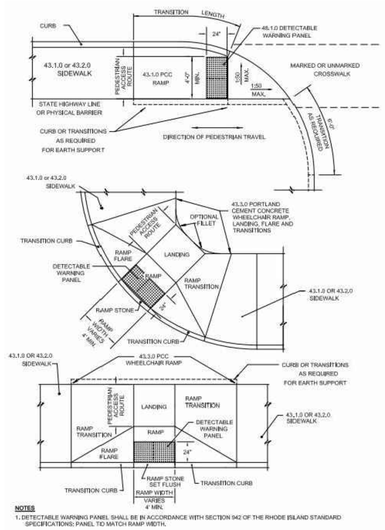
NOTES:

1. FOR TEMPORARY AND PERMANENT PATCHING IN STATE ROADS, THE CONTRACTOR SHALL MEET ALL PERMIT REQUIREMENTS OF THE RIDOT.
2. THE CONTRACTOR IS REQUIRED TO OBTAIN AND MEET THE REQUIREMENTS OF ANY AND ALL PERMITS FROM THE STATE, CITY OR TOWN THAT HAS JURISDICTION.
3. WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.
4. PERMANET PAVEMENT TO BE PLACED BETWEEN 60 AND 90 DAYS AFTER TEMPORARY PAVEMENT.
5. BITUMINOUS ASPHALT PAVEMENT SHALL BE IN ACCORDANCE WITH THE RIDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST ADDITION. BINDER COURSE TO BE 9.5mm MAXIMUM AGGREGATE SIZE; SURFACE COURSE TO BE 12.0mm AGGREGATE SIZE.

PAVEMENT REPLACEMENT (BWCA DETAIL 11A)
NOT TO SCALE



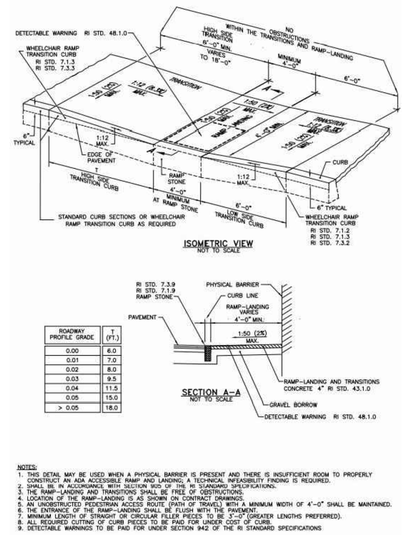
ACCESSIBLE PARKING SIGN BASE
NOT TO SCALE



NOTES

1. DETECTABLE WARNING PANEL SHALL BE IN ACCORDANCE WITH SECTION 942 OF THE RHODE ISLAND STANDARD SPECIFICATIONS; PANEL TO MATCH RAMP WIDTH.

DETECTABLE WARNING PANEL
NOT TO SCALE

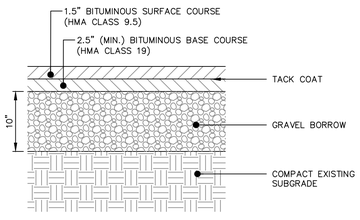


ROADWAY PROFILE GRADE	T (FT.)
0.00	6.0
0.01	7.0
0.02	8.0
0.03	9.5
0.04	11.5
0.05	15.0
> 0.05	18.0

NOTES:

1. THIS DETAIL MAY BE USED WHEN A PHYSICAL BARRIER IS PRESENT AND THERE IS INSUFFICIENT ROOM TO PROPERLY CONSTRUCT AN ADA ACCESSIBLE RAMP AND LANDING. A TECHNICAL INFEASIBILITY FINDING IS REQUIRED.
2. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE RI STANDARD SPECIFICATIONS.
3. THE RAMP-LANDING AND TRANSITIONS SHALL BE FREE OF OBSTRUCTIONS.
4. LOCATION OF THE RAMP-LANDING IS AS SHOWN ON CONTRACT DRAWINGS.
5. AN UNOBSTRUCTED PEDESTRIAN ACCESS ROUTE (PATH OF TRAVEL) WITH A MINIMUM WIDTH OF 4'-0" SHALL BE MAINTAINED.
6. THE ENTRANCE TO THE RAMP-LANDING SHALL BE FLUSH WITH THE PAVEMENT.
7. THE LENGTH OF THE RAMP-LANDING FILLER PIECES TO BE 1'-0" (GREATER LENGTHS PREFERRED).
8. ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.
9. DETECTABLE WARNINGS TO BE PAID FOR UNDER SECTION 942 OF THE RI STANDARD SPECIFICATIONS.

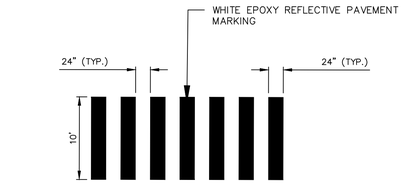
ACCESSIBLE RAMP
NOT TO SCALE



NOTES:

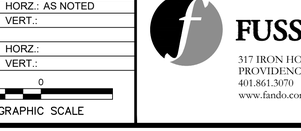
1. UNSUITABLE MATERIAL WITHIN SUBGRADE SHALL BE REMOVED AND REPLACED WITH GRAVEL BORROW.
2. GRAVEL BORROW SHALL MEET 95% MODIFIED PROCTOR FOR COMPACTION.
3. HOT MIX ASPHALT SHALL BE IN ACCORDANCE WITH SECTION 401 OF THE RI STANDARD SPECIFICATIONS.

BITUMINOUS CONCRETE PAVEMENT
NOT TO SCALE



NOTE:
STOP LINES SHALL BE NO LESS THAN 4 FEET BEHIND ADJACENT CROSSWALK LINES.

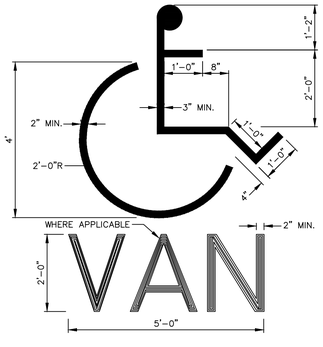
CROSSWALK
NOT TO SCALE



NOTES:

1. INTERNATIONAL SYMBOL ACCESSIBILITY SIGN WITH LETTERING NO LESS THAN 1-INCH HIGH BOLTED TO GALVANIZED STEEL TUBE.
2. REFLECTORIZED 16 GAUGE GALVANIZED STEEL SIGN PANEL WITH PORCELAIN ENAMEL FINISH.
3. WHITE IMAGE ON BLUE FIELD BEADED REFLECTORIZED TEXTURE. COLOR #15090 FED. STANDARD 595a.

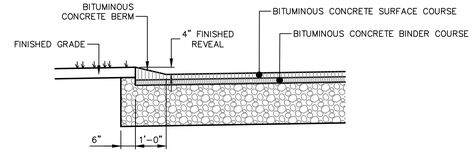
ACCESSIBLE PARKING SIGN
NOT TO SCALE



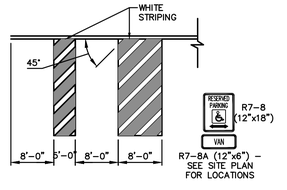
NOTES:

1. SYMBOL SHALL BE CENTERED IN THE PARKING STALL.
2. SYMBOL SHALL BE SOLID WHITE FAST-DRYING WATERBORNE PAINT AND BE CENTERED IN THE PARKING STALL. FOR VAN ACCESSIBLE SPACES, THE WORD "VAN" SHALL BE PAINTED ADJACENT TO HANDICAPPED SYMBOL.

ACCESSIBLE PARKING STALL SYMBOL
NOT TO SCALE



BITUMINOUS CONCRETE BERM
NOT TO SCALE



ACCESSIBLE PARKING STALL LAYOUT
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
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1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN No. 7487 REGISTERED PROFESSIONAL ENGINEER (CIVIL) 3/27/2023

SCALE: HORZ.: AS NOTED VERT.:
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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-503

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File Path: \\private\DFS\CadProj\DWG\P2006\1150\A22\Civil\Plan\Permitting Plans\20061150A22_DET01.dwg Layout: CD-503 Plotted: Fri, March 24, 2023 - 4:34 PM User: kmcombs
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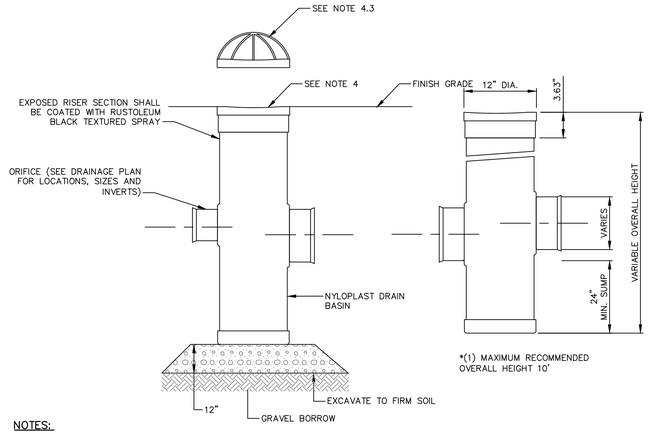
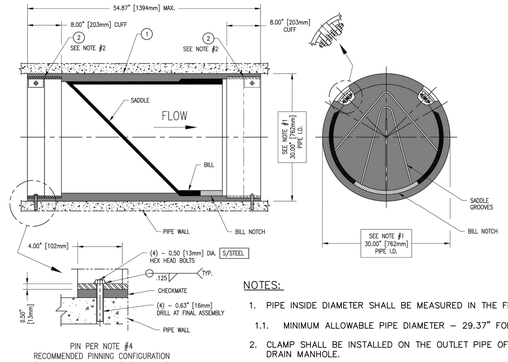


NOTES:

1. SEE DRAINAGE FOR PIPE SIZE, PIPE, MATERIAL, AND INVERTS.
2. GRAVEL BORROW SHALL BE COMPACTED TO 95–PERCENT MODIFIED PROCTOR.
3. GRAVEL BORROW SHALL CONFORM TO M.01.09, TABLE 1, COLUMN IA OF THE STANDARD SPECIFICATIONS.

DRAIN BASIN

NOT TO SCALE



PIN PER NOTE #4
RECOMMENDED PINNING CONFIGURATION
(SUPPLIED BY CUSTOMER) (SEE I.O.M.)
NOT TO SCALE

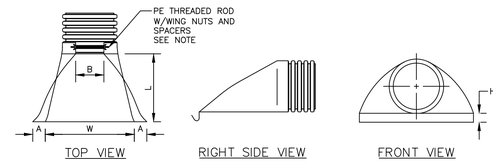
NOTES:

1. PIPE INSIDE DIAMETER SHALL BE MEASURED IN THE FIELD.
   1.1. MINIMUM ALLOWABLE PIPE DIAMETER – 29.37" FOR 30" NOMINAL
2. CLAMP SHALL BE INSTALLED ON THE OUTLET PIPE OF THE PROPOSED DRAIN MANHOLE.
3. MAXIMUM ALLOWABLE BACK PRESSURE – 38' FOR 30" NOMINAL
4. IT IS RECOMMEND TO BOLT OR PIN CHECKMATE TO PIPE AS SHOWN, 4 PLACES 90° APART.
5. TIDE GATE VALVE SHALL BE CHECKMATE ULTRAFLEX SLIP–IN INLINE CHECK VALVE MANUFACTURED BY TIDEFLEX TECHNOLOGIES OR APPROVED EQUAL.

TIDE VALVE

NOT TO SCALE

DIA.	15"
A	6.5"
B	10"
H	6.5"
L	25"
W	29"



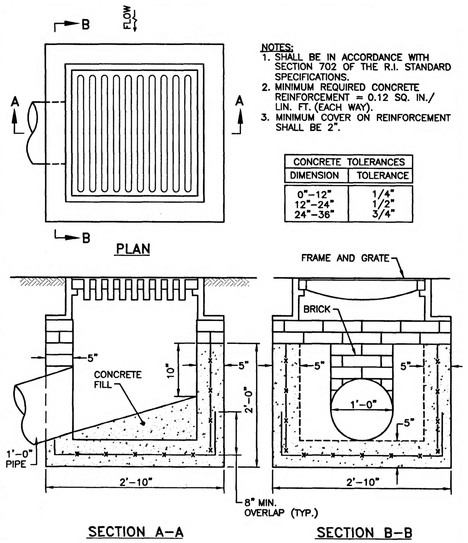
TOP VIEW RIGHT SIDE VIEW FRONT VIEW

NOTES:

1. SHALL BE MANUFACTURED WITH POLYETHYLENE RESINS AS DESCRIBED AND DEFINED IN ASTM D3350.
2. WHEN PROVIDED, THE METAL THREADED FASTENING ROD SHALL BE STAINLESS STEEL

HDPE FLARED END SECTION

NOT TO SCALE



SECTION A–A SECTION B–B

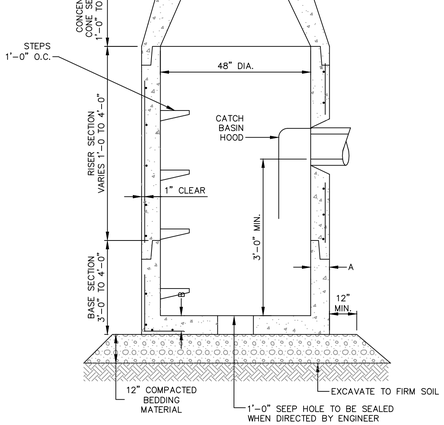
NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
2. MINIMUM REQUIRED CONCRETE REINFORCEMENT = 0.12 SQ. IN./LIN. FT. (EACH WAY).
3. MINIMUM COVER ON REINFORCEMENT SHALL BE 2".

CONCRETE TOLERANCES	
DIMENSION	TOLERANCE
0"–12"	1/4"
12"–24"	1/2"
24"–36"	3/4"

PRECAST CONCRETE DROP INLET (R.I. STD. 4.5.0)

NOT TO SCALE



ALTERNATE TOP SLAB
(STEEL REINFORCED FOR HS–25 LOADING)

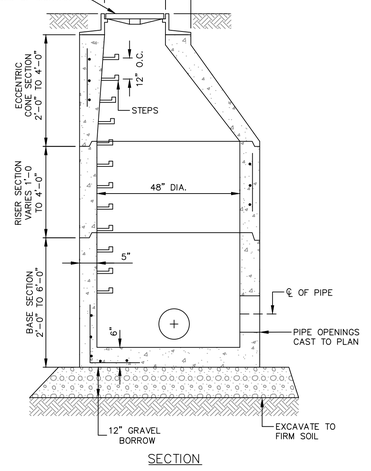
SECTION

NOTES:

1. FRAME AND GRATE SHALL BE R.I. STD. 6.3.0 OR APPROVED EQUAL.
2. INLET CATCH BASIN SHALL INCLUDE GRANITE APRON STONE PER PROVIDENCE STANDARD 7.3.7P, AND BE INSTALLED IN ACCORDANCE WITH INLET/APRON STONE REVEAL PER PROVIDENCE STANDARD 60.4.0P.
3. INLET CATCH BASIN SHALL HAVE 4' SUMP.
4. FRAMES SHALL BE SET IN FULL BED OF MORTAR. ADJUST TO GRADE WITH RED CLAY BRICKS AND MORTAR.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A–185:
   – 0.12 SQ. IN./LIN. FT. CIRCUMFERENTIAL
   – 0.18 SQ. IN./FT. (BOTH WAYS) BASE BOTTOM
6. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4,000 PSI TYPE II CEMENT.
7. ONE POUR MONOLITHIC BASE SECTION.
8. PROVIDE ASTM C923 RESILIENT CONNECTORS CAST OR FITTED INTO MANHOLE WALLS FOR EACH PIPE CONNECTION.
9. JOINT SEALANT SHALL BE PREFORMED BUTYL RUBBER MASTIC TYPE SEAL THAT COMPLIES WITH AASHTO M198 OR SYNTHETIC RUBBER GASKET THAT COMPLIES WITH ASTM C–443 OR C–361.
10. CATCH BASIN DESIGN SHALL CONFORM TO ASTM C–478 FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTION.
11. CATCH BASIN STEPS SHALL BE ASTM A 615/A615M, DEFORMED, 1/2–INCH STEEL REINFORCED RODS ENCASED IN ASTM D 4101, POLYPROPYLENE PLASTIC. THE CENTERLINE OF OPENING MUST BE WITHIN 2'–0" FROM STEPS.
12. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW–CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.

CATCH BASIN

NOT TO SCALE



ALTERNATE TOP SLAB
(STEEL REINFORCED FOR HS–25 LOADING)

SECTION

NOTES:

1. FRAME AND COVER TO BE R.I. STD. 6.2.1 OR APPROVED EQUAL. LETTERING: "DRAIN"
2. FRAMES SHALL BE SET IN FULL BED OF MORTAR. ADJUST TO GRADE WITH RED CLAY BRICKS AND MORTAR.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A–185:
   – 0.12 SQ. IN./LIN. FT. CIRCUMFERENTIAL
   – 0.18 SQ. IN./FT. (BOTH WAYS) BASE BOTTOM
4. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4,000 PSI TYPE II CEMENT.
5. ONE POUR MONOLITHIC BASE SECTION.
6. PROVIDE ASTM C923 RESILIENT CONNECTORS CAST OR FITTED INTO MANHOLE WALLS FOR EACH PIPE CONNECTION.
7. JOINT SEALANT SHALL BE PREFORMED BUTYL RUBBER MASTIC TYPE SEAL THAT COMPLIES WITH AASHTO M198 OR SYNTHETIC RUBBER GASKET THAT COMPLIES WITH ASTM C–443 OR C–361.
8. MANHOLE DESIGN SHALL CONFORM TO ASTM C–478 FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
9. MANHOLE STEPS SHALL BE ASTM A 615/A615M, DEFORMED, 1/2–INCH STEEL REINFORCED RODS ENCASED IN ASTM D 4101, POLYPROPYLENE PLASTIC. THE CENTERLINE OF OPENING MUST BE WITHIN 2'–0" FROM STEPS.
10. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW–CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
11. INVERT CONSTRUCTED OF BRICK OR CEMENT CONCRETE, CLASS D.

DRAIN MANHOLE

NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
3/27/2023

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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-504

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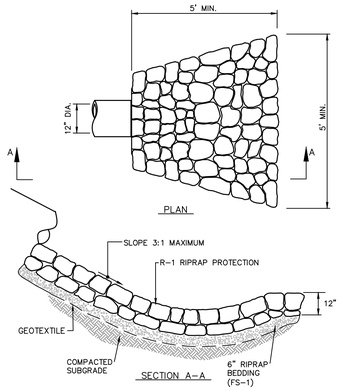
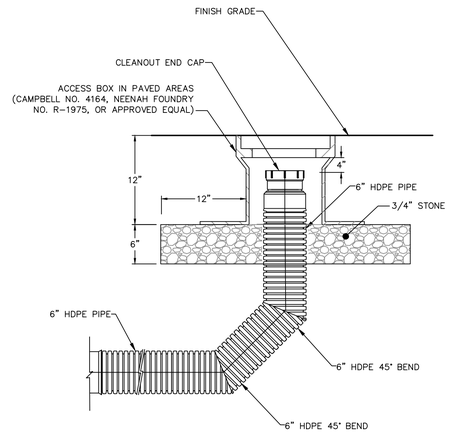


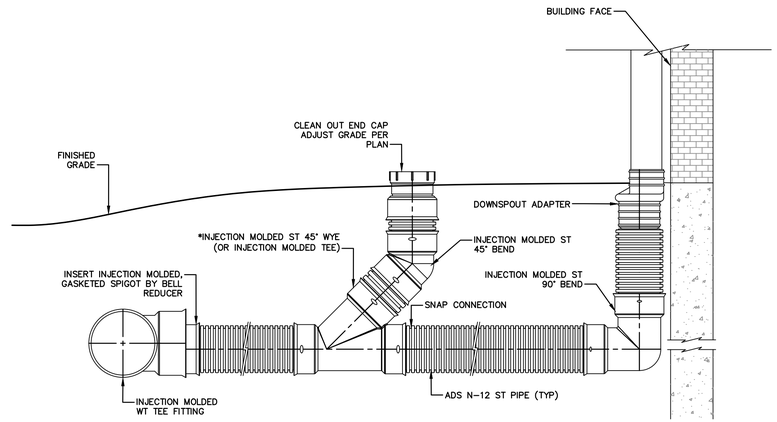
RIPRAP SPLASH PAD
NOT TO SCALE



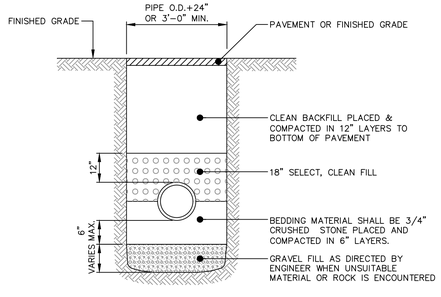
NOTE:

1. IN UNPAVED AREAS, CLEANOUT CAP SHALL BE BURIED 3 INCHES.
2. ACCESS BOX IN PAVED AREAS SHALL HAVE 9.5" SOLID COVER WITH LETTERING "CLEANOUT".
3. IN-LINE CLEANOUTS SHALL HAVE TEE WYE IN LIEU OF TWO 45 DEGREE BENDS.

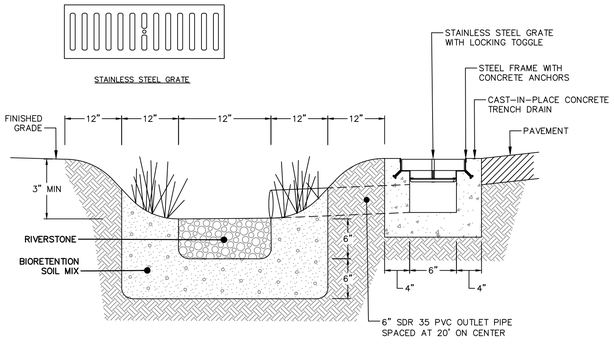
STORM DRAIN CLEANOUT
NOT TO SCALE



DOWNSPOUT CONNECTION
NOT TO SCALE



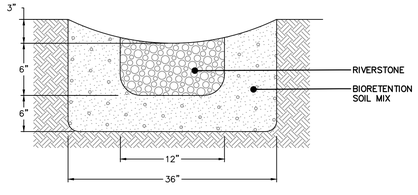
STORM DRAIN TRENCH
NOT TO SCALE



NOTE:

SEASONAL HIGH GROUNDWATER TABLE (SHGWT) ELEVATION IS APPROXIMATELY 5.5'. BOTTOM OF CHANNEL SHALL BE LOCATED AT OR ABOVE SHGWT.

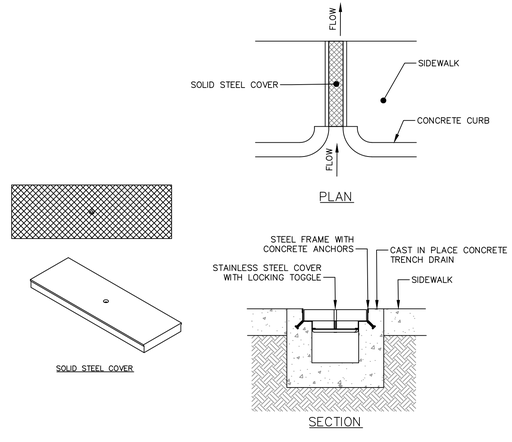
STONE CHANNEL 1
NOT TO SCALE



NOTE:

SEASONAL HIGH GROUNDWATER TABLE (SHGWT) ELEVATION IS APPROXIMATELY 5.5'. BOTTOM OF CHANNEL SHALL BE LOCATED AT OR ABOVE SHGWT.

STONE CHANNEL 2
NOT TO SCALE



TRENCH DRAIN (SOLID COVER)
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
3/27/2023

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

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-505

SHEET 20 OF 27

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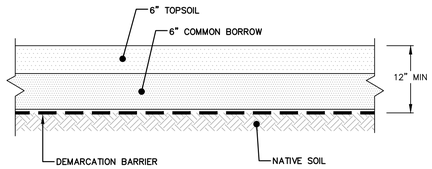


NOTES:

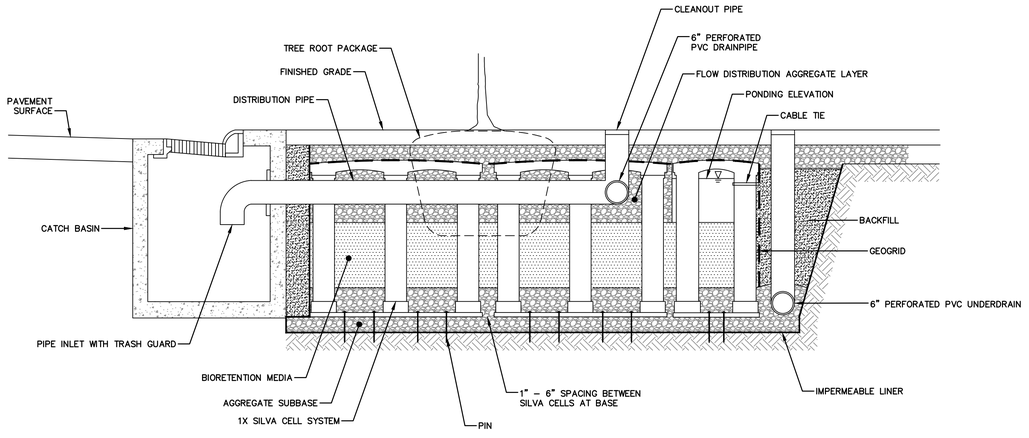
1. IMPORTED CLEAN SOIL MUST BE LABORATORY TESTED TO DEMONSTRATE COMPLIANCE WITH THE REMEDIAL ACTION WORK PLAN.
2. REUSE TOPSOIL ON-SITE. VERIFY SUITABILITY OF STOCKPILED TOPSOIL TO PRODUCE LOAM. CLEAN TOPSOIL OF ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.

2.1. SUPPLEMENT WITH IMPORTED OR MANUFACTURED LOAM FROM OFF-SITE SOURCES WHEN QUANTITIES ARE INSUFFICIENT, OBTAIN TOPSOIL DISPLACED FROM NATURALLY WELL-DRAINED CONSTRUCTION OR MINING SITES WHERE TOPSOIL OCCURS AT LEAST 4 INCHES DEEP.

3. LOAM OR RESPREAD TOPSOIL SHALL CONFORM TO ASTM D5268, WITH PH BETWEEN 5.5 AND 7, A MINIMUM OF 6 PERCENT ORGANIC MATERIAL CONTENT, FREE OF STONES 1 INCH OR LARGER AND FREE OF OTHER EXTRANEOUS MATERIALS. SHALL NOT BE OBTAINED FROM AGRICULTURAL LAND, BOGS, OR MARSHES.
4. ALL SURFACED AREAS OR DISTURBED AREAS NOT SPECIFIED ON THE PLANS SHALL RECEIVE 4 INCHES OF LOAM OR RESPREAD TOPSOIL, SEED, MULCH, AND BE WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
5. CLEAN SOIL SHALL ONLY BE IMPORTED WHERE CURRENT CAP MATERIAL DOES NOT MEET CAP REQUIREMENT OF 24-INCHES.
6. SEE LANDSCAPE PLANS FOR FINISH SURFACE TREATMENTS.
7. SOIL CAP IS REQUIRED FOR ANY LANDSCAPED AREAS ON THE MILL LOT SITE INCLUDING PLAT 10, LOTS 42, 60, 61, 62, AND 73.

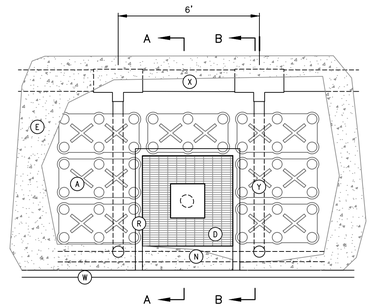
SOIL CAP

NOT TO SCALE

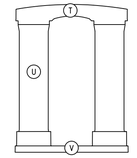


TREE FILTER 1 & 2

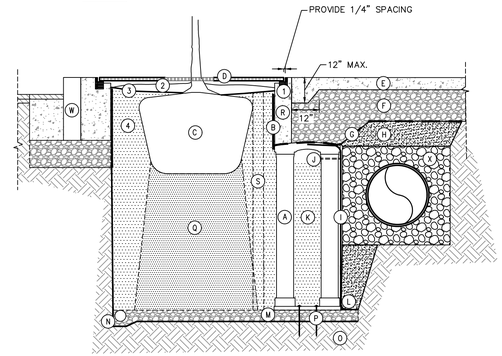
NOT TO SCALE



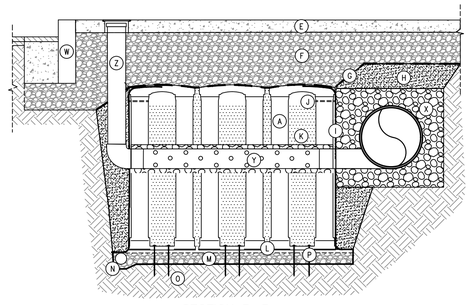
PLAN



SILVA CELL COMPONENTS



SECTION A-A



SECTION B-B

KEY PLAN

- (A) SILVA CELL 2 SYSTEM (DECK, BASE, AND POSTS).
- (B) DEEPROOT ROOT BARRIER DEEPROOT ROOT BARRIER INSTALLED TO A DEPTH 18 INCHES BELOW TOP OF TREE PIT.
- (C) TREE ROOT PACKAGE, SIZE VARIES. REMOVE ALL TWINE & STRAPS. CUT AND REMOVE BURLAP AND WIRE CAGE FROM TOP 1/2 OF BALL. REMOVE ALL SYNTHETIC MATERIALS.
- (D) TREE GRATE ASSEMBLY WITH CONCRETE ANCHOR.
- (E) EXPOSED AGGREGATE CONCRETE SIDEWALK WITH HAUNCHED EDGE
- (F) GRAVEL BORROW COURSE. GRAVEL BORROW. 18-INCH DEPTH ABOVE SILVA CELLS. TRANSITION TO STANDARD GRAVEL BORROW DEPTH PER CONCRETE SIDEWALK DETAIL.
- (G) GEOTEXTILE TO EDGE OF EXCAVATION.
- (H) BACKFILL, TO WITHIN 4-6" BELOW TOP OF SILVA CELL DECKS. INSTALL IN 8" LIFTS, EACH COMPACTED TO 95% MODIFIED PROCTOR.
- (I) IMPERMEABLE LINER.
- (J) CABLE TIE, ATTACHING GEOGRID TO SILVA CELL AT BASE OF UPPER POST FLARE.
- (K) PLANTING SOIL TO 7" BELOW DECK, MANUALLY COMPACTED TO APPROXIMATE 70% MODIFIED PROTOR.
- (L) 1" - 6" SPACING BETWEEN SILVA CELLS AT BASE.
- (M) 4" MIN. GRAVEL BORROW, COMPACTED TO 95% MODIFIER MODIFIED PROCTOR.
- (N) 6" PERFORATED PVC UNDERDRAIN PIPE, 0.0 FT/FT SLOPE.
- (O) SUBGRADE, COMPACTED TO 95% MODIFIED PROCTOR.
- (P) PIN, PER SILVA CELL SPECIFICATIONS, TO KEEP CELLS IN PLACE DURING CONSTRUCTION.
- (Q) PLANTING SOIL BELOW TREE ROOT PACKAGE, COMPACTED TO 85-90% MODIFIED PROCTOR.
- (R) 18-INCH CAST-IN-PLACE CONCRETE CURB TO STABILIZE EDGE AND PREVENT AGGREGATE MIGRATION INTO TREE OPENING.
- (S) 4" PERFORATED PVC INSPECTION RISER TO PROVIDE FOR MONITORING OF SOIL MOISTURE.
- (T) SILVA CELL DECK
- (U) SILVA CELL POST
- (V) SILVA CELL BASE
- (W) 18-INCH GRANITE CURB IN EXISTING PAVEMENT
- (X) 18" X 6" HDPE MANIFOLD, 0.0 FT/FT SLOPE, INSTALL PER STORM DRAIN TRENCH DETAIL.
- (Y) 6" PERFORATED PVC PIPE, 0.0 FT/FT SLOPE, ENCASED IN 3" OF CLEAN, WASHED, 1" DIAMETER CRUSHED STONE. PERFORATIONS MUST FACE DOWN.
- (Z) 6" SOLID PVC CLEANOUT, CAPPED, WITH ROUND, HEAVY-DUTY CAST IRON FRAME AND COVER.
- (1) SQUARE FRAME FRAME SET IN CONTINUOUS 4"X6" CONCRETE RING. INSURE PROPER EQUAL SLOPES ON ALL SIDES TO PROVIDE CONSISTENT SEAT FOR TREE GRATES. VARIATIONS OR WOBBLING GRATES WILL NOT BE PERMITTED
- (2) ORGANIC MULCH
- (3) WEED BARRIER
- (4) BACKFILL WITH PLANTING SOIL MIXTURE IN 9" LAYERS. WATER EACH LAYER UNTIL SETTLED. DO NOT TAMP. (SEE TREE PLANTING DETAILS)

TREE FILTER 3

NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
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2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
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SEAL

SHAWN M. MARTIN No. 7487 REGISTERED PROFESSIONAL ENGINEER (CIVIL) 3/27/2023

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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-506

SHEET 21 OF 27

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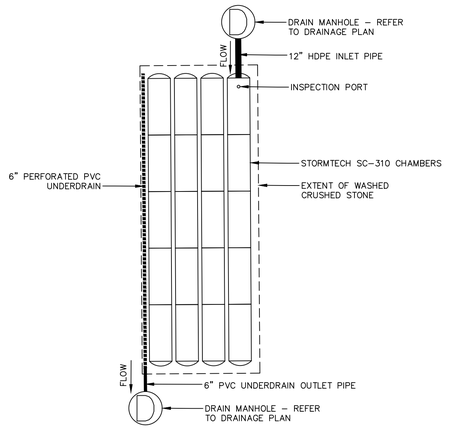
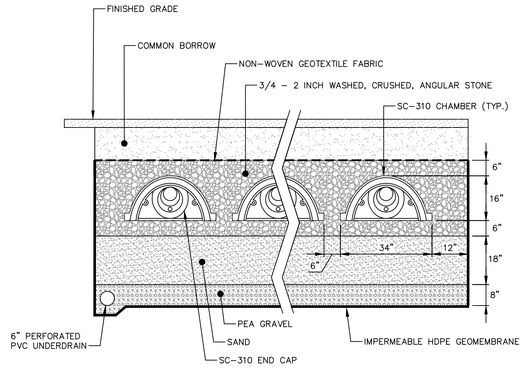


PLAN



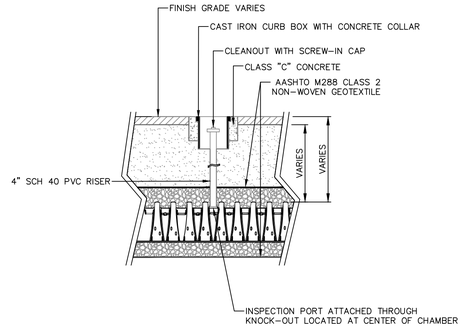
SECTION

NOTE:

INSTALL PER MANUFACTURER'S INSTRUCTIONS.

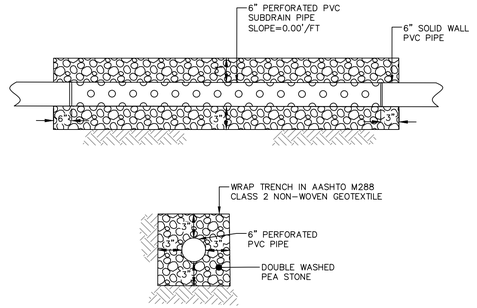
SUBSURFACE FILTRATION SYSTEM 1

NOT TO SCALE



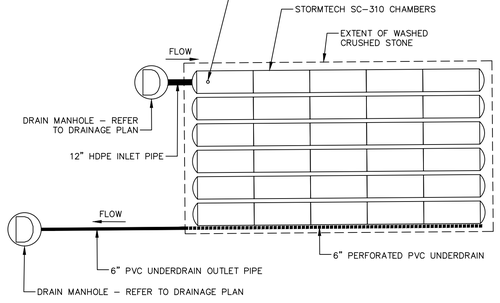
INSPECTION PORT

NOT TO SCALE

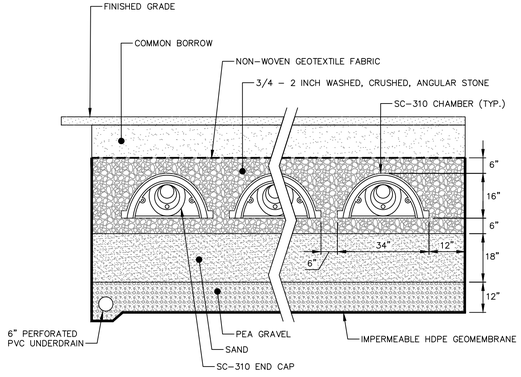


UNDERDRAIN

NOT TO SCALE



PLAN



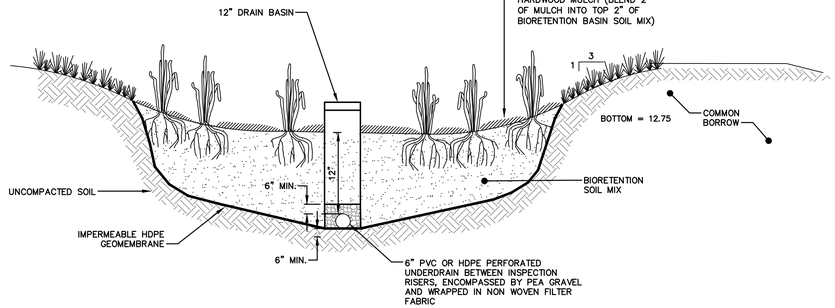
SECTION

NOTE:

INSTALL PER MANUFACTURER'S INSTRUCTIONS.

SUBSURFACE FILTRATION SYSTEM 2

NOT TO SCALE



NOTES:

1. BIORETENTION SOIL MIX SHALL HAVE A LOAMY SAND TEXTURE PER USDA TEXTURAL TRIANGLE WITH A MAXIMUM CLAY CONTENT OF LESS THAN 2%. SOIL MIXTURE SHALL BE 85–88% SAND, 8–12% SOIL FINES, AND 3–5% ORGANIC MATTER.
2. THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, MUGWORT, NUTSEDGE, POISON IVY, CANADIAN THISTLE, TEARTHUB, OR OTHER NOXIOUS WEEDS.
3. PRIOR TO INSTALLATION, SOIL SHALL BE TESTED AND CONFORM TO THE FOLLOWING CRITERIA:
   PH RANGE: 5.7 – 7.0
   MAGNESIUM: 32 PPM MIN.
   PHOSPHORUS P205: NOT TO EXCEED 69 PPM
   POTASSIUM K20: 78 PPM MIN.
   SOLUBLE SALTS: NOT TO EXCEED 500 PPM

RAIN GARDEN

NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN No. 7487 REGISTERED PROFESSIONAL ENGINEER (CIVIL) 3/27/2023

SCALE:
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317 IRON HORSE WAY, SUITE 204
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401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-507

SHEET 22 OF 27

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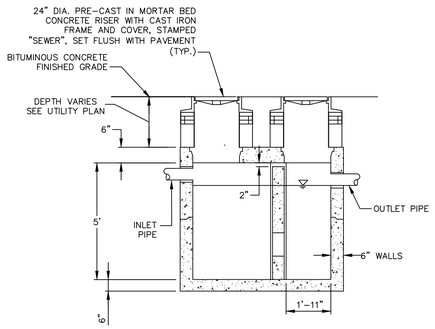
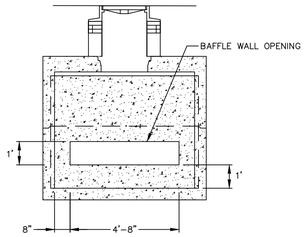
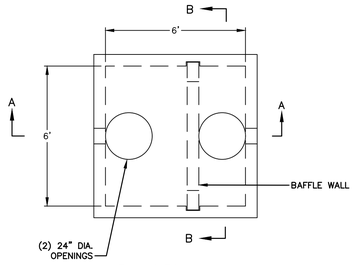


SECTION A–A



SECTION B–B



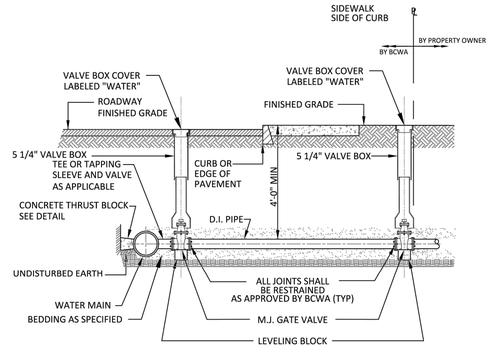
PLAN VIEW

NOTES:

1. VOLUME SHALL BE 1,000 GALLONS.
2. CONCRETE : 5,000 P.S.I MINIMUM STRENGTH @ 28 DAYS
3. STEEL REINFORCING ASTM A-615, GRADE 60
4. COVER TO STEEL 1" MINIMUM
5. TANKS SHALL MEET ASTM C858 AND ACI 318 WITH AASHTO HS-20 LOADING
6. EARTH COVER 0 MIN. TO 5 FEET MAX
7. EARTH COVER 0 MIN. TO 5 FEET MAX

OIL/WATER SEPARATOR

NOT TO SCALE

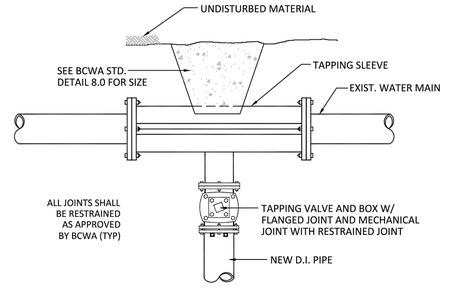


NOTE:

1.) ALL SERVICE MATERIALS, BEDDING AND BACKFILL PER BCWA SPECIFICATIONS.
2.) SERVICE LINE FROM GATE BOX TO BUILDING SHALL BE INSPECTED AND APPROVED BY THE BCWA PRIOR TO BEING BACKFILLED AND/OR ACTIVATED.
3.) TAPPING SLEEVE TO BE PRESSURE TESTED PRIOR TO INSTALLATION.
4.) STREET SIDE OF SERVICE TO BE INSTALLED FIRST, LOCATION TO BE DETERMINED BY BCWA.
5.) WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

SERVICE CONNECTION 4 INCHES & GREATER (BCWA DETAIL 10C)

NOT TO SCALE

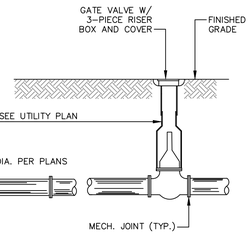


NOTE:

1.) TAPPING SLEEVE, VALVE AND PIPE TO BE DISINFECTED WITH CHLORINE SOLUTION PRIOR TO INSTALL.
2.) TAPPING SLEEVE TO BE PRESSURE TESTED USING AIR PRIOR TO TAPPING PIPE.
3.) ALL MATERIALS, BEDDING AND BACKFILL PER BCWA SPECIFICATIONS.
4.) THRUST BLOCK PER BCWA SPECIFICATIONS. SEE BCWA STD. DETAIL 8.0.
5.) ALL WORK AND MATERIALS SHALL BE INSPECTED AND APPROVED BY THE BCWA PRIOR TO BEING BACKFILLED AND/OR ACTIVATED.
6.) WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

TAPPING SLEEVE AND VALVE (BCWA DETAIL 3)

NOT TO SCALE



FIRE PROTECTION SERVICE CONNECTION

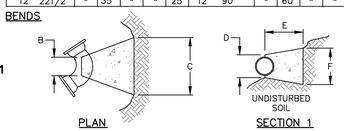
NOT TO SCALE

TABLE OF DIMENSIONS

BENDS	B	C	D	E	F	BENDS	B	C	D	E	
6" 111/4°	8"	15"	12"	24"	12"	6" 45°	8"	30"	12"	24"	14"
6" 221/2°	"	19"	"	"	13"	6" 90°	"	30"	"	"	27"
8" 111/4°	"	20"	"	"	12"	8" 45°	"	30"	"	"	24"
8" 221/2°	"	22"	"	"	17"	8" 90°	"	38"	"	"	36"
12" 111/4°	"	30"	"	"	15"	12" 45°	"	40"	"	"	40"
12" 221/2°	"	35"	"	"	25"	12" 90°	"	60"	"	"	52"

BENDS

1



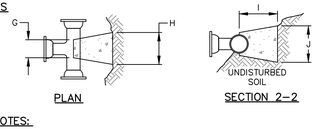
PLAN SECTION 1

TABLE OF DIMENSIONS

TEES	G	H	I	J	TEES	G	H	I	J	
6"x 6"x 6"	12"	24"	24"	18"	12"x 12"x 6"	12"	24"	24"	18"	
8"x 8"x 6"	"	"	"	"	12"x 12"x 8"	"	"	"	24"	
8"x 8"x 8"	"	"	"	24"	12"x 12"x 12"	"	36"	"	36"	

TEES

2



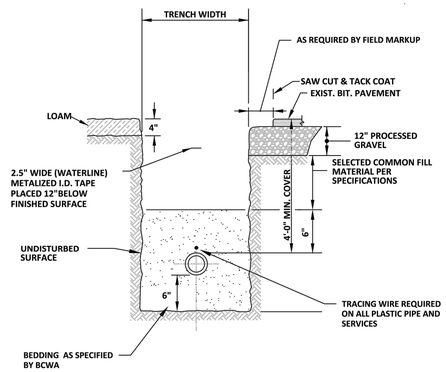
PLAN SECTION 2–2

NOTES:

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL HAVE 3,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS.

CONCRETE THRUST BLOCK

NOT TO SCALE

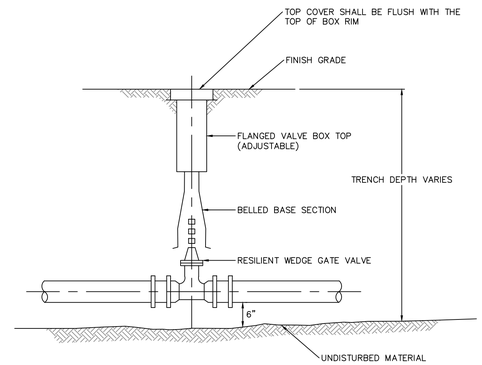


NOTES:

1.) ALL MATERIALS, BEDDING AND BACKFILL PER BCWA SPECIFICATIONS AND SHALL BE INSPECTED AND APPROVED BY THE BCWA PRIOR TO BEING BACKFILLED AND/OR ACTIVATED.
2.) ROADWAY AND SIDEWALK RESTORATION SHALL BE PERFOMED IN ACCORDANCE WITH ALL MUNICIPAL OR RIDOT PERMIT REQUIREMENTS.
3.) WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

WATER TRENCH (BCWA DETAIL 1)

NOT TO SCALE



NOTE: FURNISH TWO OPERATING WRENCHES TO OWNER.

GATE VALVE

NOT TO SCALE

PLANNING BOARD APPROVAL

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SEAL

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No. 17487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
9/27/2023

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GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-508

SHEET 23 OF 27

File Path: \\private\DFS\Cad\Proj\DWG\P20061150\A22\Civil\Plan\Permitting Plans\20061150A22_DET01.dwg Layout: CD-508 Plotted: Fri, March 24, 2023 - 4:36 PM User: kmcombs
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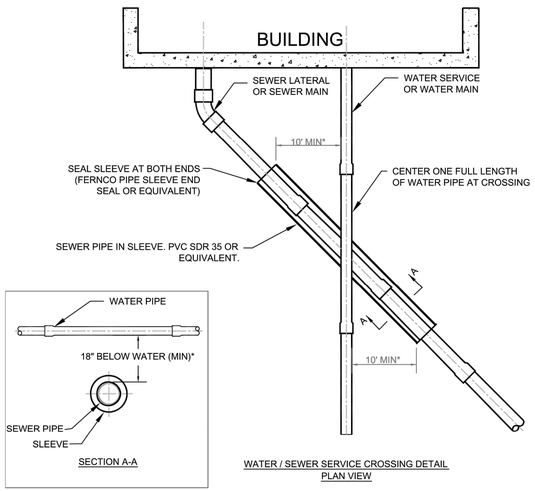
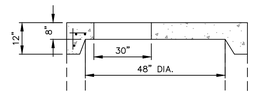


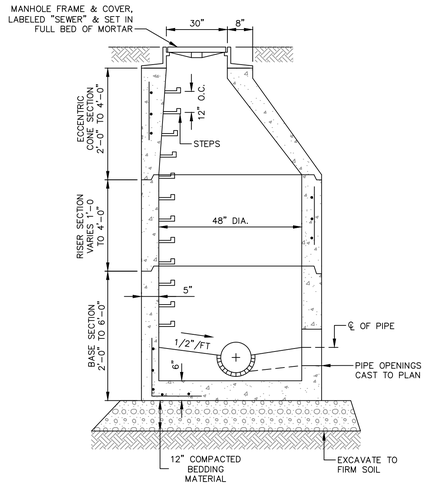
WATER / SEWER SERVICE CROSSING DETAIL
PLAN VIEW

IF THE 18 INCH MINIMUM VERTICAL SEPARATION CANNOT BE MAINTAINED, CONSTRUCT
- SEWER USING AWWA APPROVED WATER MAIN PIPE AND PRESSURE TEST TO 150psi. FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, MEASURED PARALLEL TO THE WATER PIPE, OR ENCASE SEWER PIPE IN PVC SLEEVE.

WATER & SEWER SERVICE CROSSING (BCWA DETAIL 9A)
NOT TO SCALE



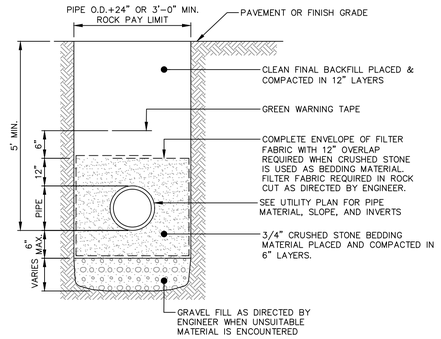
ALTERNATE TOP SLAB
(STEEL REINFORCED FOR HS-25 LOADING)



SECTION

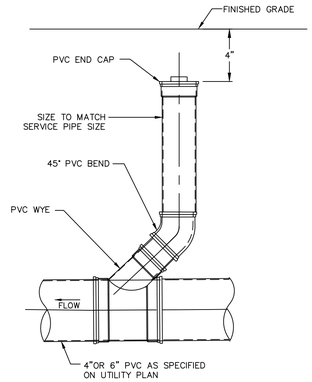
NOTES:
1. FRAME AND COVER TO BE R.I. STD. 6.2.1 OR APPROVED EQUAL. LETTERING: "SEWER"
2. FRAMES SHALL BE SET IN FULL BED OF MORTAR. ADJUST TO GRADE WITH RED CLAY BRICKS AND MORTAR.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A-185:
   - 0.12 SQ. IN./LIN. FT. CIRCUMFERENTIAL
   - 0.18 SQ. IN./FT. (BOTH WAYS) BASE BOTTOM
4. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4,000 PSI TYPE II CEMENT.
5. ONE POUR MONOLITHIC BASE SECTION.
6. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
7. JOINT SEALANT SHALL BE PREFORMED BUTYL RUBBER MASTIC TYPE SEAL THAT COMPLIES WITH AASHTO M198 OR SYNTHETIC RUBBER GASKET THAT COMPLIES WITH ASTM C-443 OR C-361.
8. MANHOLE DESIGN SHALL CONFORM TO ASTM C-478 FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
9. MANHOLE STEPS SHALL BE ASTM A 615/A615M, DEFORMED, 1/2-INCH STEEL REINFORCED RODS ENCASED IN ASTM D 4101, POLYPROPYLENE PLASTIC. THE CENTERLINE OF OPENING MUST BE WITHIN 2'-0" FROM STEPS.
10. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
11. INVERT CONSTRUCTED OF BRICK OR CEMENT CONCRETE, CLASS D.

SEWER MANHOLE
NOT TO SCALE



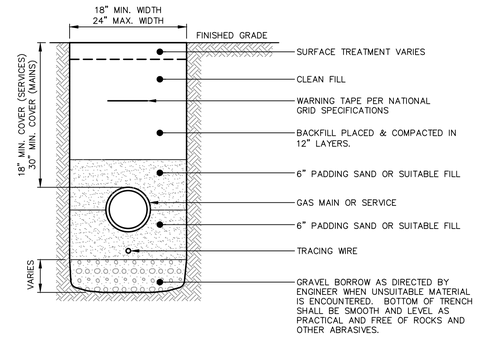
NOTES:
1. SEWER TO BE INSULATED WITH 2" RIGID FOAM WHEN LESS THAN 4' COVER IS PROVIDED.

SEWER TRENCH
NOT TO SCALE



NOTE:
IN PAVED AREAS, ZURN ADJUSTABLE CLEAN-OUT WITH CAST IRON FRAME AND COVER SHALL BE USED IN LIEU OF PVC END CAP.

SEWER CLEANOUT
NOT TO SCALE



NOTES:
1. BEDDING MATERIAL AND INITIAL BACKFILL SHALL BE CLEAN, FREE OF DEBRIS AND RUBBLE, AND FREE OF MATERIALS WHICH MAY CAUSE POLLUTION OF GROUNDWATER.
2. SPOIL SHOULD BE SET BACK A MINIMUM OF TWO (2) FEET IN ACCORDANCE WITH OSHA REGULATIONS.
3. GAS SERVICE MUST HAVE A MINIMUM HORIZONTAL SEPARATION OF THREE (3) FEET FROM PARALLEL UTILITIES. A ONE FOOT SEPARATION MUST BE MAINTAINED WHEN CROSSING OTHER UTILITIES.
4. THE MAXIMUM TRENCH DEPTH FOR GAS MAINS IS 48-INCHES WHILE THE MAXIMUM TRENCH DEPTH FOR SERVICES IS 36-INCHES.

GAS TRENCH
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
9/27/23

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.:
VERT.:
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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-509

SHEET 24 OF 27

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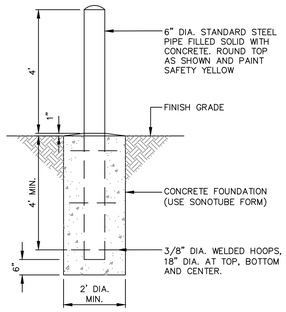
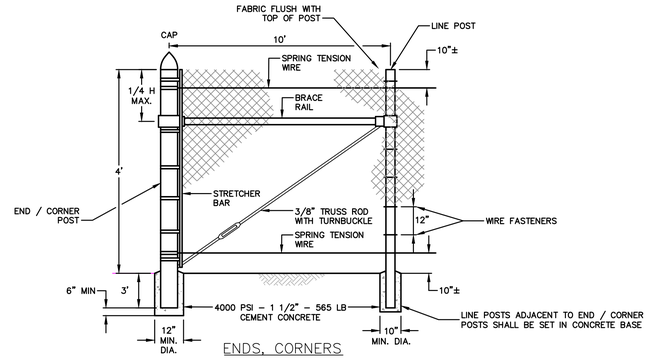
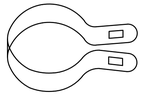


BOLLARD
NOT TO SCALE



ENDS, CORNERS



SPRING TENSION WIRE

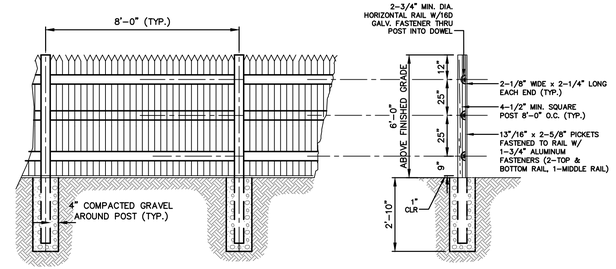
MINIMUM OF (5) TURNS AROUND THE SPRING TENSION WIRE TO END INSTALLATION. ALL BANDS SHALL BE ROUND ON ROUND POSTS.

END BAND

NOTES:

1. FABRIC FOR FENCE: TOP SELVAGE TO HAVE KNUCKLED FINISH, BOTTOM SELVAGE TO HAVE TWISTED AND BARBED FINISH UNLESS OTHERWISE NOTED.
2. GRADE OF FENCE TO BE PARALLEL WITH THE GRADE OF GROUND.
3. FOR DESCRIPTION, MATERIAL AND CONSTRUCTION METHODS, SEE SPECIFICATIONS.
4. SPRING TENSION WIRE TO BE FASTENED TO FABRIC WITH 11 GAUGE HOG RINGS AT 1' INTERVALS.
5. SPRING TENSION WIRE TO BE FASTENED TO LINE POSTS WITH CLIPS.
6. LINE POST TO BE DRIVEN EXCEPT WHERE NOTED ABOVE.

CHAIN LINK FENCE
NOT TO SCALE

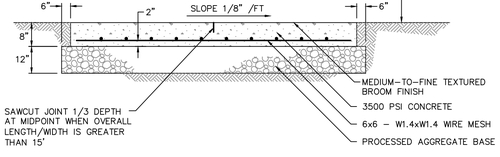


SCREENING FENCE

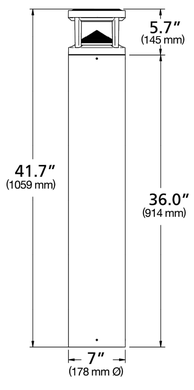
NOTES:

1. ALL FENCING MATERIAL SHALL BE PVC TO THE DIMENSIONS SHOWN ON THE DRAWING.
2. POSTS SHALL MAINTAIN A DEPTH OF 2'–10" IN GROUND AND SHALL BE RACKED TO ACCOMMODATE ANY CHANGES IN GRADE.
3. LINE OF FENCE TOP AND BOTTOM SHALL BE INSTALLED STRAIGHT AND TRUE. ALL POSTS AND FACING BOARDS OR SLATS SHALL BE INSTALLED PARALLEL AND PLUMB. ALL RAILS SHALL BE INSTALLED PARALLEL AND TRUE.
4. ALL GATE HARDWARE SHALL BE DOUBLE DIP HOT GALVANIZED.
5. FENCE SHALL TAPER FROM 6' TO 4' HEIGHT IN SINGLE 8' PANEL WHERE INDICATED ON PLANS.

STOCKADE FENCE
NOT TO SCALE



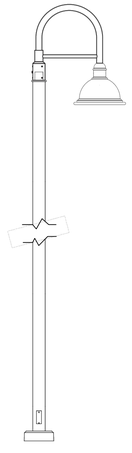
CONCRETE DUMPSTER PAD
NOT TO SCALE



NOTES:

1. LIGHT BOLLARD SHALL BE PAVILION BOLLARD PA7R MANUFACTURED BY KIM LIGHTING.
2. BOLLARD SHALL HAVE A FLAT TOP WITH NO UPLIGHT. A LIGHT ENGINE WITH THE SPECIFICATIONS OF 22W, 4000K, 70CRI, AND A VOLTAGE OF 120–277V.
3. FINISH SHALL BE APPROVED BY OWNER.

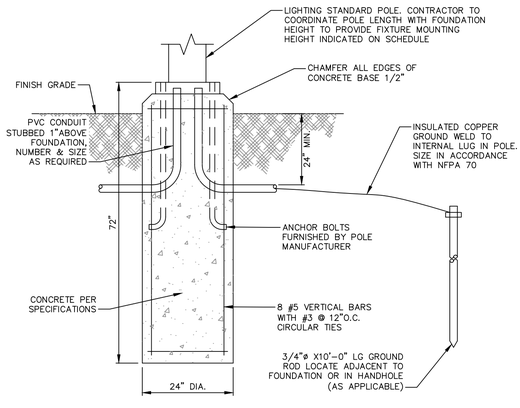
LIGHT BOLLARD
NOT TO SCALE



NOTES:

1. LIGHT FIXTURE SHALL BE 1521LED–R OMEGA MANUFACTURED BY STERNBERG LIGHTING.
2. FIXTURE SHALL HAVE A FLAT LENS, 16L LED RATING, 40K COLOR TEMPERATURE, DISTRIBUTION TYPE T4, A DRIVER MEETING THE SPECIFICATION OF 120–277V,180mA (MOLO18), AND A BACK LIGHT OPTICAL CONTROL.
2. LIGHT POLE SHALL BE 550 CONCORD MANUFACTURED BY STERNBERG LIGHTING.
3. POLE SHALL BE STRAIGHT SMOOTH.
4. LIGHT POLE ARM SHALL BE OES/1–OESPT MANUFACTURED BY STERNBERG LIGHTING.
5. FINISH SHALL BE APPROVED BY OWNER.
6. MOUNTING HEIGHT SHALL BE 12 FEET.

LIGHT POLE & FIXTURE
NOT TO SCALE



LIGHT POLE BASE
NOT TO SCALE

PLANNING BOARD APPROVAL

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1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SHAWN M. MARTIN No. 7487 REGISTERED PROFESSIONAL ENGINEER (CIVIL) 3/27/2023

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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
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CD-510

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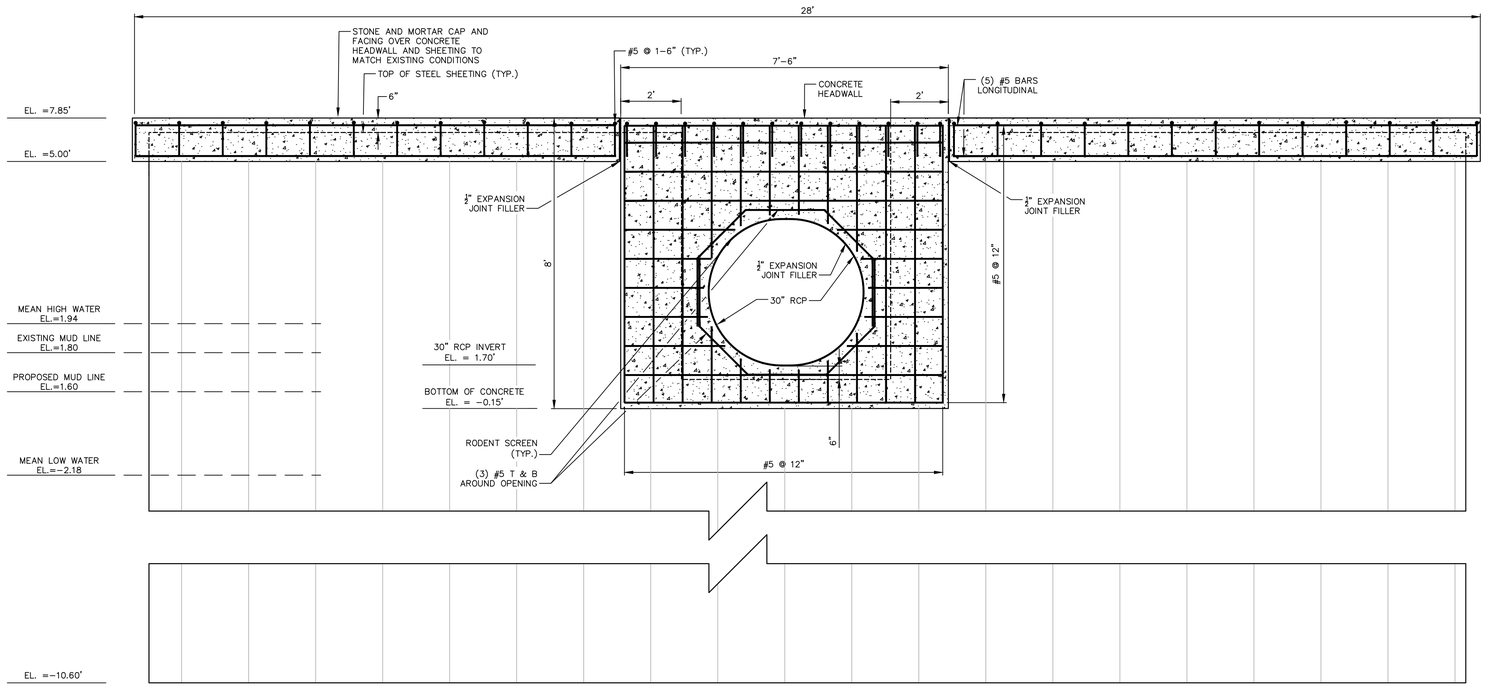
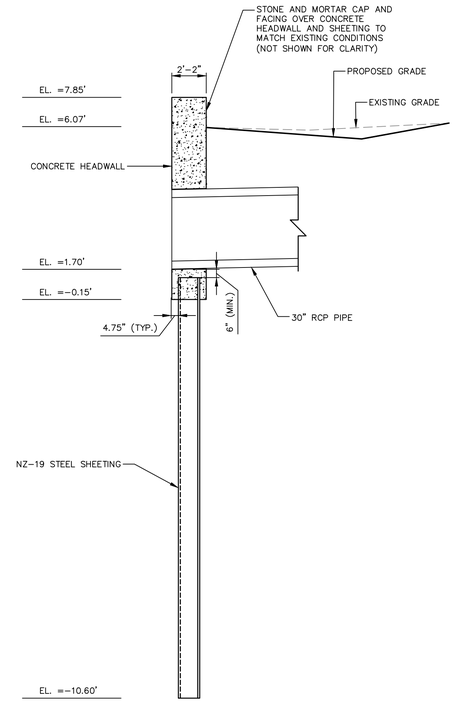


NOTES:

1. BACKFILL SHALL BE LESS 10 PERCENT SILT CONTENT.
2. CEMENT SHALL BE TYPE 2 OR TYPE 5 AIR ENTRAINING PORTLAND CEMENT OR AN EQUIVALENT

HEADWALL PROFILE

NOT TO SCALE



HEADWALL SECTION

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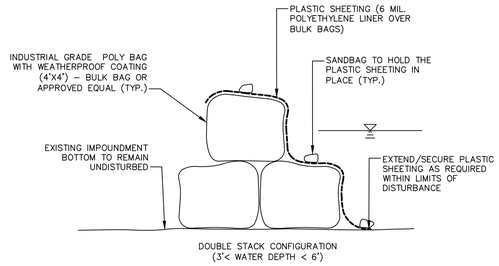

TEMPORARY COFFERDAM

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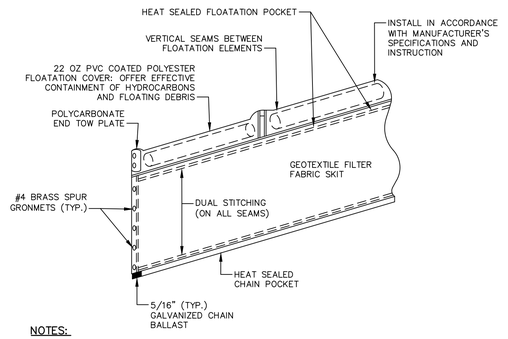

NOTES:

1. FLOATATION SIZE (6", 8" OR 12" DIA.) DETERMINED BY SKIRT DEPTH/SITE VARIABLES.
2. OTHER END TYPES AVAILABLE SUCH AS ALUMINUM UNIVERSAL SLIDE OR SLOTTED TUBE.
3. OPTIONAL TOP TENSION CABLE (5/16" TYP.) AVAILABLE FOR INCREASED STRENGTH.

TEMPORARY TURBIDITY CURTAIN

NOT TO SCALE

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SEAL

SHAWN M. MARTIN
No. 7487
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
3/27/2023

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BRADY SULLIVAN PROPERTIES, LLC

DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-511

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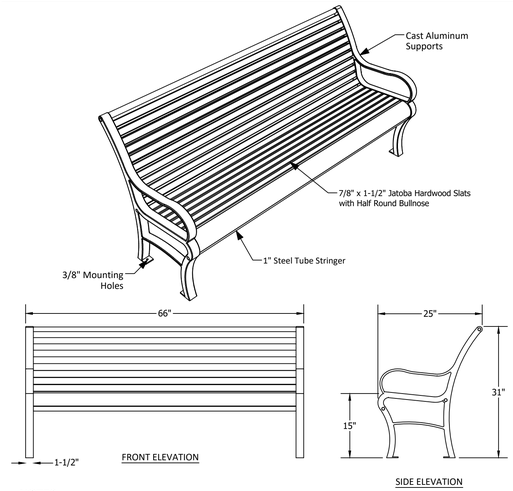
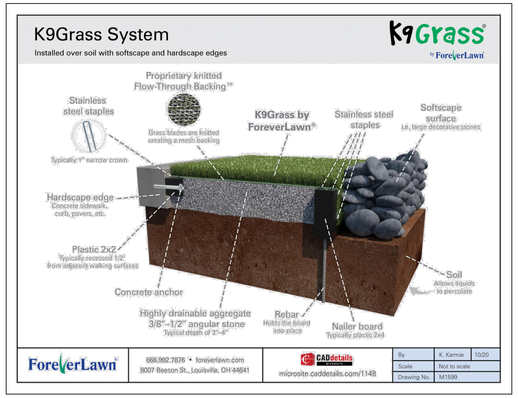
Brentwood Bench
BNBR-6-BR-W

CANTERBURY DESIGNS
5632 W. Washington Blvd. | Los Angeles, CA 90016 | 323.936.7111
Website: www.canterburydesigns.com | E-mail: info@canterburydesigns.com



NOTES:
1. All metal components are sandblasted, cleaned, and finished with zinc epoxy primer and polyester powder coat.
2. Mounting holes are 3/8" diameter; we do not recommend pre-drilling bolt hole locations (anchor bolts not provided).
3. Other lengths and hardwood seating options (e.g., Ipe, Purpleheart) available upon request.
4. Support castings available in aluminum or iron.

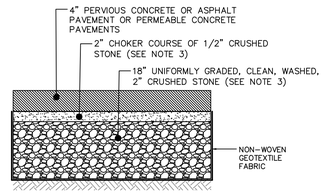
BENCH
NOT TO SCALE



SYNTHETIC TURF
NOT TO SCALE

NOTE:

1. PERVIOUS CONCRETE SHALL COMPLY WITH ACI 522.
2. POROUS ASPHALT PAVEMENT SHALL COMPLY WITH NAPA ASPHALT PAVEMENTS FOR STORMWATER MANAGEMENT: DESIGN, CONSTRUCTION, AND MAINTENANCE GUIDE.
3. PERMEABLE CONCRETE PAVERS SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS. AGGREGATE COURSE REQUIREMENTS MAY DIFFER.
4. PROTECT POROUS PAVEMENTS AND AGGREGATES FROM CONSTRUCTION VEHICLE TRAFFIC, RUNOFF FROM ADJACENT AREAS, AND SEDIMENTATION.



PERMEABLE PAVERS
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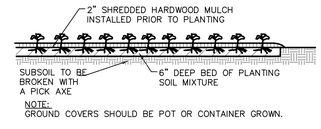
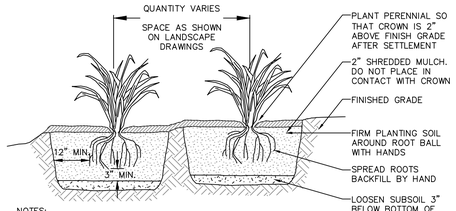


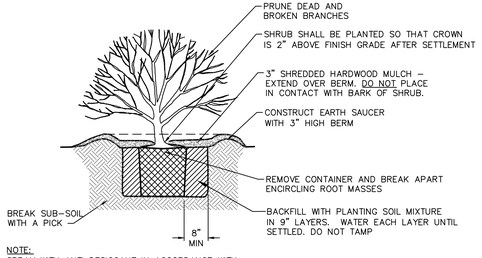
NOTE:
GROUND COVERS SHOULD BE POT OR CONTAINER GROWN.

GROUNDCOVER/ANNUAL PLUG PLANTING
NOT TO SCALE



NOTES:
1. SPADED PLANTING SOIL MIX (3" BELOW ROOT BALL) ADD FERTILIZER WHEN MIXING. DO NOT COMPACT AFTER PLANTING.
2. WATER THOROUGHLY AFTER PLANTING.
3. PROVIDE WELL DRAINING SUBSOIL WHEN SOIL IS HEAVY OR COMPACTED.
4. FOR CONTAINER GROWN PLANTS, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.

ORNAMENTAL PERENNIALS
NOT TO SCALE

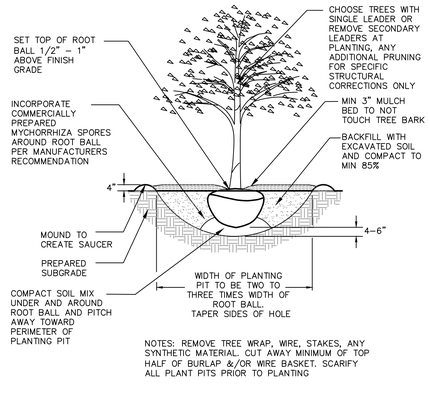


NOTE:
SPRAY WITH ANTI DESICCANT IN ACCORDANCE WITH MFG.'S RECOMMENDATIONS IF FOLIAGE IS PRESENT.

FOR CONTAINER GROWN SHRUBS, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.

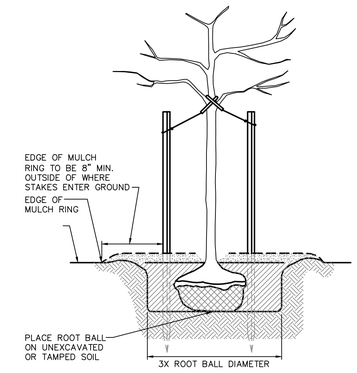
INCORPORATE COMMERCIALLY PREPARED MYCORRHIZA SPORES IN THE SOIL IMMEDIATELY AROUND THE ROOT BALL AT RATES SPECIFIED BY THE MANUFACTURER.

SHRUB PLANTING
NOT TO SCALE



NOTES: REMOVE TREE WRAP, WIRE, STAKES, ANY SYNTHETIC MATERIAL. CUT AWAY MINIMUM OF TOP HALF OF BURLAP &/OR WIRE BASKET. SCARIFY ALL PLANT PITS PRIOR TO PLANTING

TREE PLANTING
NOT TO SCALE



STAKE DETAIL
NOT TO SCALE

PLANNING BOARD APPROVAL

PLANNING BOARD CHAIR OR DESIGNEE DATE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
3.	3/27/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM
2.	2/2/23	RIDEM AND CRMC PERMITTING APPLICATION	KLM	SMM
1.	1/25/23	PRELIMINARY PLAN RESPONSE TO TOWN COMMENTS	KLM	SMM

SEAL

SEAL
REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT

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

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

LANDSCAPING DETAILS

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: DECEMBER 6, 2022

CD-512

SHEET 27 OF 27

File Path: \\private\dfs\CadProj\DWG\P20061150\A22\Civil\Plan\Permitting Plans\20061150A22_DET02.dwg Layout: CD-512 Plotted: Fri, March 24, 2023 - 3:24 PM User: kmccombs
MS VIEW: LAYER STATE: Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB

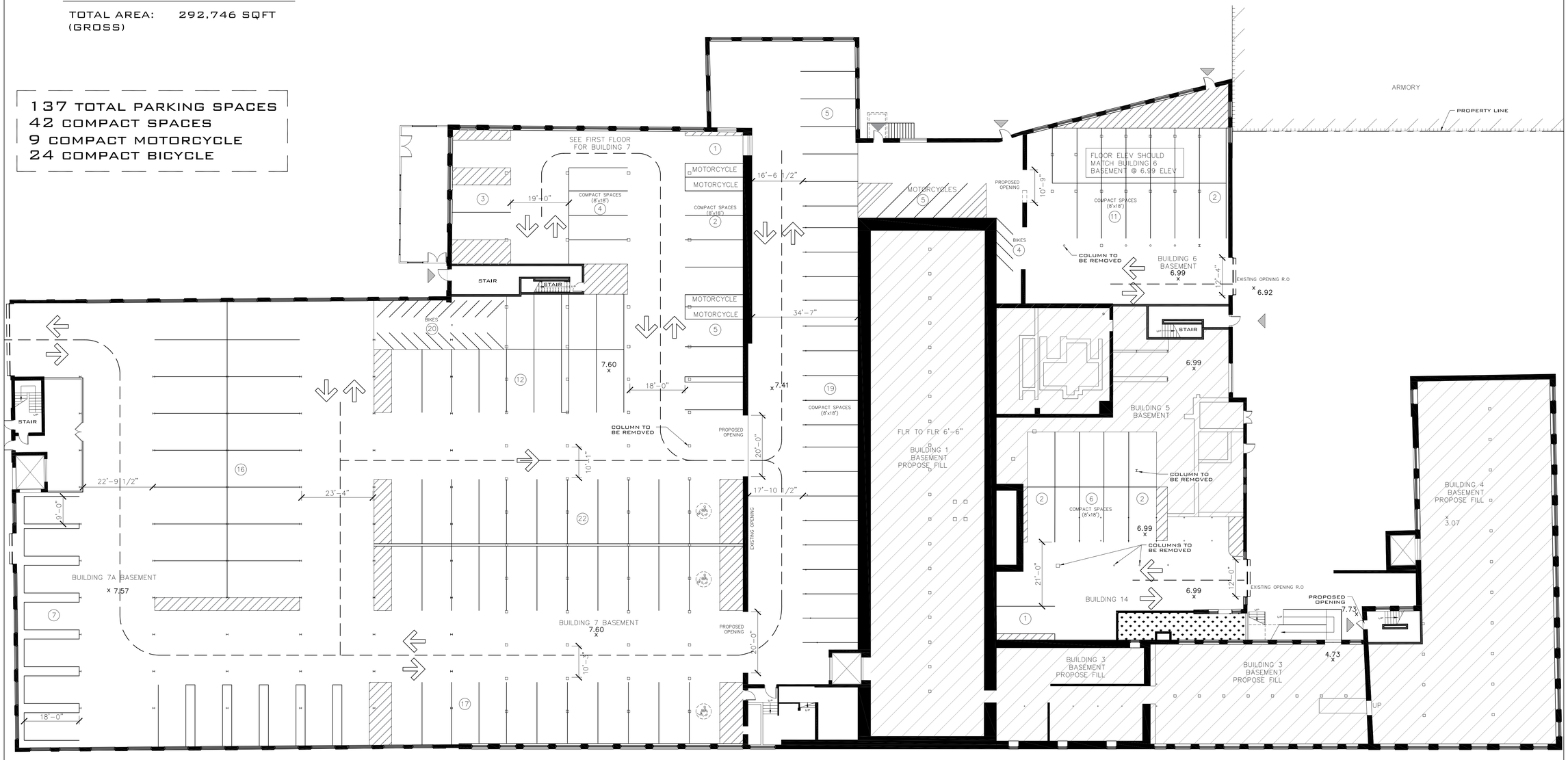
ARCHITECTURAL UPDATED PROGRESS PLANS
8/8/22

BUILDING AREAS:

AREA PER FLOOR:

LOWER:	65,460 SQFT
FIRST:	27,054 SQFT
SECOND:	71,365 SQFT
THIRD:	68,054 SQFT
FOURTH:	60,813 SQFT
TOTAL AREA: (GROSS)	292,746 SQFT

137 TOTAL PARKING SPACES
42 COMPACT SPACES
9 COMPACT MOTORCYCLE
24 COMPACT BICYCLE



1 BASEMENT FLOOR PLAN
1/16" = 1'-0"

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL ST.
MANCHESTER, NH 03101
P: 603.622.6223
F: 603.622.7342
WWW.BRADYSULLIVAN.COM

BRISTOL YARN MILL
125 THAMES ST BRISTOL, RHODE ISLAND

THESE DRAWINGS ARE IN DESIGN DEVELOPMENT. THEY ARE PROGRESS DRAWINGS. THEY ARE NOT INTENDED TO BE CONSTRUCTION DOCUMENTS AND SHOULD NOT BE USED FOR CONSTRUCTION.

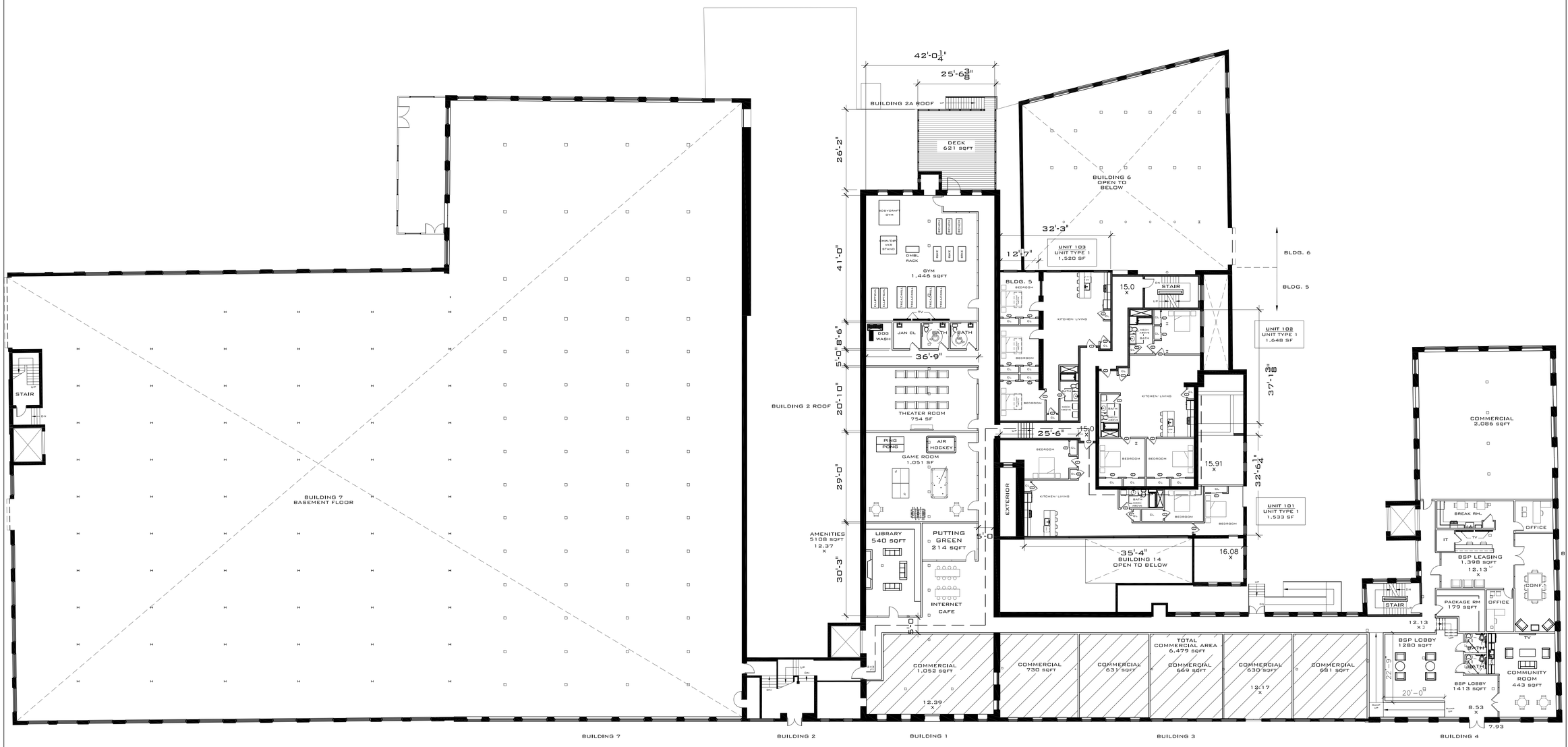
NO.	DESCRIPTION	DATE
1		

BASEMENT PARKING PLAN

SHEET ISSUE DATE: 1/27/23
PROJECT NO.: PROJECT NUMBER
APPROVED BY: APPROVER
DRAWN BY: AUTHOR

A0-1

SCALE: AS INDICATED



1 FIRST FLOOR PLAN — 3 UNITS TOTAL
1/16" = 1'-0"

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL ST.
MANCHESTER, NH 03101
P: 603.622.6223
F: 603.622.7342
WWW.BRADYSULLIVAN.COM

BRISTOL YARN MILL

125 THAMES ST BRISTOL, RHODE ISLAND

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NO.	DESCRIPTION	DATE
1	PRELIMINARY ELEVATIONS	5/02/19

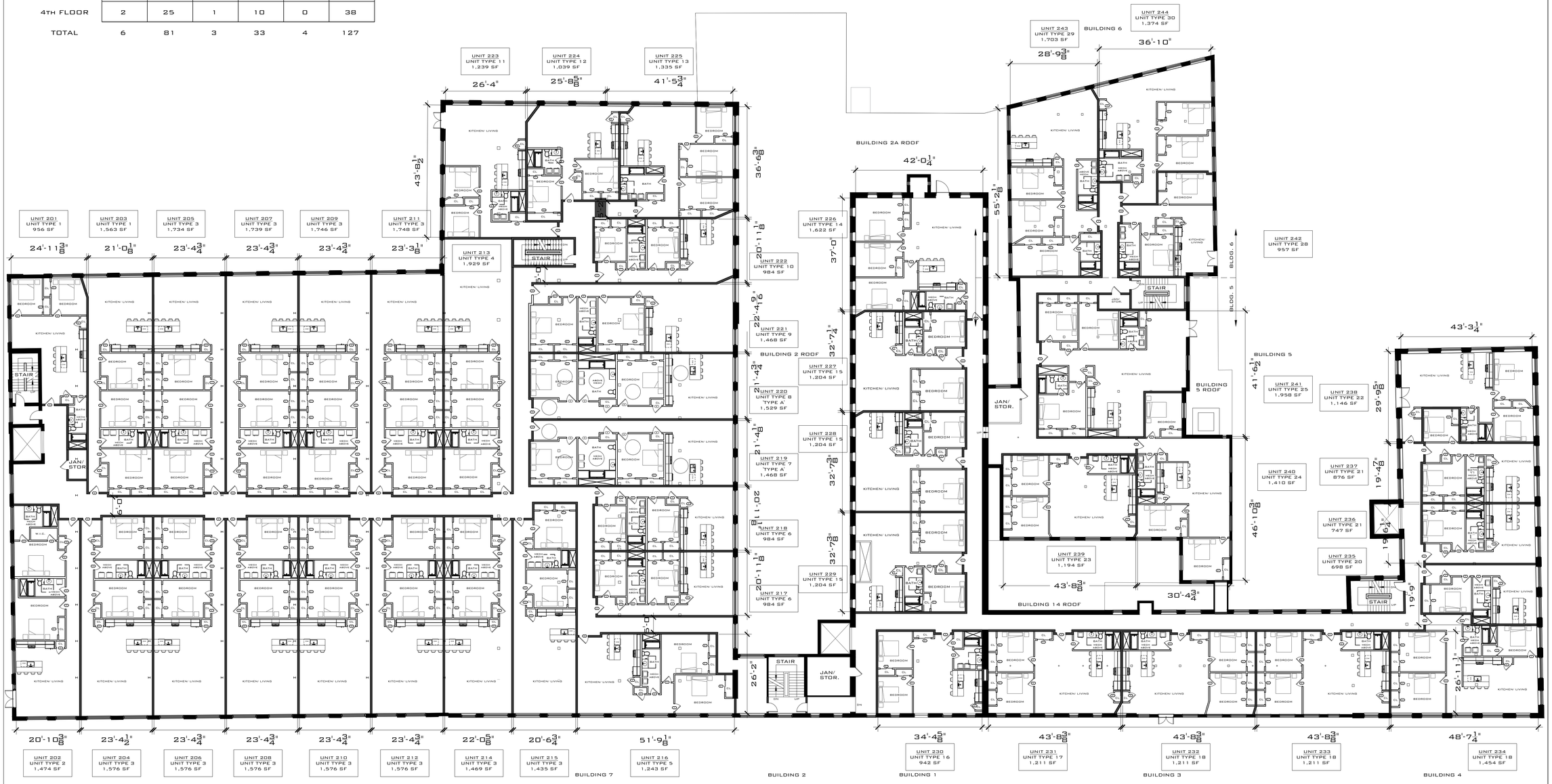
FIRST FLOOR PLAN

SHEET ISSUE DATE: 1/27/23
PROJECT NO.: PROJECT NUMBER
APPROVED BY: APPROVER
DRAWN BY: AUTHOR

A0-2

SCALE: AS INDICATED

	1 BED/ 1 BATH	2 BED/ 1 BATH	2 BED/ 2 BATH	3 BED/ 1 BATH	3 BED/ 2 BATH	TOTAL
1ST FLOOR	0	0	0	2	1	3
2ND FLOOR	2	29	1	10	2	44
3RD FLOOR	2	27	1	11	1	42
4TH FLOOR	2	25	1	10	0	38
TOTAL	6	81	3	33	4	127



1 SECOND FLOOR PLAN — 45 UNITS TOTAL
1/16" = 1'-0"

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL ST.
MANCHESTER, NH 03101
P: 603.622.6223
F: 603.622.7342
WWW.BRADYSULLIVAN.COM

BRISTOL YARN MILL

125 THAMES ST BRISTOL, RHODE ISLAND

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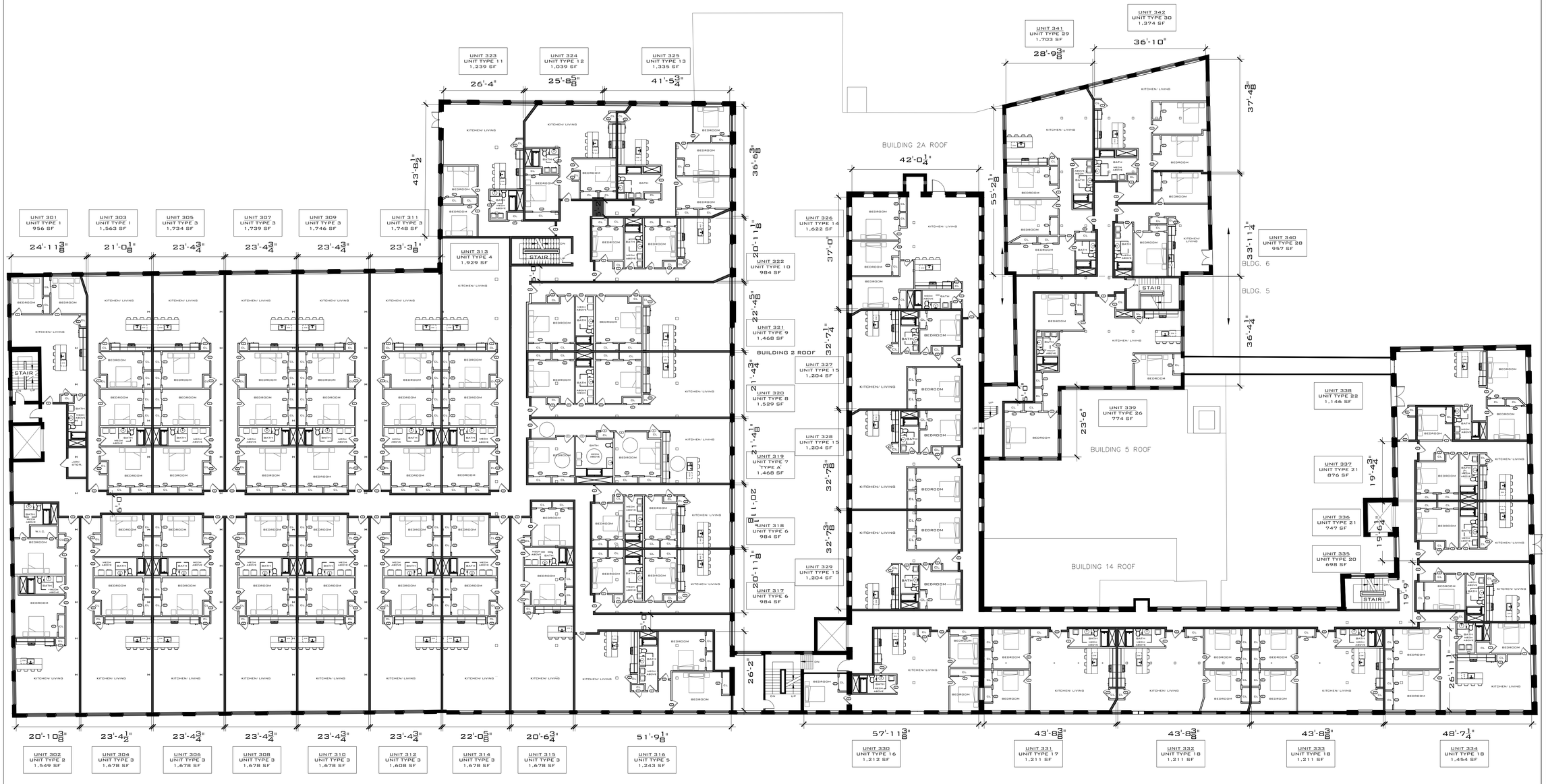
NO.	DESCRIPTION	DATE
1	PRELIMINARY ELEVATIONS	5/02/19

SECOND FLOOR PLAN

SHEET ISSUE DATE: 8/8/22
PROJECT NO.: PROJECT NUMBER
APPROVED BY: APPROVER
DRAWN BY: AUTHOR

A0-3

SCALE: AS INDICATED



1 THIRD FLOOR PLAN 43 UNITS TOTAL
1/16" = 1'-0"

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL ST.
MANCHESTER, NH 03101
P: 603.622.6223
F: 603.622.7342
WWW.BRADYSULLIVAN.COM

BRISTOL YARN MILL

125 THAMES ST BRISTOL, RHODE ISLAND

THESE DRAWINGS ARE IN DESIGN DEVELOPMENT. THEY ARE PROGRESS DRAWINGS. THEY ARE NOT INTENDED TO BE CONSTRUCTION DOCUMENTS AND SHOULD NOT BE USED FOR CONSTRUCTION.

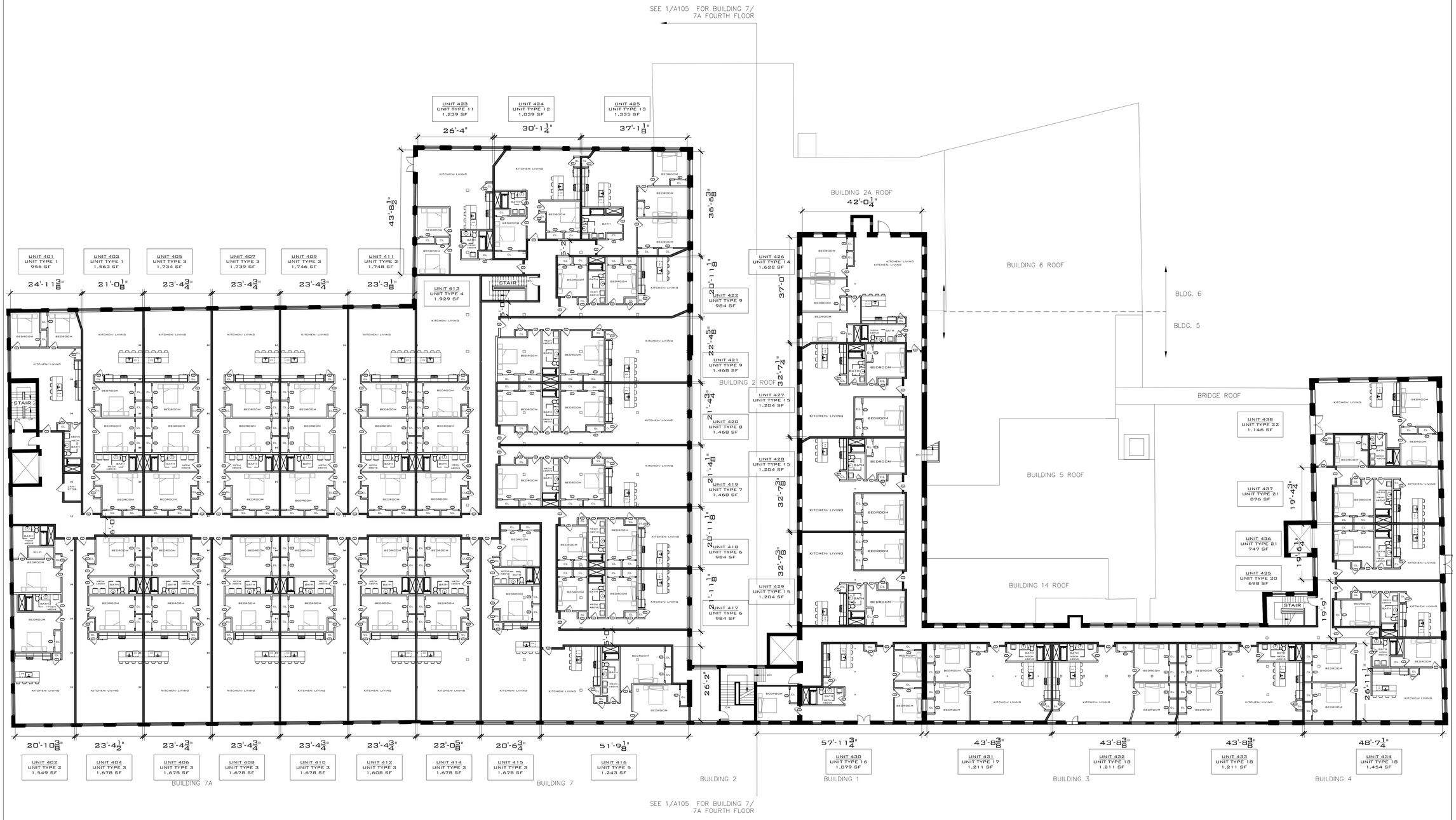
NO.	DESCRIPTION	DATE
1	PRELIMINARY ELEVATIONS	5/02/19

THIRD FLOOR PLAN

SHEET ISSUE DATE:	8/8/22
PROJECT NO.:	PROJECT NUMBER
APPROVED BY:	APPROVER
DRAWN BY:	AUTHOR

A0-4

SCALE: AS INDICATED



1 FOURTH FLOOR PLAN 1/16" = 1'-0"

39 UNITS TOTAL

BRADY SULLIVAN PROPERTIES
670 N. COMMERCIAL ST.
MANCHESTER, NH 03101
P: 603.622.6223
F: 603.622.7342
WWW.BRADYSULLIVAN.COM

BRISTOL YARN MILL

125 THAMES ST BRISTOL, RHODE ISLAND

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NO.	DESCRIPTION	DATE
1	PRELIMINARY ELEVATIONS	5/02/19

FOURTH FLOOR PLAN

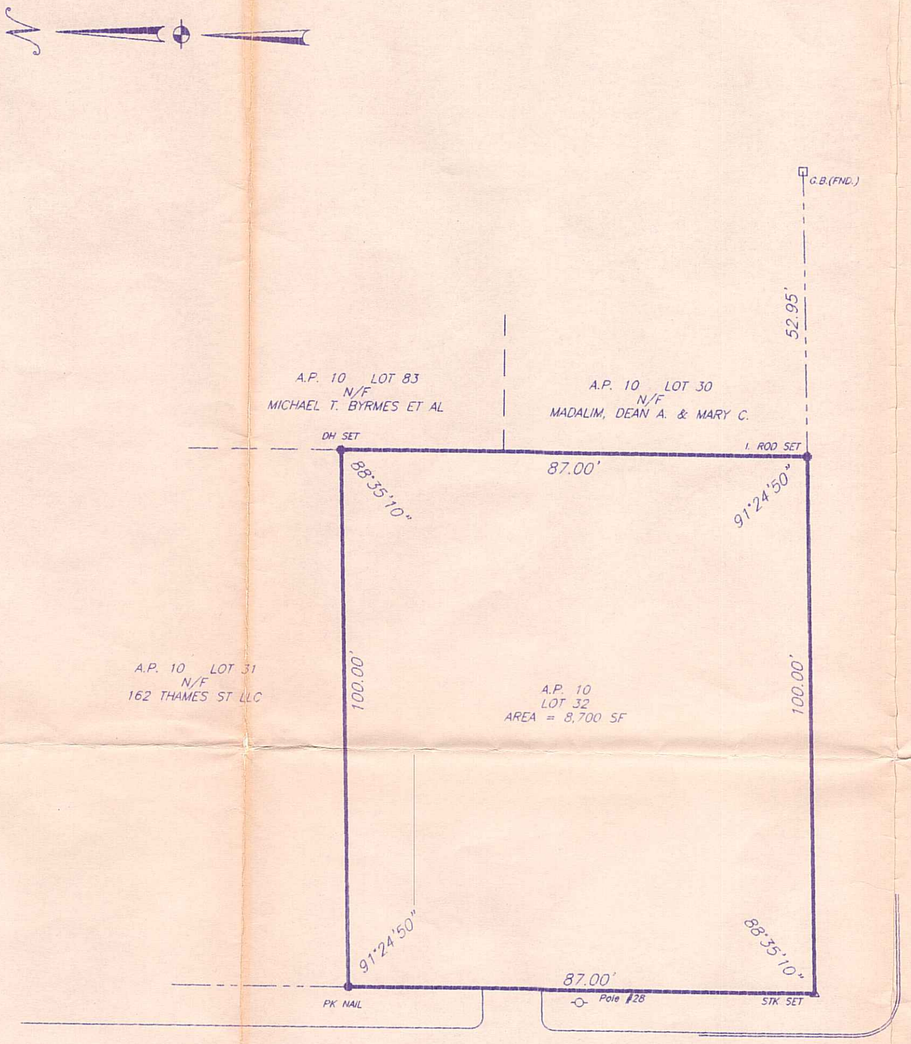
SHEET ISSUE DATE: 8/8/22
PROJECT NO.: PROJECT NUMBER
APPROVED BY: APPROVER
DRAWN BY: AUTHOR

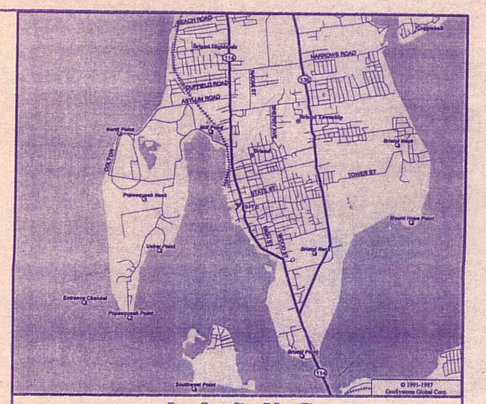
A0-5

SCALE: AS INDICATED

CHURCH LOT AP 10 Lot 32
BOUNDARY SURVEY
12/4/2000

DR.XXX SH.XXX





LOCUS

REFERENCE NOTE :

1. REFERENCE IS MADE TO THE FOLLOWING TOWN OF BRISTOL LAND EVIDENCE RECORDS REGARDING RECORD TITLE TO THE PREMISES SURVEYED.

   A. RUSS-RUSS REALTY CO.
   VOLUME 203 - PAGE 18 - DATE 10/23/1975

L. ROBERT SMITH
No. 3535
4 '00
REGISTERED
PROFESSIONAL ENGINEER

RICHARD S. LIPSITZ
No. 1837
12-4-00
PROFESSIONAL
LAND SURVEYOR

CERTIFICATION

THIS SURVEY AND PLAN CONFORM TO THE FOLLOWING CLASS STANDARDS AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 1994.

BOUNDARY SURVEY - CLASS I
TOPOGRAPHIC SURVEY - N/A

RICHARD S. LIPSITZ — 1837 — 12-4-00
WATERMAN ENGINEERING COMPANY — REG. NO. — DATE

NO.	DATE	REVISION	BY

SHEET TITLE: BOUNDARY SURVEY

PROJECT: ROBIN RUG CO.
A.P. 10 LOT 32
THAMES ST. BRISTOL, RI

PROJECT NO. P00.225
SCALE 1" = 20'
DATE NOVEMBER 2000
DRAWN BY NP
CHECKED BY RSL
00225s2

WATERMAN ENGINEERING CO.
CIVIL ENGINEERS - SURVEYORS
EAST PROVIDENCE RHODE ISLAND

1 of 1 SHTS

DR.XXX SH.XXX

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WATERMAN ENGINEERING CO.
CIVIL ENGINEERS & SURVEYORS
450 NORTH BROADWAY
EAST PROVIDENCE, RI 02914-2096

C:\WINDOWS\DESKTOP\PROJECTS\00225 ROBIN RUG\00225S2.dwg
Mon Dec 04 14:31:01 2000

RIPDES - CRMC

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street, Providence, Rhode Island 02908-5767

March 7, 2023

Russ-Russ Realty Co.; Sentier Realty; Karian Realty
Attn: Russell Karian, President
P.O. Box 656
Bristol, RI 02809

RE: RI STW/WQC File 23-021
Bristol Yarn Mill Redevelopment
Located east & west of Thames St (at 125 Thames St), between Constitution St and Church St, Assessor's Plat 10, Lots 41-44, 49, 50, 60-62, 68, 71, 73, 74 & 76, Bristol, RI

Dear Mr. Karian:

The Rhode Island Department of Environmental Management Office of Water Resources (RIDEM OWR) has received the application for the above-referenced project. The purpose of this letter is to notify you that you will be authorized to discharge under the Rhode Island Pollutant Discharge Elimination System Construction General Permit (CGP) for this project upon the receipt of an Assent by the Rhode Island Coastal Resources Management Council (RI CRMC), in accordance with **Section I.D.3.c** of the CGP. We understand that the RI CRMC is currently reviewing that application under file **# 2023-02-061.** Upon receipt of an Assent, the authorization to discharge under the CGP **will expire at midnight, on September 25, 2025.** If construction has not been completed by that date, there will be measures in place for you to reauthorize so long as the Assent remains valid.

Please note that there is no need to receive a separate permit letter from RIDEM for this project. Please also note that your project is still subject to all applicable provisions in the CGP and that RIDEM reserves the right to initiate investigation and/or enforcement actions that it may deem necessary for violations of the CGP or of any and all applicable statutes, regulations, and/or permits.

If you have any questions regarding the contents of this letter, you may contact me at chuck.horbert@dem.ri.gov or (401) 222-4700, extension 2777402. For questions regarding the status of your CRMC Assent, please contact Tracy Silvia at tsilvia@crmc.ri.gov

Sincerely,

Charles A. Horbert, Deputy Administrator
Stormwater Engineering and 401 Permitting
RIDEM Office of Water Resources

ec: Tracy Silvia, RI CRMC
Shawn Martin, PE, Fuss & O'Neill, Inc.
Arthur Sullivan, Brady Sullivan Properties

HYDRANT & EMEGENCY ACCESS PLAN APPROVAL

Amy Johnson

From: Michael Demello <mdemello@bristolri.gov>
Sent: Friday, February 3, 2023 2:53 PM
To: Amy Johnson; Jim Vieira
Cc: Robert Ferguson
Subject: RE: Bristol Yarn Mill - Hydrant & Emergency Access Plan For Review & Approval

Good day,

After review of the submitted document there are no concerns. The current location of municipal hydrants are acceptable. The easement access with minimum 20ft code requirement is acceptable. Further information regarding the new sprinkler water service main and intentions with the existing yard hydrant system will be required when available. Information on the new public easement/access on the North side will be required when available.

Thank you,

Michael A. DeMello, CFO
Chief of Department
Bristol Fire Department
EMA Director
4 Annawamscutt Dr.
Bristol, RI 02809
Office: 401-253-6912
Fax: 401-253-6610
mdemello@bristolri.gov
www.bristolri.gov

Please excuse typographical errors.

This message and all attachments may contain legally privileged and confidential information. The information is intended only for the use of the recipient named above. If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution or exploitation of, or taking any action in reliance on the contents or attachments contained in this electronic communication is strictly prohibited. If you have received this communication in error, please notify the BRISTOL FIRE DEPARTMENT immediately by telephone to arrange for the return of the original documents to us.

From: Amy Johnson <Ajohnson@fando.com>
Sent: Thursday, February 2, 2023 3:21 PM
To: Michael Demello <mdemello@bristolri.gov>; Jim Vieira <jvieira@bristolri.gov>
Subject: Bristol Yarn Mill - Hydrant & Emergency Access Plan For Review & Approval

Caution: CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Afternoon,

We are working the redevelopment of the Robin Rug Mill building located at 125 Thames Street into a multi-use development called the Bristol Yarn Mill. We have already obtained Master Plan approval and are seeking Preliminary Plan approval.

Attached is the hydrant location plan, which also shows emergency access easements on the property. We are not proposing additional hydrants or to relocate any existing hydrants. A new fire service will be installed to maintain the sprinkler system within the mill building. There is one existing easement from Constitution Street, through the Elks Lodge property to the west side of the mill for emergency vehicle access. A new public access easement will be added to the street on the north end of the site between Firemen's Memorial Park and the mill.

Please review the attached plans and respond back with any comments or concerns you have. We can provide additional plan sheets from the design, if requested. If there are no comments, please respond with an email or letter stating you approve the plan. This correspondence will be enclosed with our preliminary plan application resubmission to the Town.

Thank you very much,

Amy Johnson, PE (she / her)
Civil Engineer

Fuss & O'Neill, Inc. | Ajohnson@fando.com
(401) 861-3073
5 Fletcher Street Suite 1 | Kennebunk, ME 04043
CA CT MA ME NH NY RI VT
www.FandO.com | Instagram | Vimeo | Facebook | Linkedin

Let's See What We Can Create Together
www.FandO.com/careers

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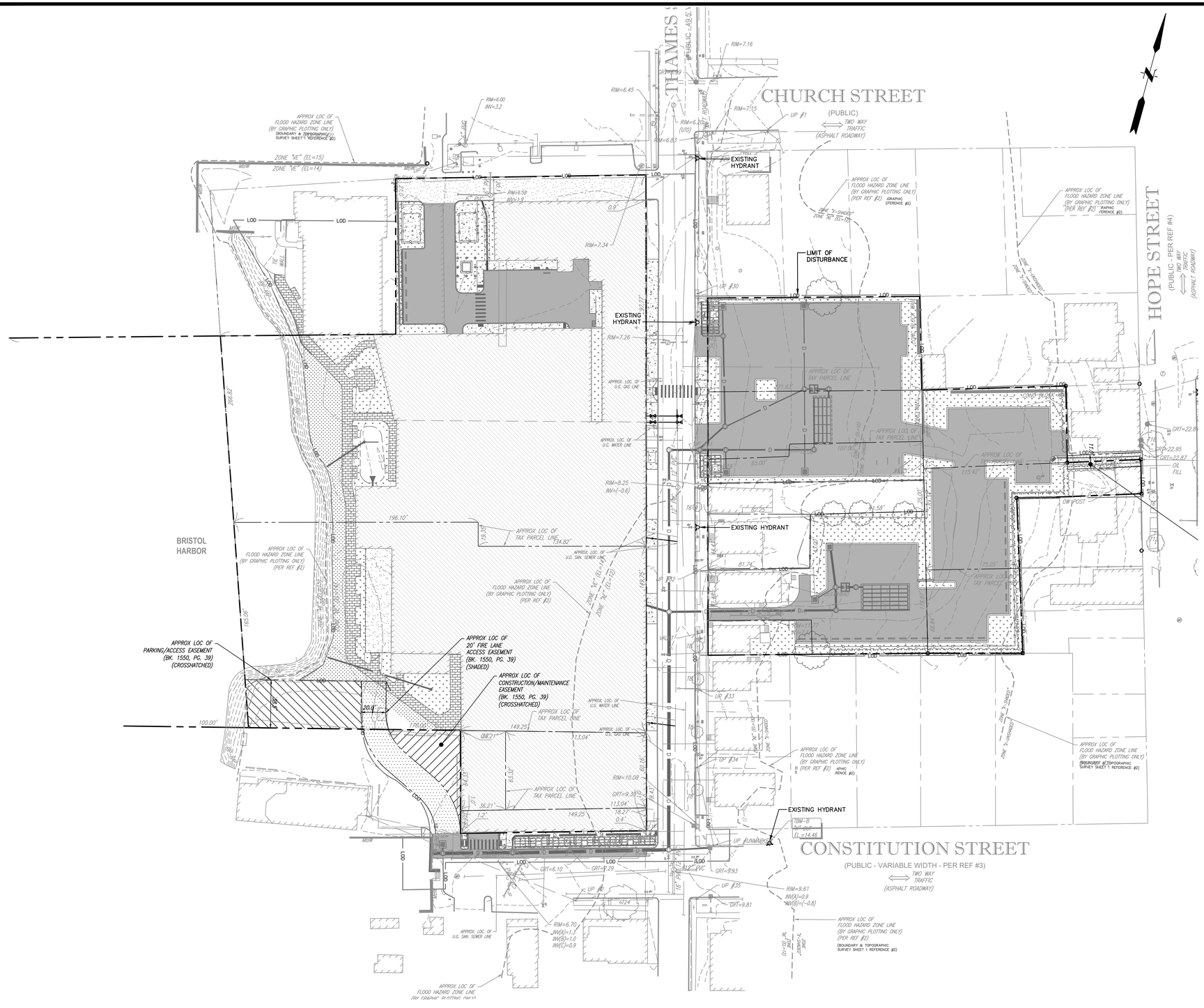

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SEAL

SEAL

SCALE:
HORZ.: 1"= 40'
VERT.:
DATUM:
HORZ.:NAD 1983
VERT.: NAD 1988
40 20 0 40
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

FIRE HYDRANT PLAN

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: JANUARY 2023

EX. A

File Path: J:\DWG\P20061150A22\Civil\Plan\Permitting Plans\20061150A22_UTL01.dwg Layout: EXHIBIT A Plotted: Thu, February 02, 2023 - 3:02 PM User: ajohnson
Plotter: NONE CTB File: FO.STB
LAYER STATE:
MS VIEW:

WETLANDS AFFIDAVIT

WETLANDS AFFIDAVIT

State of Rhode Island

County of Providence

BEFORE ME, the undersigned Notary, Robin Zucchero Coleman, on this 10th day of April, 2023, personally appeared Shawn M. Martin, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

The Town of Bristol Major Land Development and Major Subdivision Checklist for Preliminary Plan application requires "Location of any wetlands, watercourses or their buffers (perimeter wetlands) present on the subdivision parcel, as determined by a RIDEM qualified wetlands biologist {in accordance with RIDEM Wetland Regulations}" for the Bristol Yarn Mill Redevelopment Project (the Project). To the best of my knowledge and belief:

1. The Project is comprised of land identified as Lots 41, 42, 43, 44, 49, 50, 60, 61, 62, 68, 71, 73,74 & 76 on Plat 10 of the Bristol, RI Tax Assessor's records, and is within the regulatory jurisdiction of the RI Coastal Resources Management Council (CRMC) according to Freshwater Wetland Jurisdiction depicted on RI Department of Environmental Management Environmental Resource Map.
2. The CRMC established jurisdiction over the Project under its authority by 650-RICR-20-00-1 in Assent No. D2022-05-126, effective July 27, 2022.
3. The CRMC determined in Assent No. D2022-05-126 the coastal resources that are subject to review for the Project under its regulations are Section 1.2.1.E Type 4 Multipurpose Waters and Section 1.2.2.F Manmade Shorelines. Section 1.1.4.D Freshwater wetlands in the vicinity of the coast was not listed as a coastal resource applicable to the Project.
4. The Project's land, land within 200 feet thereof, and land on which Project activities will occur but which is not owned by the Project's proponent, are developed and altered with buildings, accessory

structures, parking lots, roads, impervious surfaces, private and public infrastructure, and landscaping. These conditions have been determined by my direct observation, reviews of the Town of Bristol's maps and plans, and review of record surveys incorporated into the Project's Master Plan approved by the Town of Bristol Planning Board May 12, 2022 (Book 2172 Page 297).

[signature of affiant]

Shawn M. Martin, PE

[typed name of affiant]

317 Iron Horse Way, Suite 204

[address of affiant, line 1]

Providence, RI 02908

[address of affiant, line 2]

Subscribed and sworn to before me, 10th day of April, 2023.

[Notary Seal:]

ROBIN ZUCCHERO COLEMAN NOTARY PUBLIC REG # 762828 MY COMMISSION EXPIRES 07/23/2026 STATE OF RHODE ISLAND

[signature of Notary]

Robin Zucchero Coleman

[typed name of Notary]

NOTARY PUBLIC

My commission expires: July 23, 2026.

BRISTOL COUNTY WATER AUTHORITY
WILL SERVE LETTER

450 Child St. • P.O. Box 447 • Warren, Rhode Island 02885-0447
www.bcwari.com • Fax: 401-245-2004 • Tel: 401-245-2022
A Public Agency

BRISTOL COUNTY WATER AUTHORITY

April 25, 2023

Amy F. Johnson, PE, Project Engineer
Fuss & O'Neill, Inc.
317 Iron Horse Way, Suite 204
Providence, RI 02908

RE: Bristol Yarn Mill Redevelopment
Bristol County Water Authority
A.P. 10 Lots 42, 60, 61, 62 and 73
125 Thames Street
Bristol, RI

Dear Ms. Johnson:

Bristol County Water Authority has reviewed the plan prepared by Fuss & O'Neill titled Brady Sullivan Properties "Storm Drain and Water Crossing plan", FIG-1, dated April 2023, and will provide domestic water and fire suppression services to the proposed Bristol Yarn Mill residential and commercial redevelopment located at 125 Thames Street, identified on the Bristol Assessor Tax Maps as Plat 10, Lots 42, 60, 61, 62 and 73, under the following conditions:

- The Developer will replace approximately 640 feet of water main in Thames Street, between Constitution Street and Church Street, including all labor, materials, and incidental work to remove the existing main, install the new main, and install or replace all domestic and fire service connections and hydrants within the limits of the work. The new water main will be 8" zinc-coated, V-Bio polyethylene-wrapped ductile iron pipe. The developer shall be responsible for maintaining service to all BCWA customers during the work. Engineering plans shall be submitted for review and approval and shall conform to all BCWA Rules & Regulations and material specifications.
- The Developer will provide a detailed analysis of domestic water and fire suppression flows for the development prepared by a Professional Engineer licensed in RI, along with the water service and meter application forms.
- The Developer will apply for hydrant flow tests to be performed within the project vicinity by BWCA to collect current flow rate data, which will be used to calculate the development's domestic and fire suppression flows rates.

Sincerely,

Susan H Rabideau

Susan Rabideau, PE
Engineering Project Manager

BRISTOL COUNTY WATER POLLUTION CONTROL
WILL SERVE LETTER

December 16, 2022

Mr. Shawn M. Martin, PE
Senior Vice President | Regional Manager
Fuss & O'Neill, Inc.
317 Iron Horse Way, Suite 204
Providence, RI 02908

RE: Bristol Yarn Mill Redevelopment
Bristol Water Pollution Control Service Agreement
A.P. 10 Lots 42, 60, 61, 62 and 73
Thames and Hope Street
Bristol, RI

Dear Mr. Martin:

Bristol Water Pollution Control will provide sewer service the proposed Bristol Yarn Mill residential and commercial redevelopment located at 125 Thames Street, identified on the Bristol Assessor Tax Maps as Plat 10, Lots 42, 60, 61, 62 and 73, under the following conditions:

- The Developer will provide a detailed analysis of wastewater contribution from the building including peak flow discharge and an evaluation of impacts on the pump station capacity.
- The Developer will provide new lateral services with backflow preventors between the main and the building.
- The Architect/Engineer will provide a certified letter stating that during the rehabilitation of the Mill building all illicit connections to the sanitary sewer have been verifiable disconnected including, but not limited to, floor drains, french drains, sump pumps, leaking joints, roof drains, yard drains, and catch basins.
- The Architect/Engineer will certify that commercial uses won't require any pretreatment.

Sincerely,

Jose Da Silva
Superintendent
Bristol Water Pollution Control Facility

APPLICATION FORM AND SUBMISSION CHECKLIST
MAJOR LAND DEVELOPMENTS AND
MAJOR SUBDIVISIONS

APPLICATION FORM AND SUBMISSION CHECKLIST FOR MAJOR LAND DEVELOPMENTS AND MAJOR SUBDIVISIONS

*Major Subdivisions - A plan for a **residential** subdivision of land **consisting of more than five lots**; or, a plan for a **nonresidential subdivision** of land.*

Major Land Development - A plan for a residential or nonresidential land development project as defined in Article VIII of the Zoning Ordinance.

The completed application form together with the appropriate materials from Items A, B, C, D, and E for either a Master Plan, Preliminary or Final application as indicated on the checklist shall be submitted to the Administrative Officer at least three weeks prior to the regularly scheduled meeting of the Planning Board.

Date Submission Due: _____ Planning Board Meeting Date: _____

APPLICATION FORM

Type of Application: Please check one:

☐ **Master Plan -** An overall plan for a proposed project site outlining general, rather than detailed, development intentions. *NOTE:* The entire property under the applicant's ownership shall be shown on the Master Plan with all proposed development indicated, including future phases. Failure to show the entire property and all proposed development may result in forfeiture of future development rights on the property.

☑ **Preliminary -** The stage, following Master Plan, at which time all required detailed engineering drawings and all required State and Federal Permits shall be submitted.

Indicate date of Master Plan Approval: May 12, 2022

Indicate dates of all extensions: _____

_____

☐ **Final -** The stage, following Preliminary, which is the last stage of review.

Indicate date of Preliminary Plan Approval: _____

Indicate dates of all extensions: _____

_____

APPLICATION FORM, CONT.

1. Name of proposed subdivision: Bristol Yarn Mill

2. Name, address and telephone number of property owner (if the owner of record is a corporation, the name and address of the president and secretary):

Russ-Russ Realty Co.: AP 10, Lots 41, 42, 44, 60, 61, 62, 68, 73
Russel Karian: AP 10, Lots 49, 50
Karian Realty Co.: AP 10, Lots 43, 74, 76
Sentier Realty, LLCD AP 10, Lot 71

3. Name and address and telephone number of applicant, if different from owner: (A written, notarized confirmation from property owner authorizing the applicant to make the submission shall also be submitted):

Brady Sullivan Properties, LLC
670 North Commercial Street, Manchester, NH 03101
603-622-6223
Contact: Shane Brady

4. Plat and lot number(s) of the parcel being subdivided: AP 10, Lots 41,42,43,44,49,50,60,61,62,68,71,73,74 & 76

5. Area of the subdivision parcel(s): 4.8 +/- acres

6. Zoning District: Waterfront PUD, Waterfront, Downtown

7. Names of existing streets within and immediately adjacent to the parcel being subdivided with notation as to whether Town, State or Private. Include right-of-way and pavement widths:

Thames St (Town) 49.5'/28'+/-

Hope St (State) variable (est. >60')/32'+/-

Constitution St (Town) variable (est. >60')/39'+/-

8. Attach a list of the names and current mailing addresses (and on mailing labels) of property owners within notice area radius (See Section 8.5A) from the current real estate and assessment records of the Town, including plat and lot numbers

Signed by Owner/Applicant: _____ Date: 11-3-2022

Notarized:

Subscribed and sworn to before me this 3 day of November 2022

Denise Rees
NOTARY PUBLIC

DENISE M. REES
NOTARY PUBLIC
STATE OF NEW HAMPSHIRE
MY COMMISSION EXPIRES AUGUST 17, 2027

SUBMISSION CHECKLIST
MAJOR LAND DEVELOPMENTS AND MAJOR SUBDIVISIONS

M = Master Plan
P = Preliminary
F = Final

	M	**P**	**F**	Applicant ✓	Date & Town Initials
NOTE: All plan sheets must include Title Block as well as items B 1-8 below.	•	•	•	✔	
A. Plan of Existing Conditions - Five (5) blueline or photocopies of a plan at a scale of 1" = 40' (minimum size of 8 1/2" x 11, maximum size of 18" x 24") showing the entire tract under the applicant's ownership as it currently exists, including location and dimension of existing lots, easements and rights-of-way, and all natural and man-made features;	•				
B. Subdivision/Land Development Drawing(s) - ***Master Plan and Preliminary Plans -*** Five (5) blueline or photocopies shall be submitted for distribution to and review by the Technical Review Committee. Each sheet shall be a minimum size of 8 1/2" x 11" and a maximum size of 24" x 36" at a scale of 1" = 40', unless determined otherwise at the Pre-Application Conference, with a sufficient number of sheets to clearly show all of the information required. Sheets shall be numbered sequentially (e.g. sheet 1 of 3, 2 of 3, etc.)	•	•		✔	
Final Plans - Five (5) bluelines or photocopies shall be submitted for distribution to and review by the Technical Review Committee. Upon approval, one (1) reproducible mylar*, six (6) blueline or photocopies, and one electronic AutoCAD file of all plans shall be submitted. Each sheet shall be a maximum size of 24" x 36" at a scale of 1" = 40' [unless otherwise specified by the Planning Board]; two of these sheets shall include the assessor's numbers, signed by the Tax Assessor. **The subdivision plans shall contain the following:**			•		
1. Name of the proposed subdivision; including phase numbers, if any	•	•	•	✔	
2. Name and address of property owner or applicant;	•	•	•	✔	
3. Name, address and telephone number of person or firm preparing the plan;	•	•	•	✔	
4. Date of plan preparation, with revision date(s) if any;	•	•	•	✔	
5. Graphic scale (1"=40' or larger) and north arrow;	•	•	•	✔	
6. Plat and lot number(s) of the land ~~being subdivided~~;	•	•	•	✔	
7. Legend showing all symbols;	•	•	•	✔	
8. Zoning districts(s) of the land ~~being subdivided~~ and the abutting and adjacent properties. If more than one district, zoning boundary lines must be shown;	•	•	•	✔	
9. Perimeter boundary lines ~~of the subdivision~~, drawn so as to distinguish them from other property lines. These shall be marked in the field by survey stakes to identify the limits of the property;	•	•	•	✔	

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10. Names of abutting property owners and property owners across any adjacent streets;	•	•	•	✔	
11. Area of the entire proposed development parcel(s);	•	•	•	✔	
12. Location and number of all proposed lots, with accurate areas, dimensions and angles indicated; including a zoning data table showing calculations necessary to determine conformance to zoning regulations;	•	•		✔	
13. Location, names, right-of-way and pavement widths of existing and proposed streets within and immediately adjacent to the subdivision parcel;	•	•	•	✔	
14. Location, size and proposed use of existing buildings and structures, including historic designation, if any;	•	•	•	✔	
15. Location of existing utilities including wells and individual sewage disposal systems (abandoned utilities must be shown and noted as such);	•	•	•	✔	
16. Provisions for collecting and discharging stormwater;	•	•		✔	
17. Location, scale, massing, height, (including relationship to existing and proposed grades) and dimensions of proposed structures, if any; including; floor area ratios, lot coverage and total building square footage; this information may be provided on a separate sheet, if necessary;	•	•	•	✔	
18. Location of proposed permanent bounds (documentation that all proposed bounds have been set shall be provided prior to Final plan recording);		•	•	✔	
19. Location of existing environmental features including general soil types, rock outcrops, surface water, wetland areas, wooded areas and major trees twelve (12) inch caliper or larger, and any other significant environmental features, if any;	•	•		✔	
20. Existing contours with minimum intervals of two (2) feet; where any changes in contours are proposed, finished grades must be shown as solid lines. Spot elevations must also be shown with at least two (2) benchmarks referenced;	•	•		✔	
21. Location of any wetlands, watercourses or their buffers (perimeter wetlands) present on the subdivision parcel, as determined by a RIDEM qualified wetlands biologist {in accordance with RIDEM Wetland Regulations};	•				
22. Notation as to flood zone of the property including base flood elevation data;	•	•		✔	
23. Areas of agricultural use, (if any);	•	•		N/A	
24. Location of historic cemeteries on or immediately adjacent to the subdivision (if any);	•	•		N/A	
25. Location of any unique natural and/or historic features, including stone walls;	•	•		✔	
26. Location, dimension, and area of any land proposed to be set aside as open space, recreation, or drainage or conveyed to the Town for public purposes;	•	•	•	✔	
27. Location and notation of type of proposed easement(s) or existing easement(s) to remain (if any) with accurate dimensions and areas indicated;		•	•	✔	

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28. Notation of special conditions of approval imposed by the Planning Board (if any);		•	•	✔	
29. Notation of any permits and agreements with State and Federal Reviewing agencies (if any);		•	•	✔	
30. A place for signatures of the Planning Board Chair or Designee must be provided on all plans and/or documents to be signed by the Planning Board;	•	•	•	✔	
31. Certification by a Registered Land Surveyor that all interior and perimeter lot lines and street lines of the land being subdivided have been designed to conform to Procedural and Technical Standards for the Practice of Land Surveying in the State of Rhode Island and Providence Plantations, effective April 1, 1994, as amended. Measurement standards for the surveys shall meet the minimum standards for Class I Surveys.		•	•	✔	
C. **Construction Drawings** - Six (6) blueline or photocopies of preliminary and final construction plans of street and drainage structures drawn to a minimum scale of 1 inch to 40 feet (1"=40') for referral to the Technical Review Committee. Each sheet shall be no larger than 24 ” by 36”, and a sufficient number of sheets shall be included to clearly show all of the information required. Sheets shall be numbered sequentially (e.g., sheet 1 of 3, 2 of 3, etc). All construction plans shall be certified as correct (stamped and signed) by a Registered Professional Engineer:		•	•	✔	
1. If street creation or extension is proposed: a. *Streets Plan and Profile*: (minimum scale of 1"=40' horizontal) with profiles (minimum 1"=4' vertical) indicating the street center line, curblines, and the existing elevations of the ground at the street center line, location size, rim and invert elevations of proposed sewer lines, water lines and other underground utilities; and, street cross-sections showing width of right-of-way, roadway; and, if required location and width of sidewalks. b. Street plans shall also include all vehicular access to and from the site onto public streets including the size and location of curb cuts, driveways, parking and loading areas and other off-site traffic improvements necessary to ensure public safety; and, stubs for future connections to future streets in adjacent vacant lands. NOTE: The Planning Board may make any referrals and require of the applicant any studies it deems necessary to evaluate traffic and circulation plans.					

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C. Construction Drawings, cont.		•	•		
2. For phased projects, as-built drawings for the previous phase;		•	•	N/A	
3. Drainage and Utility Plans to show the existing and proposed drainage structures, drainage basin areas, drainage flow paths, and outfalls with water quality measurements, including all utilities such as sewer, water, electric, gas, fire alarm cable, telephone and cable TV, manholes, valves, hydrants. Also included shall be a report summarizing drainage calculations; drainage plans and drainage calculations shall be prepared by a Registered Professional Engineer;		•	•	✔	
4. Additional plans with appropriate construction details and construction notes for street pavement, sidewalk, drainage structures, street lighting, exterior site lighting/photometrics plan (Major Land Developments only), sanitary structures, water line and water line structures, trench excavation, and steep slope excavation, if applicable;		•	•	✔	
5. Grading plans to show proposed contours at two-foot intervals for all grading proposed for on and off-site street construction, drainage facilities, and upon individual lots if part of proposed subdivision improvements;		•	•	✔	
6. Soil erosion and sediment control plan in conformance with Appendix F, if required;		•	•	✔	
7. Landscaping plan as detailed in Appendix F;		•	•	✔	
8. Plans showing street names and hydrant locations approved by the Fire Chief;		•	•	✔	
9. Construction Schedule identifying expected start and finish times for major construction tasks;		•		✔	
10. Temporary improvements, if any, in accordance with Appendix F;	•	•		N/A	
11. A traffic flow plan showing circulation patterns within the development;		•		✔	
12. If any streets, areas, or facilities are to be dedicated to the Town of Bristol, a statement shall be added to all final plat plans stating that such dedication shall not impose any duty or responsibility upon the Town of Bristol to maintain or improve any dedicated streets, areas, or facilities until specifically authorized by the Town Council per Section 6.7 of these regulations.			●		
D. Supporting Materials:	•	•	•		
1. 12 reduced copies of all plans required in Items A, B, and C above (minimum 8 1/2" x 11" and maximum 11" x 17");	•	•	•	✔	
2. One (1) copy of a narrative report providing the general description of the proposed development and phasing if any, including the proposed financing and present ownership of all of the land included within the development; if the applicant does not own all the land, then explain how it will be assembled or how site control will be achieved;	•				

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3. One (1) copy of a current deed and an Attorney's certificate certifying title, including encumbrances, easements, and/or temporary or permanent restrictions on the property;		•		✔	
4. A list of consultants (i.e. engineering, planning, environmental) to be used on the project;		•		✔	
5. A vicinity map, (locus map) drawn to a minimum scale of 1" = 400' or as necessary to show the area within one-half mile of the subdivision parcel showing the location of all streets, existing lot lines, and zoning district boundaries. Schools, parks, fire stations and other significant public facilities shall be indicated on the locus map by shading and labeling the specific use;	•				
6. A list of the names and mailing addresses as shown on the current real estate and assessment records of the Town for the property owners within the notice area; (See Section 8.5) this information shall also be on mailing labels;	•	•		✔	
7. Low Impact Development (LID) Site Planning and Design strategies and Checklist from the Rhode Island Stormwater Design and Installation Standards Manual. Stormwater designs should meet RI Stormwater Manual Minimum Standards.	•				
8. A radius map, showing the property within the notice area (See Section 8.5) including: a. the shape, dimension and area of the property; b. the location of all zoning use district boundary lines; c. the assessor's plat and lot numbers; and, d. the general location, shape, use; and if any, historic designation of all existing buildings and structures and improvements; The above information may be shown on an 11" x 17" plan at a scale as appropriate;	•				
9.Architectural elevations (with measurements as needed for each interpretation) and of all exterior facades of proposed or existing buildings, structures and equipment including type and color of materials to be used; elevations shall be at an appropriate scale as determined at the preapplication stage;	•				
10. Legal documents describing the property, including proposed easements and rights-of-way, offer to convey public streets, creating Homeowners Association (if appropriate) deed transferring open space, dedications, restrictions, or other required legal documents:					
a. Two draft copies for review by the Planning Board Solicitor;	•				
b. Two signed final copies;		•		Final Plan	
11. Written confirmation from the RI Department of Environmental Management that the plans of the proposed subdivision, including any required off-site construction, have been reviewed and indicating that the Wetlands Act either does not apply to the proposed site alteration or that approval has been granted for the proposed site alteration;		•		No	

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12. In lieu of item 10 above, an affidavit signed by a qualified professional (having minimum qualifications as described by the RIDEM Department of Freshwater Wetlands) stating that there are no freshwater wetlands or their buffers (perimeter wetlands) present on the property being subdivided {in accordance with RIDEM Wetland Regulations};		•		✔	
13.Preliminary determination from the Coastal Resources Management Council if the parcel to be subdivided is subject to the jurisdiction of this agency;		•		✔	
14.A Physical Alteration Permit (PAP) issued by the State Department of Transportation for any connection to or construction work within a State highway or State right-of-way (if applicable);		•		N/A	
15. Water Service (if proposed):					
a. Written confirmation that the Bristol County Water Authority has reviewed the plan and is able to provide water service;		•		Final Plan	
b. A copy of the water contract covering the installation of water service or written confirmation that a contract has been executed or will be executed upon approval by the Planning Board (a copy of the executed contract must be submitted prior to endorsement by the Planning Board;			•		
16. Sewer:					
a. Written confirmation from the Bristol Water Pollution Control Facility certifying that the subdivision can tie into the Bristol Sewer Service; or,		•		✔	
b. If Individual Sewage Disposal Systems are proposed, either a preliminary subdivision suitability report or a water table verification from the Rhode Island Department of Environmental Management indicating that the soil and water table within the proposed subdivision are suitable for the safe and proper operation of individual sewage disposal systems;		•		N/A	
17. Certification from the Tax Collector that all property taxes are current and that sewer assessments and sewer use fees are paid;			•		
18. A letter stating it is the intent to complete the required improvements prior to Planning Board endorsement of the final plat or a letter requesting that a security sufficient to cover the cost of required improvements be set by the Planning Board, along with a construction cost estimate for improvements;		•		N/A	
19. Application form;	•	•	•	✔	

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20. Initial written comments on the Master Plan and final written comments on Preliminary from the following agencies: a. ____ Planning Board Engineer Date:_____ b. ____ Water Authority Date:_____ c. __X__ Sewer Department Date:__12/24/21__ d. ____ Building Inspector Date:_____ e. __X__ Planning Department Date:__5/12/22__ f. ____ Department of Public Works Date:_____ g. __X__ Fire ~~and Police~~ Date:__2/3/22__ h. ____ Conservation Commission Date:_____ i. ____ Other Local Agencies, Specify: _____Date:_____ j. ____ Adjacent Community (Warren) Date:_____ k. ____ RI Dept. of Environmental Management Date:_____ l. __N/A__ RI Dept. of Transportation Date:_____ m. __X__ Coastal Resources Date:__7/27/22__ n. ____ Other State Agencies, Specify:_____Date:_____ o. __N/A__ FEMA Date:_____ p. ____ Other Federal Agncies, Specify: _____ Date:_____ **NOTE: REFERRALS TO THE ABOVE AGENCIES WILL BE MADE BY PLANNING DEPARTMENT STAFF**.	•	•		✔	
21. Report and recommendations from the Technical Review Committee;	•	•		✔	
22.Approvals from other Town Boards and commissions, as appropriate;		•	•	In Progress	
23.Approvals from other State Agencies, as appropriate;		•		Final Plan	
24.Such other information as may be required to show that the details of the proposal are in accordance with this section and all other applicable requirements and standards of these Regulations.	•	•	•	N/A	
E. Payment of Required Fees - Payment of the following fees or posting of financial guarantees, if required, to be prior to endorsement by the Planning Board:					
1. Application fee;	•	•	•	✔	
2. Final plat recording fee;			•		
3. Engineer Review and Inspection Fee;	•	•	•	✔	
4. Performance guarantee or other financial guarantees (if applicable);			•		
5. Fees in-lieu of land dedication (if applicable);			•		
6. Maintenance guarantee for acceptance of public improvements (if applicable);			•		
7. Receipt that all other fees to outside agencies have been paid by applicant, if any;			•		
8. Mapping fees shall be paid to the Tax Assessor prior to recording plan.			•		

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Other Requirements: The following items may be required based on the presence of certain site conditions as indicated at the Pre-application or Master Plan stage of review. The applicant shall have any required items prepared by a qualified party.				Separate Cover	
1. Fiscal impact statement (see Section 6.6);		•			
2. Completed Environmental Impact Assessment statement for the proposed development (see Section 6.6);		•		N/A	
3. Archaeological Study;		•		TBD	
4. Traffic Impact Study,		•		✔	
5. Phase 1 Environmental Site Assessment (ESA), conducted by a qualified professional consultant, as may be requested at the pre-application stage. If the Phase 1 indicates suspect environmental site conditions, then a Phase 2 ESA shall be conducted by a qualified professional consultant prior to preliminary plan approval;	•	•		✔	
6. Perspective drawings, view shed maps, line of site diagrams, sketches, renderings, photographs or scale models as needed to illustrate the visual impact on the community;	•				
7. Flood plain compensation calculations;		•		N/A	
8. Historic District Commission Certificate of Appropriateness, if the project requires Historic District Commission review and approval.		•		✔	

** Mylar plans shall be on polyester film, single matte with a thickness of 3 mils (.003 inches), and must have opacity so as to allow consistent computer scanning. All plans shall be prepared using a compatible ink with excellent cohesiveness which will produce a permanent bond and result in a plan with long term durability. All signatures must be in black India ink or its equal.*

FISCAL IMPACT

Bristol Yarn Mill Redevelopment
125 Thames Street Bristol, RI

FISCAL IMPACT ANALYSIS

FJS Associates, Ltd
December 2022

BRISTOL YARN REDEVELOPMENT
COMMUNITY FISCAL IMPACT STUDY
December 2022

1.0 BACKGROUND

At the request of Brady Sullivan, FJS Associates, Ltd. evaluated the potential fiscal impacts of proposed redevelopment of the former Bristol Yarn Mill. The project involves development of 127 residential units and 5,903 square feet of commercial space along with associated parking and site amenities. The Per Capita Multiplier Fiscal Impact Method, as described by Burchell and Listokin, 2012[1] was used for this analysis. This method is appropriate for the Bristol Yarn Project because the project is a large-scale project in a relatively small community and because it includes both residential and non-residential components.

As any study such as this, it is a snapshot in time and subject to change as conditions change.

2.0 PROJECT DESCRIPTION

The subject property is located at 125 Thames Street in Bristol. The site currently contains seven major buildings with a total area of approximately 292,746 square feet and the remaining portions of the site are almost entirely paved for driveways and parking areas. The site is serviced by public water, public sewer, natural gas, and electric and communication services from Thames Street.

The proposed complex of buildings will include 127 new residential apartment units, and approximately 5,903 square feet of new commercial space. The existing driveways and parking areas will be re-developed with new curbing, new pavement markings, new site lighting and new pavement.

Project Summary

- Total number of Residential Apartment Units = 127
- Total area of Commercial Space = 5,903 +/- sq. ft.
- Total number of parking spaces = 127
- The proposed total footprint area of buildings on the site would be approximately 292,746 sq. ft.

3.0 COST OF THE PROJECT TO THE TOWN OF BRISTOL

A. Cost of Government Services

1. Per Capita Costs of Services in Bristol

The Town of Bristol will incur costs to support the proposed projects in the form of expenses for general government, public safety, fire safety, public works, social services, recreation and culture, and education. Generally, the costs attributable to the proposed project in each of these categories can be

[1]Burchell, Robert W., Listokin David – *The Fiscal Impact Handbook: Estimating Local Costs of Land Development, Transaction Publishers; Edison, NJ 2012*

estimated on a per-capita basis based on the population of the complex. According to the Town of Bristol approved budget, the town-wide cost of these services for 2023 is as follows:

General Government:	13,707,515	(includes recreation & social services)
Public Safety:	8,518,236	
Fire Safety:	2,035,013	
Public Works:	4,989,378	
TOTAL	29,250,142	

The estimated population of Bristol in 2021, according to the U.S. Census, was 22,226. Dividing the budget amount of $29,250,142 by 22,226 local residents, yields a per capita cost for the government services listed above in Bristol for 2023 of $1,316.03.

2. Estimated Project Population

According to the U.S. Census, the average household size in Bristol in 2020 was 2.3 persons. Using that figure, the population of the proposed project, at capacity, can be estimated as (127 x 2.3) or 292 persons at full occupancy. However, full occupancy is rarely obtained in multi-family rental projects. According to the 2020 Census for the State of Rhode Island, the average vacancy rate for multi-family rental housing was 5% or, conversely, the occupancy rate was 95%. Applying this occupancy rate yields an estimated phase I population of (127x 2.3) x 95% = 278 persons.

3. Cost of Government Services for the Project

Private redevelopment of mills that do not create a network of new roads, utilities and public improvements do not require the level of public services needed for newly created developments. The Police, Fire and Public Works departments are currently serving all facilities in the complex and therefore would not need to increase services and, in fact, similar developments show that those services are fewer per capita.

Moving forward the development will employ a full-time maintenance/management staff operating the renovated facility. Additionally, trash service is private. That alone is a huge savings from the town's budget. Developments such as this use far fewer municipal services than a new development with such new public infrastructure. It has been suggested that the savings in public services could be as much as 50% per capita. For this analysis we have been conservative in reducing those services by only 20%.

Using the per capita cost figures at 80% and population projections above, the cost to the Town of Bristol to provide government services to the population of the proposed project would be ((1,316.03 x 80%) x 278) or **$292,685** annually.

B. Education Costs

1. School Enrollment and Per Pupil Costs

The costs shown above do not include the cost of education. Instead of using total population to project school department costs, it is more accurate to use school enrollment and per pupil costs to estimate this impact. Bristol does not have its own school system, but instead participates in the Bristol Regional School District. Bristol's cost for education according to the approved budget for fiscal year 2022 is $27,812,066.

According to the Bristol-Warren Regional School District, total public school enrollment in the district is 3,061 students. The total budget of the Bristol/Warren district in fiscal year 2022 is $55,368,802 less state aid of $12,765,716 is a Net Cost of the district of $42,603,086. Dividing the total cost by total enrollment yields a per capita cost to the district of $13,918.02 per pupil. Bristol's portion of the net budget is $27,812,066, or 65% of the budget.

The 2020 Census states that 17.3% (3,845) of the population are under 18 years of age. Of those, 3.3% (733) are under 5 years of age and not school aged. Therefore, there are 3,112 school aged children in Bristol, adjusted for growth once the development is complete.

2. School Age Population for the Redevelopment Project

Several studies have documented that the number of school age children varies according to housing type, with the highest generation rates from subsidized single family detached housing and the lowest rates from unsubsidized multi-family apartment units. One of the earliest studies linking housing types to school enrollment in the U.S. was done by the American Society of Planning Officials in 1966[3] That study indicated that, while single family homes typically generated 1.08 students per housing unit, multi-family high rise apartments generated as few as 0.08 students per unit.

Another study, published by the Vermont Housing Finance Agency in 2007, used data from Vermont, New Hampshire, and Maine to examine the relationship between housing types and school enrollment. This study reported a generation rate for 2-bedroom units in multi-family apartment complexes having more than 50 total units of 0.12 students per housing unit. A more recent study, done for the City of Alexandria, Virginia[4], compared student generation rates from various housing types over a three year

period from 2010-2012. Housing types were determined by mapping student addresses to specific locations within the City during the study period. Results indicated that the student ratio during the three-year period ranged from a high of 0.978 students per unit for subsidized single-family housing to a low of 0.069 for garden style condominium developments. These numbers are helpful, but not specific to New England Mill Redevelopment.

[2] http://profiles.provplan.org/profiles/municipality/Bristol/school-enrollment/

[3] https://www.planning.org/pas/at60/report210.htm

[4] www.alexandriava.gov/uploadedFiles/planning/info/LREFP/Student_Generation_Rates_Summary_10_25.pdf

In response to our inquiries, the applicant, Brady Sullivan, conducted an inventory of their recent mill redevelopment projects to determine how many students each project generated. The results are shown in Table 1 below:

TABLE 1
STUDENT OCCUPANCY IN
RECENT MILL
REDEVELOPMENT PROJECTS

Project	Students	Housing Units	**Ratio**
American Wire	25	179	0.13
US Rubber	16	310	0.05
Harris Mill	16	157	0.10
Lofts at Pocasset Mill	5	92	0.05
Anthony Mill	7	122	0.06
Tourister	25	220	0.11
MEAN			**0.065**

Source: Brady Sullivan 2022

Assuming a generation rate of 0.065 students per residential unit the proposed, at an anticipated 95% occupancy, would be expected to generate approximately (127 * 95%* 0.065) = 7.8 students (say 8).

3. Projected Education Costs for the Redevelopment Project

At a per pupil cost of $13,918.02, the Town of Bristol would pay **$111,344.16** annually for the education of the 8 students from the proposed redevelopment project.

C. Total Annual Costs to the Town of Bristol

Summing the costs of government services at $292,685 per year and public education at $111,344.16, the total cost to the Town of Bristol for government services and education related to the proposed redevelopment would be $404,029.

4.0 REVENUE FROM THE PROPOSED DEVELOPMENT

A. Tax Revenues - Property and Improvements

One of the largest contributions to be made by the proposed development will come in the form of property tax. At present, the Town of Bristol has assessed the 3.265 acres of property as an underutilized industrial complex.

Similar developments are assessed at a range between $150,000 for 1 BR units, $165,000 for 2 BR units and $180,000 for 3 BR units, and 5,906 SF of commercial space with a value of $250/SF, which translates to an assessed value of:

1BR Units: 6 Units x $150,000 per unit:	$ 900,000
2BR Units: 84 Units x $165,000 per unit:	$13,860,000
3BR Units: 37 Units x $180,000 per unit:	$ 6,660,000
Commercial Space:	$ 1,475,000
TOTAL ASSESSED VALUE:	$22,895,750

Adding the estimated assessed value of the land at $1,602,000 to the estimated assessed value of the building at $22,895,750 yields a total estimated property value for the redeveloped Bristol Yarn complex of $24,497,750. At the Town of Bristol's current tax rate of $14.38, this means that, at buildout, the redevelopment project would pay the town (24,497.75 x 14.38) = $352,278 in annual property taxes. It should be noted that the town may assess the property based upon an income approach in the future and taxes could be different than presented above.

Note that this would be the estimated tax contribution of the project at build out and would not accurately reflect tax revenues during the construction period.

B. Project Building Fees

Planning Board fees are $38,250 per Master, $32,250 at Preliminary and $32,250 at Final stage, or $102,750.

Construction in Bristol requires permits and fees that must be paid by the builders before construction can begin. Fees for these permits and are calculated on the basis of Estimated Construction Value (ECV). ECV is defined as "the estimated cost of the work including labor and materials." The Building Official has discretion to increase or decrease this value as reported by the builder. The fee for renovation of both residential uses and commercial uses is $370 plus $5.00 per $1,000 exceeding $50,000 of construction cost.

Assuming a renovation cost of $150.00 per square foot and applying the square footage of the complex, the ECV can be estimated as (292,746 sq. ft. x $150) = $43,911,900. The permit fee would then be $370 plus (43,912 x $5.00) or **$219,930.** Note some additional fees may also be assessed for plumbing, mechanical, and electrical work. There is insufficient information available to estimate the ECV for this work and therefore these fees also cannot be estimated at this time.

C. Sewer Use Fees

Each User of the Sewer System in Bristol pays a use fee. The developer has asked the project engineer, Fuss & O'Neill to calculate that use fee, which has been calculated at $85,650 plus an infiltration and inflow assessment of $155,300 for a total Sewer charge of $232,240. Please see attached Fuss & O'Neill letter attached.

D. Resident Fees and Charges

In addition to the fees that will be paid by the developer for the construction of the complex, the residents within the complex will be expected to pay fees to the town for town services. With an average of $100 per resident for things such as licenses, copies of documents, recreation, docks, etc., the development would generate an additional $27,800.00 will be expected in fees from the 278 residents.

E. Donation of Parking Lot and Marina space

As part of the original approvals, the owner/developer donated a parking lot to the town which has been a major benefit to downtown businesses and facilities. Additionally, dock/marina space has been provided also to the town for use by local boaters. These two donations would not have taken place without the original approval of the mill redevelopment. The actual value of these donations has not been calculated as part of this analysis but should be noted as a great benefit to town residents.

5.0 CONCLUSION: NET BENEFIT

Table 2 below summarizes the net benefit to the Town of Bristol for the proposed development. Values shown include the values calculated above for completion of the project. These estimates indicate that the development will bring the town approximately $61,699 in annual net benefit.

Additionally, because the town will receive fees up front in the amount of approximately $477,350, far exceeding its expenses in the early years of the project, and the value of these funds will continue to appreciate over the years, the Town will realize a net present value gain of even more. This is just the monetary budget benefit to the town. The land, parking lot, dock donation and the intangibles discussed below only strengthen the argument that this mill redevelopment is a great benefit to the town of Bristol.

6.0 DISCUSSION

The calculations show that the project will provide the town with an annual net gain after completion. However, it is important to note that these estimates include only direct costs and revenues of the redevelopment on the Town government. The development will also bring benefits to the community that are intangible and/or have not been calculated in this fiscal impact analysis. These include:

- Renovation of the vacant industrial property to create a vibrant development in a neighborhood and provide an attractive gateway to the community;
- Restoring the neighborhood by extending walkways into and through the site;
- Bringing new residents, who will live, work, play, and participate in the commerce of the community, thereby enhancing the community of Bristol;
- Providing a Town parking lot to ease parking issues downtown.
- Perhaps the most important. According to the US Census per capita disposal income in Rhode Island in 2020 was $54,548. At that rate, the 278 residents of the Bristol Yarn Mill complex would generate approximately (278 x $54,548) or $15,164,344 in annual economic activity. Estimating what percentage of resident spending will remain within Bristol, and the associated multiplier effects is beyond the scope of this study. However, it is safe to assume that some part of that $15.1 million will be spent locally at local businesses where it will multiply within the local economy and stimulate economic growth. That growth also has a significant potential to bring increased tax revenues to town government.

Table 2
BRISTOL YARN MILL

NET REVENUE TO THE TOWN OF BRISTOL

	Initial	Annually
Planning Board Fees:	$102,750	
Building Permit:	$219,930	
Revenue		
Property Tax-Real Estate:		$352,278
Resident Fees:		$ 27,800
Sewer Use:	$155,300	$ 85,650
TOTAL REVENUE:	$477,350	$465,728
Expenditures		
Government Services:		$292,685
Education:		$111,344
TOTAL EXPENDITURES:		$404,029
NET BENEFIT:	*$477,350*	*$61,699*

HISTORICAL CERTIFICATE OF APPROPRIATENESS
2/16/23

Application# 23-002

Town Hall
10 Court Street
Bristol, RI 02809-2208
401-253-7000

Town of Bristol, Rhode Island
BRISTOL HISTORIC DISTRICT COMMISSION
CERTIFICATE OF APPROPRIATENESS AND FINAL APPROVAL
Green Sheet

Property Address: 125 Thames St **Plat #** 10 **Lot #** 42/60/61/62/73

Owner/s (referred to as Applicant): Brady Sullivan properties

Owner Contact (if different than above):

Mailing Address (if different than above): 670 N Commercial St, Manchester, NH 03101

Owner/s Tel. #: (603) 622-6223

Architect/Draftsman: Chris Lewis
670 N Commercial St, Manchester, NH 03101
(603) 231-1936

APPROVED
BRISTOL HISTORIC
DISTRICT COMMISSION
DATE: _____

Contractor

Work Category (Check ALL that apply to the project):
- Remodeling of structure

Description of Work:
Replace third floor balustrade and roof with in-kind materials ✓ No work approved as of yet

Historic District Commission Decision:
___ **Approved as Submitted (Reasons below)**
_X_ **Approved as Noted (Conditions and reasons below)**
___ **Approved-Not Applicable to Commission review (Reasons below)**
___ **Denied (Reasons below)**

MOTIONS:

To approve application #23-002 125 Thames Street for a building permit based on tonight's presentation, pending future applications for windows, mortar and anything else on the exterior of the building.

Standards: Secretary of the Interior Standards #1-10

___ Check here to indicate a continuation on attached sheets.

For reasons regarding the above noted motion(s), refer to the meeting minutes dated 2/2/2023.
Date completed application received by Historic District Commission: 1/13/2023
Date of hearing: **Date Building Inspector notified:** _____

Aryan Lynai — 2/16/23
Chair/Vice Chair, Historic District Commission **Date**

_____ _____
Second Member of the Historic District Commission **Date**

(OVER)

CERTIFICATE OF APPROPRIATNESS APPROVAL

(Not Valid Without Bristol Historic District Commission "APPROVE" Stamp)

BRISTOL HDC

Assigned BHDC Project Monitor _____ Date _____

I have received a copy of this Certificate of Acceptability, read and understand all the conditions noted (if any) and understand that any deviations from the submitted plans and the terms of this Certificate of Acceptability (if any) are a violation of the Building Permit for this Project.

It shall be the duty of the Building Official to enforce provisions of the Article governing Bristol's Historic District. If the Building Official is informed by the Commission or otherwise finds that any provision of this Article is being violated, the Building Official shall notify, in writing, the person responsible for such violation, indicating the nature of the violation and order action necessary to correct it. Immediately upon authorization from the Town Council respecting any such violation, the Town Solicitor shall institute appropriate action to prevent, enjoin, abate or remove such violation. Any person who continues to violate any provision of this Article after receiving notice of such violation shall be guilty of a misdemeanor subject to a fine of one hundred dollars $100 for each offense. Each day such a violation is continued is a separate offense. If any alteration or destruction of the historic or architectural fabric of a building or site covered by Section 3 of this Article occurs without Commission approval, the Commission may require that such fabric be restored or duplicated by the owner of such property. (Bristol Ordinance #1987-02)

The Applicant understands that the Project Monitor assigned to this project will have to sign this sheet for the Bristol Historic District Commission's required FINAL APPROVAL.

A Certificate of Appropriateness (Green Sheet) is valid for one year from the date of issuance.

Note: If work on a project has started within twelve months of its approval date, you have as long as is necessary to finish the job (in other words, longer than a year).

Applicant's Signature _____ Date _____

Contractor's Signature _____ Date _____

FINAL APPROVAL

(Signed ONLY after work is complete in full accordance with this application.
Not valid without Bristol Historic District Commission "FINAL APPROVAL" Stamp)

Project Monitor's Signature_____ Date_____

LONG-TERM OPERATION AND MAINTENANCE REPORT
12/2/2022

Long-Term Operation and Maintenance Report
Bristol Yarn Mill

Thames and Hope Street
Bristol, RI

Brady Sullivan Properties, LLC

670 North Commercial Street
Manchester, NH

December 2,2022

FUSS & O'NEILL

317 Iron Horse Way, Suite 204
Providence, RI 02908

Project No. 20061150.A22

FUSS & O'NEILL

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Long-Term Operation and Maintenance Report
Bristol Yarn Mill

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Long-Term Operation and Maintenance Report
Bristol Yarn Mill

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1 Site Location Map

Appendices **End of Report**

A BMP Location Map
B Operation, Maintenance, and Management Inspection Checklists
C Sample Maintenance Agreement
D Silva Cell Operation and Maintenance Manual

FUSS & O'NEILL

1 Introduction

The purpose of this Long-Term Operation and Maintenance Report (O&M Report) is to outline the requirements for stormwater source control and pollution prevention for the Bristol Yarn Mill Redevelopment in Bristol, Rhode Island. The proposed project includes the renovation of the existing mill buildings to include residential apartments, commercial spaces, amenity space, and a parking garage on the basement level. Improvements also include an off-site parking lot on the opposite side of Thames Street along with site improvements which include public access along the shoreline and stormwater improvements. The project's stormwater management system consists of tree filters, a rain garden, two subsurface filtration systems, catch basins, trench drains, stone channels, and an oil/water separator. The site's long-term requirements include following proper site operation procedures and implementing an inspection and maintenance program to ensure the success and minimize the deterioration of the stormwater system over time. The Contractor is responsible for implementing this O&M Report during construction. The Owner is responsible thereafter. Maintenance operations shall be funded by the Owner. In the event the facility becomes owned by different entities, this Long-Term Operation and Maintenance Report shall be transferred to the future owners/operators.

2 Pollution Prevention

The following pollution prevention activities shall be conducted to minimize potential impacts on stormwater runoff quality. The Contractor is responsible for all activities during construction. The Owner is responsible thereafter.

2.1 Good Housekeeping

Good housekeeping shall be implemented to minimize the impacts to area by pollutants, soil, and fugitive sediment. The site shall be kept in good working order. Trash shall be kept in covered containers (i.e., dumpsters) to prevent waste from escaping. Fugitive litter that is deposited on the site shall be removed and placed in a proper enclosed container.

2.2 Spill Procedures

Any discharge of waste oil or other pollutant to the drainage systems shall be reported immediately to the RIDEM Groundwater Discharge Permitting Program. The owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the drainage system and may be required by RIDEM to remediate incidents that may impact groundwater quality. Should property ownership be transferred, the subsequent owner will be informed of the legal responsibilities associated with operation of the drainage system, as indicated above.

2.3 Material Disposal

All waste material, trash, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations.

- Materials and equipment necessary for spill cleanup will be kept in material storage areas. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- Spills will be cleaned up immediately after discovery.
- Spills of toxic or hazardous material will be reported to the appropriate State and local government agency, regardless of size.

2.4 Snow Management

Stormwater runoff caused by snow melt must be properly managed to prevent erosion and pollution. Snow management operations can vary depending on current weather patterns, available equipment, and previous storm events. Below is a general description of how snow will be managed on the site.

- Keep pedestrian and emergency routes cleared. Ensure stockpiles do not obstruct sight lines at driveway or road intersections.
- Snow removed from the parking areas will be stockpiled in the landscaped areas.
- Snow is not to be pushed or dumped into the catch basins, stone channels, rain garden, or tree filters.
- If additional on-site storage is needed, snow may be temporarily stockpiled in the parking spaces.
- Snow will be stockpiled onsite until the available capacity is exceeded, at which point it will be loaded into trucks and properly disposed of at an off-site location.

3 Inspection and Maintenance Requirements for Permanent Stormwater Controls

The following inspection and maintenance activities shall be conducted to ensure the success and minimize the deterioration of the stormwater system over time. A map depicting the location of the components of the stormwater management system is provided in *Appendix A*. Checklists to assist with the inspection and maintenance activities are provided in *Appendix B*. A Sample Stormwater Facility Maintenance Agreement is provided in *Appendix C*.

3.1 Subsurface Filtration Systems

3.1.1 Post-Construction Inspections

The subsurface filtration systems shall be inspected after every storm event larger than one inch in the first six months following construction.

3.1.2 Semi-Annual Inspection

Subsurface chambers may be inspected through manhole or optical inspection port. Remove any debris that could clog the systems. Check for standing water or other evidence of clogging by accumulated sediments. If the average sediment depth exceeds six (6) inches, cleanout is required. Any oil or grease found during inspection should be cleaned with oil absorption pads and disposed in an approved location. Refer to the StormTech Isolator Row O&M Manual, *Appendix D*, for additional subsurface infiltration system maintenance information. The StormTech chambers shall be maintained in accordance with the manufacturer's guidelines.

3.2 Tree Filters

Tree filter cells shall be repaired if the facility shows signs of damage from excessive loading, nearby construction, or other external source. Any damaged component (frame or deck) of the cells shall be replaced according to the manufacturer's instructions, and the system shall be reconstructed per the construction documents and the manufacturer's installation guidelines. The cell frames and decks shall not be cut, drilled into, or modified during any installation, inspection, or maintenance activity to the tree filter or adjacent infrastructure. Utility work adjacent to, below, or within the limits of the tree filter facility shall be performed according to manufacturer's instructions.

Tree openings shall be inspected at least once per spring and fall, and after every storm event greater than 2.7 inches over a 24-hour period (major storms). Inspections shall include checking for standing water or other evidence of clogging by accumulated sediments, debris, and/or trash. Accumulated sediment, debris, or trash on the surface shall be removed as needed.

Inlet and outlet structures shall be inspected at least annually and after major storms. Any blockages preventing water from being properly directed into or out of the filter free facility shall be removed, and the pipes shall be cleaned as needed. Distribution pipes and underdrain pipes shall be inspected annually. Any blockages in the pipes should be removed.

Trees shall be pruned as needed for safety reasons, to promote healthy growth, and to avoid conflicts with adjacent infrastructure. Pruning should be performed by a landscape professional with pruning experience and per the guidance of a certified arborist. Trees should be inspected for safety once per spring and fall, and after major storms. Tree health should inspected every spring and fall and remedied as needed. Every four to five years, trees should be inspected for girdling roots, and any girdling roots should be removed. Once annually, the tree should be inspected for soil or mulch on the root collar. The facility should be weeded as necessary on a monthly basis. Herbicides and pesticides should not be

used. Mulch should be applied/replenished after weeding and as necessary to cover bare spots and areas with a mulch depth less than two inches. Vegetation should be watered as needed.

Refer to the Silva Cell Operation and Maintenance Manual, *Appendix D*, for additional tree filter system maintenance information. The Silva Cell chambers shall be maintained in accordance with the manufacturer's guidelines.

3.3 Rain Garden

3.3.1 Post-Construction Inspections

During the six months immediately after construction, the rain garden shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the system is functioning properly. Thereafter, inspections shall be conducted on an annual basis and after storm events of greater than or equal the 1-year, 24-hour Type III precipitation event.

Vegetation shall be watered once every two to three days for first two months, then sporadically after establishment during the first year after installation. If droughty, watering after the initial year may be required.

If the surface of the rain garden becomes clogged to the point that standing water is observed on the surface 36 hours after precipitation events, remove accumulated sediment or till the surface to breakup any hard-packed soil and then vegetate. Trash and debris shall be removed as necessary.

3.3.2 Monthly Periodic Inspections

The rain garden shall be inspected monthly for evidence for vegetation health and the presence of trash (e.g., litter, debris, etc.). Trash deposited on the surface of the rain garden shall be removed manually and shall be disposed of in accordance with applicable local, state, and federal guidelines and regulations. Mowing shall occur when vegetation reaches a height of 12" (typically two (2) to twelve (12) times per year).

3.3.3 Annual Inspection

The annual inspection of the basin should include checking for standing water or other evidence of clogging by accumulated sediments, checking inlets and outlets for signs of erosion and damage, checking the overflow structures for blockage and structural integrity, and checking the slopes of the basins for erosion or gullying.

Sediment shall be removed from the rain garden when the accumulation exceeds one inch or when there is evidence that the infiltration capacity has been significantly reduced. Sediment and debris must be removed manually with rakes rather than heavy equipment to avoid compacting. Removed sediments shall be dewatered (if necessary) and disposed of in an acceptable manner.

The top few inches of soil shall be removed and replaced with fresh material when the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours). If discolored material is found below this removed surface then that material should also be removed and replaced until all discolored material has been removed. The removed sediments shall be disposed in an acceptable manner at an approved and permitted location.

Pruning or replacement of woody vegetation should occur when dead or dying vegetation is observed. Separation of herbaceous vegetation rootstock should occur when over-crowding is observed, or approximately once every 3 years. If at least 50 percent vegetation coverage is not established after two years, a reinforcement planting should be performed. The mulch layer should be replenished (to the original design depth) every other year, as directed by inspection reports. The previous mulch layer should be removed, and properly disposed of, or roto-tilled into the soil surface.

3.4 Stone Channel

3.4.1 Post-Construction Inspections

The stone channel shall be inspected after every storm event larger than one-inch in the first six months following construction. During the six months immediately after construction, the stone channel shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the system is functioning properly. Thereafter, inspections shall be conducted on an annual basis and after storm events of greater than or equal the 1-year, 24-hour Type III precipitation event.

Vegetation shall be watered once every two to three days for first two months, then sporadically after establishment during the first year after installation. If droughty, watering after the initial year may be required. If at least 50 percent vegetation coverage is not established after the first growing season, reinforcement planting should be installed.

If the surface of the swale becomes clogged to the point that standing water is observed on the surface 36 hours after precipitation events, remove accumulated sediment or remove stone and till the surface to breakup any hard-packed soil and then replace the stone. Trash and debris shall be removed as necessary.

3.4.2 Monthly inspection

The stone channel shall be inspected monthly for vegetation health and the presence of trash (e.g., litter, debris, etc.). Trash deposited on the surface of the stone channel shall be removed manually and shall be disposed of in accordance with applicable local, state, and federal guidelines and regulations. Mowing shall occur when vegetation reaches a height of 10" maximum. Trash and debris shall be removed upon discovery and disposed of in accordance with applicable local, state, and federal guidelines and regulations.

3.4.3 Annual Inspections

The stone channel shall be inspected annually and after every storm event greater than 2.7 inches over a 24-hour period. Inspections shall include checking for standing water or other evidence of clogging by accumulated sediments, and checking the slopes of the swales for erosion or gullying.

Materials deposited on the surface of the swales (e.g., trash and litter) should be removed manually. Sediment shall be removed from the swales when the accumulation exceeds one inch or when there is evidence that the infiltration capacity has been significantly reduced. The river stone shall be removed, sediment shall be cleaned, and the river stone shall be replaced when the filtering capacity of the filter diminishes substantially (ie., when water ponds on the surface of the filter bed for more than 48 hours). If discolored material is found below the removed stone, then that material should also be removed and replaced until all discolored material has been removed. Sediment and debris must be removed manually with rakes rather than heavy equipment to avoid compacting.

Stone channel shall be inspected for clogging on an annual basis or when water ponds on the surface of the stone channel for more than 48 hours. Removed sediments shall be dewatered (if necessary) and disposed of in an acceptable manner. Any areas within the extents of the swales that are subject to erosion or gullying shall be replenished with the original design material and re-vegetated according to design drawings.

At least every five years, the stone within the bottom of stone channel should be removed, and the sediment shall be scraped from the soil surface to restore the original cross section and infiltration rate, and the stone should be washed and replaced.

3.5 Oil/Water Separators

Oil/water separators shall be inspected at least monthly and after major storms. If the average sediment depth exceeds six (6) inches or is within six (6) inches of the outlet pipe, cleanout is required. Separators shall be cleaned at least quarterly and particularly in the fall before the first storm of the wet season. Typical cleaning includes removal of accumulated oil and grease, floatables, and sediment using a vacuum truck or other catch basin cleaning equipment. The outlet pipe of the separator must be blocked during cleaning operations.

Any oil or grease found during inspection shall be cleaned with oil absorption pads and disposed in an approved location. Polluted water or sediments removed from oil/water separators shall be disposed of in accordance with all applicable local, state, and federal laws and regulations

3.6 Drainage Structures

3.6.1 Post-Construction Inspections

Immediately prior to the end of construction and acceptance by the Owner, the Contractor shall clean all drainage structures.

3.6.2 Quarterly Inspections

Once construction is complete and has been accepted by the Owner, all drainage structures shall be inspected four times per year, at minimum. Sediment shall be removed at least twice per year, or when the depth reaches half the height between the bottom of the structure and the lowest pipe invert elevation. Inspections shall include checking for debris, sediment, and hydrocarbons, and structural integrity or damage. Deficiencies must be corrected immediately. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations. Grates shall not be welded to the frame so the structures can be easily inspected and maintained.

3.7 Paved Area Maintenance

3.7.1 Post-Construction Inspections

The Contractor shall sweep the paved areas at the completion of construction. Snow shall not be dumped into the catch basins, stone channels, rain garden, or tree filters. Sand may be used as an abrasive to provide traction on the paved surfaces during winter months, if necessary. Accumulated sand shall be removed and disposed of in accordance with applicable local, state, and federal guidelines and regulations. It is not expected that sand will be stored onsite. However, if sand is stored onsite in the future, stockpiles shall be covered to prevent exposure to precipitation. Deicing chemicals should not be stored at the site. If chemicals are stored at the site, they shall be secured from vandalism and protected from exposure to precipitation.

3.7.2 Annual Inspections

The Owner shall sweep a minimum of once per year thereafter with a vacuum sweeper. The Owner shall sweep more frequently should conditions warrant it necessary. Trash, sediment, and debris collected shall be disposed in accordance with applicable local, state, and federal guidelines and regulations.

3.8 Landscaped Areas

Lawn areas will be mowed during the growing seasons as required to maintain a health stand of vegetation. This is typically once a week but can vary depending on weather conditions. If bagged, grass clippings are to be removed from the site and legally disposed of at an off-site location.
Fertilizers, if required for the maintenance of lawn areas, shall not be phosphorus-based, and will be applied only in the amounts recommended by the manufacturer. If kept on site, fertilizers will be stored in a covered area. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

4 Party Certification

All parties working at the site are required to comply with the Long-Term Operation and Management Report (O&M) for any work that is performed on-site. The site owner is encouraged to advise all employees working on this site of the requirements of the O&M Report. A copy of the O&M Report may be obtained by contacting the site owner.

The site owner must sign the following certification statement.

I acknowledge that I have read and understand the terms and conditions of the O&M Report for the above designated project and agree to follow the practices described herein.

Owner

Brady Sullivan Properties, LLC
670 North Commercial Street
Manchester, NH 03101
603-622-6223

_____
Signature/Date

Designated Site Inspector

Company:
Name and Title:
Address:
City, State, Zip Code:
Telephone:
E-mail:

_____
Signature/Date

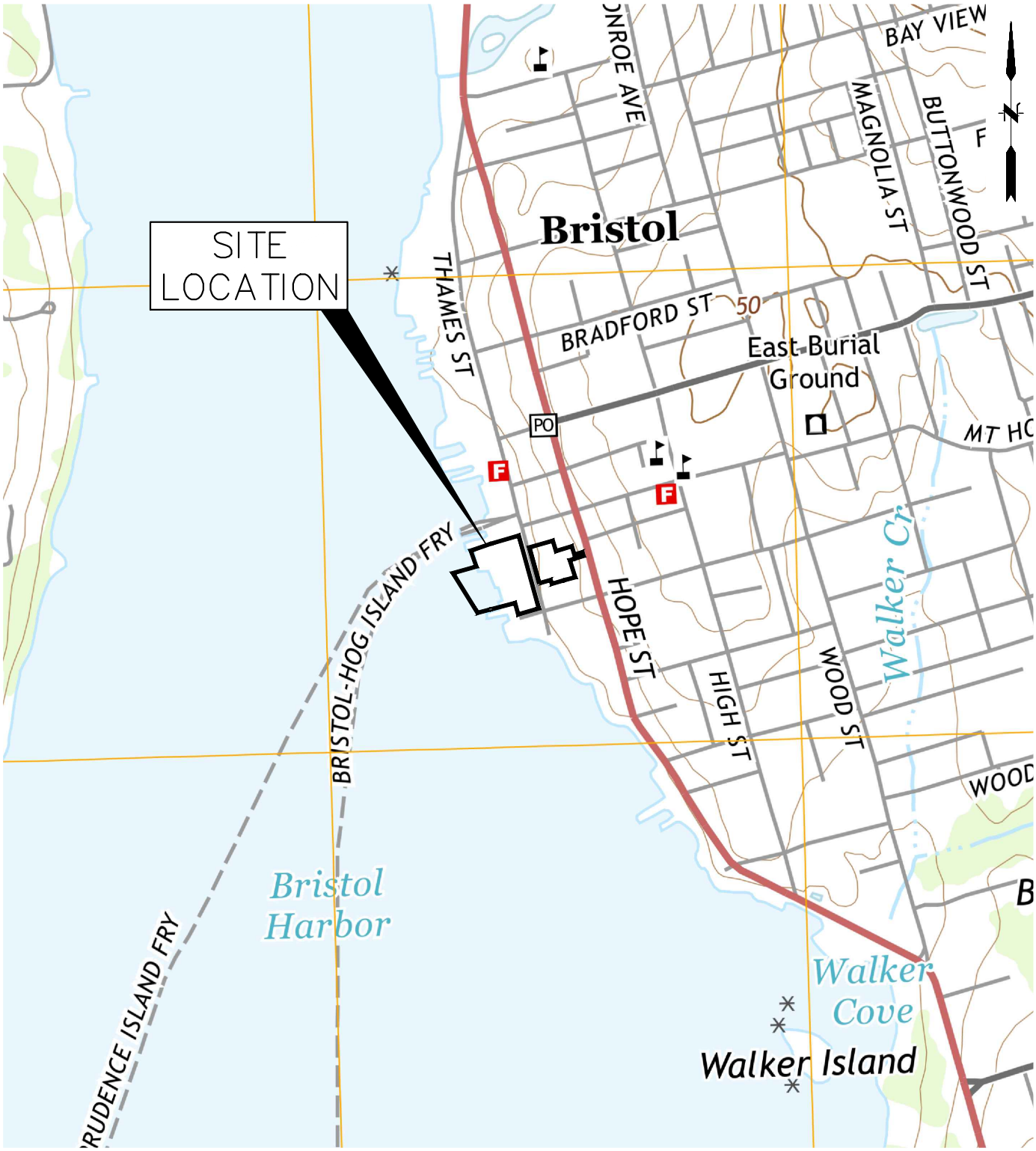
O&M Report Contact

Fuss & O'Neill, Inc.
Shawn M. Martin, PE
317 Iron Horse Way, Suite 204
Providence RI 02908
401-861-3070
smartin@fando.com

_____
Signature/Date

Figure

Site Location Map



REFERENCE:

THIS MAP WAS PREPARED FROM THE FOLLOWING 2015 USGS TOPOGRAPHIC MAPS OF RHODE ISLAND. SOURCE: THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS).

SCALE:
HORZ.: 1"= 1000'
VERT.:
DATUM:
HORZ.:
VERT.:
0 500 1000
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC.

LOCATION MAP
BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A11
DATE: NOVEMBER 2022

FIGURE 1

File: \\private\DFS\CadProj\DWG\P20061150A22\CivilFigures\20061150A22_LOC01-USGS.dwg Layout: FIGURE 1 Plotted: 2022-11-07 12:25 PM Saved: 2022-11-04 3:54 PM User: kmccombs
PC3: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 STB/CTB: FO HALF.STB
LAYER STATE:
MS VIEW:

Appendix A

BMP Location Map

STONE CHANNEL 1

STONE CHANNEL 2

RAIN GARDEN

TREE FILTER 1

TREE FILTER 2

TREE FILTER 3

SUBSURFACE FILTRATION SYSTEM 1

SUBSURFACE FILTRATION SYSTEM 2

307 DIA. TREE (APPROX LOC.)

30" DIA. TREE (APPROX LOC.)

THREE TREES >12" DIA. ALONG WIRE FENCE (APPROX. LOC)

HOPE STREET
(PUBLIC - PER REF #4)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

CONSTITUTION STREET
(PUBLIC - VARIABLE WIDTH - PER REF #3)
TWO WAY TRAFFIC

BRISTOL HARBOR

BYF

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SEAL

SEAL

SCALE:
HORZ.: 1"= 30'
VERT.:

DATUM:
HORZ.: NAD83
VERT.: NADV88

30 15 0 30
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

BRADY SULLIVAN PROPERTIES, LLC

BMP LOCATION MAP

BRISTOL YARN MILL

125 THAMES STREET BRISTOL, RHODE ISLAND

PROJ. No.: 20061150.A22
DATE: NOVEMBER 29, 2022

FIG. 4

File Path: \\private\DFS\Cad\Proj\DWG\P20061150A22\Civil\Figures\20061150A22_DRA01.dwg Layout: FIG. 4 Plotted: Tue, November 29, 2022 - 11:33 AM User: kmccombs
MS VIEW: LAYER STATE:
Plotter: NONE CTB File: FO.STB

FUSS & O'NEILL

Appendix B

Operations, Maintenance, and Management Inspection Checklists

Operation, Maintenance, and Management Inspection Checklists
Master Checklist
Bristol Yarn Mill

Inspection Year: _____

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Subsurface Filtration Systems												
Semi-Annual Inspection												
Sediment Removal (as required)												
Tree Filters												
Inspect for and Remove Trash (monthly)												
Prune and Weed (as required)												
Annual Inspection												
Rain Garden												
Inspect for and Remove Trash (monthly)												
Mow (as required)												
Annual Inspection												
Stone Channels												
Inspect for and Remove Trash (monthly)												
Mow (as required)												
Annual Inspection												
Oil/Water Separators												
Monthly Inspection												
Sediment Removal (quarterly or as required)												
Landscape												
Inspect for and Remove Trash (monthly)												
Mow and prune (as required)												
Annual Inspection												
Drainage Structures												
Quarterly Inspection												
Sediment removal (twice annually)												
Pavement												
Inspect for and Remove Trash (monthly)												
Snow Plowing/Removal (as required)												
Annual Inspection												

Operation, Maintenance, and Management Inspection Checklists
Subsurface Filtration System
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Semi-Annual

_____

No.	Monthly	Annual	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Sediment	Depth of Sediment in system is less than six (6) inches.			
2			Clogging	System appears to be draining freely and not clogged.			
3			Oil/Grease	Oil or grease cleaned with oil absorption pads and disposed			

Operation, Maintenance, and Management Inspection Checklists
Tree Filters
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Semi-Annual

_____

No.	Monthly	Annual	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Trash/Debris	Tree filter and contributing areas are free of debris, litter, and waste.			
2			Vegetation	Dead or dying vegetation has been removed and replaced. Pruning is not required. Weeds are not present.			
3			Outlet	Outlet manhole is not discharging stormwater during storm events of less than 1.2 inches of rainfall.			

4			Clogging	There is no evidence of clogging in inlet and outlet pipes.			
5			Tree Grate	Tree opening does not require expansion. Tree grate is level and securely fastened to frame.			
6			Sediment	Tree pit is clean of sediment.			
7			Dewatering	There is no evidence of standing water.			

Operation, Maintenance, and Management Inspection Checklists
Rain Garden
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Semi-Annual

_____

No.	Monthly	Annual	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Trash/Debris	Basin is free of debris, litter, and waste.			
2			Turf	Grass has not reached a height at which it cannot support its own weight			
3			Sediment	Depth of Sediment is less than one inch.			

4			Clogging	Basins appears to be draining freely and not clogged.			
5			Overflow Structures	Overflow structures are free of blockage and are structurally sound			
6			Erosion	There are no signs of erosion and scouring.			
7			Vegetation	Vegetation is satisfactorily pruned to remove any dead material. Rootstocks are not overcrowded.			

Operation, Maintenance, and Management Inspection Checklists
Stone Channels
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Semi-Annual

_____

No.	Monthly	Annual	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Trash/Debris	Swale is free of debris, litter, and waste.			
2			Turf	Grass has not reached a height at which it cannot support its own weight			
3			Sediment	Depth of Sediment is less than one inch.			

4			Clogging	Basins appears to be draining freely and not clogged.			
6			Erosion	There are no signs of erosion and scouring.			
7			Vegetation	Vegetation is satisfactorily pruned to remove any dead material. Rootstocks are not overcrowded.			

Operation, Maintenance, and Management Inspection Checklists
Oil/Water Separator
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Quarterly

Structure Name:

_____

No.	Monthly	Quarterly	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Trash/Debris	Structure is free of debris, litter, and waste.			
2			Sediment	Depth of sediment is less than six inches, more than six inches below the outlet pipe, and has been removed within the last three months.			
3			Concrete Surfaces	Concrete surfaces are structurally sound and have negligible spalling and cracking.			

4			Clogging	There is no evidence of clogging in inlet and outlet pipes.			
5			Oil and Grease	Structure is free of accumulated oil and grease.			

Operation, Maintenance, and Management Inspection Checklists
Landscape Areas
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Monthly Annual

_____

No.	Monthly	Annual	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1			Trash/Debris	Landscape is free of debris, litter, and waste.			
2			Turf	Grass has not reached an unaesthetic height and no fertilizer is needed..			
3			Vegetation	Vegetation is satisfactorily pruned to remove any dead material.			

Operation, Maintenance, and Management Inspection Checklists
Drainage Structures
Bristol Yarn Mill

Inspector Name: _____

Inspection Date: _____

Reviewed By: _____

Review Date: _____

Type of Inspection (Circle One):

Quarterly

Structure Name:

_____

No.	Quarterly	Item	Criteria	Satisfactory	Unsatisfactory	Notes
1		Trash/Debris	Structure is free of debris, litter, and waste.			
2		Sediment	Depth of sediment is less than half the height between the bottom of the structure and the lowest pipe invert elevation and has been removed within the last six months.			
3		Concrete Surfaces	Concrete surfaces are structurally sound and have negligible spalling and cracking.			

Appendix C

Sample Maintenance Agreement

Sample Stormwater Facility Maintenance Agreement

THIS AGREEMENT, made and entered into this ___ day of _____, 20___, by and between (Insert Full Name of Owner) _____ hereinafter called the "Landowner", and the [Local Jurisdiction], hereinafter called the "[Town/City]". WITNESSETH, that WHEREAS, the Landowner is the owner of certain real property described as (Tax Map/Parcel Identification Number) _____ as recorded by deed in the land records of [Local Jurisdiction] Deed Book _____ Page _____, hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and WHEREAS, the Site Plan/Subdivision Plan known as _____, (Name of Plan/Development) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the [Town/City], provides for detention of stormwater within the confines of the property; and

WHEREAS, the [Town/City] and the Landowner, its successors and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of [Local Jurisdiction] require that on-site stormwater management facilities be constructed and maintained on the Property; and

WHEREAS, the [Town/City] requires that on-site stormwater management facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site stormwater management facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater management facilities in accordance with the required Operation and Maintenance Plan. This includes all pipes, channels or other conveyances built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions. The Stormwater Best Management Practices Operation, Maintenance and Management Checklists are to be used to establish what good working condition is acceptable to the [Town/City].

3. The Landowner, its successors and assigns, shall inspect the stormwater management facility and submit an inspection report annually. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, basin areas, access roads, etc. Deficiencies shall be noted in the inspection report.
4. The Landowner, its successors and assigns, hereby grant permission to the [Town/City], its authorized agents and employees, to enter upon the Property and to inspect the stormwater management facilities whenever the [Town/City] deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The [Town/City] shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.
5. In the event the Landowner, its successors and assigns, fails to maintain the stormwater management facilities in good working condition acceptable to the [Town/City], the [Town/City] may enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow the [Town/City] to erect any structure of permanent nature on the land of the Landowner outside of the easement for the stormwater management facilities. It is expressly understood and agreed that the [Town/City] is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the [Town/City].
6. The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. In the event a maintenance schedule for the stormwater management facilities (including sediment removal) is outlined on the approved plans, the schedule will be followed.
7. In the event the [Town/City] pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner, its successors and assigns, shall reimburse the [Town/City] upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the [Town/City] hereunder.
8. This Agreement imposes no liability of any kind whatsoever on the [Town/City] and the Landowner agrees to hold the [Town/City] harmless from any liability in the event the stormwater management facilities fail to operate properly.
9. This Agreement shall be recorded among the land records of [Local Jurisdiction] and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowners association.

WITNESS the following signatures and seals:

_____
Company/Corporation/Partnership Name (Seal)

By: _____

_____
(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of _____, 20___, by _____ ___.

_____
NOTARY PUBLIC
My Commission Expires: _____

By: _____
_____
(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of _____, 20___, by _____ ___.

_____
NOTARY PUBLIC
My Commission Expires: _____

Approved as to Form:

_____ _____
[Town/City] Attorney Date

Appendix D

Silva Cell Operation and Maintenance Manual

deeproot

SILVA CELL
OPERATIONS AND MAINTENANCE MANUAL

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1.0 Acknowledgments

There are many dedicated, brilliant people working on the challenge of creating healthier, more sustainable, and more efficient cities. We believe the most successful of these places will be those grounded in the principle that nature and engineering can coexist successfully. Soil, urban trees, and sustainable stormwater management are at the core of this effort. We wish to express our tremendous appreciation and gratitude to the many researchers and practitioners whose work we have relied on to inform the guidelines contained in this manual. Thank you to the following people for their specific contributions.

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2.0 Introduction

Silva Cells are a modular suspended pavement system that provides soil volume to support large tree growth and provides stormwater management through interception, storage, evapotranspiration, and pollutant uptake. When filled with soil media of suitable depth and quality, Silva Cells also promote filtration of stormwater runoff through the soil media and infiltration of treated runoff into native site soils, making them a versatile Low Impact Development (LID) Best Management Practice (BMP).

In March 2013, the Washington State Department of Ecology approved Silva Cells as functionally equivalent to bioretention (Ecology 2013a). This approval allows designers in Washington State to design Silva Cells to fully or partially satisfy minimum stormwater requirements for LID, water quality treatment, and flow control in accordance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separated Storm Sewer System (MS4) permit (NPDES stormwater permit). Similar approvals are in place in Montgomery County, Maryland; St. Louis, Missouri; Calgary, Alberta; and North Vancouver, British Columbia. Additional approvals are currently pending in other areas across the United States and Canada as of the date of this manual.

When Silva Cells are installed as part of a permanent stormwater management system to meet stormwater permit requirements, they should be maintained as required by the local jurisdiction for maintenance of stormwater and LID BMPs.

The remainder of this section discusses the purpose of this document, applicable permit requirements, how this manual is intended to be used, and important definitions. Section 3 presents key maintenance considerations, maintenance guidelines, equipment and materials lists, and skills and staffing needs to accomplish the recommended maintenance. Section 4 discusses the repair of Silva Cell facilities. Section 5 discusses programmatic and administrative guidance, while Section 6 provides a list of additional resources relating to LID BMP design, inspection, operation, and maintenance and Section 7 provides a list of additional resources with relevant information on stormwater and LID BMP maintenance.

2.1 Purpose

This document provides guidance to assist owners and operators of Silva Cell facilities with planning and implementation of maintenance to promote long-term system performance in accordance with the design intent. These recommendations should be considered as general guidelines, not requirements, and they should be reviewed and adapted as appropriate to develop site-specific maintenance plans based on the specific design configuration of a given site.

2.2 Permit Requirements

Silva Cells may be designed and installed as LID BMPs that fully or partially satisfy applicable soil and/or stormwater requirements for new or redevelopment projects. Check the local permit requirements to determine whether such requirements apply to your project.

While Silva Cells can be designed as LID BMPs, they can also be used to promote large, healthy trees in dense urban environments, without the intent of formally managing stormwater runoff. In such cases, stormwater permit requirements would not apply.

2.3 How to Use this Manual

Operations and maintenance guidelines are provided in Section 3.0, organized in three subsections, as follows:

- Subsection 3.1 Key Maintenance Considerations - Provides details regarding maintenance activities that should be considered to maintain function of the facility.
- Subsection 3.2 Key Operations to Preserve Facility Function - Discusses the functions of the BMP that need to be preserved to maintain the intended performance.
- Subsection 3.3 Maintenance Guidelines - Provides information that can be used to develop a site specific maintenance plan.

Successful use of this manual requires understanding of the design intent, site and as-built conditions, and knowledge of applicable permit requirements (Section 2.2).

2.4 Definitions

Definitions for important terms used throughout this manual are as follows:

- Best management practices (BMPs) - Activities, practices, procedures, structural features, or products that are designed to reduce the risk of causing adverse impacts to downstream water bodies.
- Drawdown Time - The time it takes water from a given runoff event to completely drain through an infiltration BMP, typically measured from the end of the event to the time the water level in the system returns to baseflow conditions.
- Infiltration – Percolation of stormwater runoff into soil media or native site soils.
- Low Impact Development (LID) - A development approach that manages stormwater by working with nature and the existing site conditions in a manner that will reduce or prevent adverse impacts to the site or downstream environment.
- Macropores – Large, free-draining soil pores, oftentimes found between aggregates or near tree roots.

3.0 Maintaining Silva Cells

This section identifies key component design functions and maintenance considerations, provides guidance on inspection and maintenance activities and recommended frequencies, lists needed equipment and materials, and discusses skills and staff needed to perform the recommended maintenance.

3.1 Key Component Design Function and Maintenance Considerations

Key components of the Silva Cell system include the inlet structures, distribution pipes, the modular Silva Cell units and frames, fill soils, underdrain pipe, flow control structures, trees/vegetation, and surface treatments. Intended general design functions and maintenance considerations for each of these key components are discussed below.

3.1.1 Inlet system

Silva Cell inlet systems can be designed to allow stormwater runoff to flow into the facility in a number of ways. Water can sheet flow from adjacent hardened surfaces, infiltrate via overlying or adjacent permeable surfaces, flow through curb cuts, or be piped from a catch basin, roof drains, or yard drains.

However the inlet system(s) are configured, they must be properly sized and maintained to allow stormwater runoff from the intended contributing drainage area to enter the facility. Key maintenance considerations include providing pre-treatment through temporary erosion and sedimentation control measures in the tributary drainage basin during construction and long-term pre-treatment through stabilization of open soil areas in the tributary basin with plants or mulch and maintenance of inlet capacity by removing sediment, trash, and debris from inlets and the contributing drainage area.

3.1.2 Distribution Pipe

Some installations may include a distribution pipe to distribute inflows across the surface of the facility. Distribution pipes are typically 4- to 8-inch-diameter (100- to 200-millimeter-diameter) perforated or slotted pipes installed on top of or within the soil media. Maintenance activities should preserve the ability of the pipe to distribute the water effectively by removing clogs and repairing or replacing cracked or broken pipes as needed.

3.1.3 Irrigation Systems

If the Silva Cells have been designed to include irrigation, follow the manufacturer instructions for operating and maintaining your chosen irrigation system. Also see the section above (3.1.2) if the irrigation system is passive and includes distribution pipes.

3.1.4 Silva Cell Modular Units

Silva Cell modular units are made from fiberglass-reinforced, chemically-coupled, impact-modified polypropylene with galvanized steel tubes. DeepRoot provides a 20-year warranty for the Silva Cell product, which is included for reference in Appendix A. Each module provides a 92% void volume, which is backfilled with a specified type and depth of soil media (Section 3.1.5) to support tree growth and promote stormwater management.

When used in a typical pedestrian application, the Silva Cell system has an estimated design life of approximately 100 years (DeepRoot 2014). The units themselves are not expected to require maintenance within that design life duration when properly designed and installed.

3.1.5 Soil Media

The soil media filled within the Silva Cell units (Section 3.1.4) performs critical functions of supporting tree growth and managing stormwater runoff. Organic matter in the soil media is important for both of these functions; because it helps trees build soil structure, provides a nutrient reservoir, and increases soil water holding capacity. In order to preserve a healthy balance of soil organic matter and soil biology, excess soil compaction must be prevented and proper drainage through the system must be maintained.

Silva Cells protect soils under pavement from excessive compaction by providing a post and beam structure that supports the pavement, allowing the soil media backfill to be lightly compacted. The lightly compacted soil media creates a healthy rooting environment for trees, which deliver increasing amounts of organic content to the soil system as the roots grow and decay. Stormwater inputs also deliver nutrients, such as nitrogen and phosphorus, helping to maintain soil organic matter over time.

Routine maintenance of the soil media is generally not needed provided the installation process of the cell and soil has been carried out correctly and the inlet (Section 3.1.1) and distribution (Section 3.1.2) systems are properly designed, installed, and maintained.

3.1.6 Underdrain Pipe and Flow Control Devices

Silva Cells may include underdrains when infiltration of treated stormwater runoff into native soil is not feasible or not desirable. Underdrains may be located at the bottom of the facility, or may be elevated to promote nitrogen removal and peak flow detention, depending on the design intent.

Typically, underdrain systems consist of 6- or 8-inch-diameter (100- to 200-millimeter-diameter) perforated or slotted pipe. The pipe may be installed in an aggregate filter blanket layer or may be wrapped with a geotextile liner for separation. Proper design and specification of the aggregate filter blanket or geotextile liner is critical to minimizing or preventing fines from the soil media or the native site soils from clogging the pipe.

Some underdrains may be designed with flow control devices (e.g., orifii or upturned elbows) to enhance nitrogen removal, detain peak flows, increase infiltration, or some combination thereof. These flow control devices should be maintained to prevent clogging and allow treated flows to discharge to the downstream conveyance system or receiving water as intended by design.

3.1.7 Trees / Vegetation

Silva Cells fundamentally promote tree growth, and are typically designed with one or more trees that are planted either in the facility or next to the facility in a way that allows the roots to grow into the soil media. Properly designed Silva Cells provide the needed soil volume and quality, water flow, and air flow to allow the trees to reach their true mature size.

As healthy trees grow, their canopies provide increasing capacity over time for interception, storage, and evapotranspiration. As the roots grow, they increase the trees' ability to uptake stormwater and associated pollutants and enhance infiltration by maintaining macropores in the soil column. Maintaining the trees as part of the Silva Cell system is therefore important to the overall performance of the facility over time. See Table 1 for recommended maintenance activities and schedule.

Trees and vegetation adapted to site conditions, such as climate, hydrology, and soil type, should be selected wherever possible to reduce chemical inputs and reduce or eliminate the need for watering. Proper design, installation, and maintenance of the inlet system (Section 3.1.2) and distribution system (Section 3.1.3) are also important to maintaining trees and vegetation properly watered. Similarly, proper design, installation, and maintenance of the underdrain pipe and flow control devices are important to maintaining desired watering regimes and draw-down rates.

3.1.8 Surface Treatment

Silva Cells can be designed to provide structural support for a variety of surface treatment types, including hard surfaces (e.g., permeable or impermeable asphalt, concrete, pavers, etc.) or natural surfaces (e.g., soil, lawn, vegetation). Surface treatments should be maintained in accordance with manufacturer recommendations and local jurisdiction requirements (i.e., pertaining to sidewalks, roadways, etc.), as applicable.

3.2 Maintenance Guidelines

The following table provides a breakdown of recommended routine inspection and maintenance activities and frequencies, conditions that trigger non-routine maintenance, and the associated recommended non-routine (triggered) maintenance activities for key Silva Cell components.

Table 1: Silva Cell Maintenance Guidelines

Component	Recommended Frequency		Inspection Activity	Condition when Maintenance is Triggered	Recommended Maintenance Actions
	Inspection	Routine Maintenance			
Silva Cell Units					
Frames (or base and posts) and Deck	As needed	None	Not Applicable	Facility shows signs of damage from external source (i.e., excessive loading from the surface, nearby construction, or similar)	Repair damaged component (refer to the Protection and Maintenance section of the Silva Cell Operations Manual included in Appendix B, pages 9-11).
Tree Opening	Spring, Fall, and after major storms	As needed	Check for clogging, standing water, sediment, trash, and debris	Evidence of clogging, standing water, accumulation of sediment, debris, or trash	As needed.
Inlets/Outlets/Pipes					
Inlet/outlet structures	Annually	After major storms	Check that the structures are operating properly	Water is not being directed properly to or out of the Silva Cell facility	Remove any blockages and clean pipe as needed.
Energy dissipation component at inlet (if applicable)	Annually	After major storms	Check that the energy dissipation is working correctly	Where applicable – Energy dissipation (i.e., splash block, rock, or cobbles) is removed or missing and concentrated flows are being directed into the facility improperly	Replace or restore the energy dissipation component of the facility to the original design.
Flow restrictor (if applicable)	Annually	After major storms	Check that the flow restrictor is operating properly	Water is not passing through the flow restrictor per the design flow rate	Remove material causing the blockage and repair component as needed.
Distribution pipes	Annually	Annually	Check that the distribution pipes are allowing water to distribute properly	Water is not being distributed within the facility per design	Remove blockages from pipes (e.g., jet clean, rotary cut roots/debris).
Underdrain pipes	Annually	Annually	Check that the underdrain pipes are	Water is not being drained through the underdrain pipes per design	Remove blockages from pipes (e.g., jet clean, rotary cut roots/debris).

Component	Recommended Frequency		Inspection Activity	Condition when Maintenance is Triggered	Recommended Maintenance Actions
	Inspection	Routine Maintenance			
Trees/Vegetation					
Tree	Biannually	As needed	Check need for pruning	Tree requires pruning for safety reasons, to promote healthy growth or to prevent the tree from growing in an undesirable manner.	Prune tree as needed for safety to promote healthy growth and to avoid conflicts with adjacent features (i.e., power lines, clearances from buildings or sidewalk, or similar). Pruning should be performed by a landscape professional that has experience pruning trees and per the guidance of an arborist certified by the International Society of Arboriculture.
	Spring, Fall, and after major storms	As needed	Check tree safety	Signs of potential danger include broken, dead, or hanging branches, cracks, fungi, cavities, weak trunk or branch unions	Remove components of the facility above the frames and decks in a manner that minimizes damage to the facility. Use HydroVac and hand tools to remove soil if soil removal is needed. Cut and remove roots as directed by an arborist. Do not cut or damage frames. Install new tree and Silva Cell components as needed to restore the facility to its designed configuration.
	Spring and Fall	As needed	Check tree health	Check tree for mower and weed whip damage, vandal damage, and animal damage. Inspect leaves, branches, crown and trunk for signs of insect or disease problems	Diagnose cause of problem: e.g. mower and weed whip damage, vandal damage, animal damage, over- or under-watering, pest or disease, soil problems, etc., and remedy.
	Every 4-5 years	As needed	Check for girdling roots	Girdling roots are found	Remove girdling roots.
	Annually	As needed	Check for soil or mulch on root collar	There is soil or mulch on the root collar	Clean soil or mulch off root collar until the first set of roots is found, take care not to harm roots.
	Annually	As needed	Check safety	Tree is dying, dead, diseased, or has become a safety hazard	Remove components of the facility above the frames and decks in a manner that minimized damage to the facility. Use HydroVac and hand tools to remove soil. Cut and remove roots as directed by an arborist. Do not cut or damage frames (or base and posts). Install new tree and Silva Cell components as needed to restore the facility to its designed configuration. Refer to the Protection and Maintenance section of the Silva Cell Operations Manual included in Appendix B.

Component	Recommended Frequency		Inspection Activity	Condition when Maintenance is Triggered	Recommended Maintenance Actions
	Inspection	Routine Maintenance			
Tree					
Vegetation	Biannually	As needed	Check tree health	Dying, dead, or unhealthy plants	Remove and replace dying, dead or unhealthy plants.
Weeds	Monthly	Monthly	Check for weeds	Weeds present in the facility	Remove weeds as necessary. Noxious weeds should be removed in accordance with local standards. Avoid using herbicides and pesticides in an effort to protect water quality.
Mulch	Monthly	After weeding	Check much coverage	Mulch layer has bare spots or a depth less than two inches (50 mm).	Cover bare spots and replenish mulch as required.
Watering		As needed	Not applicable	Tree/vegetation shows signs of being deprived of water or watering is anticipated during prolonged dry periods	Water frequency will vary depending on species, climate, and site conditions. Water appropriately to maintain a health of the tree or vegetation. Ensure water is reaching the entire soil column and perimeter, not just the tree opening.
Pest Control					
Nuisance Animals	Biannually	As needed	Check for signs of damage from animals	Damage or erosion caused by animals	Remove/reduce the item that is attracting the nuisance animals. Consider placing decoy predator species or pet waste bag stations to promote responsible activities.
Insects	Biannually or as needed	As needed	Check the presence of insects and or insect nests	Tree/vegetation shows signs of wilting, chewing of bark, spotting, or other indicators appropriate for the region.	Remove diseased or dead plants. Remove or reduce the source attracting the insects if possible. Follow the pest management procedures appropriate for the region.
Surface Treatment					
Hard Surfaces (i.e., permeable or impermeable concrete, asphalt, pavers, or grid systems)	Annually	As needed	See applicable manufacturer recommendations.		
Permeable Surfaces (i.e., vegetated areas)					

3.3 Equipment and Materials

The text box to the right provides a list of equipment and materials that may be needed to perform maintenance and inspection activities. The list should be reviewed and approved by the Silva Cell owner or operator and should be modified as appropriate for the specific installation. For instance, if the installation does not have a planter strip area, weeding equipment may not be needed. Similarly, if underdrains are not included, vactor, water jets, and pressure washing equipment may not be needed, etc.

- Safety Equipment – As appropriate for the site (i.e., high visibility vest, gloves, long pants, boots, traffic control equipment, etc.)
- Inspection Equipment
  - Camera
  - Tape measure
  - Manhole key and lifter to open manhole, cleanout, or inspection port lids
  - Flashlight
  - Field report sheet
  - Inspection records and photos from previous inspections
  - As-built information
  - Manufacturers' product information
  - Method of inspecting pipes and structure without entering them (i.e., camera or mirror on an extendable pole)
  - Equipment to measure drawdown time (i.e., stopwatch, measuring stick, water source, and hose)
- Maintenance Equipment
  - Broom, rake, and shovel
  - Weeding equipment
  - Bucket, wheelbarrow, garbage/leaf bags, and tarp
  - Tree trimming and pruning equipment
  - Hand tools
  - Plumbing snake
  - Vactor truck
  - Water jet
  - Pressure washer
- Maintenance Material
  - Pipe repair material
  - Replacement pipe material per the original design
  - Replacement surface material (i.e., pavers, asphalt, concrete, or natural material)

Equipment and materials that may be needed to perform typical maintenance and inspection activities. Adapted from the Western Washington Low Impact Development (LID) Operation and Maintenance (O&M) Guidance Document (Ecology 2013b).

3.4 Skills and Staffing

The skills and staff required to inspect and maintain Silva Cells will vary depending on the size of the installation, complexity of the system, surface treatment, and site constraints. Routine maintenance and inspection activities for the above-ground features will generally be similar to that of a street tree, planter strip, or sidewalk. Routine maintenance for the below-ground features will generally be similar to that of an underdrain or footing drain system.

The Table 2 summarizes the staffing resources that may be required for routine maintenance and inspection activities:

Table 2: Skills and Staffing Table

Maintenance Activity	Staff Skills
Landscaping	Staff must have appropriate landscaping skills, including plant care, watering, and weeding, based on the trees/vegetation present; staff must have the ability to identify plants, weeds, and invasive weed species and have knowledge of the timing of weed seeding and growing periods.
Pruning and tree care	Staff conducting pruning and tree care activates should be a certified arborist or have equivalent training.
Pest Management	Staff conducting pest management activities must be able to identify pests applicable to the region and be familiar with methods to address those issues.
Erosion Control	Staff must have general knowledge of identifying sources of erosion, prevention methods, and removal methods.
Drainage System Maintenance	Staff inspecting drainage system must have general knowledge of the drainage system components included in the facility, specific knowledge of how the facility was built and its intended to function, and maintenance history. Staff preforming maintenance activities must be trained to operate the specialized equipment to conduct those activities (i.e., jet cleaning, root cutting, vactoring, CCTV inspection).

4.0 Repairing Silva Cells

As the Silva Cell is a system that interacts with other infrastructure, repairs to adjacent elements, such as paving surfaces or utilities and services, must be undertaken with an understanding of the site-specific installation. Repairs to all system components and adjacent or nearby elements should be done per local guidelines and individual manufacturer directions, as applicable.

Each Silva Cell stack is independent of the Silva Cell stack adjacent to it. Therefore, if an individual stack is disturbed, the entire system is generally not expected to be compromised.

Examples of repair processes are provided in the Tree Planting Solutions for Hard Boulevard Surfaces Best Practices Manual, included in Appendix B. This manual documents two demonstration projects conducted by the City of Toronto, in which they field-tested a water main break scenario and a gas lateral and riser installed through Silva Cells. In both cases, the Silva Cells were found to pose no significant hindrance to their utility work.

Section IV of the Silva Cell Operations Manual (DeepRoot 2011), included in Appendix C, provides general information on how to protect installed Silva Cell systems, manage utilities in the vicinity of installed systems, repair or replace overlying pavement, and remove or replace Silva Cells and trees as needed.

5.0 Programmatic and Administrative Guidance

This section discusses regulatory requirements for LID BMP maintenance (if applicable) and the available programs and tools to help with implementation.

5.1 Regulatory Requirements for LID BMP Maintenance Programs

As discussed above, this manual provides general maintenance guidelines that can be adapted to site specific maintenance plans based on given site conditions. If Silva Cells are installed as part of a permanent stormwater management plan to meet minimum stormwater requirements for new or redevelopment, local requirements for maintaining LID BMPs would apply. Consult the local standards and requirements to determine the maintenance requirements that will need to be addressed.

5.2 Tools for Implementing an LID Maintenance Program

A range of administrative tools can be used to assist jurisdictions in implementing required maintenance activities for stormwater BMPs, such as Silva Cells. The tools vary depending on jurisdiction requirements, but may include (Ecology 2013b):

- Stormwater requirements (i.e., Code, manual, ordinance)
- Legal agreements between private or public owners and the regulatory agency (i.e. access easements, property maintenance covenants, or transfer of ownership)
- Maintenance requirements specified as part of the design process
- Financial liability measures
- Record keeping and tracking requirements
- Inspection and maintenance checklists
- Inspection and maintenance schedules
- Mapping
- Owner education (public or private)

6.0 Additional Resources

The following resources provide additional information on maintenance of LID facilities applicable to Silva Cells.

- Western Washington Low Impact Development Operations and Maintenance Guidance Document http://www.ecy.wa.gov/programs/wq/stormwater/municipal/LID/TRAINING/OperationsAndMaintenance.html
- LID Technical Guidance Manual for Puget Sound http://www.wastormwatercenter.org/files/library/lid-manual-2012-final-secure.pdf
- International Society of Arboriculture http://www.isa-arbor.com/education/publications/index.aspx

- EPA's Integrated Pest Management (IPM) principles site http://www.epa.gov/pesticides/factsheets/ipm.htm
- Water Environment Research Foundation (WERF) BMP and LID Whole Life Cost Tool http://www.werf.org/c/KnowledgeAreas/Stormwater/ProductsToolsnonWERF/BMP_and_LID_Whole_Li.aspx
- Chesapeake Stormwater Network http://chesapeakestormwater.net/training-library/stormwater-bmps/
- Los Angeles County Department of Public Works, Stormwater BMP Design and Maintenance Manual http://dpw.lacounty.gov/ldd/publications/Stormwater%20BMP%20Design%20and%20Maintenance%20Manual.pdf
- Low Impact Development Center http://www.lowimpactdevelopment.org/links.htm

7.0 References

- DeepRoot 2011. Silva Cell Operations Manual, prepared by DeepRoot Green Infrastructure LLC (DeepRoot), 2011.
- DeepRoot 2014. Personal communications between Graham Ray, President of DeepRoot, and Robin Kirschbaum, Senior Engineer of HDR, regarding expected design life of Silva Cells in typical pedestrian application. September 2, 2014.
- Ecology 2013a. Washington State Department of Ecology (Ecology) Equivalent Technology Website (http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html), accessed on June 9, 2014.
- Ecology 2013b. Western Washington Low Impact Development (LID) Operation and Maintenance (O&M) Guidance Document, prepared for Washington State Department of Ecology Water Quality Program, July 8, 2013.
- EPA 2014. Incorporating LID Website (http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/IncorporatingLID.pdf), accessed on June 9, 2014.

Appendix A

DeepRoot Warranty

DeepRoot® warrants to the original purchaser of its Silva CellTM product that such product will be free from defects in materials and workmanship, and perform to DeepRoot's written specifications for the warranted product, when installed and used as specifically provided in the product's installation guidelines for a period of 20 years from the date of purchase. This warranty does not cover wear from normal use, or damage caused by abuse, mishandling, alterations, improper installation and/or assembly, accident, misuse, or lack of reasonable care of the product. This warranty does not apply to events and conditions beyond DeepRoot's control, such as ground subsidence or settlement, earthquakes and other natural events, acts of third parties, and/or Acts of God. If this warranty is breached, DeepRoot® will provide a replacement product. Incurred costs, such as labor for removal of the original product, installation of replacement product, and the cost of incidental or other materials or expenses are not covered under this warranty.

DEEPROOT® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. DEEPROOT® SHALL NOT BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOST PROFITS, LOST REVENUES, LOSS OF USE, OR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.

Some states do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This Warranty gives you specific legal rights, and you may also have other legal rights, which vary from state to state, or in Canada, from province to province.

Appendix B

City of Toronto Tree Planting Solutions
in Hard Boulevard Surfaces;
Best Practices Manual

Project # A21065
Date February 8, 2013
Recipient City of Toronto
Submitted by DTAH, Lead Consultant
ARUP, Engineering
James Urban, Urban Trees + Soils

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Gro-bark

Earthco Soil Mixtures

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* Please note: Appendix B contains excerpts from the City of Toronto's Tree Planting Solutions in Hard Boulevard Surfaces Best Practices Manual. For full document with all content please contact the Urban Forestry Department at 311@toronto.ca

Executive Summary

The City of Toronto has established a goal to increase both the number and size of its street trees (*Toronto Street Trees: Guide to Standard Planting Options*, April 2010). The City aims to grow large-canopy trees in hard boulevard surfaces that have a complete 40+ year life span and are 40 cm in diameter at breast height.

This manual examines and provides cost-efficient options to reach this goal.

Downtown streetscapes are harsh environments for trees, and many do not survive or never grow to a large canopy size. Large-canopy trees provide enormous climatic, environmental, health, aesthetic and psychological benefits. There is room for considerable improvement in the quality of the urban forest in downtown streetscapes and this report examines how this can be done.

Section 1 of this report, the Introduction, defines 'criteria for success' for urban tree planting in Toronto, and sets the tone for the manual and its future implementation.

Section 2 provides fundamental principles for growing large trees. At minimum, trees require 20 to 30 m3 of soil each in order to grow to maturity. In order to achieve this, integration of soil/root zones with utilities is proposed to reach the target soil volume under urban sidewalks. Larger openings in the pavement also help to increase longevity. Cost savings are achieved by eliminating unnecessary hardware and designing structural concrete to withstand the load of occasional snowploughs and service vehicles, but not firetrucks.

Sections 3 and 4 provide various technical solutions that have been developed as part of this manual. They address both new and retrofit construction and repair techniques to respond to a variety of site-specific requirements such as sidewalk width, public realm condition, and infrastructure arrangement for a range of budgets.

Section 5 evaluates essential material components that are required for successful tree growth in an urban streetscape. These are tree opening area materials such as mulch; flexible plastic mesh bark protectors; passive rainwater harvesting and distribution; and root zone ID markers to prevent construction damage.

Sidewalk trees on Yorkville Ave.

Section 6 offers insightful information to ensure that each planted tree has the best opportunity to thrive. Horticultural topics such as tree preservation, installation and maintenance, tree species suitability, nursery stock quality and soil specific requirements are discussed.

Lastly, Section 7 documents two demonstration projects where the City of Toronto and consultants field-tested a number of the tree planting construction methods. A water main break scenario was recreated and a gas lateral and riser were installed through soil cells. In both cases, the soil cells posed no significant hindrance to utility work.

The Appendices include construction drawings, specifications, cost estimates, letters of product availability, responses to City comments and the street tree precedents review.

Section 3 Types

Section 4 Arrangements	3.5m min. sidewalk width			5.7m min. sidewalk width
	TYPE 1: Pavement Bridge		TYPE 2: On-Grade Pavement Over Soil Cells	TYPE 3: Open Planter
	1A	1B		
Growing Medium Trench	X	X	X	
Open Planter with Curb Edge				X

Compatibility between types identified in Section 3 and arrangements identified in Section 4.

3.0 Construction Methods & Repair Regimes

Three different systems for tree planting in sidewalks are laid out in this section. They form the basis for the proposed City of Toronto tree planting details that accompany this report in the Appendices. In addition, this section makes recommendations for hybrid solutions and retrofits and dealing with sub-standard sidewalk conditions.

3.1 Type-1: Pavement bridge system

A structural pavement surface or subsurface spans between supporting ends over the growing medium trench. Reinforced precast and cast-in-place concrete panels provide the 'bridge'. Refer to the T-1A and T-1B Construction Drawings in Appendix A.

3.2 Type-2: Soil cells system

Modular rigid soil cells support a pavement system above the growing medium. The pavement surface and base can be built directly on top of the hard deck of the soil cells. Refer to T-2 Construction Drawings in Appendix A.

3.3 Type-3: Open planter system

There is no paving around the tree base. Where there is space for this system on the sidewalk, it is the most cost-efficient option available for growing large urban trees. Refer to T-3 Construction Drawings in Appendix A.

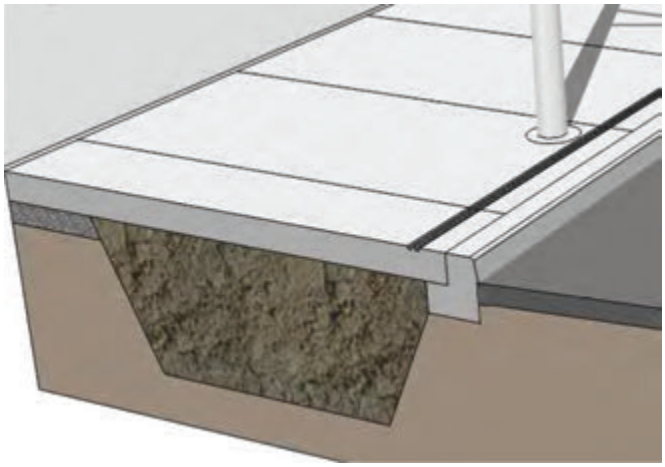
3.4 Hybrid solution and retrofits

The street is not rebuilt wholesale, just one or two trees in a block may be affected.

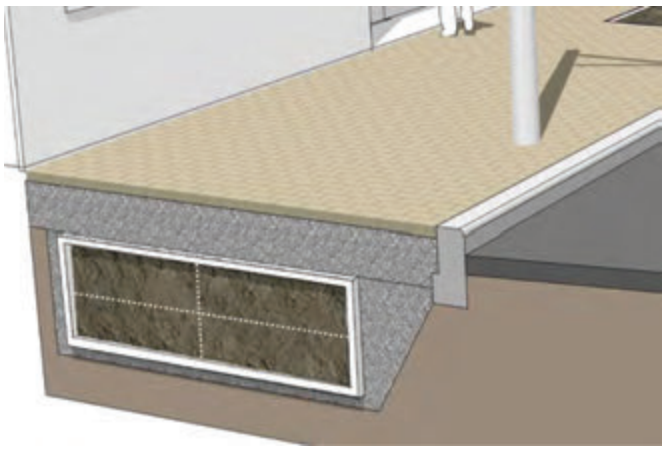
3.5 Sub-standard sidewalk conditions

Conditions where the existing space or utility constraints are such that the standards advocated in this report are not achievable.

Note: In the following descriptions for utility compatibility with various construction methods, review is based upon the general feasibility of working with such utilities and repairs. Ultimately, individual utility companies and City departments will have to reach an agreement for the access and repair of the various conditions generated, and the responsibility thereof. The recommendations in this report are intended to provide a framework for these policy decisions to be made.



3.1 Type 1: Pavement bridge system



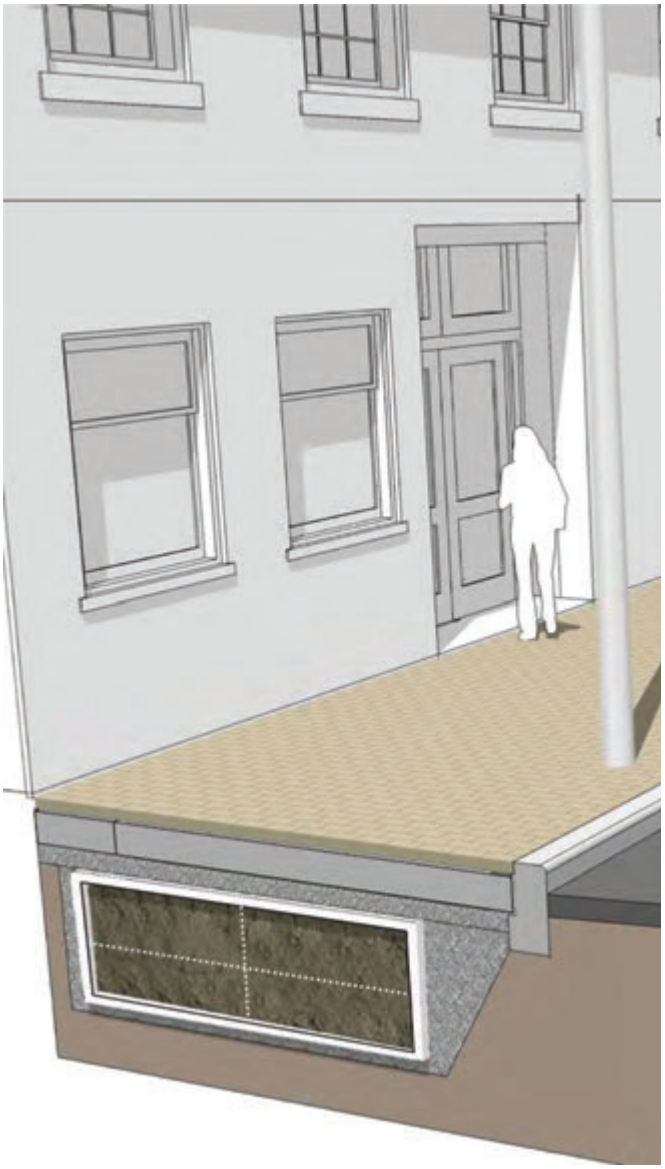
3.2 Type 2: Soil cells system

3.3 Type 3: Open planter system

3.2 Type-2: Soil Cell System

On-grade pavement over soil cells allows for traditional pavement on-grade on top of the soil cell assembly and has been used in a number of pilot projects in Toronto and other North American cities. This system requires utility companies and City agencies to become comfortable with the concept of a modular support system, and will require a new protocol to include removal and replacement of the soil cells.

Construction Drawings T-2 in Appendix A provides details on this system.



Type 2: On-grade pavement over soil cells

Construction

Space allotted for root zone and foundation are excavated out, and a compacted granular base is installed for the soil cells. Soil cells are installed per manufacturer's instructions. The pavement system is installed with granular base above the soil cells. The new paving can be installed in a similar way to any on-grade pavement system.

Utility access

Where there is concrete, the pavement is sawcut. Where there is unit paving, the pavers are removed. Filter fabric is peeled back, and soil cells are removed and set aside. In frozen conditions, the soil cells may be removed forcibly with an excavator, requiring them to be replaced with new soil cells prior to repairing surface paving. Once soil cells are removed, the utility is accessed via excavation of planting soil or granular below.

Repair

After the utility is backfilled with granular to the underside of the root zone and compacted, soil cells are reinstalled per manufacturer's instructions. Filter fabric is laid down on top of replaced soil cells, then pavement system is made good either temporarily or permanently.

Recommended utilities compatible with root zone

On-grade pavement over soil cells is generally compatible with utilities below the root zone, ideally where frequent access is not anticipated. Some shallower utilities may be compatible for placement within root zone/soil cell zone depending on agreement with the utility company concerned such as gas or hydro laterals.

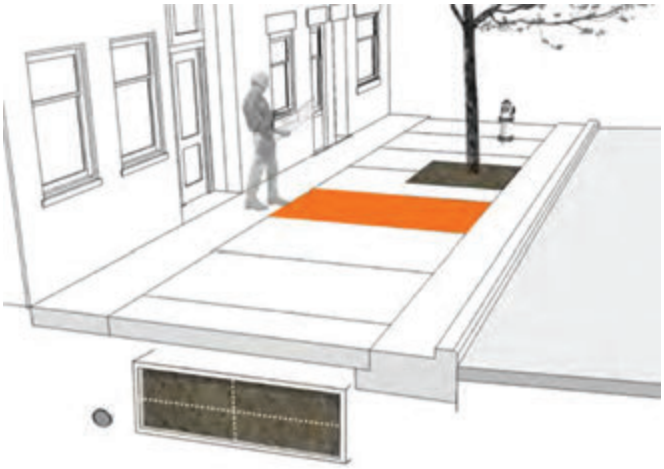
- Utilities below root zones:
- New generation storm line (concrete)
- New generation sanitary line (concrete)
- Concrete-encased hydro duct, combined data
- District energy
- Pressurized water main
- Gas (main or lateral)
- Bare conduit (street lighting, telephone, etc.)

Surface finish

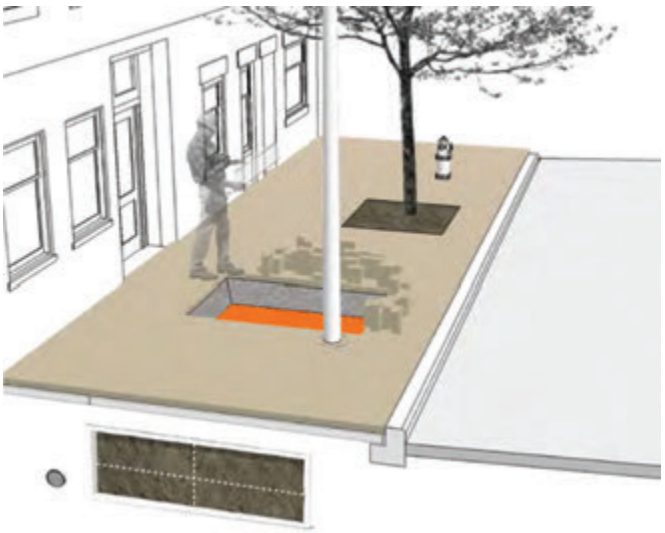
Since the structural support is provided by the soil cells, the pavement system can be any type or finish such as concrete or unit paving over concrete.

Pros / cons

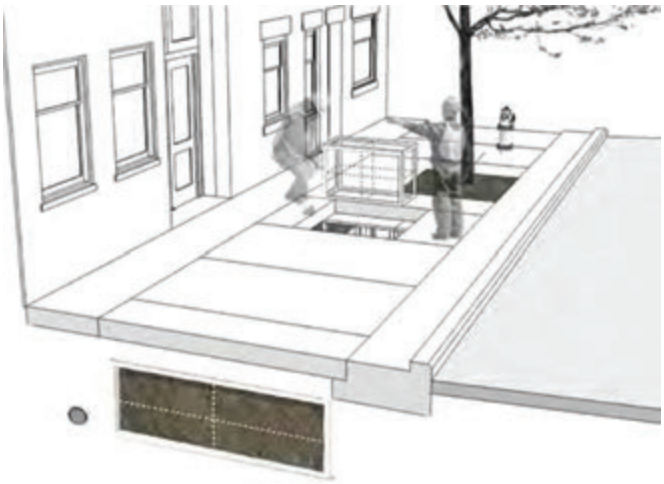
If the work crew is comfortable removing and replacing soil cells, the access and repair procedure is similar to current practices. The pavement system is equivalent to an on-grade construction. It can be repaired as a permanent repair or a temporary two-stage repair.



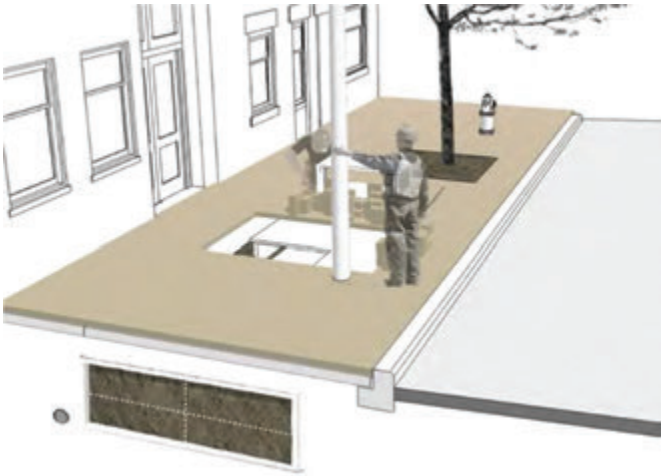
Utility access, step 1



Utility access with pavers, step 1



Utility access, step 2



Utility access with pavers, step 2

Utility access, step 3

7.0 Demonstration Projects

The consultants and the City organized a soil cell testing exercise at the City of Toronto's Nashdene Yard in Scarborough with utility stakeholders Toronto Water and Enbridge Gas. New utility installation and repair of existing utilities under soil cells was recreated at the Yard:

7.1 Toronto Water utility access exercise

Toronto Water recreated an "emergency scenario" in the middle of winter (Feb. 24, 2012). The scenario involved bursting a water main and testing the effects of water leaking on the soil cell system.

7.2 Enbridge Gas lateral line and riser installation

Enbridge Gas tested access through soil cells to install a gas lateral line.

7.3 Bloor St. W. at Dovercourt Rd. and Concord Ave. demonstration project

A further on-site demonstration project was proposed. However, it was decided not to be implemented as part of this study, due to a larger upcoming resurfacing project in the area.

Note: The soil cell product used at Nashdene Yard was Silva Cells, manufactured by DeepRoot Green Infrastructure, LLC.

Nashdene Yard location, Scarborough.

Soil cell trench filled with soil.

Soil cell decking system.

Backfill installation on top of deck.

Finished installation.

7.1 Toronto Water Utility Access Exercise

Description of the exercise

The cold weather conditions, at -4°C (-10°C with wind chill) provided Toronto Water field personnel a good test for working with soil cells in adverse conditions.

The exercise began at 8:00 am with an on-site briefing where the demonstration project coordinators and Toronto Water personnel discussed the different activities and the order of execution. Water was then turned on into the installed water pipe which was capped on both ends and pre-cut during its installation under the soil cell system. Water fed from a hydrant at 414 kPa ran for approximately three minutes before it started to come out through the already saturated soil adjacent to the demonstration sidewalk. After the water valve was shut off, the following activities took place:

Concrete sidewalk pavement was removed

- Concrete pavement was saw cut into blocks that could later be removed by a backhoe.
- Removal of concrete and granular 'A' base below concrete paving.
- Crew located a geotextile layer that was installed below the granular 'A' and on top of the soil cell top frame deck; the geotextile was cut to expose the soil cell deck.
- Manual removal of two of six soil cell top decks were set aside for re-installation.

Water pipe cut.

Sawcutting concrete pavement.

Water introduced - water bursting out of saturated soil adjacent to installation.

Mechanical removal of pavement to expose soil cell decking system.

Manual removal of two decks, unscrewed and set aside for future re-installation.

Excavation below bottom of soil cells to daylight water pipe.

Mechanical removal of soil cells.

Excavation below bottom of soil cells to daylight water pipe.

Mechanical removal of soil cells, soil and sub-base

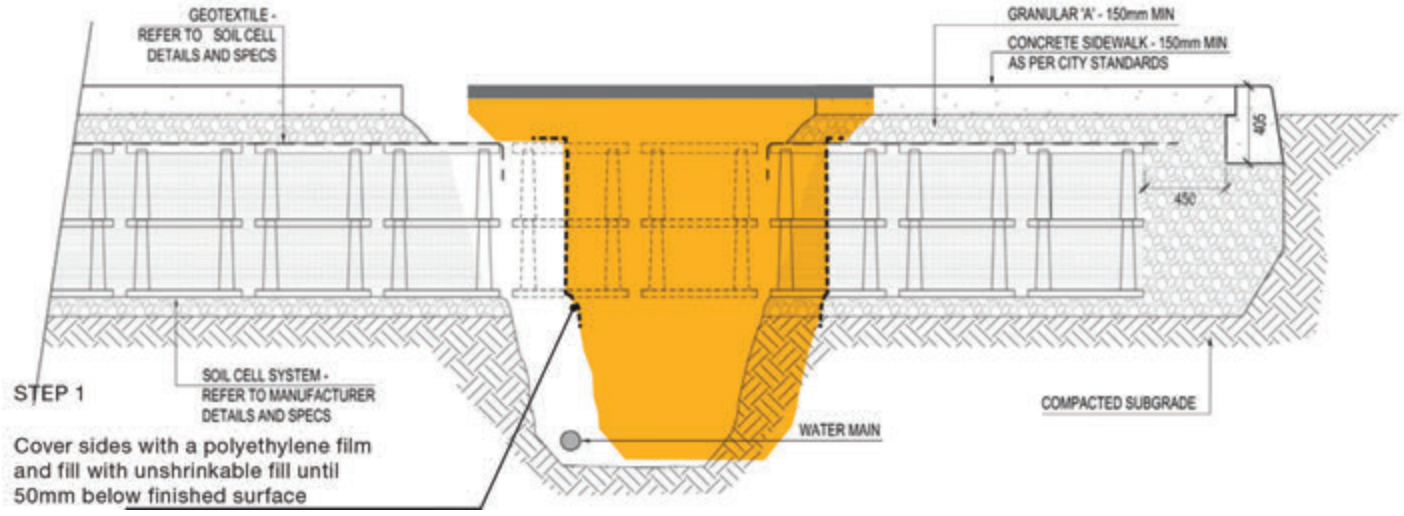
- Backhoe was used to dig out and through soil cells and soil.
- Water pipe was daylighted.

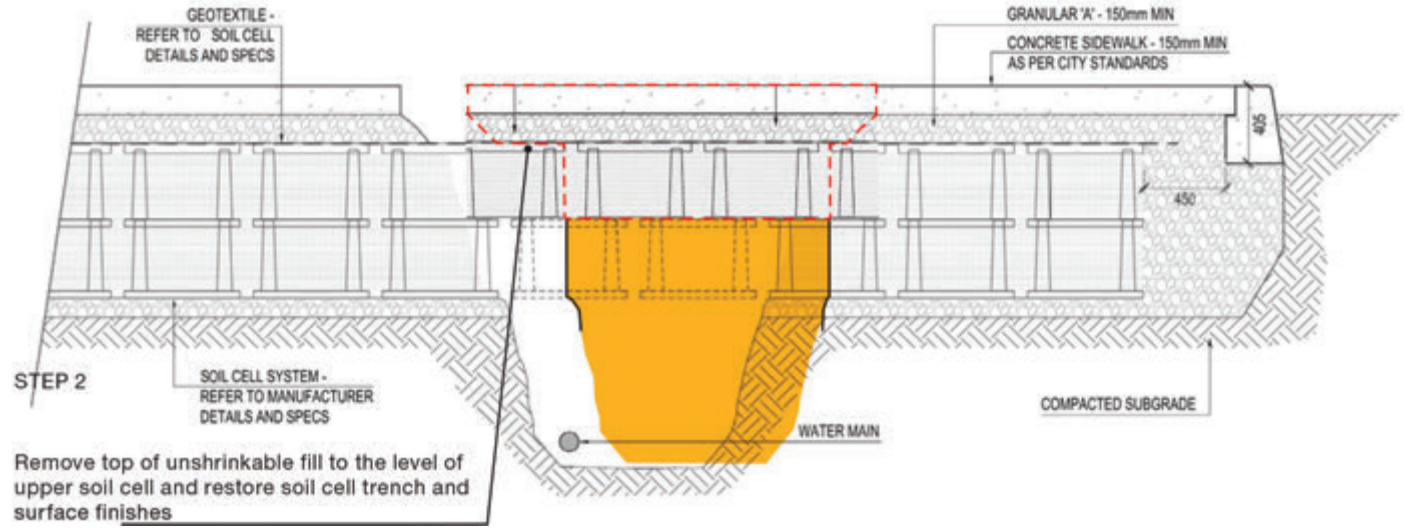
Repair

- The dug trench was temporarily repaired afterwards with unshrinkable fill up to finished grade.
- Weeks later, unshrinkable fill was broken up to the bottom of the first layer of soil cells to restore the cells and surface finishes to the original condition.

Conclusions of the Toronto Water exercise

Once the soil cells were removed, the stakeholders discussed the outcome and lessons learned from the exercise. It was concluded that Toronto Water can easily access its infrastructure through the soil cell system under extreme conditions using the same methods they currently have in place in either a planned or emergency situation. The exercise allayed their concerns that the soil cells would be a hindrance in their field work. Further discussions of a vertical minimum clearance between the utility and the bottom of the soil cells are expected.





7.2 Enbridge Gas Lateral Line and Riser Installation

Description of the exercise

The exercise began at 9:00 am at Nashdene Yard in Scarborough on a late-May day that was partly cloudy and warm. A gas lateral with a long riser was installed under a sidewalk cross-section of unit paving and soil cells. Using a mole with the shortest torpedo hammerhead at 1 .0 m length, the 25 mm gas line was bored through the growing medium and adjacent subgrade. Excavation was only necessary at each end of the gas lateral. For longer horizontal drilling, a directional drill is used which has greater directional control. Enbridge usually uses a torpedo mole for downtown work, which requires less excavation and can be used for horizontal drilling through sidewalk cross-sections. It can drill through tree roots and is only blocked by large rocks. The following took place:

Setting the direction and starting point of the horizontal boring

- Mock building and road sides of the sidewalk were designated for the purposes of this exercise.
- Unit pavers and granular base were removed to locate and confirm the cell deck edge. The torpedo was set to drill horizontally between the soil cell frame legs from the side.
- The crew dug down two cells deep between the building side and the cell, until there was enough room to slide the riser through. Where there is not enough room to dig behind the cell, the cell can be removed to install the riser.
- In alignment with the pit dug at the building end, another pit was dug down approximately 1.2m deep at the road end of the lateral.

Directional boring

- The torpedo was first set to begin at the building side where the riser would be placed. The torpedo did not make it out at the road side because it had great difficulty going from soft material to hard material (i.e.. growing medium to hard clay subgrade) as it does not have enough friction to propel it forward.
- The torpedo was reset to begin on the road side. It bored through the road subgrade then through the soft growing medium and came out at the building side.

Removal of pavers and granular base.

Geotextile is cut through centre of cell deck.

Digging down approximately two cells deep at both lateral ends.

Pulling the lateral through, attaching and setting the riser

- The torpedo was removed and the lateral pipe was attached to the hose end and pulled through.
- The riser was fused to the pipe end and pulled through and set at the correct elevation.
- Granular was backfilled into the cavity.

Torpedo set to begin at the imaginary building end of the lateral line.

Torpedo and hose are pulled up and out of the pit.

Torpedo emerges through growing medium and cell decks on the imaginary building side.

After false start on imaginary building end, torpedo is reset at road end.

Pulling the lateral through the cells and growing medium.

End of lateral at building end.

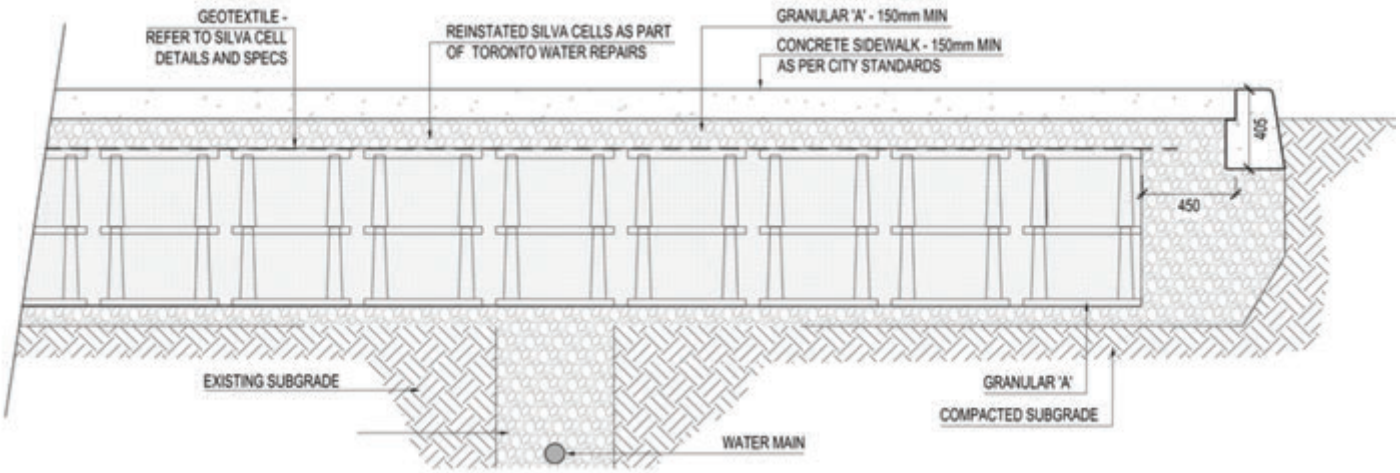
Cover over the cell deck with the cut geotextile and add an overlapping layer of geotextile on top.

Riser is attached and pulled through.

Backfill and ensure riser is set correctly. Conclusions of the Enbridge Gas exercise

Conclusions of the Enbridge Gas exercise

It was concluded that the soil cells pose no obstruction to the installation of a gas lateral and riser. The work is essentially the same as current sidewalk conditions with a few extra considerations. The crew must locate the boundary of the cell frame to set the torpedo to go between the cell deck legs and not collide into them. The crew must be mindful that the growing medium is easily permeable and that the torpedo bores move easily from hard to soft matter and not the other way around. Paving removal need only be limited to where the riser needs to go and the area needed to slide it into place. Where there is enough room between the soil cells and building face to excavate and install the riser, paving on top of the cells could stay intact.



Appendix C

Protection and Maintenance

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San Francisco, CA 94104
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Notes: Each Silva Cell stack is independent of the Silva Cell stack adjacent to it – therefore if individual Silva Cells are disturbed, the entire system is not compromised.

Silva Cell frames (or base and posts) and decks should at no time be cut, drilled into, or otherwise structurally modified during any installaion, inspection or maintenance procedure. Any damaged Silva Cell frames (or base and posts) or decks shall be replaced.

1.0 Protection of The Silva Cell System

To help avoid future disturbance of the Silva Cell system the location of the system should be accurately recorded at the time of construction and incorporated into an as-built drawing.

If possible register the location of the Silva Cell system with the local One-Call utility locating program.

Accurately locate the limits of the Silva Cell system prior to any future excavation in the area. (Some types of underground utility locating equipment, such as ground penetrating radar, are capable of detecting Silva Cells and may be used to locate the limits of the system. Contact a professional utility locating contractor for more information).

Utility warning tape/ribbon and locating wires can also be incorporated into the system and are recommended.

2.0 Utility Installation, Maintenance, Relocation or Replacement within Silva Cell System

If the Silva Cell system is accidentally unearthed by future excavation in the area, cease the excavation immediately and consult the as-built drawings to determine the limits of the system.

Using hand tools only, expose the impacted portion of the Silva Cell system and carefully inspect the Silva Cell frames (or base and posts) and decks for any signs of damage or cracking.

Replace any damaged Silva Cell frames (or base and posts) or decks and reconstruct any disturbed portion of the system as per DeepRoot's installation Guidelines.

The Silva Cell system supports vehicle loading equal to 32,000 lbs (14,500 kg) per axle, which allows use in areas that accommodate 3 - 4 axle vehicles such as those used for emergency, delivery, and maintenance. Generally meets AASHTO HS-20 (USA), CSA-S6, 87.5 and OBC 54KN (Canada), and BS EN 1991-1-1:2002 and BS EN 1991-1-2:2003 (UK) loading standards when used with standard paving profiles.

Throughout this document, where H-20 loading is referred to, this is shorthand for the loading standards described above.

To prevent damage to underlying Silva Cells, ensure that machinery operated on the paving above does not exceed loading as described above. Do not operate any machinery over the Silva Cell system without paving being in place.

3.0 Utilities and Accessing The Silva Cell System

The Silva Cell system can be easily accessed for utility installation, maintenance, relocation, replacement, etc. using the following procedure.

First, locate the limits of the Silva Cell system.

Carefully remove the existing pavement. Take care to not operate machinery exceeding H-20 loading on any of the surrounding pavement supported by the system. Do not operate any machinery over the Silva Cell system once the pavement has been removed.

Using hand tools remove the aggregate base course and expose the underlying geotextile fabric. If working near the perimeter of the system there will be also be approximately 12" (30.5 cm) of geogrid that is folded over and attached to the cell decks. Cut the geotextile fabric as needed to allow for the removal of Cell decks. If Geogrid is encountered, detach it from cell decks and fold it back as well. Do not cut the Silva Cell frames (or base and posts) or decks. Remove the Silva Cell decks by removing the four corner screws and set it aside. Remove the soil from inside the frames using hand tools only or a HydroVac. (If the existing soil is to be reused, store it separately to ensure that it does not become contaminated with other spoil material. Otherwise dispose of the soil and replace it with soil meeting the requirements specified for the project. All soil must be inspected and approved prior to reinstallation.) Carefully remove any of the frames (or base and posts) needed to complete utility work. Upon completion of the utility work visually inspect the surrounding exposed Silva Cell parts and remove any of those showing signs of damage or cracking. Restore the disturbed portion of the system using one of the two following methods:

Method 1:

Replace the Silva Cell frames (or base and posts), soil and decks as required per Silva Cell installation details and specifications. Re-wrap geogrid over decks with an overlap at cut seam. Restore the aggregate base course and pavement. Re-use only Silva Cell frames (or base and posts) and decks that have been thoroughly inspected and found to be free of damage or cracking. Replace any parts showing signs of damage or cracking with new.

Method 2:

Structurally bridge the gap with 1 1⁄2" (3.8 cm) clear stone. Install geogrid around the perimeter of the area from which the Silva Cells were removed per DeepRoot's construction guidelines. Fill inside void area with 1 1⁄2" (3.8 cm) clear stone up to the level of the adjacent Silva Cell decks. Cover the stone with geotextile fabric making sure to overlap the existing geotextile fabric by a minimum of 2 feet on all sides. Restore the aggregate base course and pavement.

4.0 Pavement Repair or Replacement over Silva Cell System

When the existing pavement over a Silva Cell system is to be replaced by a different type of pavement, refer to the Silva Cell standard details and specifications. A change in surface materials may require a change in the depth of the underlying aggregate base course.

5.0 Adding Silva Cells to The System/Removing Silva Cells from The System

To make changes to the size of the Silva Cell system, locate the limits of the system. Carefully remove the pavement taking care to ensure that no machinery which exceeds H-20 loading is operated on pavement supported by the Silva Cells and that no machinery is operated over the Silva Cells once the pavement has been removed. Using hand tools remove the aggregate base and expose the underlying geotextile fabric. Cut the geotextile fabric as needed to visually confirm the limits of the Silva Cells. Excavate to no closer than 1' (30.5 cm) of the limits of the Silva Cells. Using hand tools, expose the geogrid which wraps the perimeter of the system. Cut and fold back the geogrid as needed to add or remove cells. If adding to the system, install the new Cells per Silva Cell specifications. Ensure that the gap between the existing Silva Cell frames (or base and posts) and

the new Silva Cell frames does not exceed the 3" (7.6 cm) maximum. If removing frames (or base and posts) or decks, re-install the geogrid along the new perimeter of the Silva Cell system and backfill along the new limits of excavation per Silva Cell specifications.

6.0 Tree Replacement

Tree replacement may be necessary based upon unforeseen or severe site, climate or circumstantial conditions. Limit disturbance area as possible. Ensure all equipment meets H-20 loading requirements.

Remove any structure at the tree opening (tree grate, etc.) Remove mulch and any excess soil from above tree root package. Do not damage Silva Cell frames (or base and posts) or decks. Remove soil using hand tools only or HydroVac and set aside. If hand dug, ensure clean storage of soil material by excavating into contained/isolated location and cover during utility work. Soil must be inspected and approved prior to reinstallation.

Consult a certified arborist to remove tree. If necessary to cut tree roots from main root package, do not cut Silva Cell frames (or base and posts) or decks. Remove tree root package from planting bed. If using construction equipment to remove tree, ensure meeting of H-20 loading requirements.

Prior to planting new tree, install additional planting soil, to the depths indicated, within the tree opening adjacent to paving supported by Silva Cells. Assure that the planting soil under the tree root package is compacted to approximately 85-90% to prevent settlement of the root package. The planting soil within the tree opening shall be the same soil as in the adjacent Silva Cells. See Silva Cell specifications for further detail. Replace root barrier.

Plant tree according to owner specifications or at the direction of consulting arborist. Cover the planting soil finished grade with 2" (5cm) of mulch per Silva Cell specifications.

When a large portion of a Silva Cell installation is to be removed, first locate the area of disturbance. Limit disturbance area as possible. Ensure all equipment meets H-20 loading requirements.

Remove paving and aggregate base course. Carefully cut geotextile to allow for removal of Cell decks. Ensure at least 18" (45.7 cm) overlap into new limits of excavation. Do not cut Silva Cell frames or decks. Unfold geogrid from Cell decks and carefully fold away from Silva Cell frames (or base and posts). Remove Silva Cell decks by removing screws and set aside. Remove soil using hand tools only or HydroVac and set aside. If hand dug, ensure clean storage of soil material by excavating into contained/isolated location and cover during utility work. Soil must be inspected and approved prior to reinstallation Remove anchoring spikes from Cell base and set aside. If geotextile is at base of system, carefully cut geotextile at least 6" (15.2 cm) within new limits of excavation.

Install aggregate base course and paving, ensuring no damage to Silva Cells or other installation components.

7.0 Additional Silva Cells to be Installed Adjacent to Existing Installation

When additional Silva Cells are to be installed adjacent to an existing Silva Cell system, first locate the area of disturbance. Limit disturbance area as possible. Ensure all equipment meets H-20 loading requirements.

Excavate up to 12" (30.5 cm) from existing Silva Cells. Excavated remaining 12" (30.5 cm) by hand. Cut geogrid from face of existing Silva Cell system. Do not cut Silva Cell frames (or base and posts) or decks.

deeproot

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RIDEM REMEDIAL APPROVAL LETTER
File NO. SR-02-2085
5/5/23

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND REVITALIZATION & SUSTAINABLE MATERIALS MANAGEMENT
235 Promenade Street, Providence, Rhode Island 02908

REMEDIAL APPROVAL LETTER May 5, 2023
File No. SR-02-2085

Chris Reynolds
Brady Sullivan Properties
670 North Commercial Street
Manchester, NH 03101

RE: Robin Rug Manufacturing Facility
125 Thames Street
Bristol, Rhode Island
Plat Map 10 / Lots 42, 43, 60, 61, 62, 73 & 76

Dear Mr. Reynolds:

On April 22, 2020, the Rhode Island Department of Environmental Management's (the Department) Office of Land Revitalization and Sustainable Materials Management (LRSMM) enacted the codified 250-RICR-140-30-1, Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (the Remediation Regulations). The purpose of these regulations is to create an integrated program requiring reporting, investigation, and remediation of contaminated sites in order to eliminate and/or control threats to human health and the environment. A Remedial Approval Letter (RAL) is a document used by the Department to approve remedial actions at contaminated sites that do not involve the use of complex engineered systems or techniques (e.g. groundwater pump and treat systems, soil vapor extraction systems, etc.).

In the matter of the above-referenced property (the Site), the Department's Office of LRSMM is in receipt of the following documentation submitted pursuant to the Remediation Regulations in response to the reported release at the Site:

1. Notification of Hazardous Material Release, received by the Department on May 5, 2022, and prepared by Nobis Engineering, Inc. dba Nobis Group (Nobis);

2. Phase I & II Environmental Site Assessment, dated July 26, 2005, received by the Department on August 1, 2022, and prepared by GZA Geoenvironmental, Inc. (GZA);

3. Phase I Environmental Site Assessment, received by the Department on August 1, 2022, and prepared by Nobis;

4. Phase II Limited Subsurface Investigation, received by the Department on August 1, 2022, and prepared by Nobis;

5. Site Investigation Report Addendum, received by the Department on August 2, 2022, and

prepared by Nobis;

6. Notification to Abutters, received by the Department on November 28, 2022, and prepared by Nobis;

7. Public Notification – Response to Abutter Comments, received by the Department on February 13, 2023, and prepared by Nobis;

8. Remedial Action Work Plan, received by the Department on February 27, 2023, and prepared by Nobis; and

9. RAWP – Revision 1 and RAWP Response to Comments, received by the Department on April 19, 2023, and prepared by Nobis.

Together these documents fulfill the requirements of Section 1.9 (Risk Management) and Section 1.10 (Remedial Action Work Plan (RAWP)) of the Remediation Regulations.

The preferred remedial alternative involves:

- Limited excavation and off-site disposal of selective lead-impacted soils in the vicinity of TP-7 on Lot 10-76 to a licensed facility. Confirmatory sampling shall be conducted from the excavation sidewalls and base to verify any remaining soils are compliant with Method 1 Direct Exposure Criteria. Any remaining jurisdictional soils shall be encapsulated by a Department approved engineered control;

- The encapsulation of site soils that exceed the Department's Method 1 Residential Direct Exposure Criteria (R-DEC) with Department approved engineered controls consisting of Robin Rug Manufacturing Facility, 125 Thames Street, Bristol March 20, 2023Remedial Decision Letter - Amendment Page 3 of 4either a minimum of two (2) feet of clean fill, one (1) foot of clean fill underlain with a geotextile fabric, four (4) inches of pavement (asphalt or concrete) above six (6) inches of clean subgrade, or equivalent, and/or building foundations. Site soils in the western portion of the Site adjacent to Bristol Harbor that are within the boundary of the RI Coastal Resources Management Council (CRMC) shall be managed in accordance with all applicable CRMC regulations and requirements;

- The integrity of the cap shall be preserved through the recording of an Environmental Land Usage Restriction (ELUR) on the deed for the entire property (Plat Map 10 / Lots 42, 43, 60, 61, 62, 73 & 76). The ELUR shall require the performance of annual inspections to document the status of the ELUR and the condition of the engineered controls at the Site. The ELUR shall include a soil management plan (SMP), which will address post remediation activities that disturb onsite soils. The ELUR, once approved by the Department, shall be recorded for the property in the Land Evidence Records for the Town of Bristol and a recorded copy forwarded back to the Department within fifteen (15) days of recording; and

- Please note that given the detection of PCE in one sub-slab soil vapor sample, should the

portion of the main mill building currently proposed as an open-air garage space be considered for residential usage, a sub-slab depressurization system (SSDS) shall be installed within the footprint of the building.

Based upon review and consideration of the above referenced documents, the Department approves the Remedial Action Work Plan (RAWP) through this RAL provided that:

1. All work must be performed in accordance with all applicable regulations and the Department approved RAWP.

2. Start of the work described in the Department approved RAWP must be initiated within sixty (60) days of issuance of this RAL.

3. Prior to initiating any remedial activities, the Department shall be provided with a list of all contractors, and their respective contact information, that will be used on Site to complete the remedial work described in the Department approved RAWP. The Department shall be notified, when feasible, a minimum of five (5) working days in advance of any changes in contractors and/or consultants involved with the remedial work on this Site. The notification must be promptly supplied in writing with complete contact information for each new contractor or consultant (including but not limited to company name and address, contact name and address, contact telephone number and e-mail address).

4. All excavated regulated soil, if not approved for encapsulation onsite, shall be disposed of off-site at an appropriately licensed disposal facility in accordance with all local, State, and Federal laws. Copies of the material shipping records and manifests associated with the disposal of the material shall be included along with the Closure Report.

5. Areas of the site where contaminated soils are to be excavated must be staged and temporarily stored in a designated area, as proposed in the RAWP, of the site with proper polyethylene covers. Any stockpiled materials, including clean fill, must be underlain and covered with polyethylene sheeting and be secured at the end of each day with all appropriate erosion and sediment controls to limit the loss of the cover and protect against storm-water and wind erosion (i.e. hay bales, rocks, silt fencing). These appropriate sedimentation and erosion controls must be in place and in proper working order at all times until all disturbed areas are stabilized and capped as proposed. Within reason, the storage location will be selected to limit the unauthorized access to the materials (i.e. away from public roadways/walkways). No regulated soil will be stockpiled on-site for greater than thirty (30) days. In the event that stockpiled soils pose a risk or threat of leaching hazardous materials, a proper leak-proof container (i.e. drum or lined roll-off) or secondary containment will be required and utilized.

6. The Office of LRSMM no longer requires the submittal of analytical data prior to clean fill being brought to a Site. It is the sole responsibility of the Performing Party and their consultant to analyze the material, certify that the material meets the Department's Residential Direct Exposure Criteria (RDEC), as defined by the Remediation Regulations, for all constituents, and is suitable for use on the Site. The Office of LRSMM strongly suggests that enough representative samples of the clean fill are collected prior to moving the material to the Site to satisfy the Performing

Party and their consultant that the material meets the RDEC. Please note that the Office of LRSMM reserves its rights to sample the fill, if suspect, to confirm compliance with the RDEC.

7. All regulated soil remaining onsite shall be encapsulated by an engineered control consistent with those described in the Department approved RAWP.

8. Dust suppression techniques (i.e. watering) must be employed at all times during all soil disturbing/handling activities at the site in order to minimize the generation of fugitive dust.

9. Compliance sampling for the excavation in the vicinity of TP-7 on Lot 10-76 shall be laboratory analyzed for lead. Please note that if soil exceeding the Department's Residential Direct Exposure Criteria (RDEC) is to remain onsite then a draft Environmental Land Usage Restriction (ELUR) and Soil Management Plan (SMP) must be submitted to the Office of LRSMM for review and approval prior to recording.

10. Within sixty (60) days of completion of the work described in the Department approved RAWP, a Closure Report detailing the remedial action and including any disposal documentation shall be submitted to the Office of LRSMM.

11. Within sixty (60) days of completion of the work described in the Department approved RAWP, the final Department approved ELUR shall be recorded in the Town of Bristol Land Evidence Records for the property and a stamped, certified copy returned to the Department within fifteen (15) days of recording. Upon receipt of a copy of the recorded (stamped) ELUR, the Office of LRSMM will issue a Letter of Compliance.

12. Following recording of the ELUR, the site shall be maintained and annually inspected to evaluate the compliance status of the site with the ELUR. Within thirty (30) days of each annual inspection, an evaluation report shall be prepared and submitted to the Office of LRSMM detailing the findings of the inspection and noting any compliance violations at the site.

13. Should a sub-slab depressurization system (SSDS) shall be installed within the footprint of the building, as part of the operation and maintenance of the remedy, the sub-slab pressure shall be measured and the SSDS annually inspected to ensure that the SSDS is operating properly. As part of the annual ELUR inspection of the remedy, the efficacy of the SSDS shall be documented. Within thirty (30) days of each annual inspection, an evaluation report shall be prepared and submitted to the Office of LRSMM detailing the findings of the inspection and noting any compliance violations at the site.

14. Any changes in the activities detailed in the RAWP shall be reported to the Office of LRSMM by telephone within one (1) working day and in writing within five (5) business days.

15. The Office of LRSMM shall be notified forty-eight (48) hours prior to initiating the remedial activities at the site associated with the Department approved RAWP.

16. The Office of LRSMM shall be immediately notified of any site or operation condition that results in non-compliance with this RAL.

At this time, the Office of LRSMM offers its concurrence with the proposed remedial action for the property. The Department approves the RAWP provided that all activities and procedures detailed in the RAWP and RAWP Addendum are strictly adhered to. Furthermore, this letter continues to place primary responsibility for the construction, operation, maintenance, and monitoring of the approved RAWP and its associated implementation on Brady Sullivan Properties. As the Voluntary Party and Performing Party, Brady Sullivan Properties is expected to implement the RAWP in an expeditious and professional manner that prevents non-compliance with this RAL and said RAWP and is protective of human health and the environment.

Please note that at this time the Department does not approve the ELUR for recording in the Land Evidence Records with the Town of Bristol. Please forward an electronic version of the draft ELUR and the post-construction SMP in red line / strikeout format for Department review and approval. The draft ELUR and SMP shall be reviewed and approved by the Department, followed by recording of the approved ELUR, at the completion of all remedial work.

This RAL does not remove your obligation to obtain any other necessary permits from other local, State, or Federal agencies.

If you have any questions regarding this letter or would like the opportunity to meet with Department personnel, please contact me by telephone at (401) 222-2797, ext. 277-7105, or by E-mail at Rachel.simpson@dem.ri.gov.

Sincerely,

Rachel T. Simpson
Environmental Scientist III
Office of Land Revitalization &
Sustainable Materials Management

Authorized by,

Jeffrey P. Crawford
Environmental Scientist III
Office of Land Revitalization &
Sustainable Materials Management

Cc: Kelly J. Owens, RIDEM/LRSMM
Michelle McLarney, RIDEM/LRSMM
Tim Andrews, Nobis Group