P5118-001
May 20, 2024

Mr. Peter Britz, Director of Planning & Sustainability
City of Portsmouth Planning & Sustainability Department
1 Junkins Avenue
Portsmouth NH, 03801
Portsmouth, New Hampshire 03801

Re: Request for Site Plan Review & Conditional Use Permits Review
Proposed Mixed-Use Development, 1035 Lafayette Road, Portsmouth, NH

Dear Peter:

On behalf of Christ Church Parish (Owner), and Portsmouth Housing Authority (Applicant), we are pleased to submit one (1) set of hard copies of the following information to support a request for a Site Review Permit for the above referenced project:

- One (1) full size & one (1) half size copy of the Site Plan Set, dated May 20, 2024;
- Owner Authorization, dated March 25, 2024;
- Applicant Authorization, dated March 24, 2024;
- Parking Conditional Use Permit Request, dated May 20, 2024;
- Drainage Analysis, dated May 20, 2024;
- Long-Term Operation & Maintenance Plan, dated May 20, 2024;
- Truck Turning Exhibit, dated May 20, 2024;
- Trip Generation Memorandum, dated May 20, 2024;
- Site Review Checklist, dated May 20, 2024;
- Application fee calculation form for the Site Review Permit;

PROJECT SUMMARY

Existing Conditions

The proposed project is located at 1035 Lafayette Road on a parcel of land identified as Map 246 Lot 1 on the City of Portsmouth Tax Maps and is located in the Gateway Neighborhood Mixed Use Corridor, G2 District. The existing parcel is approximately 3.5 acres and is bound to the west by Route 1 and to the North, East, and South by a State of New Hampshire Conservation Urban Forestry Center parcel. The sites current uses include the Christ Episcopal Church and Little Blessings Child Care Center. The site is accessed by two driveways on Route 1, a right in / right out at the center of the property and a signalized intersection at Mirona Road on the north side of property.

Proposed Redevelopment

For the proposed project, the Portsmouth Housing Authority will construct a 4-story, 44-unit multi-family residential building to the south of the existing church building. In addition, HAVEN will convert and renovate the first-floor of the existing church into office space and will construct a 7-unit transitional housing addition to the north of their new office. The lower level of the existing church will be renovated for Little Blessings Child Care Center. The Christ Episcopal Church will be relocated to the existing rectory building on the southern portion of

the site. The project will include associated site improvements such as parking, pedestrian connections, access to public transportation, utilities, stormwater management, lighting, and landscaping. The site will continue to be accessed via the existing driveways on Route 1.

LAND USE PERMIT APPLICATIONS

The proposed project will require the following site-related approvals from the Planning Board:

- Site Plan Review Permit
- Conditional Use Permit for Development Site
- Conditional Use Permit for Density Bonus Incentives
- Conditional Use Permit for Parking

The applicant met with the Planning Board on April 18, 2024, for conceptual consultation. The enclosed information which has been prepared to address comments and feedback received to date from this meeting.

The project will also require the following approvals from the New Hampshire Department of Environmental Services (NHDES):

- Alteration of Terrain Permit
- Shoreland Permit
- Sewer Connection Permit

Site Plan Review Permit

The project will require a Site Plan Review Permit for the site improvements described above in the project summary. The project has previously met with the Planning Board for Conceptual Consultation.

Traffic Impact Study

A Traffic Impact Study is currently being prepared for the development project and will be completed and submitted for review by NHDOT once the NHDOT continuous count station data from April is available. Enclosed in this package is a Trip Generation Memorandum showing the net tips for the proposed uses.

CONDITIONAL USE PERMITS

Development Site Conditional Use Permit

Under Section 10.5B41.10 Development Site Standards are "allowed by Conditional Use Permit approval from the Planning Board, a development site is any lot or group of contiguous lots owned or controlled by the same person or entity, assembled for the purpose of a single development and including more than one principal building or building type". The proposed project meets the definition of a Development Site, as such a CUP to allow the use of the Development Site Standards is being requested for this proposed project.

Conditional Use Permit Criteria

Based on the above-described and enclosed materials, the following addresses how the Project warrants the granting of a Conditional Use Permit for a Development Site by satisfying the following four (4) criteria for approval in Section 10.5B43.10 of the Zoning Ordinance:

(1) The development project is consistent with the Portsmouth Master Plan.

The Project along with the existing site as a whole is consistent with several goals identified in the Master Plan.

- Goal 1.2 is to encourage walkable mixed-use development along existing commercial corridors. The proposed project has been designed to promote alternative modes of transportation such as walking, bicycling, and public transportation by incorporating bicycle storage spaces on-site, pedestrian connections to Lafayette Rd, and the applicant is working with COAST for the addition of an on-site COAST bus stop.
- Goal 2.1 is to ensure that new development complements and enhances its surroundings. The proposed residential, office and day care uses of the proposed development will further enhance the commercial, retail, and restaurants located at the Lafayette Plaza Shopping Centers to the West and North of the property.
- Goal 3.1 and Goal 3.2 are to adapt housing stock to accommodate changing demographics and to accommodate the housing needs of low- and moderate-income residents. The Project will add 51 residential units to the local housing stock all of which 44 will be workforce housing and 7 will be transitional housing units.

(2) The development project has been designed to allow uses that are appropriate for its context and consistent with City's planning goals and objectives for the area.

The Project has been designed to be consistent with the surrounding uses already in the neighborhood. Residential buildings are an allowed use with the zone and the addition of housing stock and workforce housing is consistent with goals laid out in the City's Master Plan as described in criteria item 1.

(3) The project includes measures to mitigate or eliminate anticipated impacts on traffic safety and circulation, demand on municipal services, stormwater runoff, natural resources, and adjacent neighborhood character.

The Project will have a minimal impact on traffic due to the existing large traffic volumes on Lafayette Road. A traffic study will be prepared and submitted to NHDOT for review.

The development site has been designed to mitigate stormwater runoff with the use of a surface Bioretention Internal Storage Reservoir (ISR) and an infiltration basin stormwater treatment practices. The proposed project is a significant improvement over existing conditions as there is no stormwater treatment on site.

(4) The project is consistent with the purpose and intent set forth in Section 10.5B11.

Section 10.5B11.10 states that *"The purpose of Article 5B is to implement and support the goals of the City's Master Plan and Housing Policy to encourage walkable mixed-use development and continued economic vitality in the City's primary gateway areas, ensure that new development complements and enhances its surroundings, provide housing stock that is suited for changing demographics, and accommodate the housing needs of the City's current and future workforce."*

The Project meets the standards outlined in Section 10.5B11.20 which are to:

a. ***Promote development that is consistent with the goals of the Master Plan to create vibrant, authentic, diverse, connected and resilient neighborhoods;*** Criteria 1 details that the proposed project is consistent with the goals of the Master Plan.

b. ***Encourage high quality housing for a variety of household types and income ranges.*** All of the proposed units will be workforce and transitional housing units ensuring that the Project will provide high quality housing for a variety of income ranges.

c. ***Guide the physical character of development by providing a menu of building and site development types that are based on established community design principles;*** *The proposed project maintains the existing church building on site with the addition of a new code compliant modern building on site which will* enhance the parcel.

d. ***Create quality places by allowing for whole site development with meaningful public spaces and neighborhood centers.*** The Project will enhance the whole-site development approach by maintaining and enhancing the existing historic features which include the addition of the Memorial and Cemetery Fence surrounding the existing burial grounds.

Density Bonus Conditional Use Permit

Under Section 10.5B72 Density Bonus Incentives "A conditional use permit may be granted by the Planning Board for increased housing density or for increased building height. Such conditional use permit shall be contingent upon satisfying the requirements of Section 10.5B73". The Project is requesting a CUP for increased dwelling units per building allowed under Section 10.5B72.10.

Conditional Use Permit Criteria

Based on the above-described and enclosed materials, the following addresses how the Project warrants the granting of a Conditional Use Permit for a Development Site by satisfying the following requirements for approval in Section 10.5B73.10 of the Zoning Ordinance:

10.5B73.10 Workforce Housing Requirement: At least 20% of the dwelling units in the development, but no less than three units, shall be workforce housing units for sale or rent complying with the following criteria:

1) For sale units shall be at least the average gross floor area of the proposed units in the building or 1,000 sq. ft., whichever is greater.

All the proposed dwelling units will be for rent units.

2) Rental units shall be at least the average gross floor area of the proposed units in the building or 800 sq. ft., whichever is greater.

All the proposed dwelling units will be for rent units which will be at least the average gross floor area of the proposed units in the building.

3) The workforce housing units shall be distributed throughout the building wherever dwelling units are located.

All the proposed units will be workforce housing units therefore will be distributed throughout the building.

Parking Conditional Use Permit

Under Section 10.1112.14 Number of Required Parking Spaces "The Planning Board may grant a conditional use permit to allow a building or use to provide less than the minimum number of off-street parking spaces required by Section 10.1112.30, Section 10.1112.61 or Section 10.1115.20, as applicable." The project is requesting a CUP for a reduction in off-street parking spaces. A Parking Conditional Use Permit Request has been included in the package.

CONCLUSION

We respectfully request to be placed on the TAC meeting agenda for June 4, 2024. If you have any questions or need any additional information, please contact me by phone at (603) 294-9213 or by email at NAHansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President

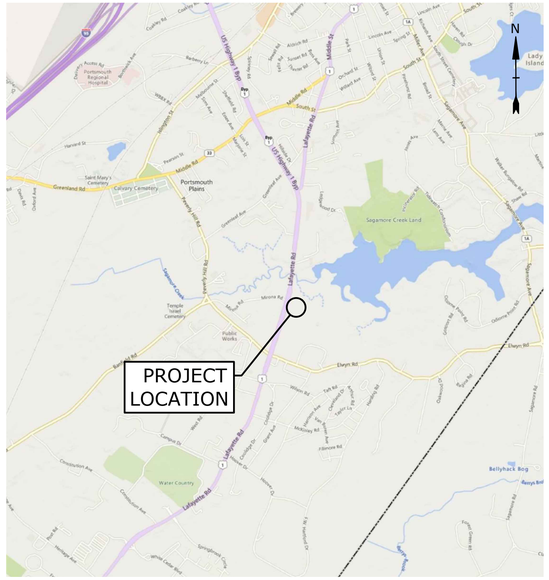
Neil A. Hansen, PE
Project Manager

Cc: Portsmouth Housing Authority
Christ Church Parish

1035 LAFAYETTE ROAD
PROPOSED MULTI-FAMILY DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE
DATE: May 20, 2024

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	5/20/2024
1 OF 1	TOPOGRAPHIC PLAN	4/2/2024
G-100	GENERAL NOTES AND LEGEND	5/20/2024
C-101	EXISTING CONDITIONS & DEMOLITION PLAN	5/20/2024
C-102	SITE PLAN	5/20/2024
C-103	GRADING, DRAINAGE, & EROSION CONTROL PLAN	5/20/2024
C-104	UTILITY PLAN	5/20/2024
C-105	PHOTOMETRIC PLAN	5/20/2024
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	5/20/2024
C-502	DETAILS SHEET	5/20/2024
C-503	DETAILS SHEET	5/20/2024
C-504	DETAILS SHEET	5/20/2024
C-505	DETAILS SHEET	5/20/2024
C-506	DETAILS SHEET	5/20/2024
C-507	DETAILS SHEET	5/20/2024
L-1	LANDSCAPE PLAN	5/20/2024
TAC-01	COVER SHEET	5/20/2024
LS-01	CODE SEARCH AND LIFE SAFETY DRAWINGS	5/20/2024
TAC-02	FIRST FLOOR PLAN	5/20/2024
TAC-03	SECOND FLOOR PLAN	5/20/2024
TAC-04	THIRD FLOOR PLAN	5/20/2024
TAC-05	FOURTH FLOOR PLAN	5/20/2024
TAC-06	ROOF PLAN	5/20/2024
TAC-07	EXTERIOR ELEVATIONS	5/20/2024
TAC-08	EXTERIOR ELEVATIONS	5/20/2024
PR1.01	LEVEL 1 FLOOR PLAN	5/20/2024
PR1.04	NORTH AND WEST ELEVATION	5/20/2024
PR1.05	EAST AND SOUTH ELEVATION	5/20/2024

LIST OF PERMITS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT	PENDING	
CONDITIONAL USE PERMIT - DEVELOPMENT SITE	PENDING	
CONDITIONAL USE PERMIT - DENSITY BONUS	PENDING	
CONDITIONAL USE PERMIT - PARKING	PENDING	
STATE		
NHDES - SEWER CONNECTION PERMIT	PENDING	
NHDES - ALTERATION OF TERRAIN PERMIT	PENDING	
NHDES - SHORELAND PERMIT	PENDING	
FEDERAL		
NPDES - CONSTRUCTION GENERAL PERMIT	PENDING	



LOCATION MAP
SCALE: 1" = 2000'

CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
3. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

PREPARED BY:
Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NH 03801
603-433-8818

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 5/20/2024

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 5/20/2024

APPLICANT:
PORTSMOUTH HOUSING AUTHORITY
245 Middle Street
Portsmouth, NH 03801

OWNER:
CHRIST CHURCH PARISH
1035 Lafayette Rd
Portsmouth, NH 03801

LANDSCAPE ARCHITECT:
WOODBURN & COMPANY
103 Kent Place
Newmarket, NH 03857

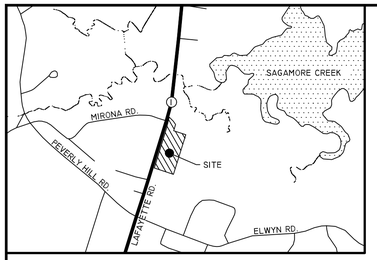
ARCHITECT:
JSA DESIGN
273 Corporate Dr Suite 100
Portsmouth, NH 03801

LASSEL ARCHITECTS
370 Main St
South Berwick, ME 03908

SURVEYOR:
JAMES VERRA & ASSOCIATES, INC.
101 Shattuck Way, Suite 8
Newington, NH 03801

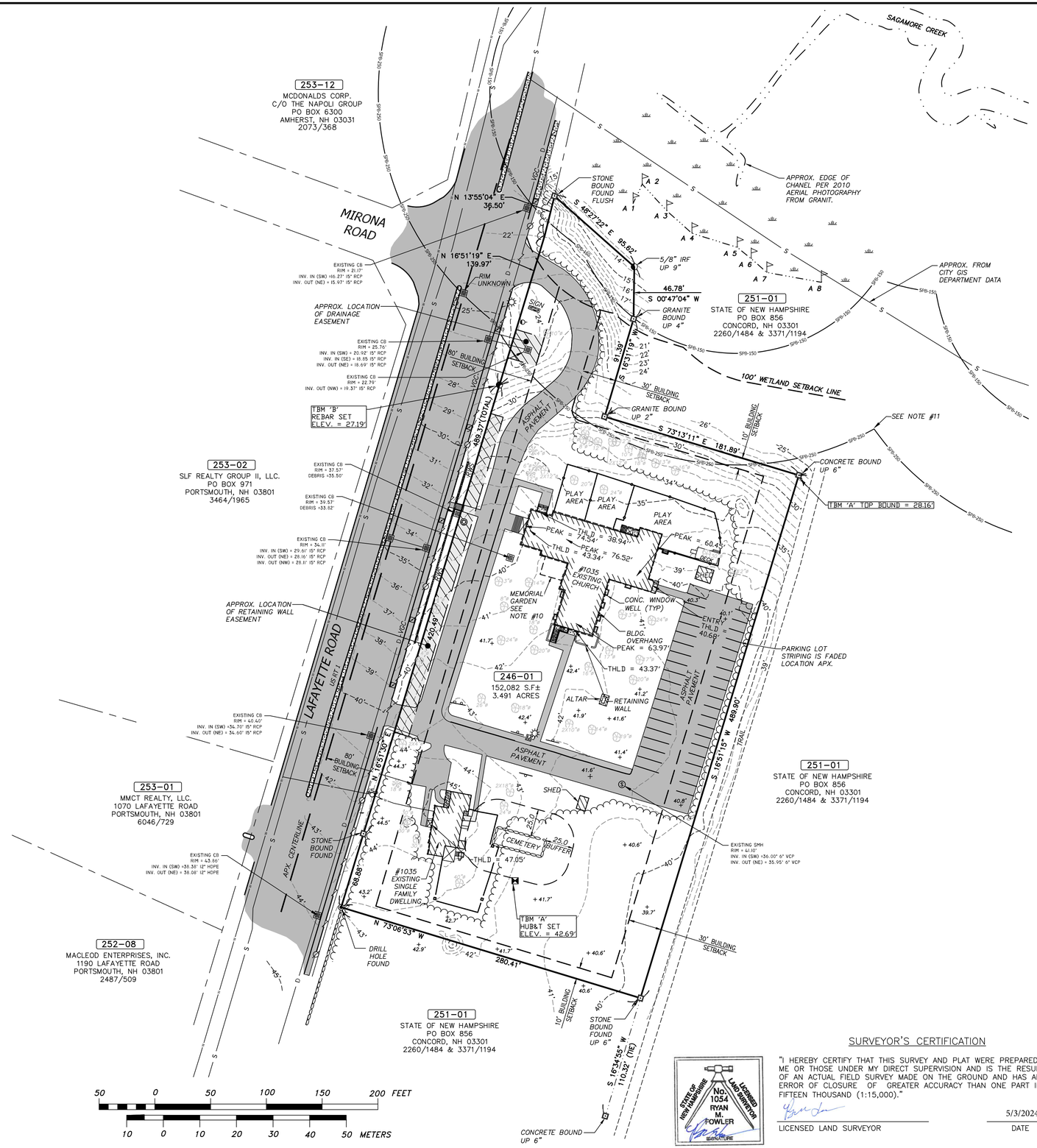
811 DigSafe MA-ME-NH-RI-VT

TAC SUBMISSION
COMPLETE SET 28 SHEETS



LOCUS
(N.T.S.)

NH STATE PLANE COORDINATE SYSTEM
NAD 1983



50 0 50 100 150 200 FEET
10 0 10 20 30 40 50 METERS

LEGEND:

- ● ..... DRILL HOLE FOUND
- ⊡ ..... BOUND FOUND (AS NOTED)
- ..... CHAIN LINK FENCE
- ..... WOOD FENCE
- ⌀ ..... UTILITY POLE
- ✲ ..... UTILITY POLE W/TRANSFORMER
- ..... GUY
- —OHW— ..... OVERHEAD WIRES
- ..... SIGN
- ..... DOUBLE POST SIGN
- ..... FLAGPOLE
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- 246-01 ..... TAX SHEET / LOT NO.
- EOP ..... EDGE OF PAVEMENT
- LA ..... LANDSCAPED AREA
- RWS ..... STONE RETAINING WALL
- VGC ..... VERTICAL FACED GRANITE CURB
- ..... CATCH BASIN
- Ⓓ ..... DRAIN MANHOLE
- Ⓢ ..... SEWER MANHOLE
- ..... TREE LINE/BRUSHLINE
- ..... ELECTRICAL BOX
- ✲ ..... LIGHT POLE
- Ⓜ ..... MAILBOX
- ..... WETLAND FLAG
- SPB-150 ..... 150' SHORELAND PROTECTION BUFFER
- SPB-250 ..... 250' SHORELAND PROTECTION BUFFER
- ..... ASPHALT
- ..... RAISED ASPHALT WALK
- ..... CONCRETE
- ..... CONCRETE PAVERS
- +41.6' ..... SPOT ELEVATION
- THLD ..... THRESHOLD

NOTES:

1. OWNER OF RECORD.....THE PARISH OF CHRIST CHURCH IN PORTSMOUTH
   ADDRESS.....1035 LAFAYETTE ROAD, PORTSMOUTH, NH 03801
   DEED REFERENCE.....1720/453 & 3371/1195
   TAX SHEET / LOT.....246-01
2. ZONED: .....SINGLE RESIDENCE B (SRB)

MINIMUM LOT AREA ..15,000 S.F.	FRONT YARD SETBACK .....30'*
FRONTAGE .....100'	SIDE YARD SETBACK .....10'
	REAR YARD SETBACK .....30'

   * SEE PORTSMOUTH ZONING SECTION 10.533 FOR SPECIAL YARD REQUIREMENTS ON LAFAYETTE ROAD. (80' FROM CENTERLINE OF LAFAYETTE ROAD.)
3. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF THE SUBJECT PARCEL AND THE IMPROVEMENTS THEREON FOR FUTURE SITE REDEVELOPMENT.
4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.
5. HORIZONTAL DATUM: NAD83, VERTICAL DATUM: NAVD88. ESTABLISHED BY SURVEY GRADE GPS OBSERVATION AND PROCESSED BY OPUS. UNITS: US SURVEY FOOT.
6. THE PLAN IS BASED UPON A FIELD SURVEY COMPLETED IN JULY – AUGUST OF 2023 & MARCH 2024 WITH TRIMBLE S5 ROBOTIC TOTAL STATION, CARLSON BRX7 RTK GPS UNITS, PANASONIC FZ-M1/TRIMBLE TSC7 DATA COLLECTORS.
7. THE PARCEL SHOWN HEREON LIES WITHIN ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS IDENTIFIED ON FLOOD INSURANCE RATE MAP, ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP NUMBER 33015C0270F, EFFECTIVE DATE 1/29/2021 BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. WETLANDS WERE DELINEATED BY JOSEPH NOEL, CWS #86 ON 6/22/2023 AND WERE FIELD LOCATED BY JVA.
9. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE ESTABLISHMENT OF ANY GRADES OR ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOCIATES, INC.
10. IT IS BELIEVED THAT THE "MEMORIAL GARDEN" DOES NOT HAVE ANY REMAINS OR URNS BURIED THERE BASED ON INFORMATION PROVIDED BY REPRESENTATIVES AT THE EPISCOPAL CHURCH OF NEW HAMPSHIRE. THERE IS A POSSIBILITY THAT ASHES HAVE BEEN SPRINKLED IN THE GARDEN. BASED ON THE INFORMATION PROVIDED THE MEMORIAL GARDEN MAY NOT BE CONSIDERED A CEMETERY AND WOULD NOT BE SUBJECT TO THE 25' BUFFER. FURTHER EXPLORATION SHOULD BE CONDUCTED TO CONFIRM NO HUMAN REMAINS ARE LOCATED IN THE GARDEN, EXTREME CAUTION SHOULD BE USED IN ANY EXCAVATION WITHIN 25' OF THE MEMORIAL GARDEN.
11. SHORELAND PROTECTION BUFFER SHOWN IS BASED ON THE CHANNEL LOCATION TAKEN FROM AERIAL PHOTOGRAPHY.

REFERENCE PLANS:

1. "PLAN OF LAND, PORTSMOUTH, N.H., FOR CHRIST EPSICOPOL CHURCH." REVISED SEPT. 1964, AND PREPARED BY JOHN W. DURGIN (JWD). JWD FILE NO. 2320S, PLAN NO. 839.3. NOT RECORDED AND ON FILE WITH THIS OFFICE.
2. "LOT LINE ADJUSTMENT OF THE LANDS OF: D.R.E.D. & THE PARISH OF CHRIST CHURCH." LAST REVISED JUNE 22, 1999 AND PREPARED BY RICHARD D. BARTLETT & ASSOCIATES, INC. NOT RECORDED, AND ON FILE WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF NATURAL & CULTURAL RESOURCES, DIVISION OF FORESTS & LANDS. BARTLET JOB #298.111.
3. "STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, RIGHT-OF-WAY, PLANS OF PROPOSED FEDERAL AID PROJECT, STP-X-T-001-1(90), N.H. PROJECT NO. 11855, US ROUTE 1 OVER SAGAMORE CREEK." DATED MARCH 14, 2000 AND PREPARED BY NHDOT & KIMBALL CHASE. RCRD PLAN #D-28308.

SURVEYOR'S CERTIFICATION

"I HEREBY CERTIFY THAT THIS SURVEY AND PLAT WERE PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE ON THE GROUND AND HAS AN ERROR OF CLOSURE OF GREATER ACCURACY THAN ONE PART IN FIFTEEN THOUSAND (1:15,000)."

LICENSED LAND SURVEYOR — DATE: 5/3/2024

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 1054 — RYAN M. FOWLER — SIGNATURE

REV. NO.	DATE	DESCRIPTION	APPR'D
#1	5/3/24	COMMENTS PER PHAN & TEAM	RMF

TOPOGRAPHIC PLAN
1035 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
TAX MAP #246-01
LAND OF:
THE PARISH OF CHRIST CHURCH IN PORTSMOUTH
PREPARED FOR:
PORTSMOUTH HOUSING AUTHORITY

JAMES VERRA & ASSOCIATES, INC.
101 SHATTUCK WAY, SUITE 8, NEWINGTON, N.H., 03801-7876 603-436-3557

RMF — DRAWN BY
RMF — PROJECT MGR

DATE:	4/2/2024
JOB NO:	24-2012
SCALE:	1" = 50'
DWG NAME:	24-2012_EX
PLAN NO:	24-2012
SHEET:	1 of 1

J:\2024 PROJECTS\24-2012 PHA 1035 LAFAYETTE RD PORTSMOUTH NH\24-2012\DWG\24-2012_EXCON_2.dwg 2024-05-03

GENERAL NOTES:

1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
10. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
11. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
12. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
7. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
9. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
10. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
11. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
12. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
13. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
15. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
16. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.

SITE NOTES:

1. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
10. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
11. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
12. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
13. THE PROPERTY MANAGER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PRIVATE SIDEWALKS, DRIVEWAYS, AND PARKING AREAS. SNOW REMOVAL WILL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF WHEN SNOW BANKS EXCEED 6 FEET IN HEIGHT.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.

2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL) OR RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
4. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
6. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
7. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.

EROSION CONTROL NOTES:

1. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

1. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - CONSOLIDATED COMM/FAIRPOINT/COMCAST
2. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
3. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT.
4. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
5. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH DPW STANDARDS.
6. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
7. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
8. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
9. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
10. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
11. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
12. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
13. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
14. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
15. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
16. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
17. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
18. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
19. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
20. CONTRACTOR SHALL FIELD VERIFY EXISTING SEWER LINE LOCATION, INVERT AND DIAMETER PRIOR TO CONSTRUCTION AND SHALL SUBMIT FIELD INFORMATION TO ENGINEER FOR REVIEW. MODIFICATIONS TO THE NEW SEWER CONNECTION LOCATION AND ELEVATION MAY BE NECESSARY BASED ON THE OBSERVED EXISTING CONDITIONS.
21. EACH UTILITY CONNECTION WITHIN THE LAFAYETTE ROAD RIGHT OF WAY WILL REQUIRE A NHDOT RIGHT OF WAY ACTIVITIES PERMIT.
22. EXISTING SEWER LINE IS ASSUMED TO BE ASBESTOS CEMENT PIPE. CONSTRICTOR SHALL UTILIZE A LICENSED ASBESTOS SPECIALIST FOR THE REMOVAL OF ANY ASBESTOS PIPE.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY JAMES VERRA & ASSOCIATES, INC. DATED 5/3/2024.

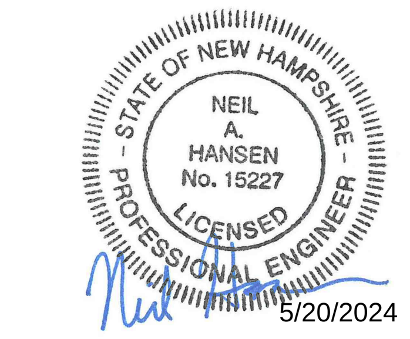
LEGEND

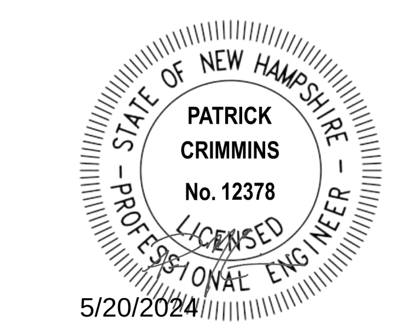
- APPROXIMATE LIMIT OF SAWCUT
- LIMIT OF WORK
- APPROXIMATE LIMIT OF PAVEMENT & CONCRETE TO BE REMOVED
- EXISTING TREES TO BE REMOVED
- EXISTING BUILDING TO BE REMOVED
- APPROXIMATE LIMIT OF PAVEMENT TO RECEIVE MILL & OVERLAY
- LOCATION OF PROPOSED BUILDING
- PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB
- PROPOSED GRAVEL PAVEMENT SECTION
- PROPOSED PAVEMENT SECTION
- PROPOSED CONCRETE
- PROPOSED MAJOR CONTOUR LINE
- PROPOSED MINOR CONTOUR LINE
- EXISTING STORM DRAIN (D)
- EXISTING DRAIN CATCH BASIN
- APPROXIMATE SANITARY SEWER (XS)
- EXISTING WATER (W)
- EXISTING GAS (G)
- EXISTING OVERHEAD UTILITY (OHW)
- EXISTING APPROXIMATE SEWER MANHOLE
- EXISTING SEWER MANHOLE
- EXISTING HYDRANT
- EXISTING UTILITY POLE
- PROPOSED DRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET PROTECTION BARRIER
- PROPOSED DRAINLINE
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER LINE (PS)
- PROPOSED GAS LINE (G)
- PROPOSED WATER LINE (PW)
- PROPOSED WATER VALVE
- PROPOSED THRUST BLOCK
- PROPOSED UNDERGROUND ELECTRIC LINE (PE)
- PROPOSED TRANSFORMER (T)
- 100' WETLAND BUFFER
- 50' LIMITED CUT BUFFER
- 25' VEGETATIVE BUFFER
- 250' TIDAL BUFFER
- 150' WOODLAND BUFFER
- 100' TIDAL BUFFER
- 50' TIDAL BUFFER

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	LF	LINEAR FEET
AC	ACRES	MAX	MAXIMUM
ADA	AMERICANS WITH DISABILITIES ACT	MIN	MINIMUM
AGGR	AGGREGATE	OC	ON CENTER
BLDG	BUILDING	PCB	PROPOSED CATCH BASIN
BC	BOTTOM OF CURB	PDMH	PROPOSED DRAINAGE MANHOLE
CB	CATCH BASIN	POS	PROPOSED OUTLET STRUCTURE
CONST	CONSTRUCT	PROP	PROPOSED
COORD	COORDINATE	PSMH	PROPOSED SEWER MANHOLE
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE	PVMT	PAVEMENT
DMH	DRAINAGE MANHOLE	R	RADIUS
DWG	DRAWING	RCP	REINFORCED CONCRETE PIPE
ELEV	ELEVATION	ROW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SGC	SLOPED GRANITE CURB
EV	ELECTRIC VEHICLE	SF	SQUARE FEET
FF	FINISHED FLOOR	STD	STANDARD
FGC	FLUSH GRANITE CURB	TBR	TO BE REMOVED
HDPE	HIGH DENSITY POLYETHYLENE	TC	TOP OF CURB
HMA	HOT MIX ASPHALT	TYP	TYPICAL
HYD	HYDRANT	UD	UNDERDRAIN
ID	INSIDE DIAMETER	W	WIDTH
INV	INVERT	W/	WITH
L	LENGTH	YD	YARD DRAIN

Tighe&Bond





Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

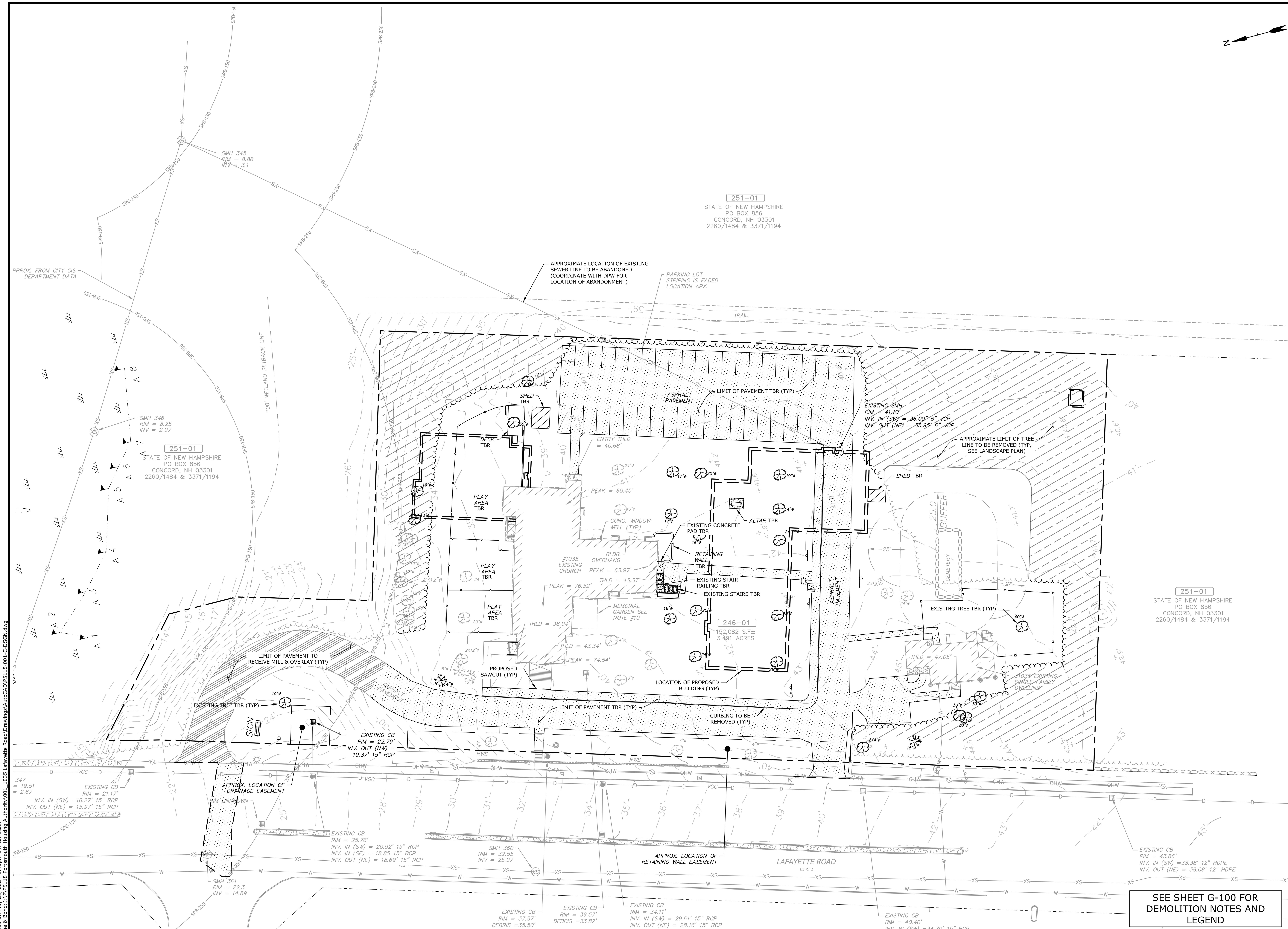
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

GENERAL NOTES

SCALE: AS SHOWN

G-100



SEE SHEET G-100 FOR DEMOLITION NOTES AND LEGEND

Last Saved: 5/20/2024
Plotted On:May 20, 2024-1:41pm By: CKrzcuik
Tighe & Bond: J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg

Tighe&Bond

STATE OF NEW HAMPSHIRE — NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER — 5/20/2024

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 5/20/2024

0 30' 60'
GRAPHIC SCALE

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: AS SHOWN

C-101

SITE DATA:

LOCATION: TAX MAP 273, LOT 3 OWNER: THE PARISH OF CHIRST CHURCH IN PORTSMOUTH
1035 LAFAYETT RD
PORTSMOUTH, NH 03801

ZONING DISTRICT: GATEWAY CORRIDOR (G2)
PROPOSED USE: MIXED USE
MULTIFAMILY
PROPOSED LOT SIZE: ±3.491 ACRES (±152,082 SF)

BUILDING PLACEMENT & LOT STANDARDS

APARTMENT BUILDING STANDARDS:	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	100 FT	±208 FT
MINIMUM STREET FRONTAGE:	50 FT	±666 FT
FRONT YARD SETBACK:		
LAFAYETTE ROAD SETBACK	70-90 FT	± 110 FT(1)
MINIMUM SIDE BUILDING SETBACK:	15 FT	± 25 FT
MINIMUM REAR BUILDING SETBACK:	20 FT	± 68 FT
MINIMUM OPEN SPACE COVERAGE:	20%	±72%
FRONT LOT LINE BUILDOUT:	75%	48%(1)
BUILDING DESIGN STANDARDS:		
MAXIMUM BUILDING HEIGHT:	4 STORIES	4 STORIES
	50 FT	<50 FT
MINIMUM STREET FACING FACADE HEIGHT:	24 FT	>24 FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 IN	<36 IN
MAXIMUM BUILDING FOOTPRINT:	20,000 SF	10,900 SF
MAXIMUM FACADE MODULATION LENGTH:	50 FT	<50 FT
MINIMUM STREET FACING FACADE GLAZING:	20% GROUND FLOOR	>20%
DEVELOPMENT SITE STANDARDS:(3)		
MINIMUM DEVELOPMENT SITE AREA:	20,000 SF	±152,082 SF
MINIMUM SITE WIDTH:	100 FT	±666 FT
MINIMUM SITE DEPTH:	100 FT	±280 FT
MINIMUM PERIMETER BUFFER FROM RESIDENTIAL, MIXED RESIDENTIAL, OR CD4-L1 DISTRICTS:	75 FT	N/A
MAXIMUM DEVELOPMENT BLOCK DIMENSIONS:		
BLOCK LENGTH:	800 FT	N/A
ERIMETER:	200 FT	N/A
MAXIMUM BUILDING COVERAGE:	70%	14
MINIMUM OPEN SPACE COVERAGE:	20%	±72
FRONT LOT LINE BUILDOUT:	75%	48%(1)
DENSITY THRESHOLDS AND BONUSES:		
DWELLING UNITS PER ACRE:	16 UNITS	14.6 UNITS
DWELLING UNITS PER BUILDING:	36 UNITS	44 UNITS(2)(3)

(1) - EXISTING NON-CONFORMING CONDITION, MODIFICATION OF STANDARDS ALLOWED AS PART OF CONDITIONAL USE PERMIT PER 10.5B74.30.
(2) - ALLOWED BY CONDITIONAL USE PERMIT PER 10.5B72 FOR PROVIDING 20% WORK FORCE HOUSING
(3) - USE OF DEVELOPMENT SITE STANDARDS ALLOWED BY CONDITIONAL USE PERMIT PER 10.5B40.

PARKING CALCULATIONS:

PARKING SPACE REQUIREMENTS:

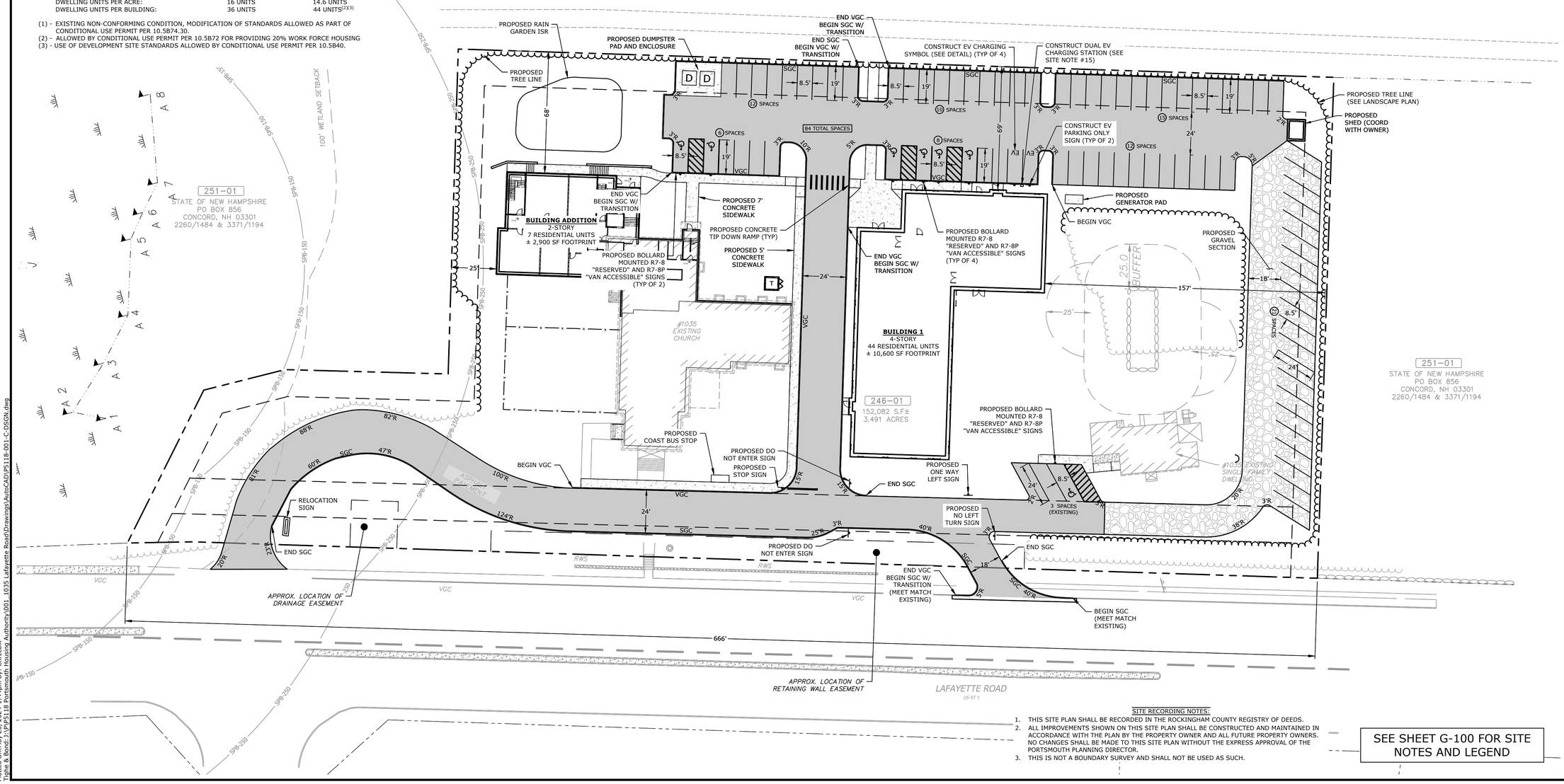
ZONING REQUIRED PARKING SPACES	
OFFICE:	
1 PER 350 SF GFA x 6,900 SF	= 20 SPACES
RESIDENTIAL:	
1.0 SPACES PER UNIT (500-750 SF) x 11UNITS	= 11 SPACES
1.3 SPACES PER UNIT (>750 SF) x 40 UNITS	= 52 SPACES
+1 VISITOR PER 5 UNITS X 51 UNITS	= 11 SPACES
GROUP DAY CARE:	
0.5 PER STUDENT x 71 STUDENTS	= 36 SPACES
PLACE OF WORSHIP:	
1 PER PERSON MAX CAPACITY (40 PERSON)	= 10 SPACES
TOTAL REQUIRED PARKING	= 140 SPACES
TOTAL REQUIRED PER SHARED PARKING ANALYSIS(4)	= 103 SPACES
REQUIRED PARKING SPACES ON A PUBLIC TRANSIT(5)	
ZONING REQUIREMENTS x 80%	**= 83 SPACES**
PROVIDED PARKING SPACES	
TOTAL PROVIDED SPACES:	**= 84 SPACES**

ACCESSIBLE PARKING SPACES:	REQUIRED 4	PROPOSED 6

DIMENSIONAL REQUIREMENTS:

STANDARD 90° PARKING STALL :		
WIDTH	8.5 FT	8.5 FT
LENGTH	19 FT MIN	19 FT
DRIVE AISLE WIDTH:		
90° (2-WAY TRAFFIC)	24 FT	24 FT

(4) - SHARED PARKING ANALYSIS ALLOWED THROUGH A CONDITIONAL USE PERMIT PER SECTION 10.1112.61.
(5) - PUBLIC TRANSIT 20% REDUCTION IN SPACES ALLOWED PER SECTION 10.5B82.10.



SITE RECORDING NOTES:

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
3. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
5/20/2024

0 30' 60'
GRAPHIC SCALE

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

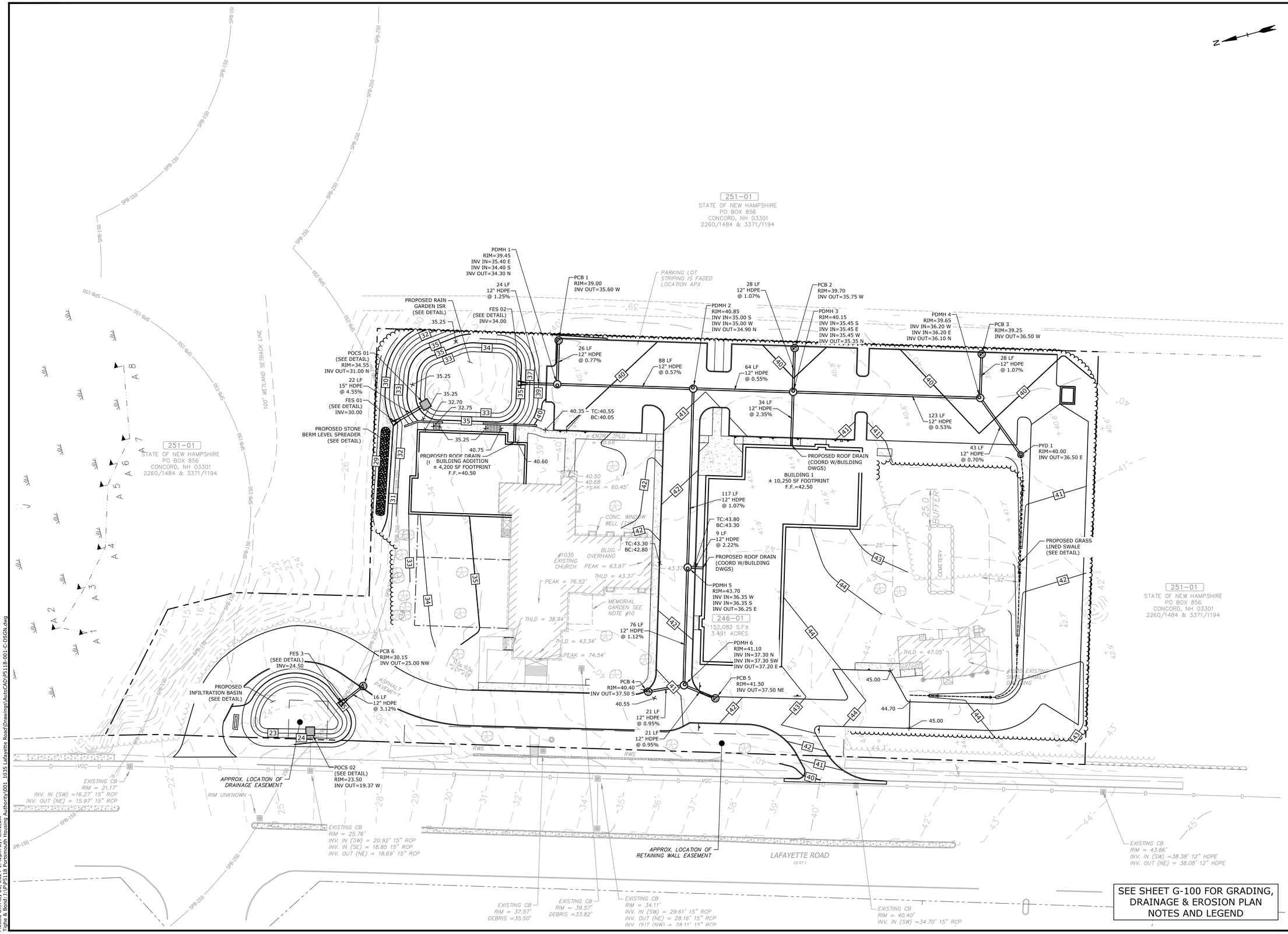
PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

SITE PLAN

SCALE: AS SHOWN

C-102

Last Saved: 5/20/2024
Plotted: May 20, 2024 - 1:44pm By: CKrzsiik
Tighe & Bond: I:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg



SEE SHEET G-100 FOR GRADING, DRAINAGE & EROSION PLAN NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

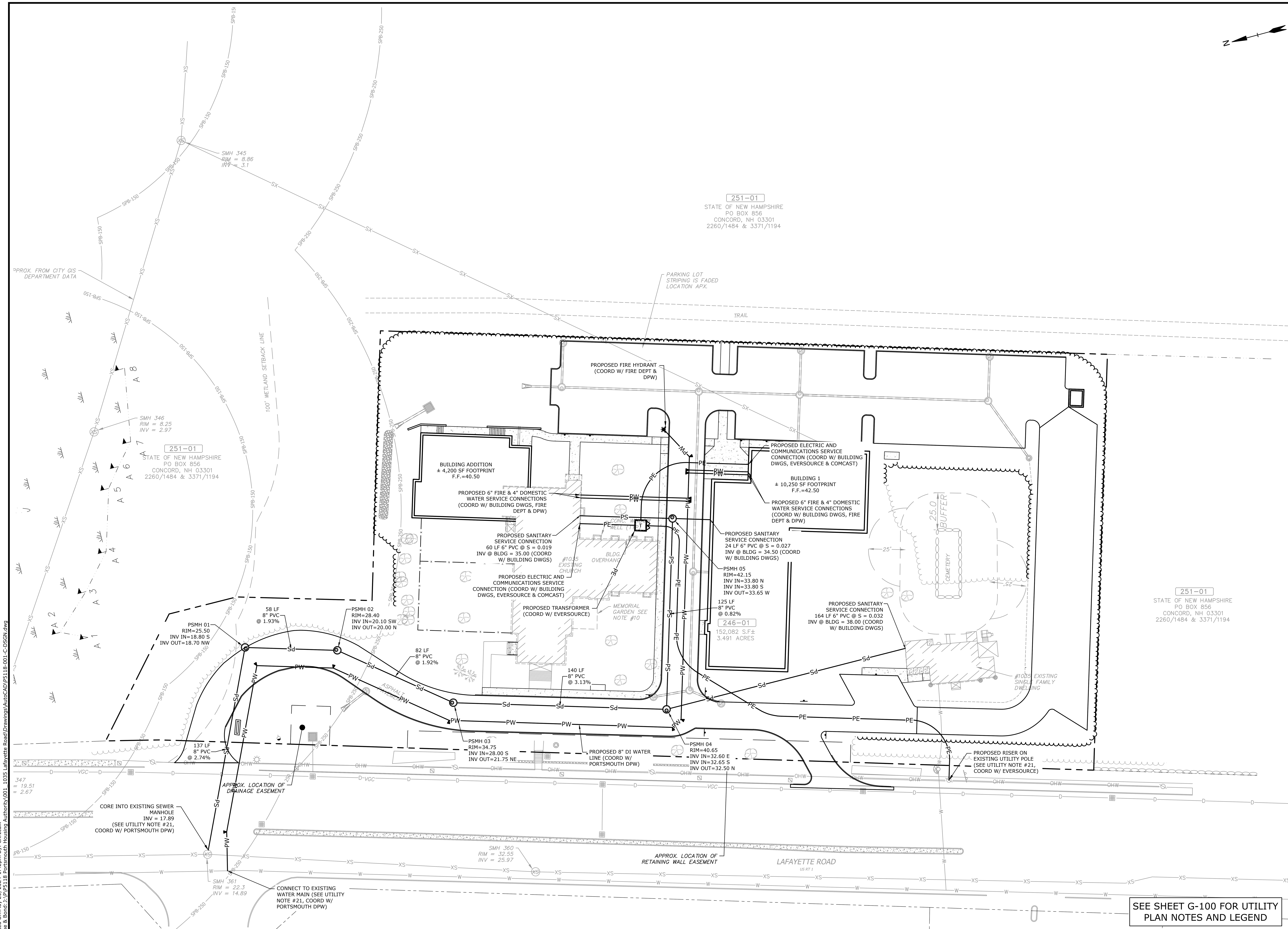
PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

GRADING, DRAINAGE & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

Last Saved: 5/20/2024
Plotted: May 20, 2024 - 1:42pm By: CKrzcuik
Tighe & Bond: J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg



SMH 345
RIM = 8.86
INV = 3.1
251-01
STATE OF NEW HAMPSHIRE
PO BOX 856
CONCORD, NH 03301
2260/1484 & 3371/1194
APPROX. FROM CITY GIS DEPARTMENT DATA
PARKING LOT STRIPING IS FADED LOCATION APX.
TRAIL
100' WETLAND SETBACK LINE
SMH 346
RIM = 8.25
INV = 2.97
PROPOSED FIRE HYDRANT (COORD W/ FIRE DEPT & DPW)
BUILDING ADDITION
± 4,200 SF FOOTPRINT
F.F.=40.50
PROPOSED 6" FIRE & 4" DOMESTIC WATER SERVICE CONNECTIONS (COORD W/ BUILDING DWGS, FIRE DEPT & DPW)
PROPOSED SANITARY SERVICE CONNECTION
60 LF 6" PVC @ S = 0.019
INV @ BLDG = 35.00 (COORD W/ BUILDING DWGS)
PROPOSED ELECTRIC AND COMMUNICATIONS SERVICE CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE & COMCAST)
PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)
#1035 EXISTING CHURCH
BLDG. OVERHANG
MEMORIAL GARDEN SEE NOTE #10
PROPOSED ELECTRIC AND COMMUNICATIONS SERVICE CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE & COMCAST)
BUILDING 1
± 10,250 SF FOOTPRINT
F.F.=42.50
PROPOSED 6" FIRE & 4" DOMESTIC WATER SERVICE CONNECTIONS (COORD W/ BUILDING DWGS, FIRE DEPT & DPW)
PROPOSED SANITARY SERVICE CONNECTION
24 LF 6" PVC @ S = 0.027
INV @ BLDG = 34.50 (COORD W/ BUILDING DWGS)
PSMH 05
RIM=42.15
INV IN=33.80 N
INV IN=33.80 S
INV OUT=33.65 W
125 LF
8" PVC
@ 0.82%
246-01
152,082 S.F.±
3.491 ACRES
PROPOSED SANITARY SERVICE CONNECTION
164 LF 6" PVC @ S = 0.032
INV @ BLDG = 38.00 (COORD W/ BUILDING DWGS)
25.0' BUFFER
CEMETERY
#1039 EXISTING SINGLE FAMILY DWELLING
251-01
STATE OF NEW HAMPSHIRE
PO BOX 856
CONCORD, NH 03301
2260/1484 & 3371/1194
PSMH 01
RIM=25.50
INV IN=18.80 S
INV OUT=18.70 NW
58 LF
8" PVC
@ 1.93%
PSMH 02
RIM=28.40
INV IN=20.10 SW
INV OUT=20.00 N
82 LF
8" PVC
@ 1.92%
140 LF
8" PVC
@ 3.13%
PSMH 03
RIM=34.75
INV IN=28.00 S
INV OUT=21.75 NE
PROPOSED 8" DI WATER LINE (COORD W/ PORTSMOUTH DPW)
PSMH 04
RIM=40.65
INV IN=32.60 E
INV IN=32.65 S
INV OUT=32.50 N
PROPOSED RISER ON EXISTING UTILITY POLE (SEE UTILITY NOTE #21, COORD W/ EVERSOURCE)
137 LF
8" PVC
@ 2.74%
APPROX. LOCATION OF DRAINAGE EASEMENT
CORE INTO EXISTING SEWER MANHOLE
INV = 17.89
(SEE UTILITY NOTE #21, COORD W/ PORTSMOUTH DPW)
SMH 360
RIM = 32.55
INV = 25.97
APPROX. LOCATION OF RETAINING WALL EASEMENT
LAFAYETTE ROAD
SMH 361
RIM = 22.3
INV = 14.89
CONNECT TO EXISTING WATER MAIN (SEE UTILITY NOTE #21, COORD W/ PORTSMOUTH DPW)
SEE SHEET G-100 FOR UTILITY PLAN NOTES AND LEGEND
0 30' 60'
GRAPHIC SCALE

Last Saved: 5/20/2024
Plotted On:May 20, 2024-1:42pm By: CKrzcuik
Tighe & Bond: J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg

Tighe&Bond

STATE OF NEW HAMPSHIRE — NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 5/20/2024

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

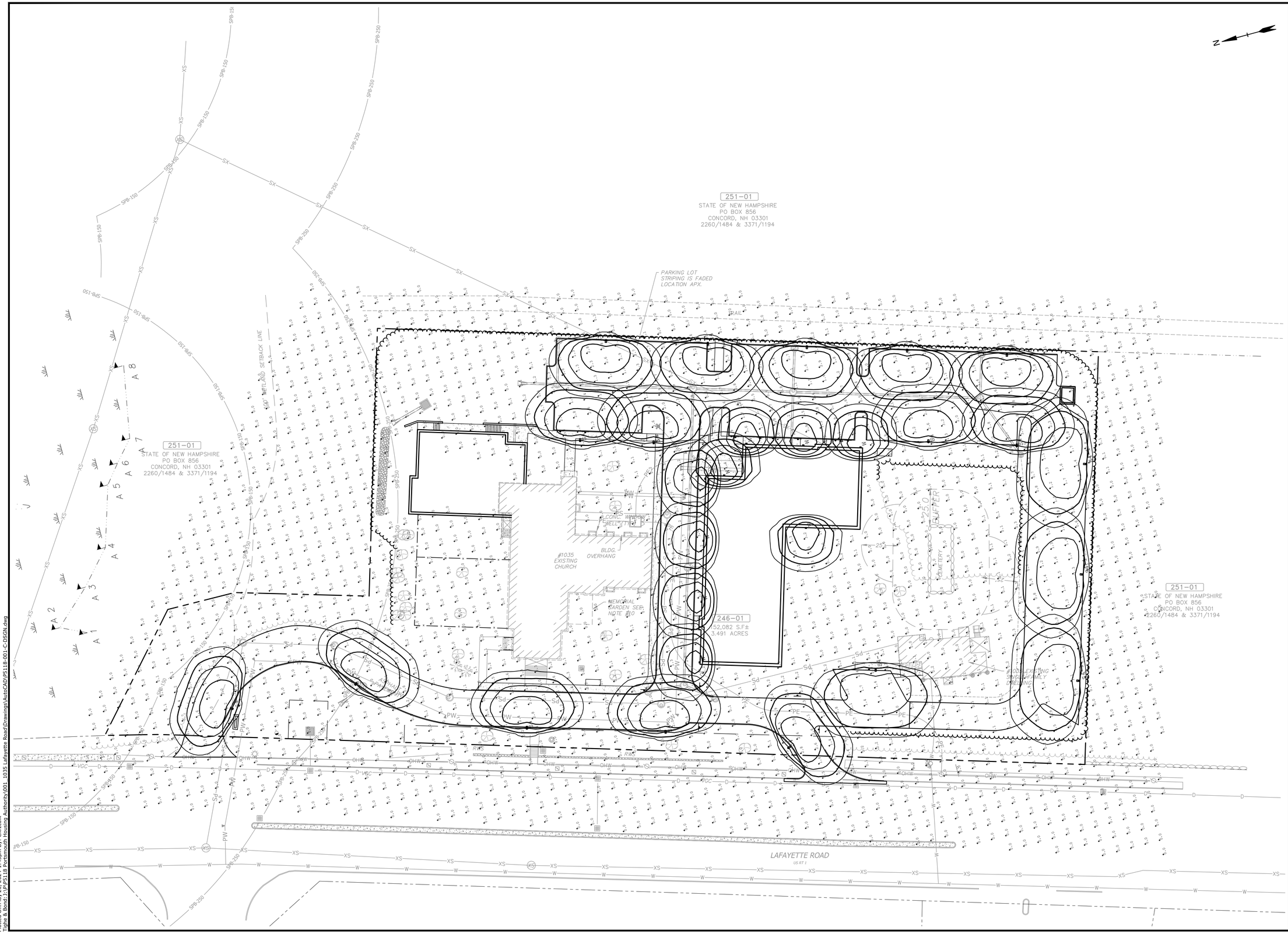
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

UTILITY PLAN

SCALE: AS SHOWN

C-104



Tighe&Bond

NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
5/20/2024

PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
5/20/2024

0 30' 60'
GRAPHIC SCALE

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

PHOTOMETRIC PLAN

SCALE: AS SHOWN

C-105

Last Saved: 5/20/2024
Plotted: May 20, 2024 - 1:43pm By: CKrzcuik
Tighe & Bond: J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg

GENERAL PROJECT INFORMATION
PROJECT APPLICANT: PORTSMOUTH HOUSING AUTHORITY
PROJECT NAME: PROPOSED MIXED USED DEVELOPMENT
PROJECT ADDRESS: 1035 LAFAYETTE ROAD, PORTSMOUTH NH
PROJECT MAP / LOT: TAX MAP 246, LOT 1
PROJECT LATITUDE: 42°-03'-53"N
PROJECT LONGITUDE: 70°-46'-15"W

PROJECT DESCRIPTION
THE PROPOSED PROJECT CONSISTS OF RENOVATING THE PORTION OF THE EXISTING CHURCH TO REMAIN, CONSTRUCTING A NEW ADDITION TO THE NORTH SIDE OF THE EXISTING CHURCH, AS WELL AS A FOUR STORY APARTMENT BUILDING IN THE CENTRAL PORTION OF THE SITE.

DISTURBED AREA
THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 3.0 ACRES.

SOIL CHARACTERISTICS
BASED ON THE NRCS WEB SOIL SURVEY FOR STRAFFORD COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF URBAN LAND-CANTON GRAVELLY FINE SANDY LOAM SOILS WHICH HAVE A FAST INFILTRATION RATE WHEN THOROUGHLY WET. THESE SOILS HAVE A HYDROLOGIC SOIL GROUP RATING OF D.

NAME OF RECEIVING WATERS
THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO THE SAGAMORE CREEK TO THE SOUTH OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:
1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - CONTROL OF DUST
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:
1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:
1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:
1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

DUST CONTROL:
1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:
1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:
1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:
1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 7.6;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:
1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:
1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:
1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      i. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO PEASE DEVELOPMENT AUTHORITY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

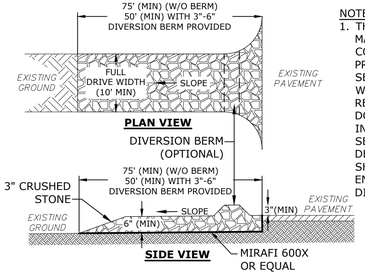
EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES
THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
1. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
2. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
3. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT;
4. AN NPDES NOTICE OF INTENT SHALL BE SUBMITTED.

CITY OF PORTSMOUTH BUFFER VEGETATION NOTES
1. REMOVAL OR CUTTING OF VEGETATION
   1.1. CHEMICAL CONTROL OF VEGETATION IS PROHIBITED IN ALL AREAS OF A WETLAND OR WETLAND BUFFER.
   1.2. THE REMOVAL OR CUTTING OF VEGETATION IS PROHIBITED IN A WETLAND OR VEGETATED BUFFER STRIP, EXCEPT THAT NON-CHEMICAL CONTROL OF PLANTS DESIGNATED BY THE STATE OF NEW HAMPSHIRE AS "NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES" IS PERMITTED.
   1.3. THE REMOVAL OF MORE THAN 50% OF TREES GREATER THAN 6" DIAMETER AT BREAST HEIGHT (DBH) IS PROHIBITED IN THE LIMITED CUT AREA.
2. FERTILIZERS
   2.1. THE USE OF ANY FERTILIZER IS PROHIBITED IN A WETLAND, VEGETATED BUFFER STRIP OR LIMITED CUT AREA.
   2.2. THE USE OF FERTILIZERS OTHER THAN LOW PHOSPHATE AND SLOW RELEASE NITROGEN FERTILIZERS IS PROHIBITED IN ANY PART OF A WETLAND BUFFER.
3. PESTICIDES AND HERBICIDES
   3.1. THE USE OF PESTICIDES OR HERBICIDES IS PROHIBITED IN A WETLAND OR WETLAND BUFFER, EXCEPT THAT APPLICATION OF PESTICIDES BY A PUBLIC AGENCY FOR PUBLIC HEALTH PURPOSES IS PERMITTED.

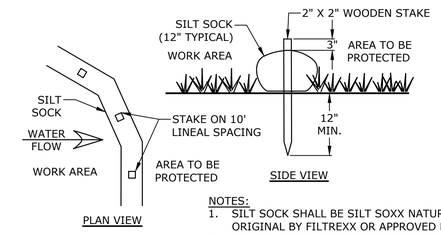
NOTES:
1. CONCRETE WASHOUT SHALL BE "JESCRAFT" STACKABLE CONCRETE WASHOUT PAN (72"x72"x14") OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN CONCRETE WASHOUT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. CONCRETE WASHOUT SHALL NOT BE PLACED WITHIN 100' WETLAND BUFFER.

CONCRETE WASHOUT DETAIL
NO SCALE



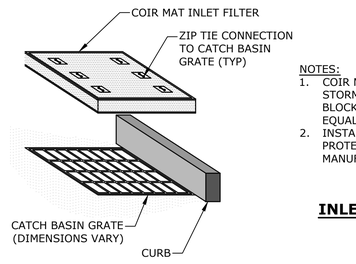
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT
NO SCALE



NOTES:
1. SILT SOCK SHALL BE SILT SOXX NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK
NO SCALE



NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

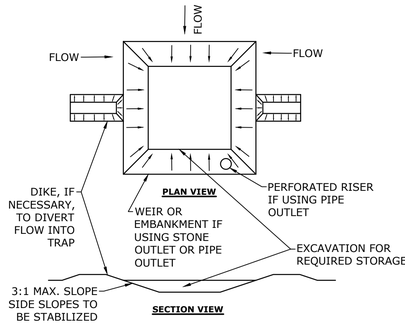
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

EROSION CONTROL NOTES & DETAILS

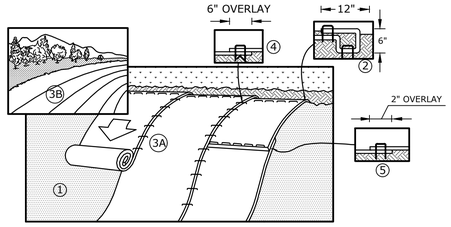
SCALE: AS SHOWN

C-501



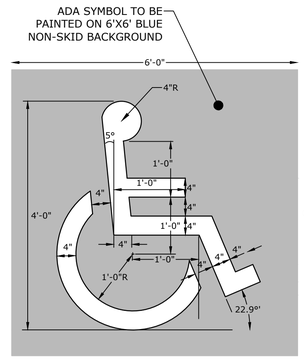
NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS MUST BE USED AS NEEDED TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.

SEDIMENT TRAP
NO SCALE



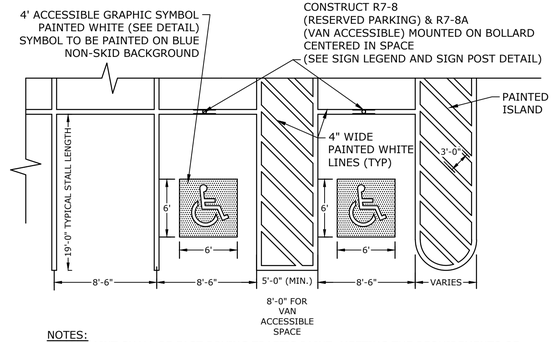
NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL. THE LENGTH OF STAKES SHALL BE BASED OFF OF THE MANUFACTURERS RECOMMENDATION.
3. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, COMPOST AND SEED.
4. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAKES IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAKING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAKES ACROSS THE WIDTH OF THE BLANKET.
5. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN ON THE MANUFACTURERS PATTERN GUIDE.
6. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

EROSION CONTROL BLANKET
NO SCALE



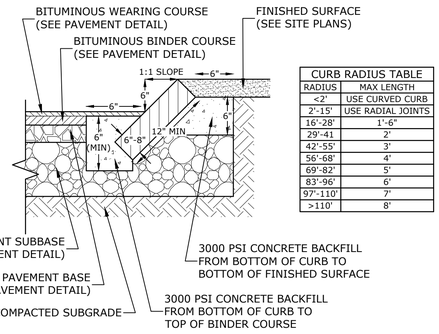
NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL
NO SCALE



NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

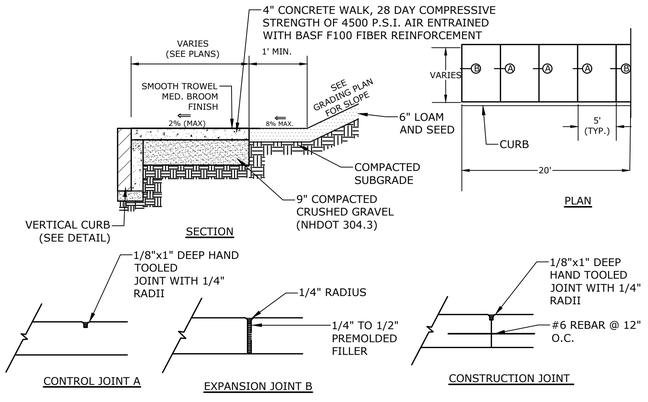
PARKING STALL/PAINTED ISLAND STRIPING
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-5"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

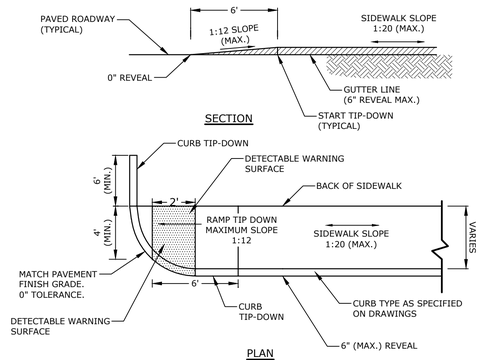
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE



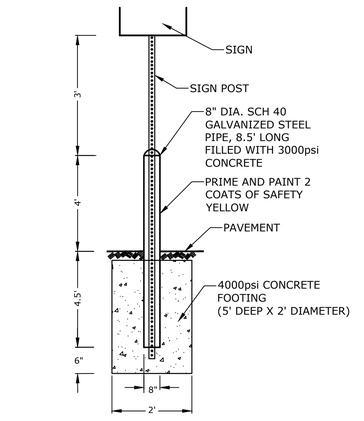
NOTES:
1. SIDEWALK SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS

CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE

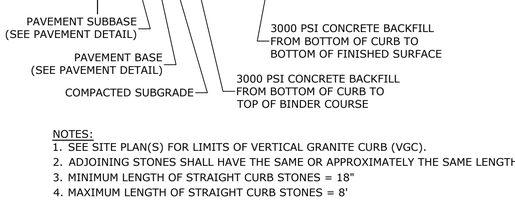


NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CONCRETE SIDEWALK TIP-DOWN RAMP
NO SCALE



BOLLARD MOUNTED SIGN DETAIL
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE

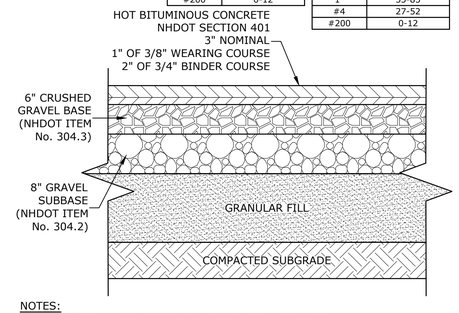
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB WITHIN DOT R.O.W.
NO SCALE

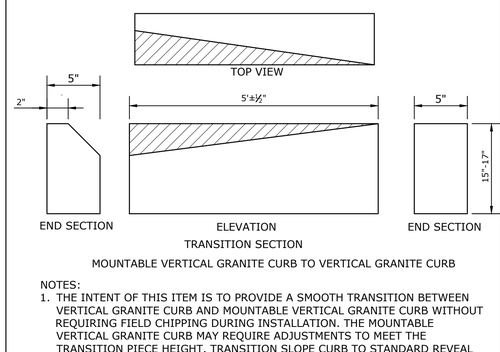
NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

TYPICAL PAVEMENT SECTION
NO SCALE



MOUNTABLE VERTICAL GRANITE CURB TO VERTICAL GRANITE CURB

NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN VERTICAL GRANITE CURB AND MOUNTABLE VERTICAL GRANITE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE MOUNTABLE VERTICAL GRANITE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.

CURB TRANSITION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

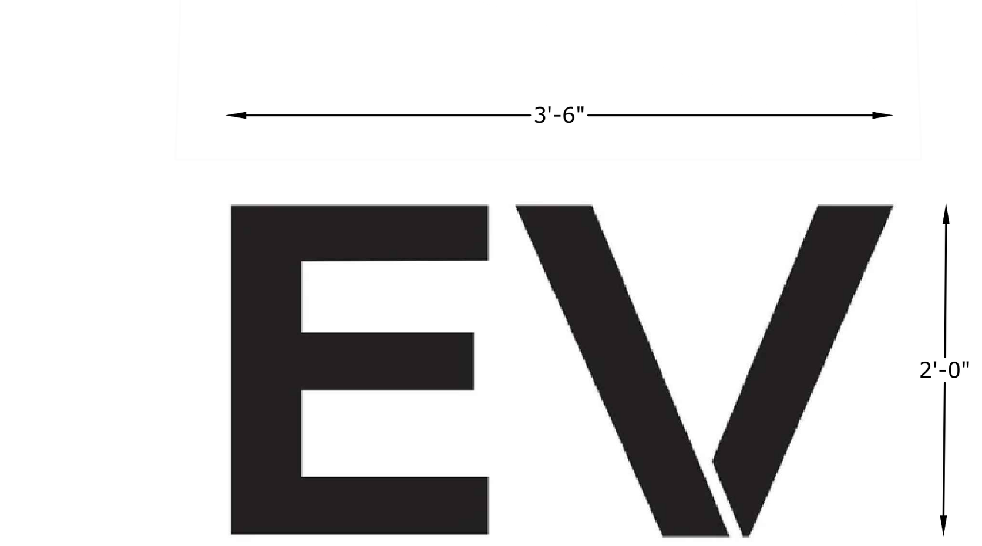
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

DETAILS

SCALE: AS SHOWN

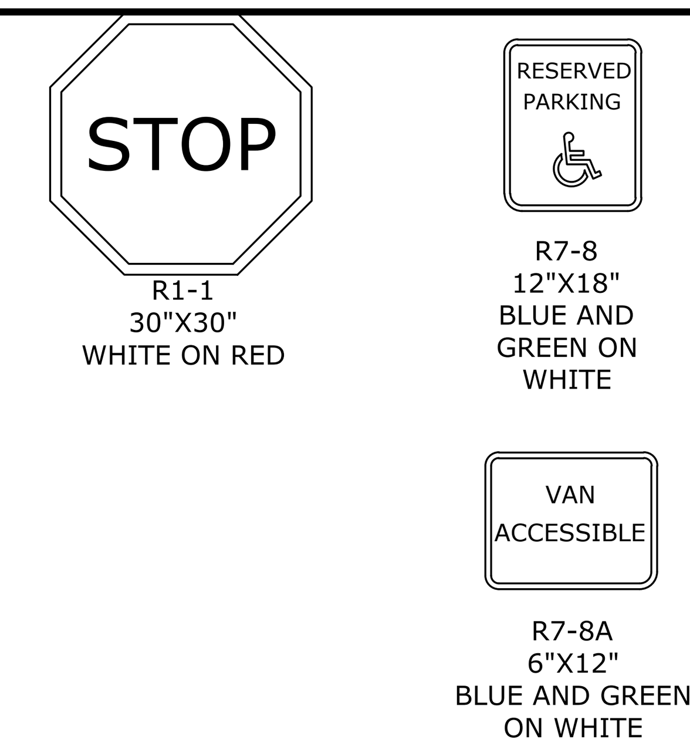
C-502

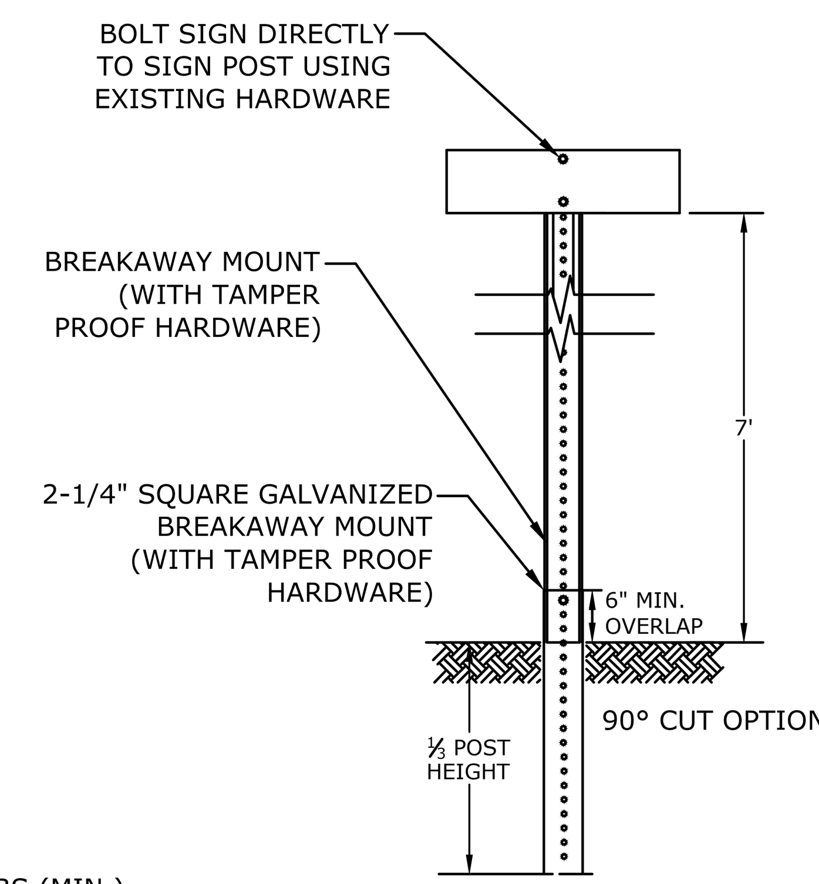


NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ELECTRIC VEHICLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST STATE AND LOCAL REQUIREMENTS.

EV CHARGING SYMBOL

NO SCALE





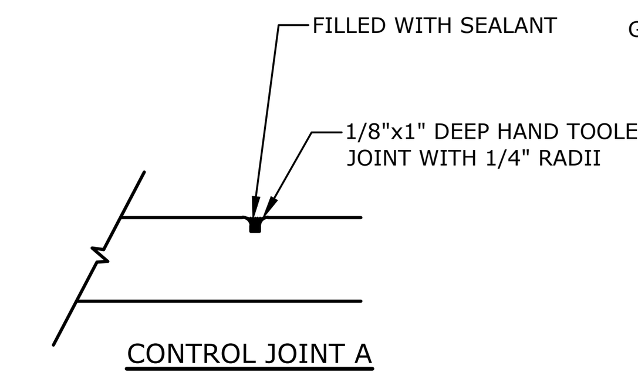
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 7/16" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: STREET SIGNS - GALVANIZED STEEL ALL OTHER - SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

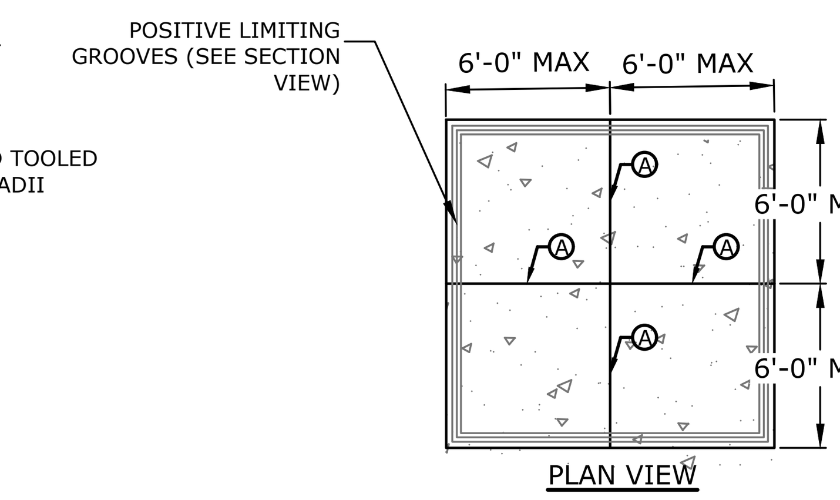
* IN LEDGE DRILL & GROUT TO A MIN OF 2'

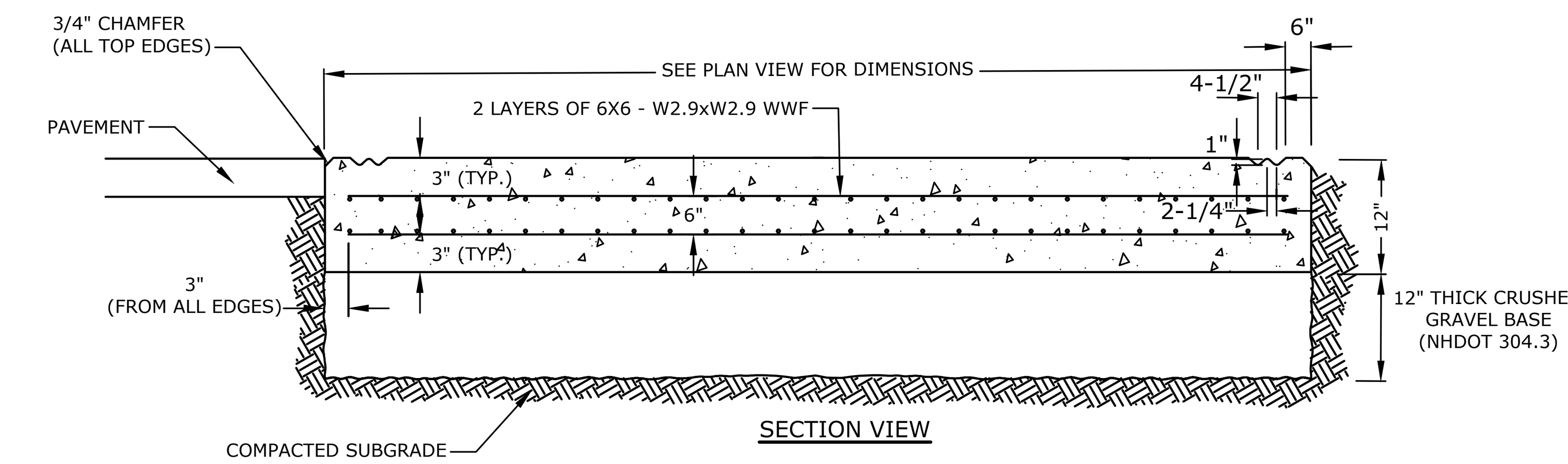
NOTES:
ALL SIGNS TO BE CONSTRUCTED PER THE LATEST EDITION OF THE FHWA STANDARD HIGHWAY SIGNS MANUAL AND INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN LEGEND & SIGN POST

NO SCALE



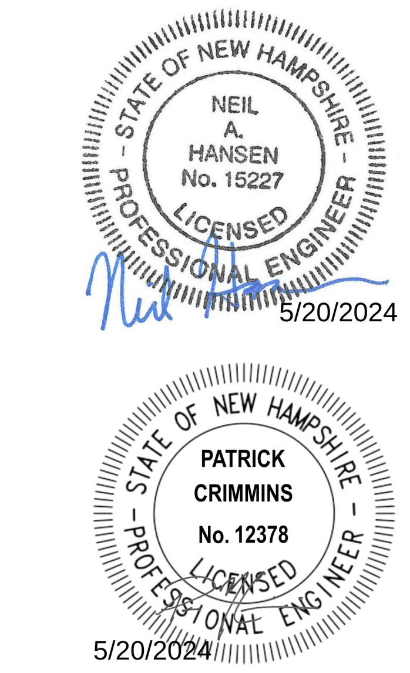


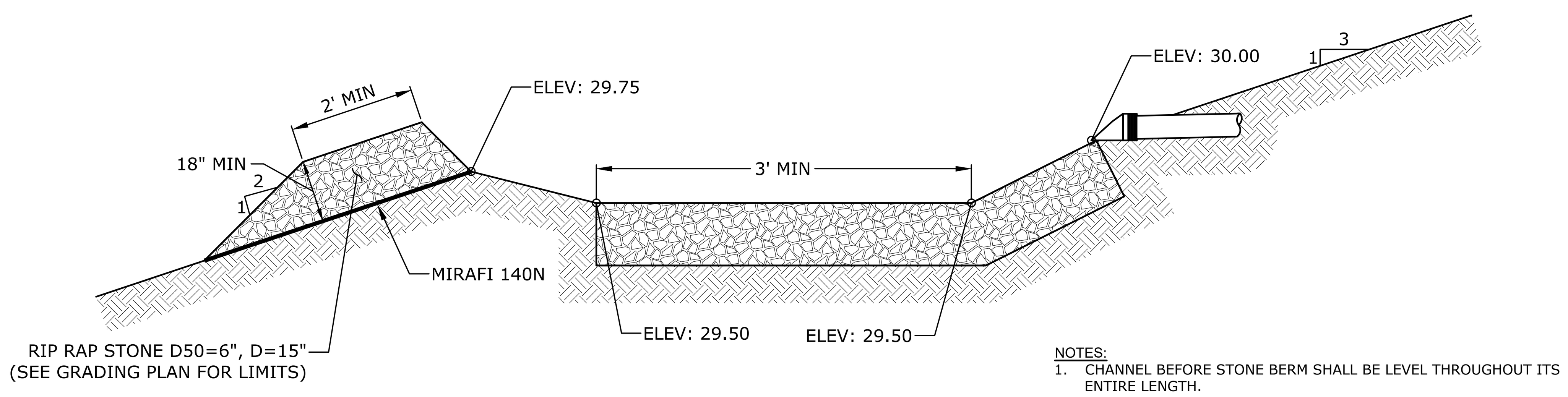


NOTES:
1. CONCRETE TO BE 4500 PSI, 7% AIR ENTRAINED
2. STANDARD BROOM FINISH.

DUMPSTER PAD

NO SCALE

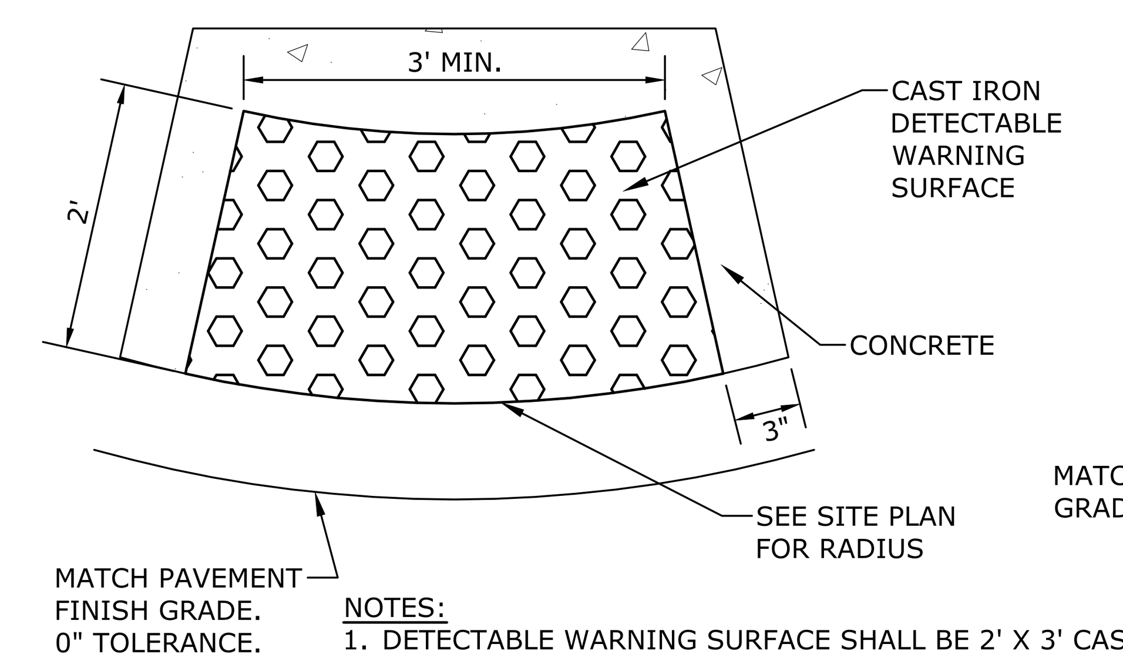




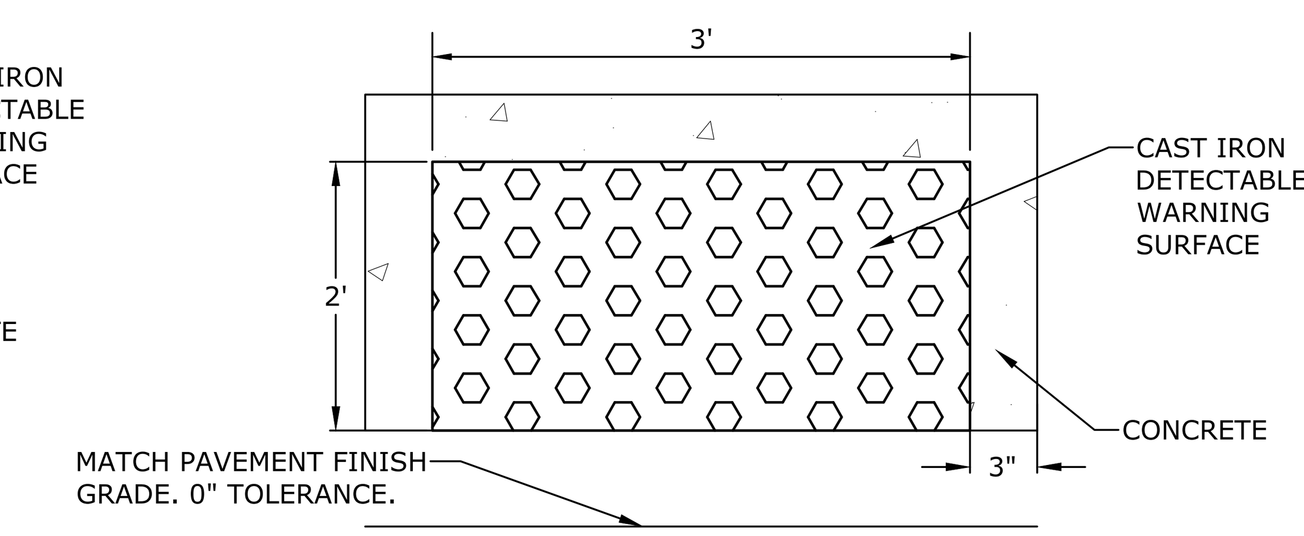
NOTES:
1. CHANNEL BEFORE STONE BERM SHALL BE LEVEL THROUGHOUT ITS ENTIRE LENGTH.

STONE BERM LEVEL SPREADER DETAIL

NO SCALE

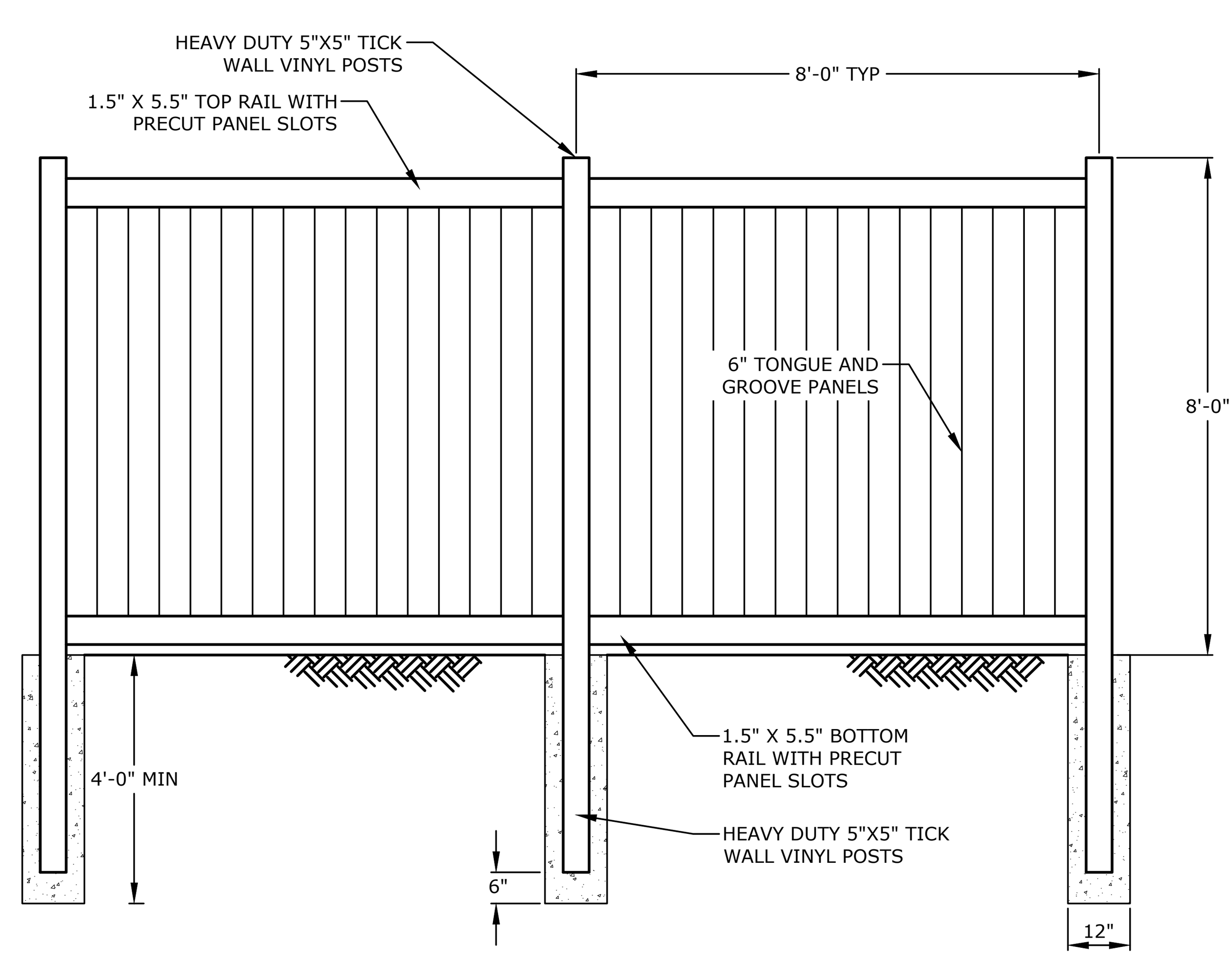


NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



CAST IRON DETECTABLE WARNING SURFACE

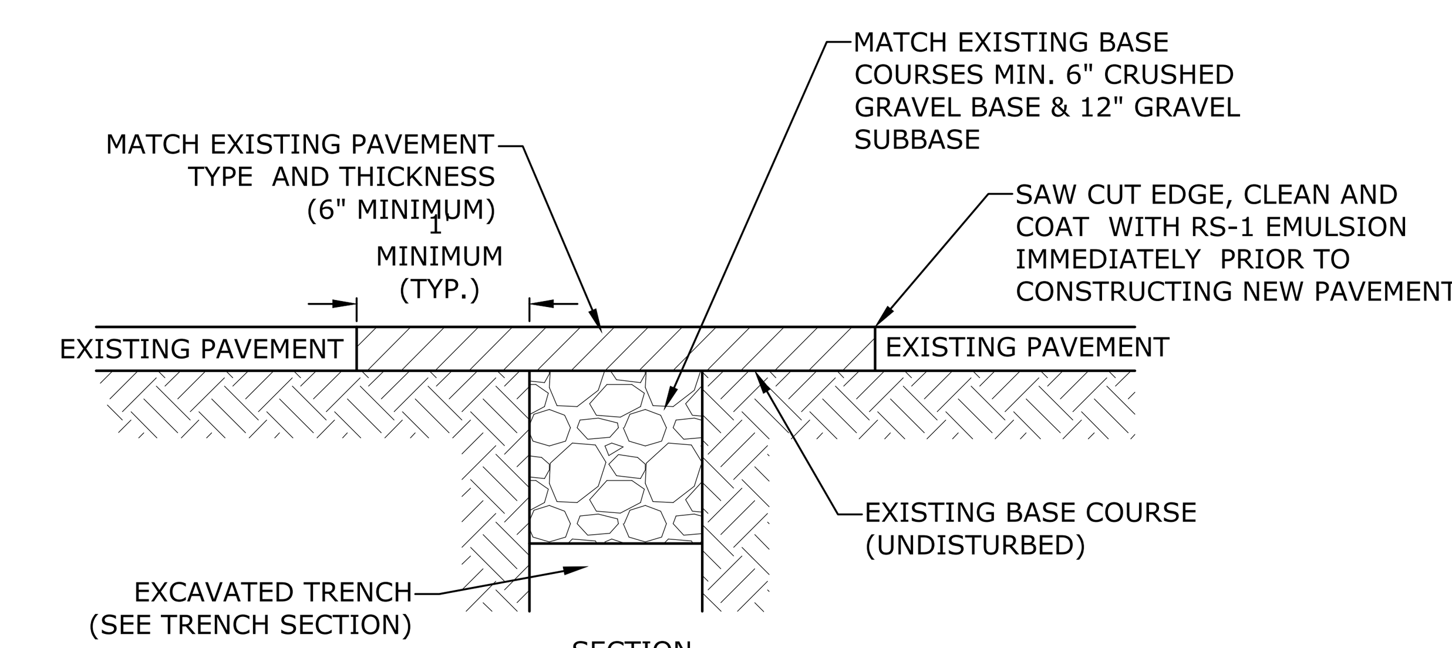
NO SCALE

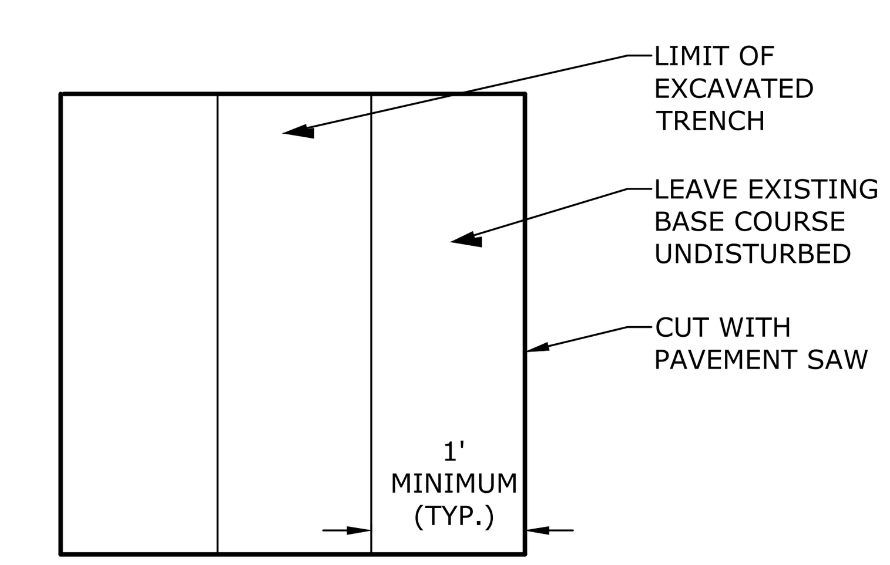


NOTES:
1. VINYL DUMPSTER ENCLOSE SHALL BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
2. COORDINATE FINAL COLOR AND STYLE WITH OWNER PRIOR TO CONSTRUCTION.

DUMPSTER PAD ENCLOSURE

NO SCALE





NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH

NO SCALE

Tighe&Bond

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

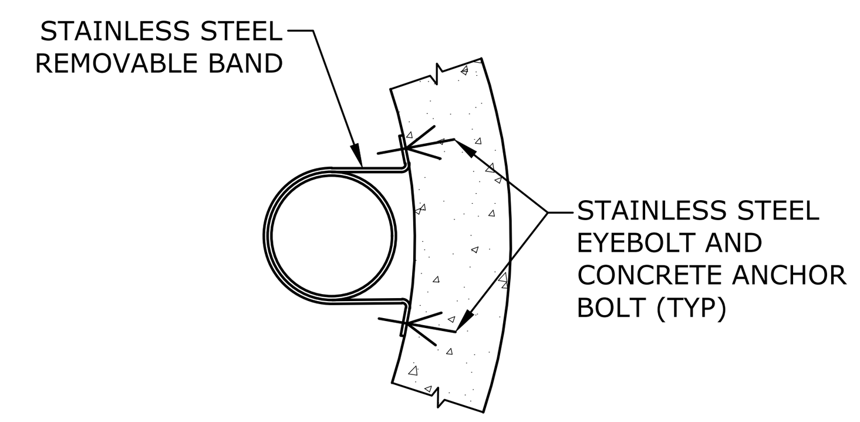
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

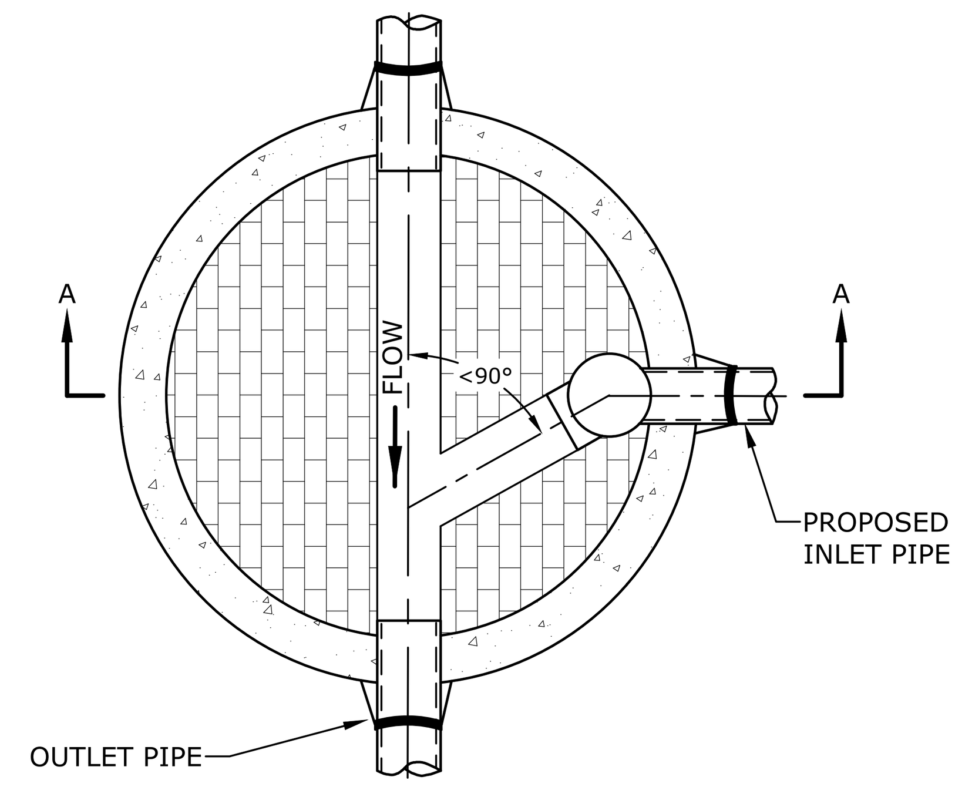
DETAILS

SCALE: AS SHOWN

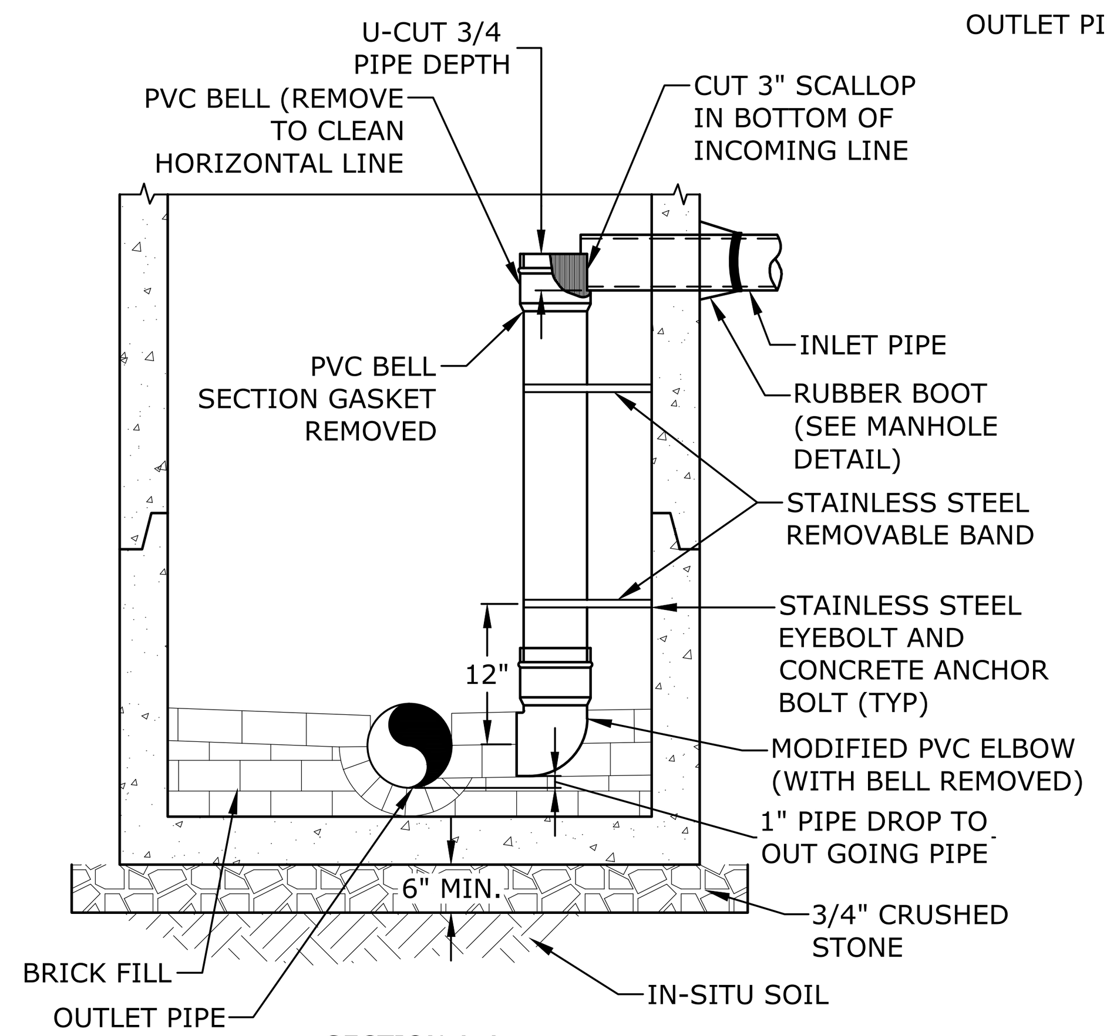
C-503



PIPE STRAP DETAIL



PLAN

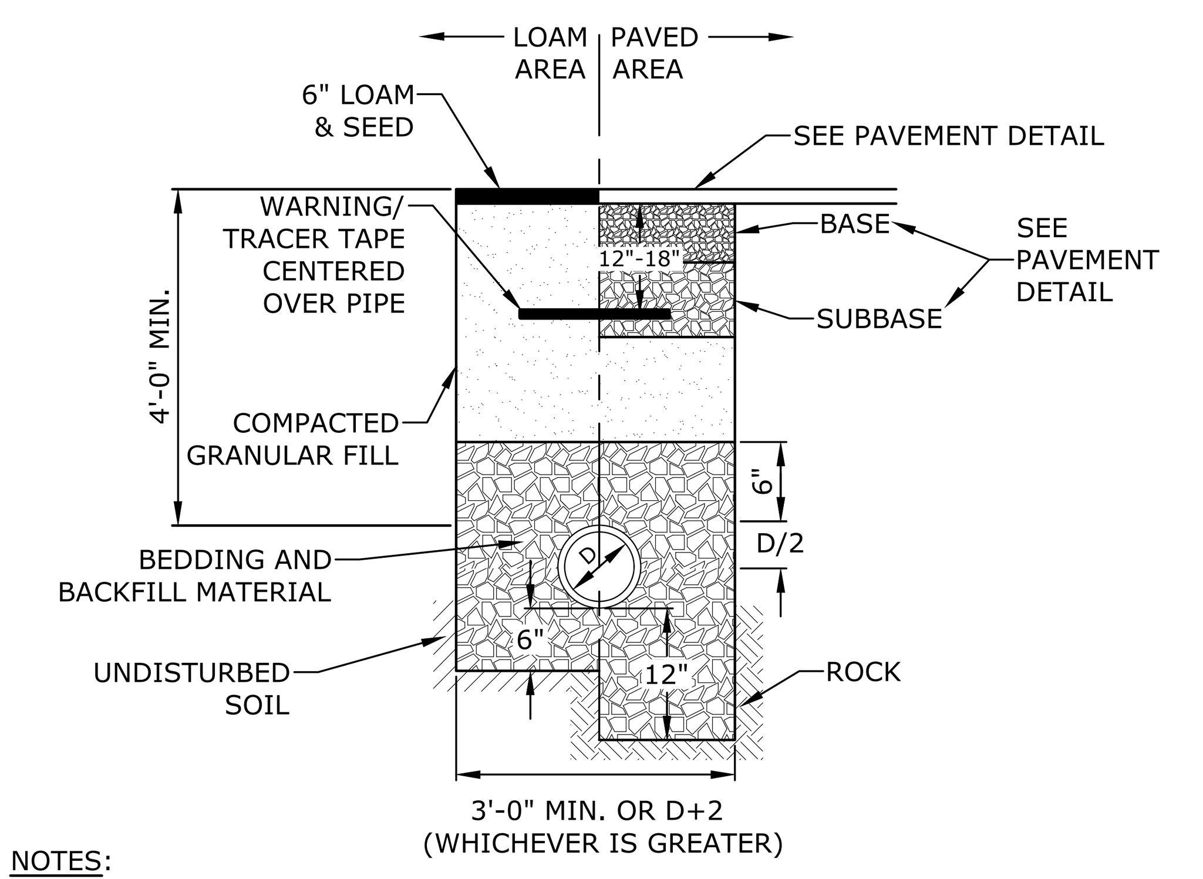


SECTION A-A

NOTES:
1. RISER PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF SDR35 PVC PIPE.
2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS.
3. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

INSIDE DROP MANHOLE

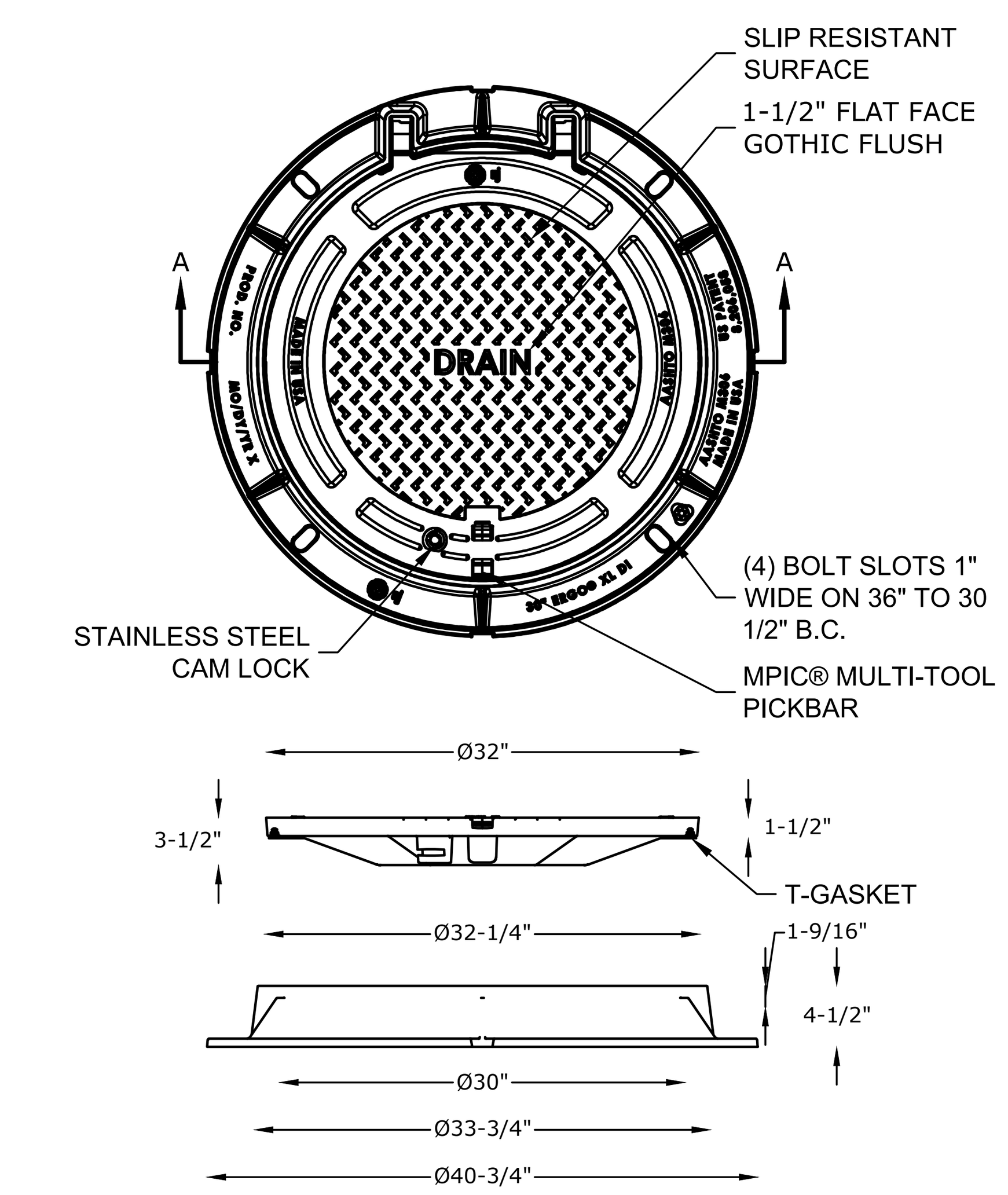
NO SCALE



NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.
3. DRAIN LINE SHALL BE INSULATED WHERE THERE IS LESS THAN 6' OF COVER IN PAVED AREAS AND LESS THAN 4' OF COVER IN NON-PAVED AREAS.

STORM DRAIN TRENCH

NO SCALE

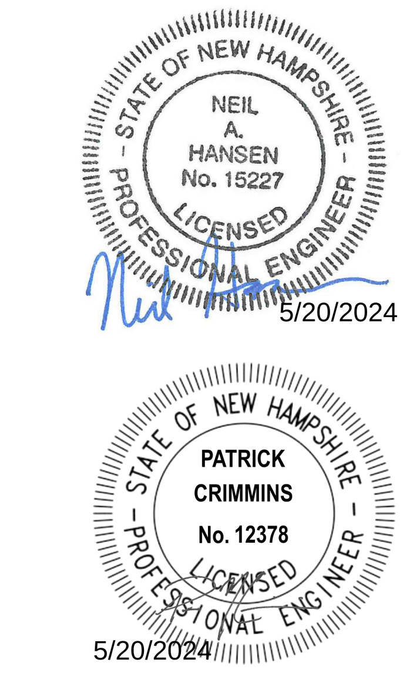


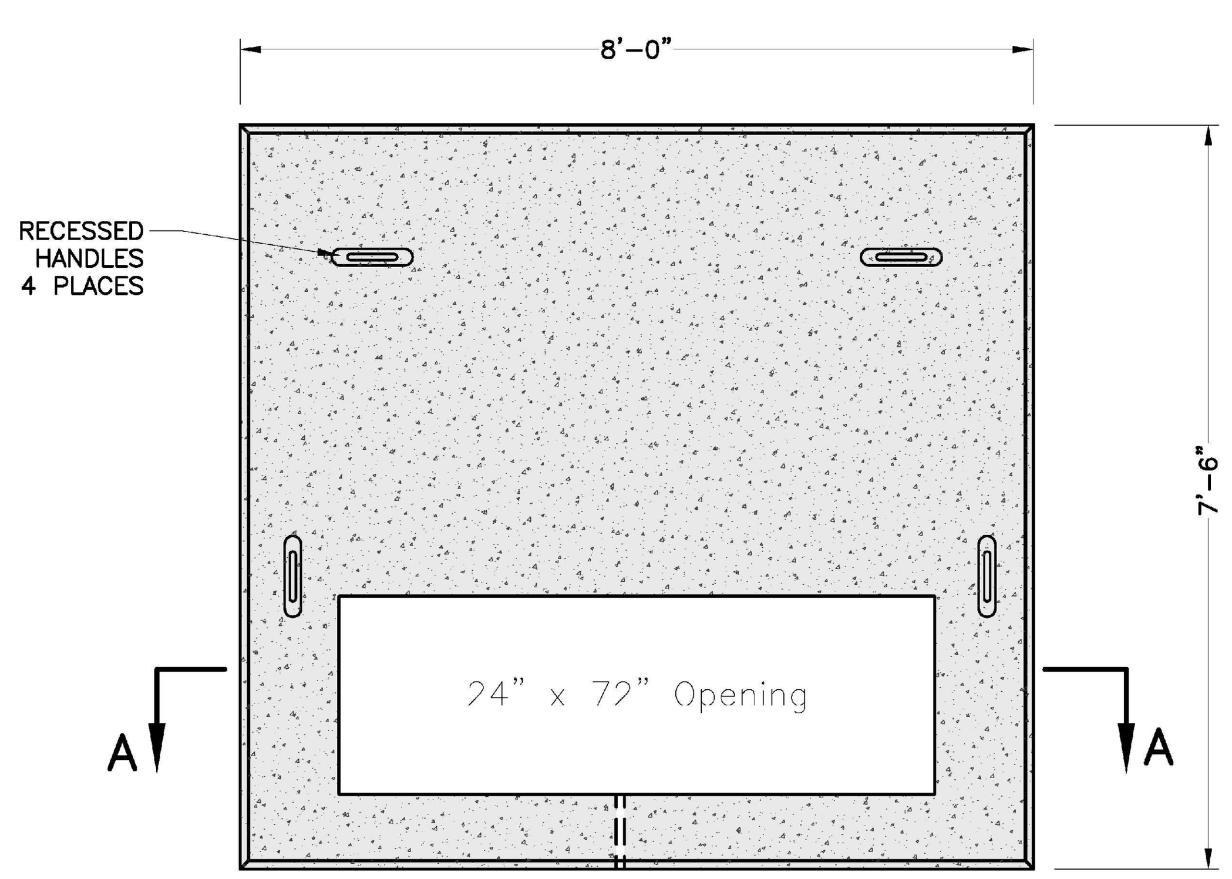
SECTION A-A

NOTES:
1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.
2. ALL DIMENSIONS ARE NOMINAL.
3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
4. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN HE CENTER OF THE COVER.

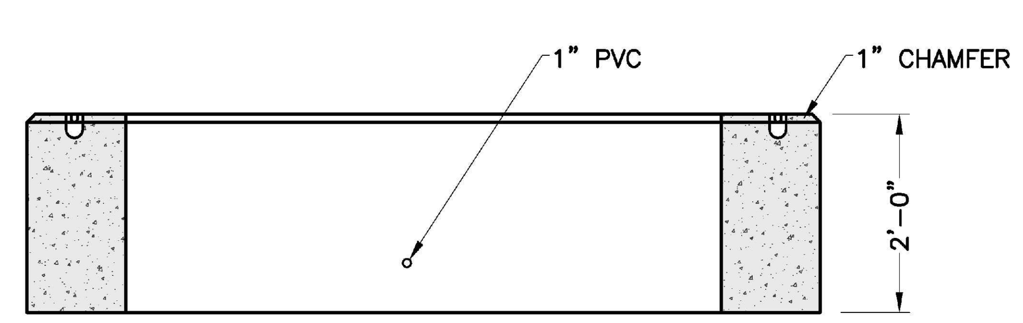
DRAIN MANHOLE FRAME & COVER

NO SCALE





PLAN

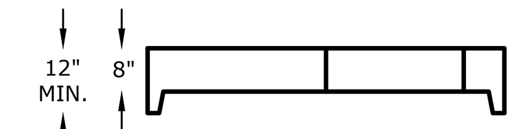


SECTION A–A

NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS
5. TRANSFORMER PAD SHALL BE REVIEWED AND APPROVED BY EVERSOURCE PRIOR TO CONSTRUCTION.

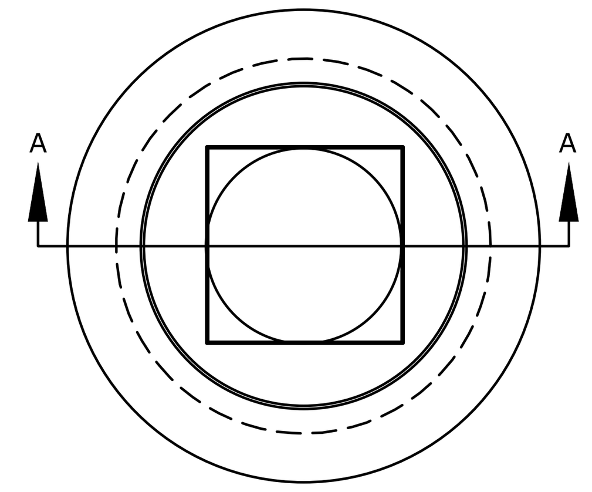
TRANSFORMER PAD DETAIL

NO SCALE

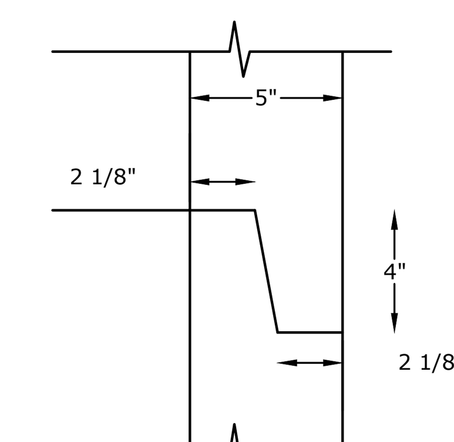


SECTION B-B

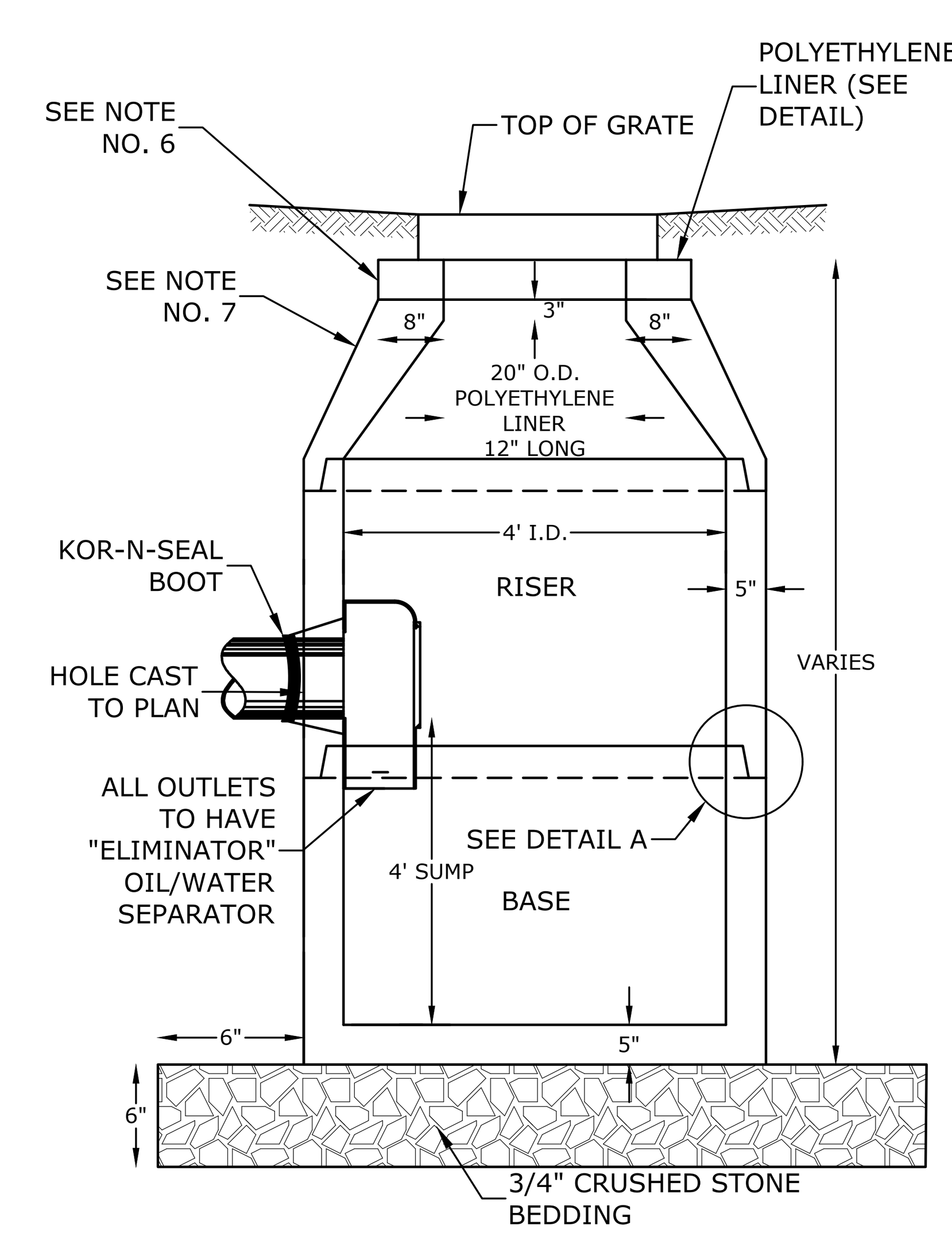
FLAT SLAB TOP



PLAN



DETAIL A
(TONGUE AND GROOVE JOINT)



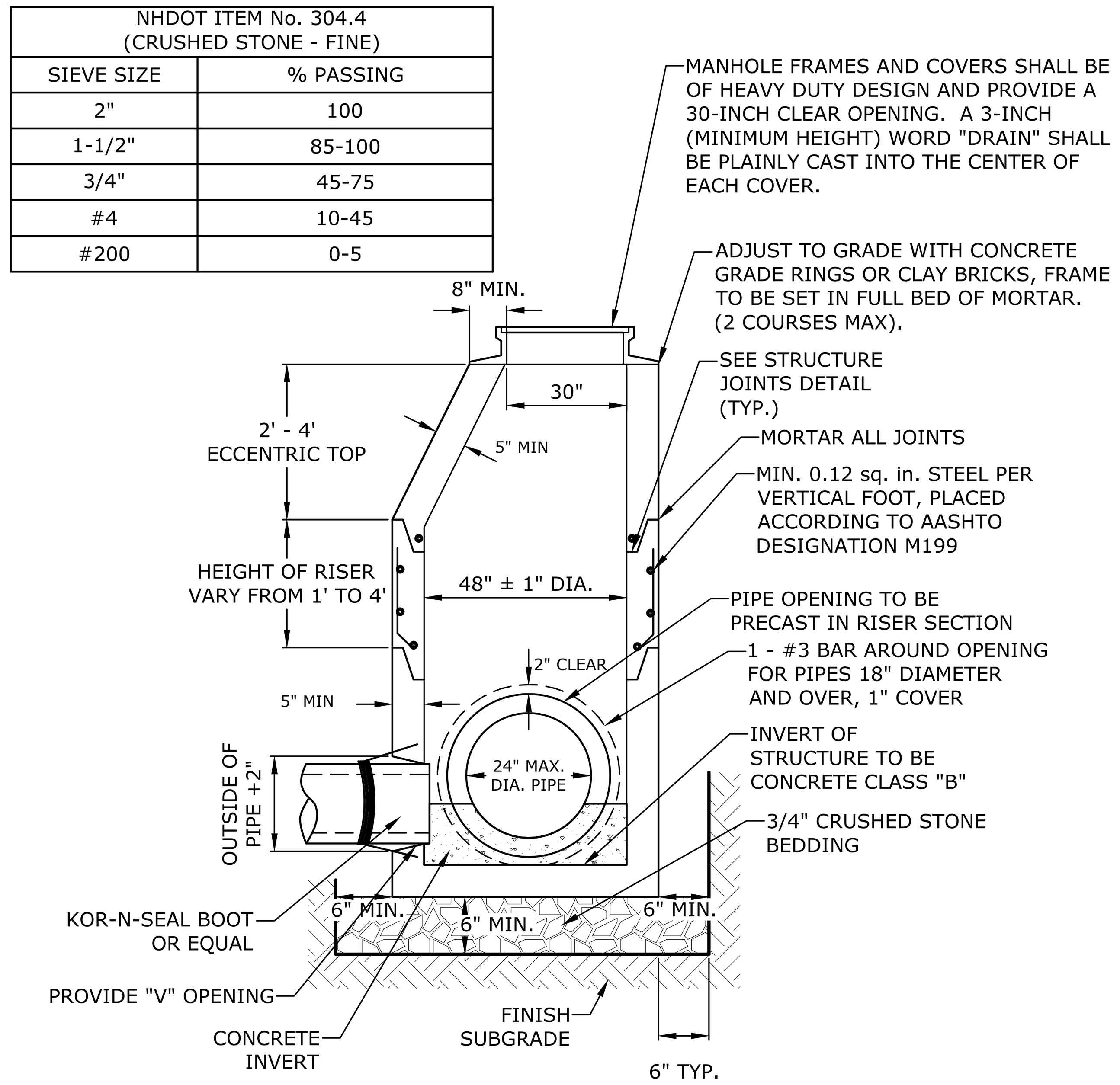
SECTION A-A

NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN

NO SCALE

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

4' DIAMETER DRAIN MANHOLE

NO SCALE

Tighe&Bond

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

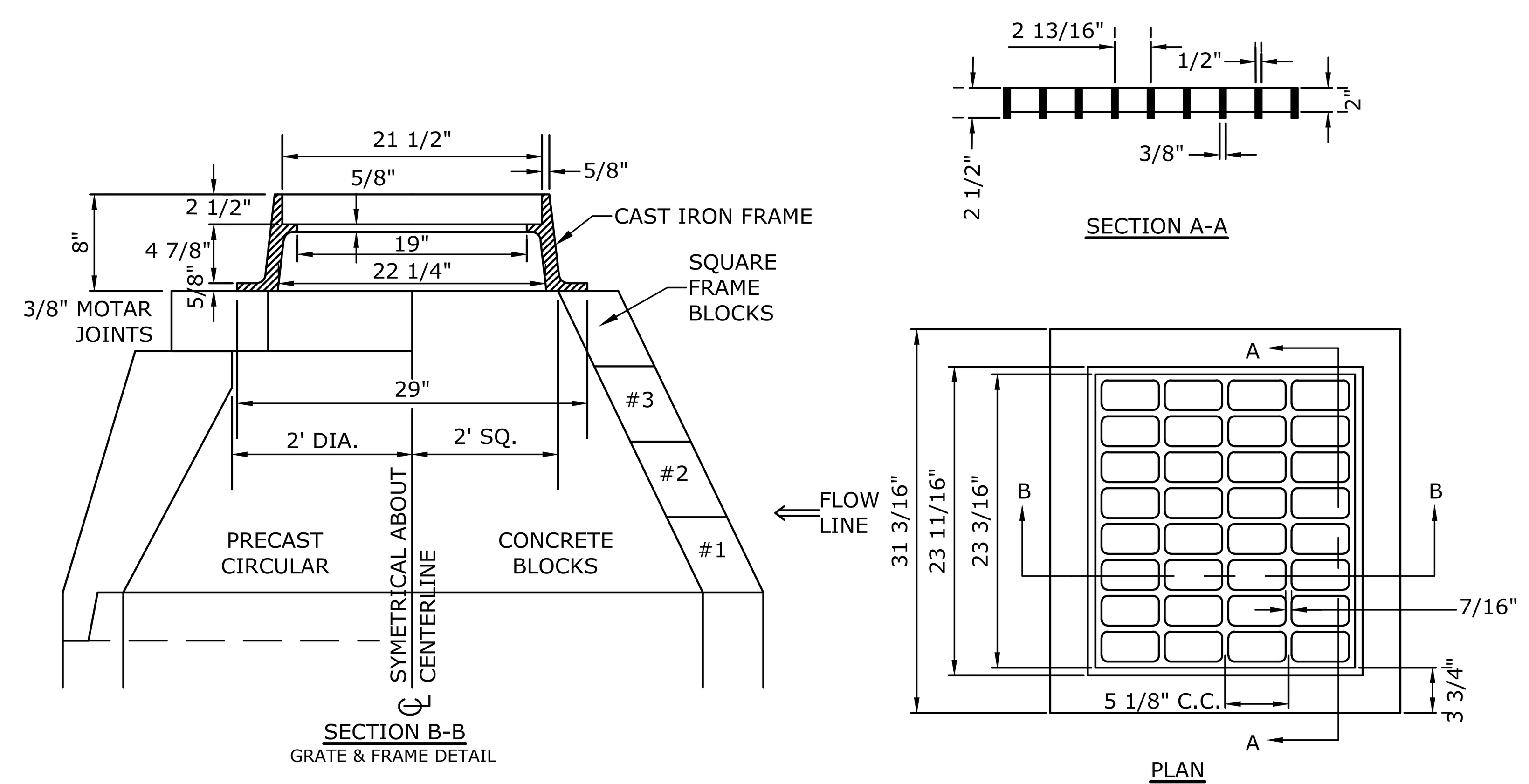
PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

DETAILS

SCALE: AS SHOWN

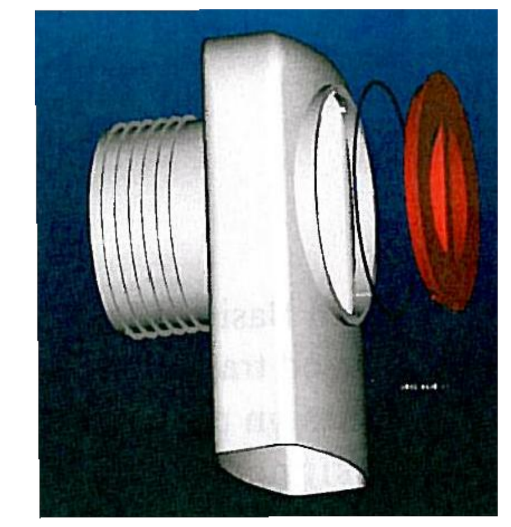
C-504

Last Saved: 5/20/2024
Plotted On:May 20, 2024-12:18pm By: CKrzcuik
Tighe & Bond:J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DTLS.dwg



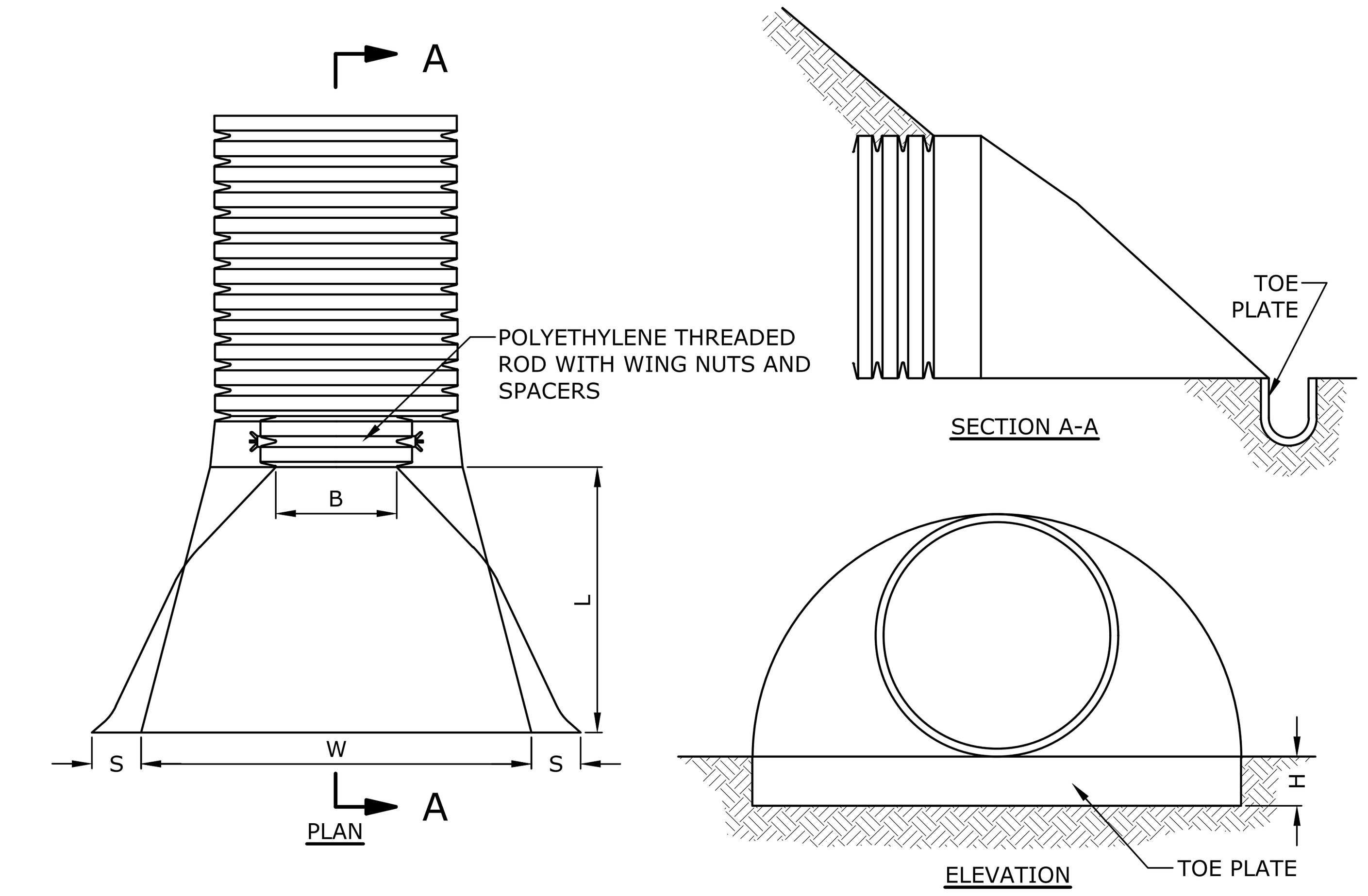
NOTES:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

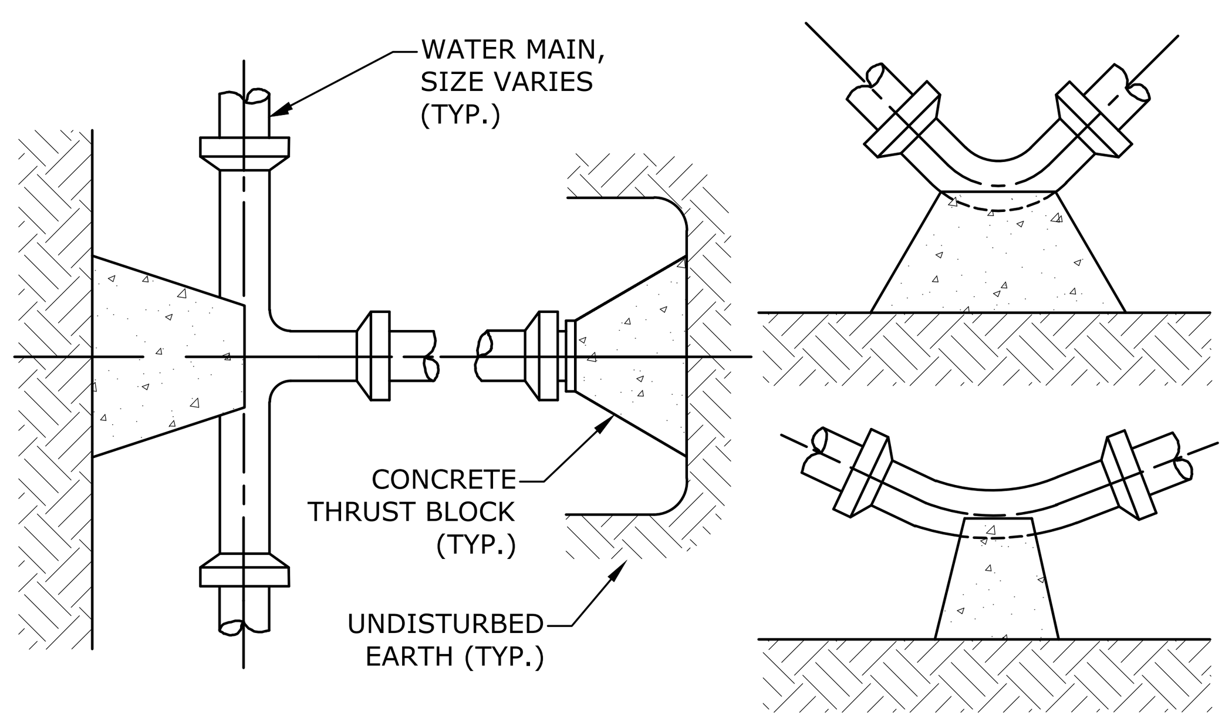
"ELIMINATOR" OIL FLOATING DEBRIS TRAP
NO SCALE



PIPE DIA.	S	B	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"
18"	7.5"	15"	6.5"	32"	35"
24"	7.5"	18"	6.5"	36"	45"
30"	7.5"	12"	8.6"	58"	63"
36"	7.5"	25"	8.6"	58"	63"

NOTE:
1. END SECTIONS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, COLUMBUS, OHIO. END SECTIONS TO BE WELDED TO PIPE AS PER MANUFACTURER'S RECOMMENDATIONS.

HDPE END SECTION
NO SCALE



TEST PRESSURE = 200psi

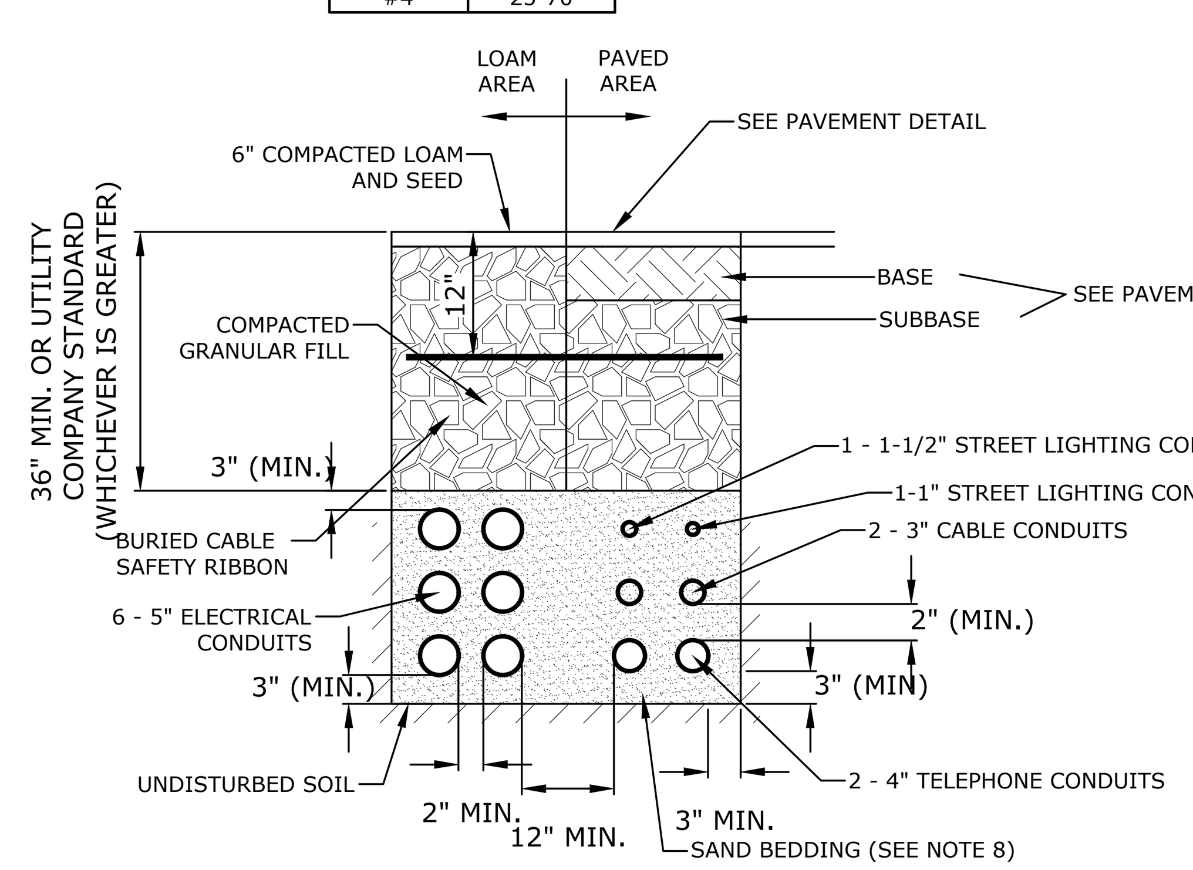
SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
REACTION TYPE	PIPE SIZE				
	4"	6"	8"	10"	12"
A 90°	0.89	2.19	3.82	11.14	17.24
B 180°	0.65	1.55	2.78	8.38	12.00
C 45°	0.48	1.19	2.12	6.02	9.32
D 22-1/2°	0.25	0.60	1.06	3.08	4.74
E 11-1/4°	0.13	0.30	0.54	1.54	2.38

NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.

THRUST BLOCKING DETAIL
NO SCALE

GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BLANKET	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX

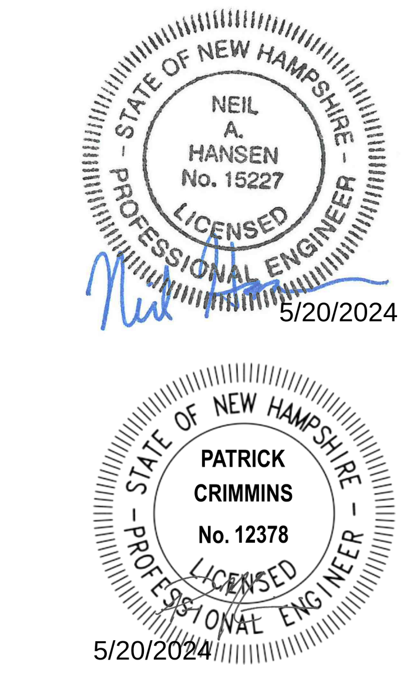


AASHTO #67 STONE (#4 to 3/4")	
SIEVE SIZE	% PASSING
1"	100
3/4"	90-100
3/8"	20-55
#4	0-10
#8	0-5

NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE REQUIRED BY EVERSOURCE.

ELECTRICAL AND COMMUNICATION CONDUIT TRENCH
NO SCALE

Tighe&Bond



Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

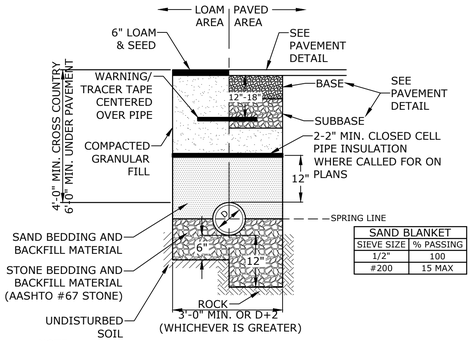
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

DETAILS

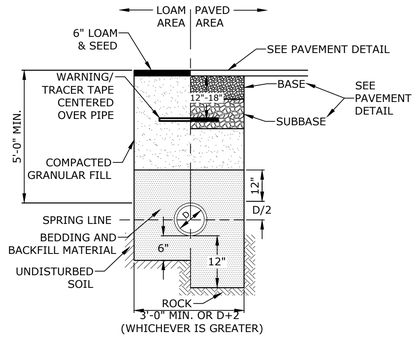
SCALE: AS SHOWN

C-505



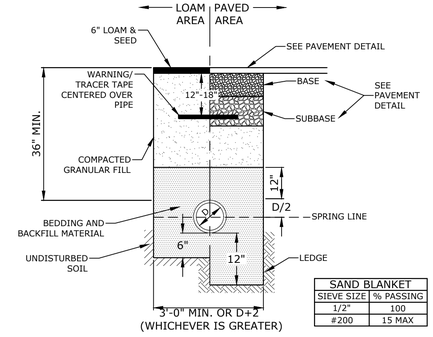
NOTE:
1. BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. BEDDING SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 12" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

SEWER SERVICE TRENCH
NO SCALE



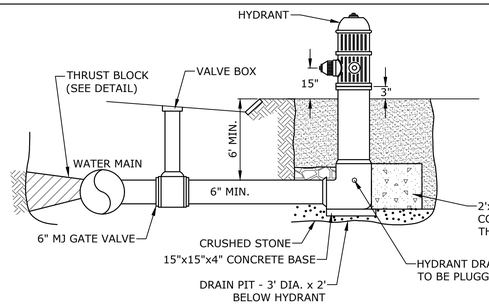
NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

WATER TRENCH
NO SCALE



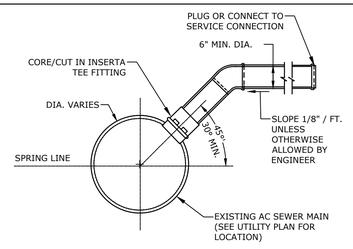
NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS LINE SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE



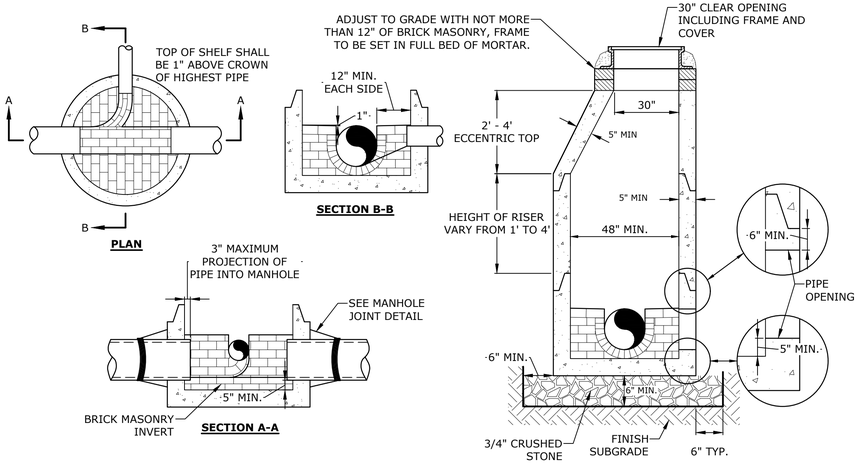
NOTES:
1. HYDRANT TO BE KENNEDY TYPE K-81, RIGHT OPEN (NO EQUAL). COORDINATE WITH CITY OF PORTSMOUTH WATER DEPARTMENT AND CITY OF PORTSMOUTH FIRE DEPARTMENT.
2. PAINT HYDRANT IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS AFTER INSTALLATION AND TESTING.

FIRE HYDRANT
NO SCALE



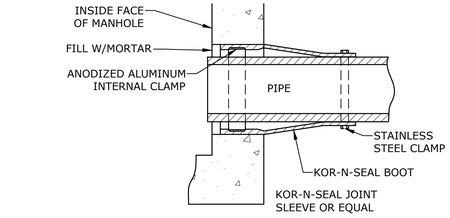
NOTES:
1. INSERTA TEE CONNECTION TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
2. SERVICE LATERAL CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
3. THE EXISTING SEWER MAIN IS BELIEVED TO BE ASBESTOS CEMENT PIPE.

INSERTA-TEE LATERAL SERVICE CONNECTION
NO SCALE

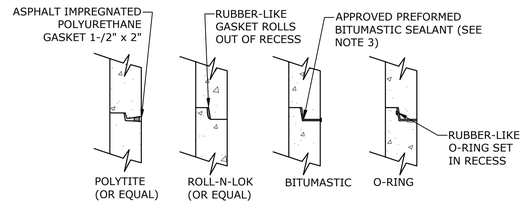


NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

SEWER MANHOLE
NO SCALE



PIPE TO MANHOLE JOINTS



HORIZONTAL JOINTS

NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

MANHOLE JOINTS
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

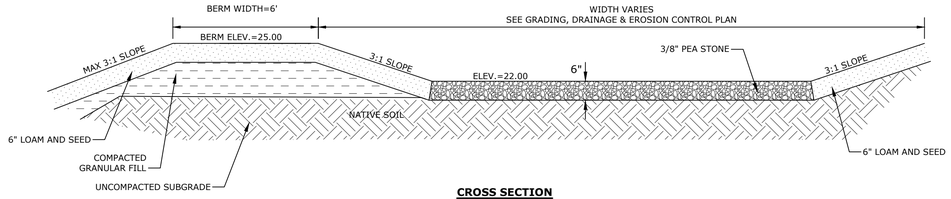
MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

DETAILS

SCALE: AS SHOWN

C-506



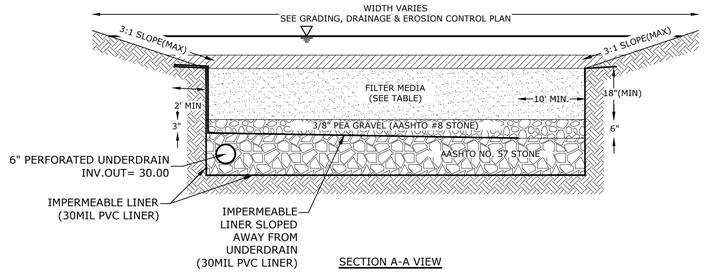
CROSS SECTION

NOTES:

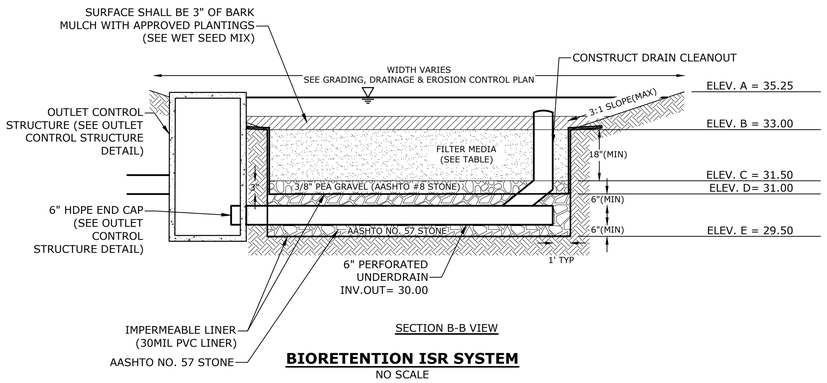
1. SUBSOIL SHALL BE LEFT IN PLACE TO THE MAXIMUM EXTENT PRACTICAL AND SHALL NOT BE COMPACTED.
2. SUBSOIL SHALL BE SCARIFIED WITH TEETH OF EXCAVATOR PRIOR TO PLACING LOAM. SCARIFY PARALLEL WITH CONTOURS WORKING FROM THE CENTER OUTWARD. SOIL MUST BE DRY PRIOR TO PREPARATION.
3. EQUIPMENT SHALL NOT BE DRIVEN ON SCARIFIED SOIL SURFACE.
4. LOAM SHALL BE PUSHED ONTO PREPARED SURFACE FROM THE SIDE.
5. SEED ON SIDE SLOPES OF INFILTRATION BASIN SHALL BE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES OR EQUAL.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
7. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
8. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

INFILTRATION BASIN

NO SCALE



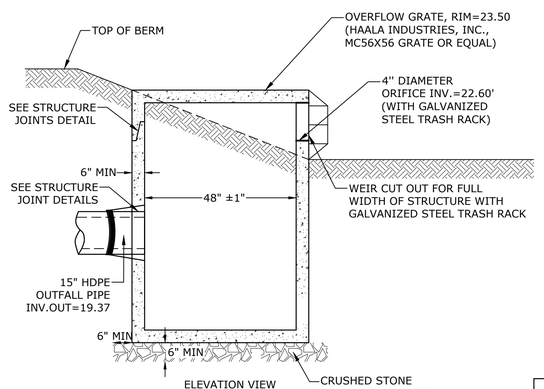
SECTION A-A VIEW



SECTION B-B VIEW

BIORETENTION ISR SYSTEM

NO SCALE



ELEVATION VIEW

NOTES:

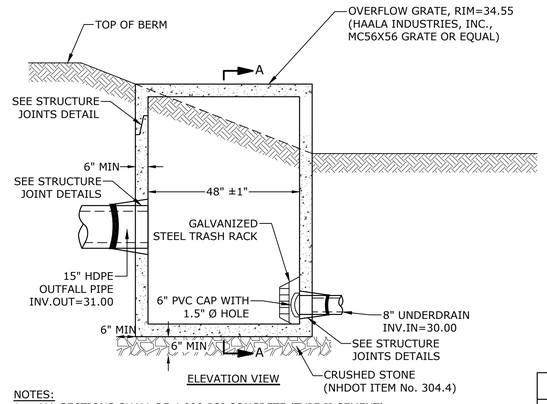
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE THIRDE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

OUTLET STRUCTURE (POS 02)

NO SCALE

SECTION A-A

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



ELEVATION VIEW

NOTES:

1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE THIRDE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

OUTLET STRUCTURE (POS 01)

NO SCALE

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5

Tighe&Bond

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
5/20/2024

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
5/20/2024

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

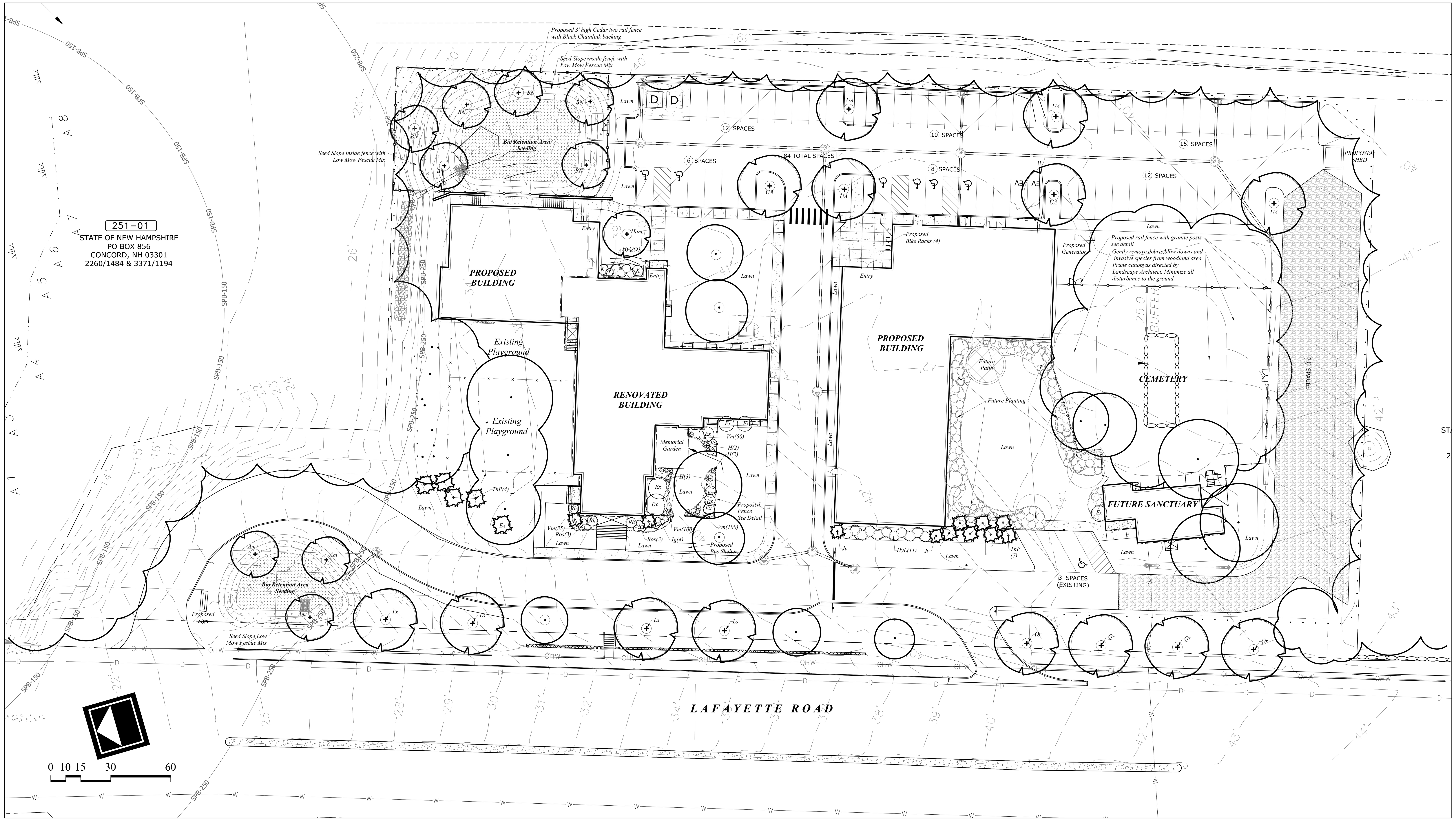
DETAILS

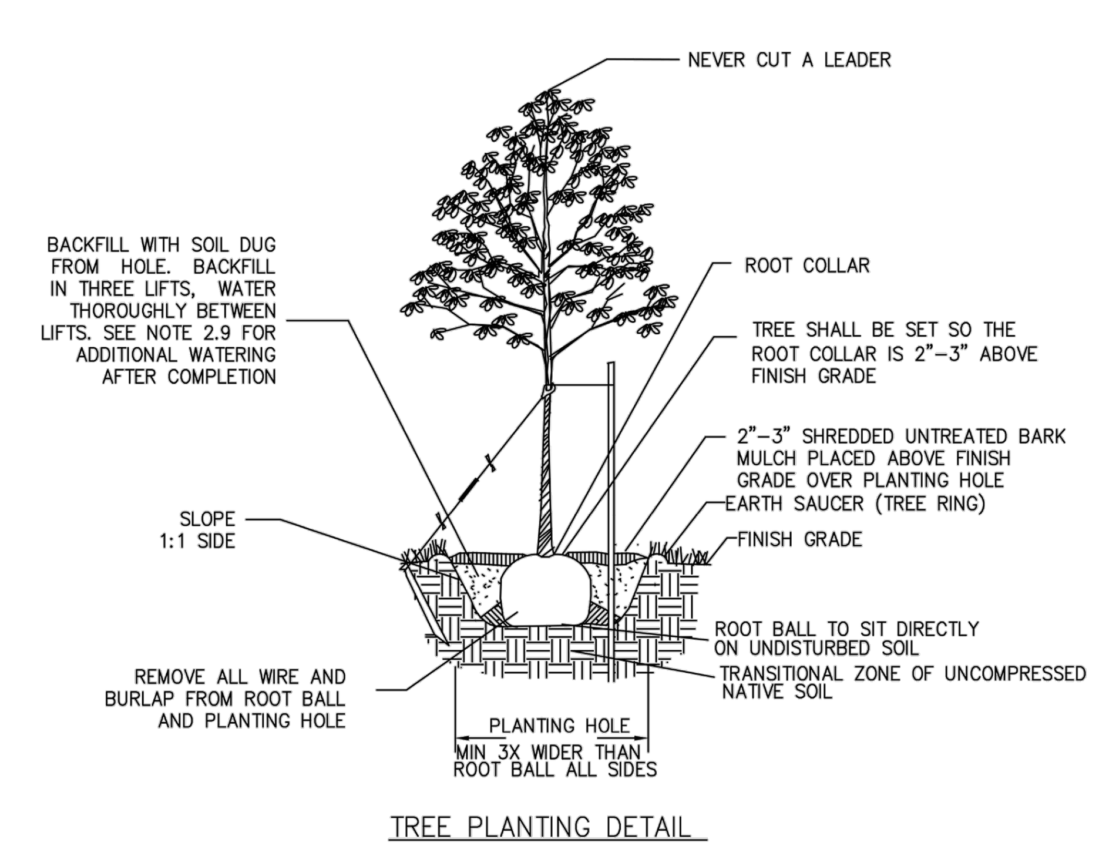
SCALE: AS SHOWN

C-507

Landscape Notes

1. Design is based on drawings by Tighe & Bond Engineering dated 2024-05-13 and Lassel Architects dated 2024-05-14 and may require adjustment due to actual field conditions.
2. The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
3. Erosion Control shall be in place prior to construction.
4. Erosion Control shall be as illustrated in the Engineer's drawings
5. The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
6. It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
7. Trees to Remain within the construction zone shall be protected from damage for the duration of the project by snow fence or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Snow fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots. In order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
8. This plan is for review purposes only, NOT for Construction. Construction Documents will be provided upon request.
9. Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
10. The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 811 or 888-DIG-SAFE.
11. The Contractor shall procure any required permits prior to construction.
12. Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
13. Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a Contractor is aware of a potential issue and does not bring it to the attention of the Landscape Architect or Owner's Representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
14. The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the American Standard of Nursery Stock, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
15. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
16. All plants shall be legibly tagged with proper botanical name.
17. The Contractor shall guarantee all plants including seeding, for not less than one year from time of acceptance.
18. Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
19. No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
20. All landscaping shall be provided with the following:
    a. Outside hose attachments spaced a maximum of 150 feet apart, and
    b. An underground irrigation system, or
    c. A temporary irrigation system designed for a two-year period of plant establishment.
21. If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
22. The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, watering of plants, including seeding and weeding. Plants shall be appropriately watered prior to, during, and after planting. It is the Contractor's responsibility to provide clean water suitable for plant health from off site, should it not be available on site.
23. All disturbed areas will be dressed with 6" of loam and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
24. Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and ½" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be dark brown.
25. Drip strip/Maintenance Strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick black metal edger.
26. In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
27. Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy. Within the sight distance triangles at vehicle intersections the canopies shall be raised to 8' min.
28. Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
29. Landscape Architect is not responsible for the means and methods of the Contractor.





PART 1 – GENERAL:

1.1 THE BASE OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING. ANSI A300 PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE "END ALL" FOR THE CITY OF PORTSMOUTH. THE FOLLOWING ARE THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT ARE IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.

PART 2 – EXECUTION:

2.1 ALL PLANTING HOLES SHALL BE DUG BY HAND – NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PITS, PLANTING BEDS WITH GRANITE CURBING, AND PLANTING SITES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINE IS USED TO DIG IN ANY OF THESE SITUATIONS AND PLANTING DEPTH NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.

2.2 ALL WIRE AND BURLAP SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.

2.3 THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GIRDLING ROOTS ARE PRESENT.

2.4 THE ROOT COLLAR OF THE TREE SHALL BE 2"–3" ABOVE GRADE OF PLANTING HOLE FOR FINISHING DEPTH.

2.5 ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.

2.6 ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS – NO EXCEPTIONS.

2.7 AN EARTH BERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR PITS ARE BEING USED.

2.8 2"–3" OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.

2.9 AT THE TIME OF PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.

2.10 STAKES AND GUYS SHALL BE USED WHERE APPROPRIATE AND/OR NECESSARY. GUY MATERIAL SHALL BE NON–DAMAGING TO THE TREE.

2.11 ALL PLANTING STOCK SHALL BE SPECIMEN QUALITY, FREE OF DEFECTS AND DISEASE OR INJURY. THE CITY OF PORTSMOUTH, NH RESERVES THE RIGHT TO REFUSE/REJECT ANY PLANT MATERIAL OR PLANTING ACTION THAT FAILS TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTATION AND/OR THE CITY OF PORTSMOUTH, NH PLANTING REQUIREMENTS.

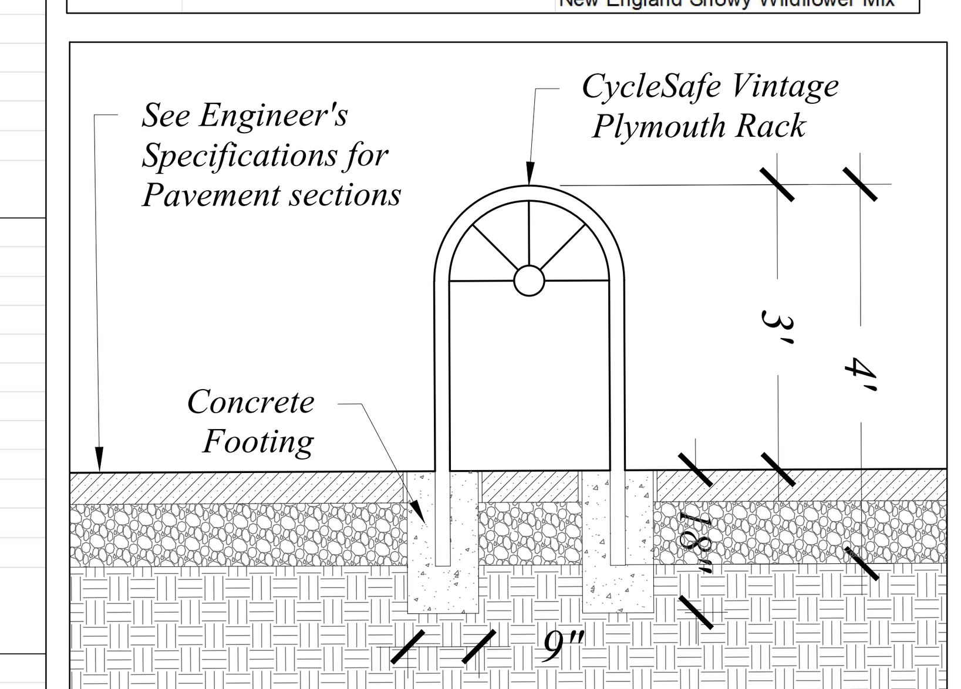
City of Portsmouth
Standard Tree Planting Detail

Proposed Memorial and Cemetery Fence - 8x8 granite posts with 2.5"diameter metal rails.

Plant List

Symbol	Botanical Name	Common Name	Native	Current Plan Quantity	Future Planting Quatity	Size	Comments
TREES							
Am	*Amelanchier granidflora 'Autumn Brilliance'*	Autumn Brilliance Serviceberry	Y	3	2	8-10' ht.	multi-stemmed BB
Bn	*Betula nigra 'Dura Heat'*	Dura Heat River Birch	Y	6	2	10-12' ht.	multi-stemmed BB
Ham	*Hamamelis intermedia 'Arnold Promise'*	Arnold Promise Witch Hazel	Y	1	0	7-8' ht	multi-stemmed BB
Jv1	*Juniperus virginiana 'Manhattan Blue'*	Manhattan Blue Eastern Red Cedar	Y	4	0	7-8' ht.	BB
Ls	*Liquidambar styraciflua*	Sweet Gum	Y	4	0	3.5" cal.	BB
Qr	*Quercus rubra*	Northern Red Oak	Y	4	0	3.5" cal.	BB
Th	*Thuja plicata 'Green Giant'*	Green Giant Western Red Cedar		11	0	8-10' ht.	BB
Ua	*Ulmus americana 'Princeton'*	Princeton Elm	Y	6	0	3.5" cal.	BB
SHRUBS							
Symbol	Botanical Name	Common Name	Native	Quantity		Size	Comments
Cf	*Calycanthus floridus 'Aphrodite'*	Aphrodite Sweetshrub	Y	0	2	7 gal.	
HyL	*Hydrangea paniculata 'Little Lime'*	Little Lime Hydrangea		11	11	3 gal.	
HyQ	*Hydrangea Little Quick Fire'*	Little Quick Fire Hydrangea		7	18	3 gal.	
Ig	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	Y	4	20	3 gal.	
K	*Kalmia latifolia 'Olympic Fire'*	Olympic Fire Mountain Laurel	Y	2	0	2.5'3' ht	BB
Rh	*Rhododendron 'Roseum Pink'*	Roseum Pink Rhododendron		3	0	3-4' ht.	BB
Pros	*Rosa 'Apricot Drift'*	Apricot Drift Rose		6	0	3 gal.	
Rhus	*Rhus aromatica 'Grow Low'*	Grow Low Sumac	Y	0	23	3 gal.	
PERENNIALS, GROUNDCOVERS, VINES and ANNUALS							
Symbol	Botanical Name	Common Name	Native	Current Plan Quantity	Future Planting Quatity	Size	Comments
H	*HOSTA VARIETIES*						
	Hosta 'Frances Williams'	Frances Williams Hosta		3	5	1 gal.	
	Hosta sieboldiana 'Elegans'	Elegans Hosta		3	5	1 gal.	
	Hosta 'Sum and Substance'	Sum and Substance Hosta		3	0	1 gal.	
	Hosta 'Guacamole'	Guacamole Hosta		0	5	1 gal.	
Vm	*Vinca minor 'Bowles'*	Bowles Periwinkle		285	380	2.5" Pots	

SEED MIXES - Prep and Install per manufacturer's installation guides.	
LAWN AREAS	Penningtons Smart Seed Sun/Shade mix or approved equal
BIORETENTION SLOPES	Prairie Nursery No Mow Fescue or approved equal
BIORETENTION BASIN	50% New England Wetland Plants Erosion Control/Restoration Mix for Detention Basins and Moist Sites
	50% New England Wetland Plants New England Showy Wildflower Mix



Bike Rack nts

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

Proposed Mixed Use Development

LANDSCAPE PLAN

1035 Lafayette Road Portsmouth, New Hampshire

Drawn By: RW
Checked By: RW
Scale: scale
Date: 2024-05-20
TAC Submission
Revisions:

L-1

Sheet 1 of 1

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUJHANE
No. 04574
THE STATE OF NEW HAMPSHIRE

OVERALL SF BREAKDOWN	
FIRST FLOOR:	10,556
SECOND FLOOR:	11,413
THIRD FLOOR:	11,413
FOURTH FLOOR:	10,173
TOTAL:	43,555

OVERALL APARTMENT BREAKDOWN	
FIRST FLOOR:	7
SECOND FLOOR:	14
THIRD FLOOR:	14
FOURTH FLOOR:	9
TOTAL:	44

GRAPHIC SCALE

0' 4' 8' 16' 32'

TAC SUBMISSION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

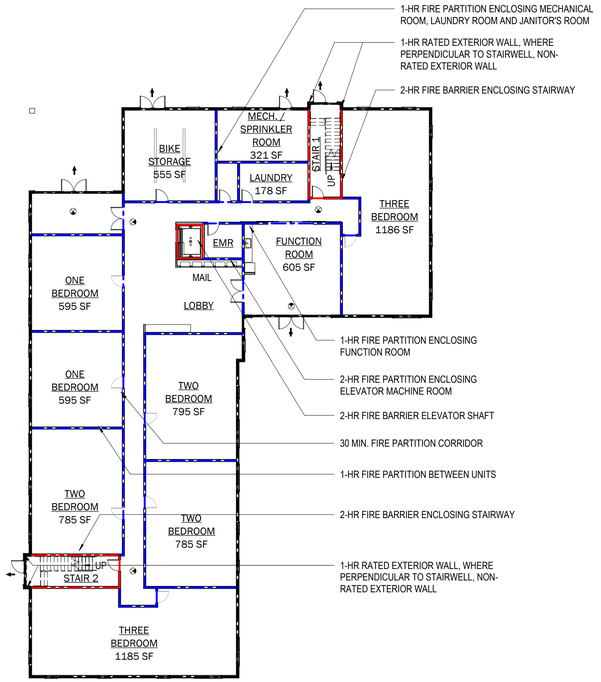
DRAWING NAME:
COVER SHEET

DRAWING NUMBER:
TAC - 01

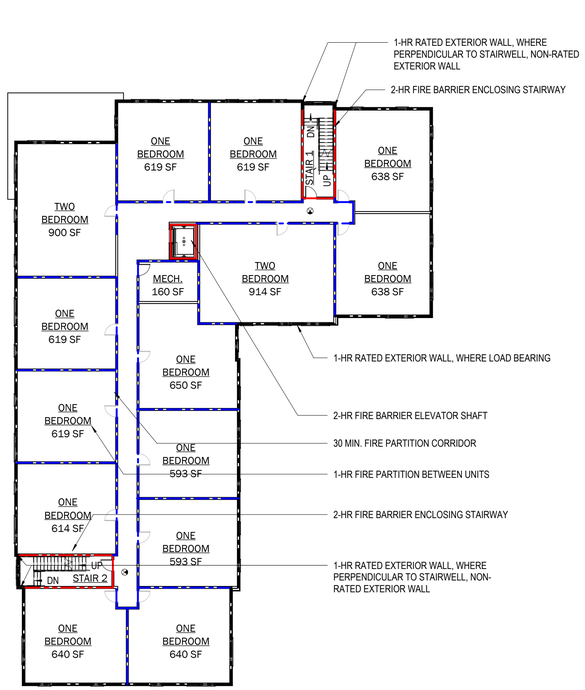
5/20/2024 12:48:57 PM Z:\Users\khmuh\Documents\1035 Lafayette Road - SD_5.13.24_kylePAAH8.rvt

LIFE SAFETY LEGEND

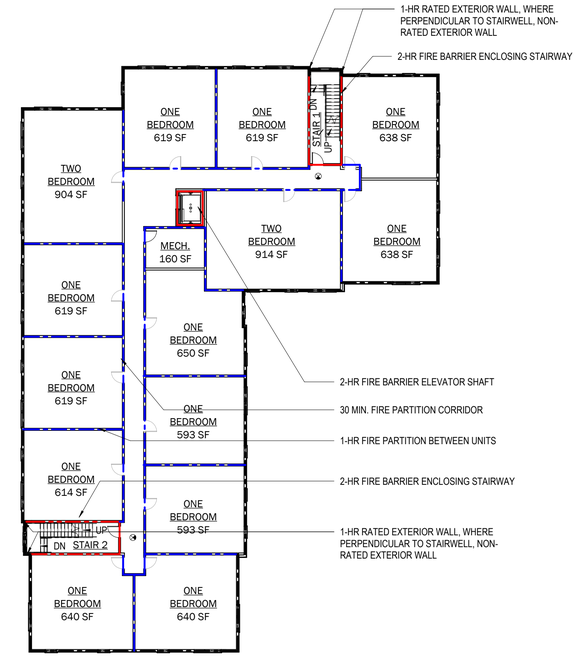
- FIRE PARTITION
- FIRE BARRIER
- SMOKE BARRIER
- BUILDING EXIT LOCATION
- FEC — FIRE EXTINGUISHER CABINET
- EXIT SIGNS
- SD — SMOKE DETECTORS
- EMERGENCY LIGHTING



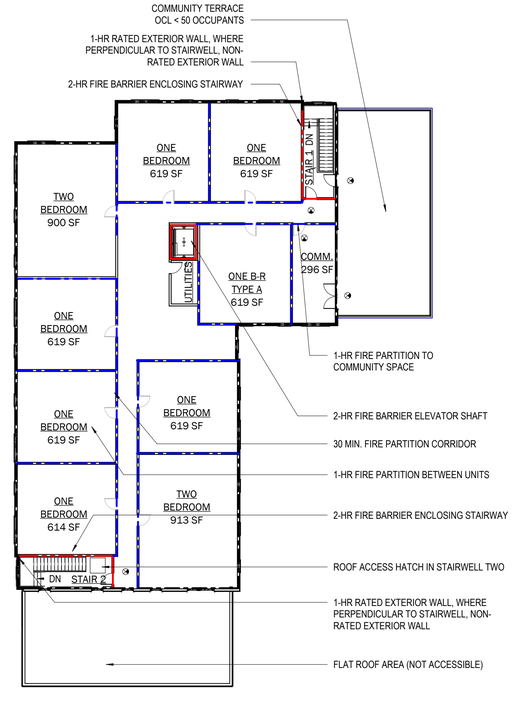
1 FIRST FLOOR - LIFE SAFETY
1" = 20'-0"



2 SECOND FLOOR - LIFE SAFETY
1" = 20'-0"



3 THIRD FLOOR PLAN - LIFE SAFETY
1" = 20'-0"



4 FOURTH FLOOR - LIFE SAFETY
1" = 20'-0"

CODE SUMMARY :

Applicable Codes

The following codes currently apply:

- City Of Portsmouth Zoning Ordinance
- International Building Code 2018
- International Energy Conservation Code 2018
- International Mechanical Code 2018
- International Plumbing Code 2018
- National Electrical Code 2020
- 2010 Americans with Disabilities Act Standards for Accessible Design (ADASAD)
- NFPA 101 - 2018

Classifications (IBC Chapter 3 / NFPA 101 chapter 6 & 30)

The building is a New Construction Residential (occupancy group R-2) uniform across all four floors

• Resulting building height	48 FT; (four stories)
• Resulting building area	
1st floor	10 546 SQ.FT.
2nd floor	11 574 SQ.FT.
3rd floor	11 574 SQ.FT.
4th floor	10 173 SQ.FT.
Total	43 875 SQ.FT.
• Sprinklers	**YES, NFPA 13 R**
• Fire Alarm	YES, A MANUAL FIRE ALARM WITH AUTOMATIC SPRINKLER SYSTEM AND SMOKE DETECTORS CONNECTED
• Construction type	**V-A**

Calculations (IBC chapter 5)
With design premise of four story building, sprinklered throughout per NFPA 13R system, and per construction type V A

• Allowable height in feet	60 FT.	-	REQ. MET
• Allowable height in stories	FOUR STORIES	-	REQ. MET
• Allowable area per floor	12 000 SQ. FT.	-	REQ. MET

Occupant Load (IBC table 1004.5 / NFPA 101 chapter 7)

Total building occupancy load, calculated per IBC table 1004.5, is **271 occupants**

• **First Floor:**		**88 occupants**
Residential	OLF: 200 gross (Residential)	8 899 s.f. / 200 = 40
community areas	OLF: 15 net (Assembly Unconsecrated)	603 s.f. / 15 = 40
utilities	OLF: 300 gross (Accessory storage and mech.)	1054 s.f. / 300 = 4
• **Second Floor:**		**58 occupants**
Residential	OLF: 200 gross (Residential)	11 414 s.f. / 200 = 57
utilities	OLF: 300 gross (Accessory storage and mech.)	160 s.f. / 300 = 1
• **Third Floor:**		**58 occupants**
Residential	OLF: 200 gross (Residential)	11 414 s.f. / 200 = 57
utilities	OLF: 300 gross (Accessory storage and mech.)	160 s.f. / 300 = 1
• **Fourth Floor:**		**68 occupants**
Residential	OLF: 200 gross (Residential)	9735 s.f. / 200 = 49
community areas	OLF: 15 net (Assembly Unconsecrated)	279 s.f. / 15 = 19
utilities	OLF: 300 gross (Accessory storage and mech.)	160 s.f. / 300 = 1

Egress (IBC chapter 10 / NFPA 101 chapter 7)

Stairwells, per 1005.3.1 and 1011.2:

• capacity factor	0.3	
• number of stairways	2	
• stairway's occupant load:	(Second floor + third floor + fourth floor) / 2 stairwells = (58 + 58 + 68) / 2	**92 OCCUPANTS**
• stair's width	92 x 0.3 = 27.6 Per requirements of 1011.2, when OCL over 50, minimum 44" required:	**44" WIDE STAIRS PROVIDED**
Maximum common path of egress travel distance	75 FT	
Maximum exit access travel distance	250 FT	

Barriers to Fire and Smoke Spread (IBC Table 508.4; Table 509 and Table 601 / NFPA 101 chapter 8)

- Primary structural frame (columns, floor beams and roof decking)
  Construction type V A, 1HR RATING REQUIRED
- Exterior walls - load bearing
  Construction type V A, 1HR RATING REQUIRED
- Exterior walls - non-load bearing
  Exterior walls have a fire separation distance of more than 20 feet therefore openings are unlimited in size.
  Fire separation distance is measured to the lot line, or to the centerline of the public way.
  Exterior walls will be rated within 10' horizontally off the corners of stairways, where required per IBC 1023.7 - where exposed by other parts of the building at an angle less than 180 degrees - **EXTERIOR WALL OF STAIRWELL SHALL BE RATED, WHERE ADJACENT TO BUILDING INSIDE CORNERS**
- Interior walls - load bearing
  Construction type V A, 1HR RATING REQUIRED
- Floor construction and associated secondary structural members
  Construction type V A, 1HR RATING REQUIRED
- Roof construction and associated secondary structural members
  Construction type V A, 1HR RATING REQUIRED
- Fire Barriers per 707
  2 Hour fire barriers shall be provided for stairwell and elevator enclosure, and all shafts connecting four stories
  Fire Barriers will be continuous to underside of floor or roof decking.

Required separation of occupancies Per 420.2:

- Separation of occupancy groups R-2 and R-2
  shall be provided 30 minute Fire Partition

Required rating of the corridor Per table 1020.1:

- Corridor in occupancy group R,
  shall be provided 1 hour Fire Partition

INTERIOR FINISH CLASS REQUIREMENTS

• Corridors and enclosure for exit access stairways and ramps	class C
• Rooms and enclosed spaces	class C

TAC SUBMISSION

LASSEL ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

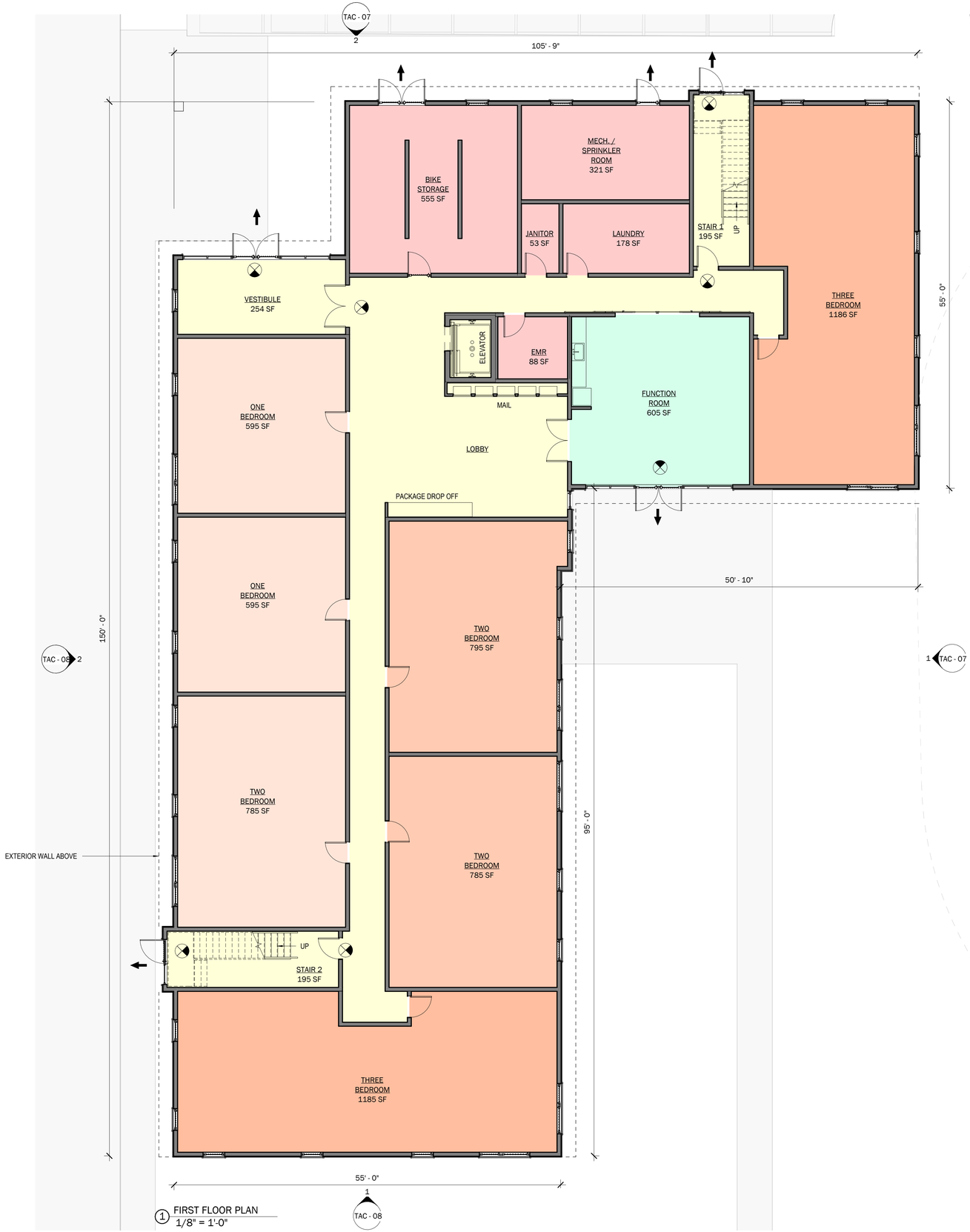
CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

DRAWING NAME:
CODE SEARCH AND LIFE SAFETY DRAWINGS

DRAWING NUMBER:
LS - 01



1 FIRST FLOOR PLAN
1/8" = 1'-0"

GENERAL PLAN NOTES:

- PUBLIC ACCESSIBLE ENTRANCES TO HAVE ADA DOOR OPERATOR AND PUSH BUTTON
- ALL STAIRWELLS TO BE 2 HOUR FIRE RATED
- ALL EGRESS DOORS TO HAVE PANIC HARDWARE
- BUILDING TO MEET ALL APPLICABLE BUILDING CODES AT TIME OF CONSTRUCTION

EGRESS AND SEPARATION REGULATIONS:

- MINIMUM NUMBER OF EXITS FROM EACH STORY: 2
- MAX TRAVEL DISTANCE: 250'
- DEAD END CORRIDOR DISTANCE: 20'
- FIRE SEPARATION BETWEEN OCCUPANCY GROUPS TO MEET IBC AND NFPA REQUIREMENTS

EXIT SIGNS

SF BREAKDOWN: FIRST FLOOR

	APARTMENTS:	6,710
	MECHANICAL / UTILITIES:	1,054
	CIRCULATION:	2,189
	COMMUNITY SPACES:	603
TOTAL:		10,556

APARTMENT BREAKDOWN: FIRST FLOOR

ONE BEDROOM:	2
TWO BEDROOM:	3
THREE BEDROOM:	2
TOTAL:	7

GRAPHIC SCALE
0' 4' 8' 16' 32'

TAC SUBMISSION

LASSEL ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUGHANE
No. 04574
THE STATE OF NEW HAMPSHIRE

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:
NORTH:

DRAWING NAME:
FIRST FLOOR PLAN

DRAWING NUMBER:
TAC - 02

1 SECOND FLOOR PLAN
1/8" = 1'-0"

GENERAL PLAN NOTES:

- PUBLIC ACCESSIBLE ENTRANCES TO HAVE ADA DOOR OPERATOR AND PUSH BUTTON
- ALL STAIRWELLS TO BE 2 HOUR FIRE RATED
- ALL EGRESS DOORS TO HAVE PANIC HARDWARE
- BUILDING TO MEET ALL APPLICABLE BUILDING CODES AT TIME OF CONSTRUCTION

EGRESS AND SEPARATION REGULATIONS:

- MINIMUM NUMBER OF EXITS FROM EACH STORY: 2
- MAX TRAVEL DISTANCE: 250'
- DEAD END CORRIDOR DISTANCE: 20'
- FIRE SEPARATION BETWEEN OCCUPANCY GROUPS TO MEET IBC AND NFPA REQUIREMENTS

EXIT SIGNS

SF BREAKDOWN: SECOND FLOOR

	APARTMENTS:	10,012
	MECHANICAL / UTILITIES:	160
	CIRCULATION:	1,401
	COMMUNITY SPACES:	0
TOTAL:		11,413

APARTMENT BREAKDOWN: SECOND FLOOR

ONE BEDROOM:	12
TWO BEDROOM:	2
THREE BEDROOM:	0
TOTAL:	14

GRAPHIC SCALE

0' 4' 8' 16' 32'

TAC SUBMISSION

LASSEL ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUGHANE
No. 04574
THE STATE OF NEW HAMPSHIRE

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
SECOND FLOOR PLAN

DRAWING NUMBER:
TAC - 03

1 THIRD FLOOR PLAN
1/8" = 1'-0"

GENERAL PLAN NOTES:

- PUBLIC ACCESSIBLE ENTRANCES TO HAVE ADA DOOR OPERATOR AND PUSH BUTTON
- ALL STAIRWELLS TO BE 2 HOUR FIRE RATED
- ALL EGRESS DOORS TO HAVE PANIC HARDWARE
- BUILDING TO MEET ALL APPLICABLE BUILDING CODES AT TIME OF CONSTRUCTION

EGRESS AND SEPARATION REGULATIONS:

- MINIMUM NUMBER OF EXITS FROM EACH STORY: 2
- MAX TRAVEL DISTANCE: 250'
- DEAD END CORRIDOR DISTANCE: 20'
- FIRE SEPARATION BETWEEN OCCUPANCY GROUPS TO MEET IBC AND NFPA REQUIREMENTS

EXIT SIGNS

SF BREAKDOWN: THIRD FLOOR

	APARTMENTS:	10,012
	MECHANICAL / UTILITIES:	160
	CIRCULATION:	1,401
	COMMUNITY SPACES:	0
TOTAL:		11,413

APARTMENT BREAKDOWN: THIRD FLOOR

ONE BEDROOM:	12
TWO BEDROOM:	2
THREE BEDROOM:	0
TOTAL:	14

GRAPHIC SCALE

0' 4' 8' 16' 32'

TAC SUBMISSION

LASSEL ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUGHANE
No. 04574
STATE OF NEW HAMPSHIRE

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:
NORTH:

DRAWING NAME:
THIRD FLOOR PLAN

DRAWING NUMBER:
TAC - 04

1 FOURTH FLOOR
1/8" = 1'-0"

GENERAL PLAN NOTES:

- PUBLIC ACCESSIBLE ENTRANCES TO HAVE ADA DOOR OPERATOR AND PUSH BUTTON
- ALL STAIRWELLS TO BE 2 HOUR FIRE RATED
- ALL EGRESS DOORS TO HAVE PANIC HARDWARE
- BUILDING TO MEET ALL APPLICABLE BUILDING CODES AT TIME OF CONSTRUCTION

EGRESS AND SEPARATION REGULATIONS:

- MINIMUM NUMBER OF EXITS FROM EACH STORY: 2
- MAX TRAVEL DISTANCE: 250'
- DEAD END CORRIDOR DISTANCE: 20'
- FIRE SEPARATION BETWEEN OCCUPANCY GROUPS TO MEET IBC AND NFPA REQUIREMENTS

EXIT SIGNS

SF BREAKDOWN: FOURTH FLOOR

	APARTMENTS:	6,495
	MECHANICAL / UTILITIES:	160
	CIRCULATION:	1,862
	COMMUNITY SPACES:	1,656
TOTAL:		10,173

APARTMENT BREAKDOWN: FOURTH FLOOR

ONE BEDROOM:	7
TWO BEDROOM:	2
THREE BEDROOM:	0
TOTAL:	9

GRAPHIC SCALE

0' 4' 8' 16' 32'

TAC SUBMISSION

LASSEL ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUGHANE
No. 04574
THE STATE OF NEW HAMPSHIRE

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

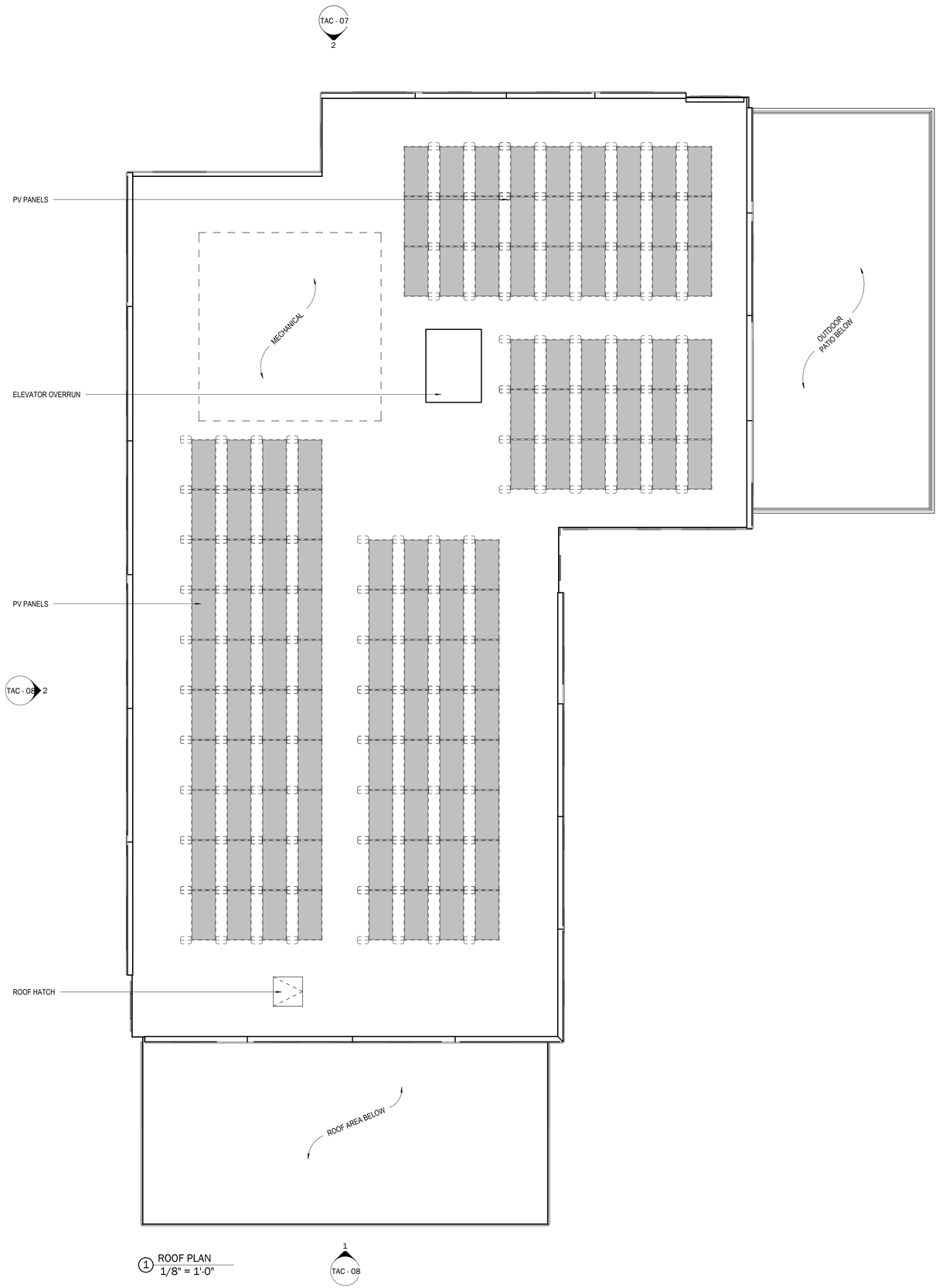
REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
FOURTH FLOOR PLAN

DRAWING NUMBER:
TAC - 05



1 ROOF PLAN
1/8" = 1'-0"

1 A2.0

GRAPHIC SCALE
0' 4' 8' 16' 32'

TAC SUBMISSION

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

LICENSED ARCHITECT
SARAH E HOUGHANE
No. 04574
THE STATE OF NEW HAMPSHIRE

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
ROOF PLAN

DRAWING NUMBER:
TAC - 06

1 WEST ELEVATION
1/8" = 1'-0"

2 SOUTH ELEVATION
1/8" = 1'-0"

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

REV: DATE: NOTES:

PROJECT NUMBER:
23.30

DATE:
MAY 2024

SCALE:
AS NOTED

REVISION:

DRAWING NAME:
EXTERIOR ELEVATIONS

DRAWING NUMBER:
TAC - 07

TAC SUBMISSION

② EAST ELEVATION
1/8" = 1'-0"

① NORTH ELEVATION
1/8" = 1'-0"

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT

ADDRESS:
1035 LAFAYETTE ROAD

CLIENT:
PORTSMOUTH HOUSING AUTHORITY

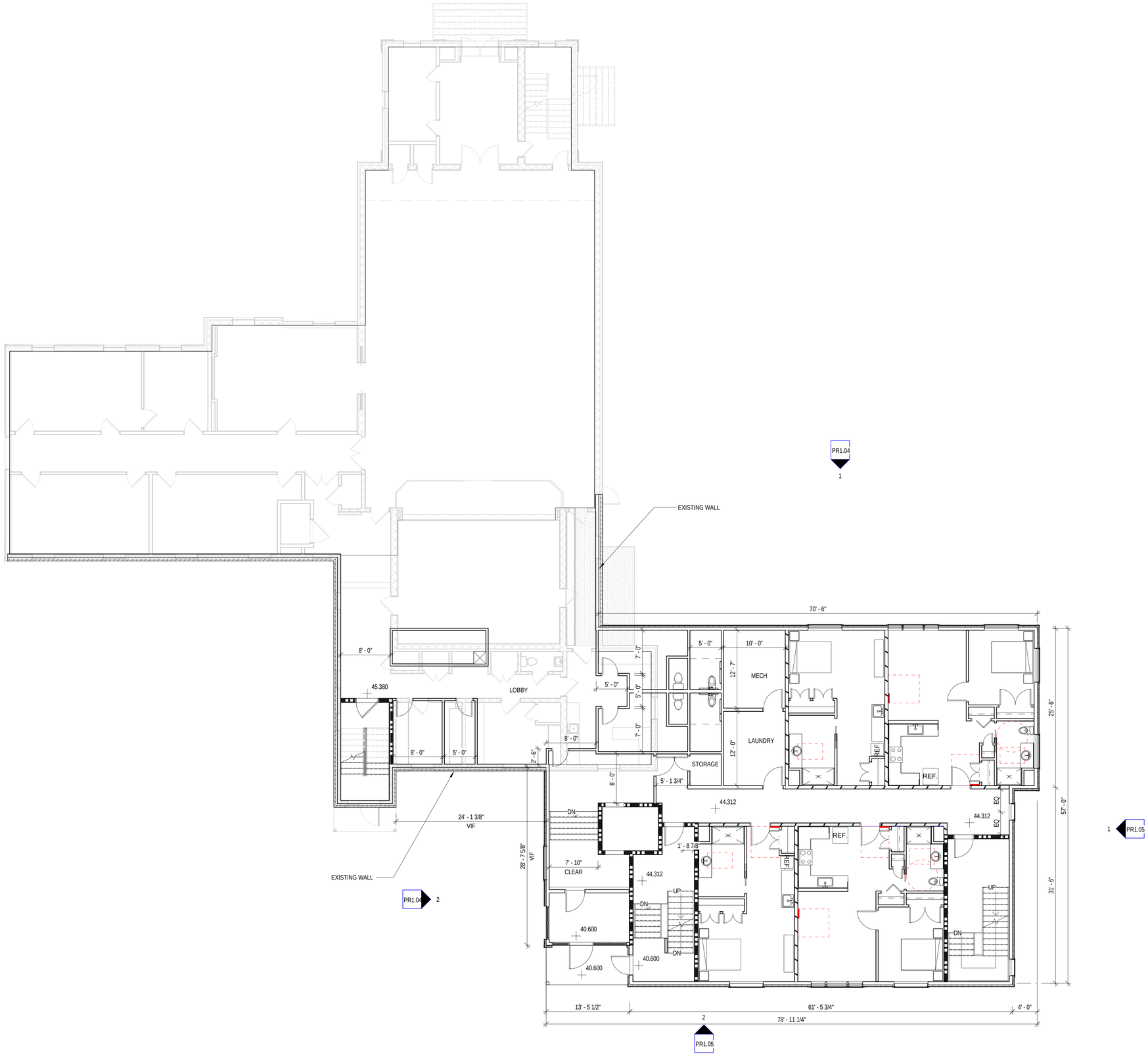
REV: DATE: NOTES:

PROJECT NUMBER: 23.30
DATE: MAY 2024
SCALE: AS NOTED
REVISION:

DRAWING NAME:
EXTERIOR ELEVATIONS

DRAWING NUMBER:
TAC - 08

TAC SUBMISSION



1 LEVEL 1 - Overall Plan - Presentation
1/8" = 1'-0"

JSA
ARCHITECTS
INTERIORS
PLANNERS

273 CORPORATE DRIVE
PORTSMOUTH, NH 03801
T 603.436.2551
www.jsainc.com

CIVIL ENGINEER & LAND SURVEYOR
TIGHE & BOND
177 CORPORATE DR
PORTSMOUTH, NH 03801
(603) 433 - 8818

LANDSCAPE ARCHITECT
WOODBURN & COMPANY
130 KENT PLACE
NEWMARKET, NH 03857

STRUCTURAL ENGINEER

MECHANICAL, ELECTRICAL, PLUMBING &
FIRE PROTECTION ENGINEERS

HAVEN

273 CORPORATE DRIVE
PORTSMOUTH, NH, 03801

JSA DESIGN

Scale:	1/8" = 1'-0"
Date:	05/20/2024
Project Number:	24064.00

PROGRESS PRINT

LEVEL 1 FLOOR PLAN

PR1.01

2 WEST ELEVATION
1/8" = 1'-0"

1 NORTH ELEVATION
1/8" = 1'-0"

JSA
ARCHITECTS
INTERIORS
PLANNERS

273 CORPORATE DRIVE
PORTSMOUTH, NH 03801
T 603.436.2551
www.jsainc.com

CIVIL ENGINEER & LAND SURVEYOR
TIGHE & BOND
177 CORPORATE DR
PORTSMOUTH, NH 03801
(603) 433 - 8818

LANDSCAPE ARCHITECT
WOODBURN & COMPANY
130 KENT PLACE
NEWMARKET, NH 03857

STRUCTURAL ENGINEER

MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION ENGINEERS

HAVEN

273 CORPORATE DRIVE
PORTSMOUTH, NH, 03801

JSA DESIGN

Scale:	1/8" = 1'-0"
Date:	05/20/2024
Project Number:	24064.00

PROGRESS PRINT

NORTH AND WEST ELEVATION

PR1.04

2 SOUTH ELEVATION
1/8" = 1'-0"

1 EAST ELEVATION
1/8" = 1'-0"

JSA
ARCHITECTS
INTERIORS
PLANNERS

273 CORPORATE DRIVE
PORTSMOUTH, NH 03801
T 603.436.2551
www.jsainc.com

CIVIL ENGINEER & LAND SURVEYOR
TIGHE & BOND
177 CORPORATE DR
PORTSMOUTH, NH 03801
(603) 433 - 8818

LANDSCAPE ARCHITECT
WOODBURN & COMPANY
130 KENT PLACE
NEWMARKET, NH 03857

STRUCTURAL ENGINEER

MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION ENGINEERS

HAVEN

273 CORPORATE DRIVE
PORTSMOUTH, NH, 03801

JSA DESIGN

Scale:	1/8" = 1'-0"
Date:	05/20/2024
Project Number:	24064.00

PROGRESS PRINT

EAST AND SOUTH ELEVATION

PR1.05

Owner Letter of Authorization

This letter is to authorize Portsmouth Housing Authority (Applicant), to represent the interest of Christ Church Parish (Owner), in all site design and permitting matters for the proposed redevelopment project located at 1035 Lafayette Road in Portsmouth, New Hampshire on parcel of land identified as Map 246 Lot 1. This project includes the construction of multifamily buildings, repurposing of an existing church for office and daycare uses, and associated on-site improvements. This authorization shall relate to those activities that are required for local, state and federal permitting for the above project and include any required signatures for those applications.

Signature	Print Name	Date
	Benge Ambrogi, CFO Episcopal Diocese of NH	3/25/24

Agent Letter of Authorization

This letter is to authorize Tighe & Bond, Inc. (Civil Engineer), to represent and submit on behalf of Portsmouth Housing Authority (Applicant), applications and materials in all site design and permitting matters for the proposed redevelopment project located at 1035 Lafayette Road in Portsmouth, New Hampshire on parcel of land identified as Map 246 Lot 1. This project includes the construction of multifamily buildings, repurposing of an existing church for office and daycare uses, and associated on-site improvements. This authorization shall relate to those activities that are required for local, state and federal permitting for the above project and include any required signatures for those applications.

Signature	Craig W. Welch Print Name	3/24/24 Date

P5118-001
May 20, 2024

Mr. Peter Britz, Director of Planning & Sustainability
City of Portsmouth Planning & Sustainability Department
1 Junkins Avenue
Portsmouth NH, 03801
Portsmouth, New Hampshire 03801

Re: **Parking Conditional Use Permit Request**
Proposed Mixed-Use Development, 1035 Lafayette Road, Portsmouth, NH

Dear Peter:

On behalf of Christ Church Parish (Owner), and Portsmouth Housing Authority (Applicant), we are pleased to submit the following information relative to a request for a Conditional Use Permit (CUP) to provide less than the minimum number of off-street parking spaces for the above-referenced project:

- One (1) copy of the Parking Demand Analysis, dated May 20, 2024;

Pursuant Section 10.1112.14, the applicant is respectfully requesting that a CUP be granted by the Planning Board to allow the Project to provide less than the minimum off-street parking spaces required by Section 10.1112.30 or Section 10.1112.61:

- Section 10.1112.141 – The enclosed Parking Demand Analysis has been provided as required by this section. The Parking Demand Analysis demonstrates the off-street parking provided by the Project is sufficient for its Uses.

- Section 10.1112.142 – This section indicates an application for a CUP shall identify permanent evidence-based measures to reduce parking demand. As described in the enclosed Parking Demand Analysis, the Project provides measures that promotes alternative modes of transportation such as walking, bicycling, and public transportation.

We trust the enclosed information is sufficient to support a Request for a CUP. As per Section 10.1112.141 the City's Technical Advisory Committee (TAC) shall review the Parking Demand Analysis prior to submission to the Planning Board. We respectfully request to be placed on the TAC meeting agenda for June 4, 2024. If you have any questions, please feel free to contact me by phone at (603) 433-8818 or by email at NAHansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President

Neil A. Hansen, PE
Project Manager

Cc: Portsmouth Housing Authority

1035 Lafayette Rd Redevelopment – Parking Demand Memo

TO: City of Portsmouth Planning Board

FROM: Patrick M. Crimmins, PE
Neil A. Hansen, PE

COPY: Portsmouth Housing Authority

DATE: May 20, 2024

Tighe & Bond, Inc. (Tighe & Bond) has prepared this Parking Demand Memo to summarize the parking demand calculations related to the proposed redevelopment of the parcel located at 1035 Lafayette Road (Route 1) in Portsmouth, New Hampshire.

The proposed project includes 4 proposed uses consisting of residential, office space, daycare facility, and a place of worship. The residential building and addition to the existing church include 51 total units consisting of a mix of 500-750 SF and >750 SF units. The existing Church is proposed to be converted to 6,900 SF of first-floor office space and 6,900 SF of lower-level daycare which has a max licensed enrollment capacity of 71 students. The existing single-family dwelling located in the southern portion of the lot would be converted to a chapel and place of assembly with an anticipated maximum occupancy of 40 people. This chapel has been calculated utilizing the place of assembly use identified as Use No. 3.10 from Portsmouth Zoning Ordinance Section 10.1112.32.

To calculate the project's parking requirement, parking demand was first calculated by the minimum parking requirements defined in the City of Portsmouth Zoning Ordinance Section 10.1112.30.

Due to the mix in uses, a shared parking calculation was then applied as allowed by Section 10.1112.61 of the Zoning Ordinance. The shared parking occupancy rate for the residential, office space, and place of worship proposed uses have utilized the standard rates identified in section 10.1112.61. The daycare parking occupancy rates have been modified from the standard Retail/Service Use to better reflect the anticipated working hours of the proposed daycare of Monday through Friday 8 AM to 5PM. We have modified the weekday daytime rate to be 100%, weekday evening to be 10% and weekend and nighttime rates to be 0%.

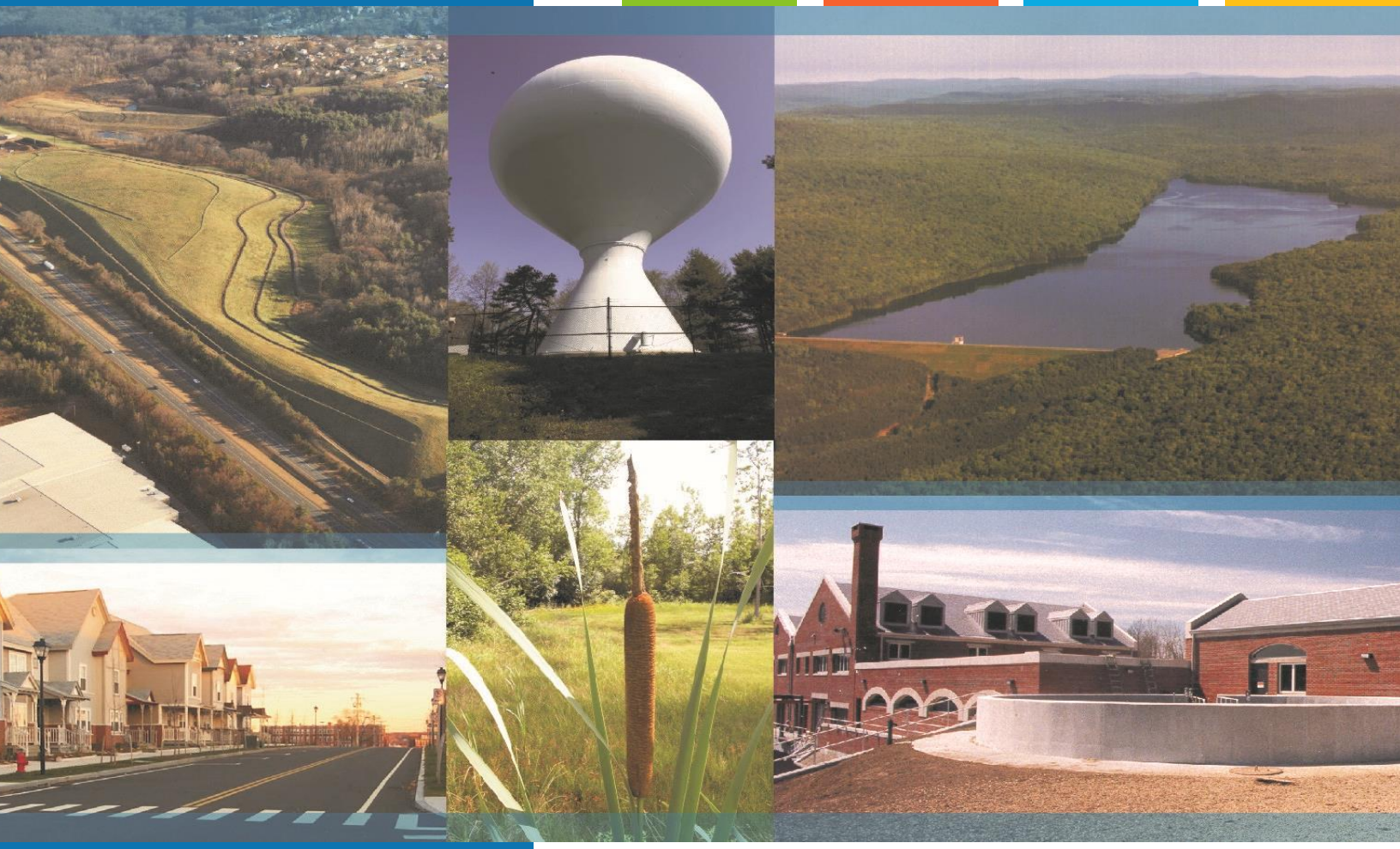
Lastly, a 20% reduction was applied to the parking requirement calculation as allowed by Section 10.5B82.10 of the Zoning Ordinance when public transportation is within a ¼-mile of the property. The public transit reduction requirement states that "*For developments located on a public transit route with year-round, 5-days-per-week, fixed-route service and where at least 50% of the building(s) are within ¼ mile of a transit stop, the minimum offstreet parking required for motor vehicles shall be reduced by 20% of the total required for all uses."* The proposed parcel is located along the COAST route 41, Portsmouth-Lafayette Trolley, that runs along Lafayette Rd from Downtown Portsmouth to the Lafayette Road Residence Association at Bluefish Blvd. The applicant is currently working with COAST to provide a bus stop onsite along this route which would allow the project to utilize the 20% reduction.

Based on the above-described zoning requirements, the minimum required parking for the project is calculated at 83 spaces. The proposed project provides 84 spaces, which exceeds the minimum parking requirement. In addition, the project is promoting alternative modes of transportation such as walking, bicycling, and public transportation by incorporating pedestrian connections, bicycle storage, and a bus stop.

	MINIMUM PARKING REQUIRED PER CITY ZONING ORDINANCE					
	Type of Use	Weekday		Weekend		Nighttime (Midnight– 6:00 AM)
		Daytime (8:00 AM – 5:00 PM)	Evening (6:00 PM–Midnight)	Daytime (8:00 AM–5:00 PM)	Evening (6:00 PM–Midnight)	
	Residential	60%	100%	80%	100%	100%
	Daycare[1]	100%	10%	0%	0%	0%
	Office Space	100%	20%	10%	5%	5%
	Place of Worship	10%	5%	100%	50%	5%

Use	Required Spaces per Section 10.1112.30	Required Shared Spaces per Section 10.1112.61				
PROPOSED RESIDENTIAL UNITS < 500 SF	0	0	0	0	0	0
PROPOSED RESIDENTIAL UNITS 500 - 750 SF	11	7	11	9	11	11
PROPOSED RESIDENTIAL UNITS >750 SF	52	32	52	42	52	52
SPACES FOR RESIDENTIAL VISITORS	11	7	11	9	11	11
PROPOSED OFFICE	20	20	4	2	1	1
PROPOSED DAYCARE	36	36	4	0	0	0
RELOCATED EXISTING CHAPEL	10	1	1	10	5	1
	Total Required Shared Spaces:	**103**	**83**	**72**	**80**	**76**
	Public Transit 20% Reduction Spaces: (Per Section 10.5B82.10)	**83**	**67**	**58**	**64**	**61**
	Total Provided:	**84**				

[1] Daycare has been modified from the Retail/Service use based on conservative estimates of the business hours (M-F 8 am-5 pm) of the proposed daycare.



Proposed Multi-Family Development
1035 Lafayette Road
Portsmouth, NH

Drainage Analysis

Portsmouth Housing Authority

May 20, 2024

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER

5/20/2024

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER

5/20/2024

Tighe&Bond

100% Recyclable

Table of Contents

Section 1
Project Description

The project is located at 1035 Lafayette Road identified as Map 246 Lot 1 on the City of Portsmouth Tax Maps. The existing property is approximately 3.5 acres in size and is bound to the west by Route 1, the north by Sagamore Creek, and east & south by conservation land.

The proposed project consists of converting the existing church on site to office/day care space, converting an existing single family dwelling unit to a chapel and constructing two (2) additional buildings on site. The first proposed building (Building 1) will be a 4-story, 44-unit residential building. The second proposed building on site (Building 2) will be a 2-story, 7-unit residential building that will be connected to the existing church. The project will include associated site improvements such as parking, pedestrian access, utilities, stormwater management, lighting, and landscaping.

1.1 On-Site Soil Description

The project site consists of terrain that is sloping in all directions due to the center of the site consisting of the higher elevations. The site has an approximate high point of elevation 45 located at the location of the existing single family dwelling unit.

A web soil survey was completed for the project and can be found in Appendix A of this report. Based on the soil survey, the runoff analyzed within this study has been modeled using Hydrologic Soil Group A soils.

1.2 Pre- and Post-Development Comparison

The pre-development and post-development watershed areas have been analyzed using four (4) distinct points of analysis (PA-1, PA-2, PA-2.1 & PA-3.) While the points of analysis have remained unchanged, the contributing sub-catchment areas varied between pre-development and post-development conditions. These adjustments were made to reflect the differences in drainage patterns between the existing and proposed conditions. The overall area analyzed as part of this drainage analysis was held constant. PA-1 is located just off site to the south of the development. This area is undisturbed conservation land and will remain undisturbed throughout construction. PA-2 is also located just off site to the west of the development at Lafayette Road - US-Route 1. PA-2.1 is located just off site and is defined as the point where the existing catch basin between the sites northern most entrance and US-Route 1 discharges into the closed drainage system under Lafayette Road - US-Route 1. The last point of analysis, PA-3, is located off site to the north of the development at the Sagamore Creek, which is a tidal body of water.

The peak discharge rates at these points of analysis were determined by analyzing Type III, 24-hour storm events. The rainfall data for these storm events were obtained from the data published by the Northeast Regional Climate Center at Cornell University, which can be found in Appendix B.

Furthermore, the site is located within a Coastal and Great Bay Community, therefore an added factor of safety of 15% was included as required by Env-Wq 1503.08(l).

1.3 Calculation Methods

The design storms analyzed in this study are the 2-year, 10-year, 25-year and 50-year 24-hour duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. The peak discharge rates were determined by analyzing Type III 24-hour storm events. The rainfall data for these storm events were obtained from the data published by the Northeast Regional Climate Center at Cornell University, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l).

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow, and channel flow. Runoff curve numbers were calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.

References:

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.
2. New Hampshire Stormwater Management Manual, Volume 2, Post-Construction Best Management Practices Selection and Design, December 2008.
3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

Section 2
Pre-Development Conditions

To analyze the pre-development condition, the site has been modeled utilizing (4) distinct points of analysis (PA-1, PA-2, PA-2.1 & PA-3.) These points of analysis and watershed areas are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

The points of analysis and their contributing watershed areas are described below:

Point of Analysis (PA-1)

Point of analysis 1 (PA-1) is comprised of one subcatchment area (PRE 1.0). This subcatchment is comprised of mostly impervious surfaces, grass, and woods with a small portion of roof area made up by an existing shed and existing single-family dwelling. Runoff from this subcatchment sheet flows untreated stormwater directly into the conservation lands abutting the southern and eastern portions of the site.

Point of Analysis (PA-2)

Point of analysis 2 (PA-2) is also comprised of one subcatchment area (PRE 2.0). This subcatchment is comprised of mostly impervious surfaces, grass, and a small portion of roof area made up by a small portion of both the existing single-family dwelling and church on site. Runoff from this watershed sheet flows untreated stormwater directly onto Lafayette Road - US-Route 1.

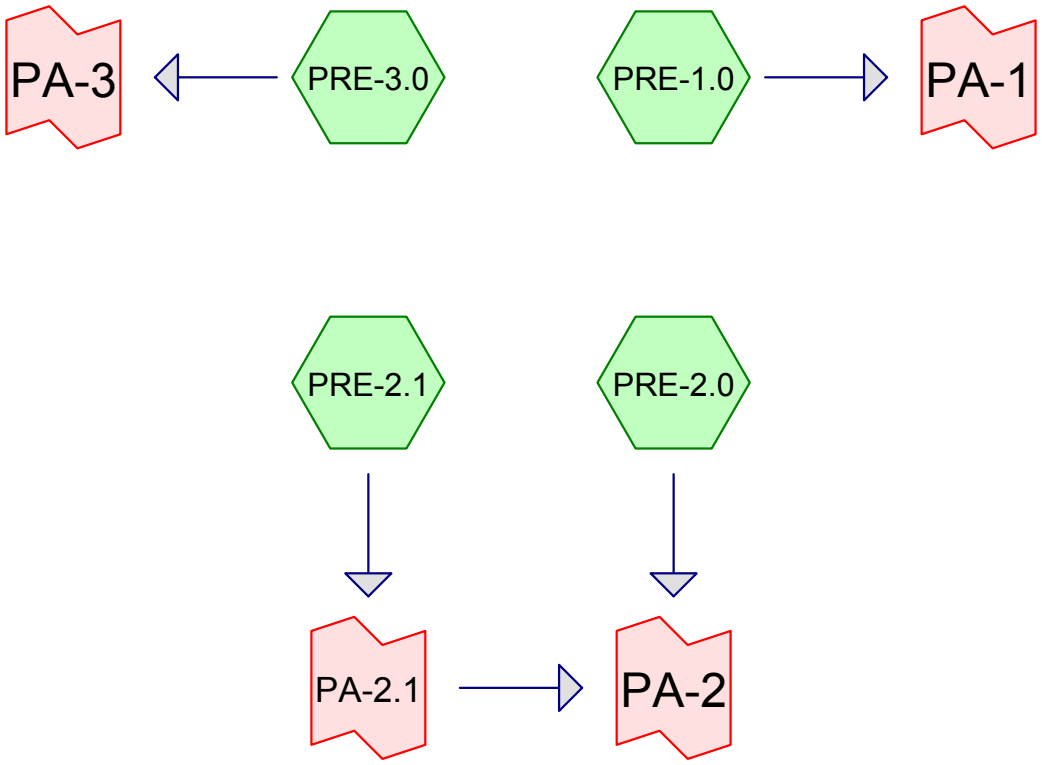
Point of Analysis (PA-2.1)

Point of analysis 2.1 (PA-2.1) is also comprised of one subcatchment area (PRE 2.1). This subcatchment is comprised of mostly grass with a small portion of impervious surface. Runoff from this watershed sheet flows stormwater directly into an existing catch basin on site, which ties into a closed drainage system along US-Route 1. The point at which the pipe connected to the catch basin on site discharges into the closed drainage system under Lafayette Road - US-Route 1 is depicted on the plans as PA-2.1. This catch basin has an existing DOT Drainage Easement that will remain.

Point of Analysis (PA-3)

Point of analysis 3 (PA-3) is the last point of analysis and is also comprised of one subcatchment area (PRE 3.0). This subcatchment is comprised of mostly impervious surfaces, grass, woods, and roof made up by an existing shed and the majority of the existing Church on site. Runoff from this watershed sheet flows untreated stormwater directly into Sagamore Creek and ultimately to the Piscataqua River.

2.1 Pre-Development Calculations



Subcat Reach Pond Link

Routing Diagram for P5118-001_PRE
Prepared by Tighe & Bond Consulting, Printed 5/20/2024

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
63,435	39	>75% Grass cover, Good, HSG A (PRE-1.0, PRE-2.0, PRE-2.1, PRE-3.0)
32,277	98	Paved parking, HSG A (PRE-1.0, PRE-2.0, PRE-2.1, PRE-3.0)
9,187	98	Unconnected roofs, HSG A (PRE-1.0, PRE-2.0, PRE-3.0)
47,183	30	Woods, Good, HSG A (PRE-1.0, PRE-2.0, PRE-3.0)
152,082	**52**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
152,082	HSG A	PRE-1.0, PRE-2.0, PRE-2.1, PRE-3.0
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
152,082		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.0: Runoff Area=61,649 sf 17.89% Impervious Runoff Depth>0.12"
Flow Length=218' Tc=8.6 min CN=45 Runoff=0.02 cfs 598 cf

SubcatchmentPRE-2.0: Runoff Area=24,290 sf 39.91% Impervious Runoff Depth>0.71"
Flow Length=266' Tc=7.3 min CN=62 Runoff=0.34 cfs 1,438 cf

SubcatchmentPRE-2.1: Runoff Area=7,081 sf 22.82% Impervious Runoff Depth>0.31"
Flow Length=213' Tc=5.0 min CN=52 Runoff=0.02 cfs 183 cf

SubcatchmentPRE-3.0: Runoff Area=59,062 sf 32.39% Impervious Runoff Depth>0.45"
Flow Length=237' Tc=7.3 min CN=56 Runoff=0.38 cfs 2,228 cf

Link PA-1: Inflow=0.02 cfs 598 cf
Primary=0.02 cfs 598 cf

Link PA-2: Inflow=0.36 cfs 1,620 cf
Primary=0.36 cfs 1,620 cf

Link PA-2.1: Inflow=0.02 cfs 183 cf
Primary=0.02 cfs 183 cf

Link PA-3: Inflow=0.38 cfs 2,228 cf
Primary=0.38 cfs 2,228 cf

Total Runoff Area = 152,082 sf Runoff Volume = 4,446 cf Average Runoff Depth = 0.35"
72.74% Pervious = 110,618 sf 27.26% Impervious = 41,464 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.0: Runoff Area=61,649 sf 17.89% Impervious Runoff Depth>0.65"
Flow Length=218' Tc=8.6 min CN=45 Runoff=0.51 cfs 3,355 cf

SubcatchmentPRE-2.0: Runoff Area=24,290 sf 39.91% Impervious Runoff Depth>1.83"
Flow Length=266' Tc=7.3 min CN=62 Runoff=1.07 cfs 3,708 cf

SubcatchmentPRE-2.1: Runoff Area=7,081 sf 22.82% Impervious Runoff Depth>1.09"
Flow Length=213' Tc=5.0 min CN=52 Runoff=0.17 cfs 645 cf

SubcatchmentPRE-3.0: Runoff Area=59,062 sf 32.39% Impervious Runoff Depth>1.37"
Flow Length=237' Tc=7.3 min CN=56 Runoff=1.81 cfs 6,764 cf

Link PA-1: Inflow=0.51 cfs 3,355 cf
Primary=0.51 cfs 3,355 cf

Link PA-2: Inflow=1.24 cfs 4,354 cf
Primary=1.24 cfs 4,354 cf

Link PA-2.1: Inflow=0.17 cfs 645 cf
Primary=0.17 cfs 645 cf

Link PA-3: Inflow=1.81 cfs 6,764 cf
Primary=1.81 cfs 6,764 cf

Total Runoff Area = 152,082 sf Runoff Volume = 14,473 cf Average Runoff Depth = 1.14"
72.74% Pervious = 110,618 sf 27.26% Impervious = 41,464 sf

Summary for Subcatchment PRE-1.0:

Runoff = 0.51 cfs @ 12.21 hrs, Volume= 3,355 cf, Depth> 0.65"
Routed to Link PA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
1,523	98	Unconnected roofs, HSG A
9,504	98	Paved parking, HSG A
29,181	30	Woods, Good, HSG A
21,441	39	>75% Grass cover, Good, HSG A
61,649	45	Weighted Average
50,622		82.11% Pervious Area
11,027		17.89% Impervious Area
1,523		13.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.3	15	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	153	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.6	218	Total			

Summary for Subcatchment PRE-2.0:

Runoff = 1.07 cfs @ 12.12 hrs, Volume= 3,708 cf, Depth> 1.83"
Routed to Link PA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
2,697	98	Unconnected roofs, HSG A
6,996	98	Paved parking, HSG A
933	30	Woods, Good, HSG A
13,664	39	>75% Grass cover, Good, HSG A
24,290	62	Weighted Average
14,597		60.09% Pervious Area
9,693		39.91% Impervious Area
2,697		27.82% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0250	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.7	103	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.1150	2.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	266	Total			

Summary for Subcatchment PRE-2.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 645 cf, Depth> 1.09"
Routed to Link PA-2.1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
0	98	Unconnected roofs, HSG A
1,616	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
5,465	39	>75% Grass cover, Good, HSG A
7,081	52	Weighted Average
5,465		77.18% Pervious Area
1,616		22.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	97	0.0618	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.6	83	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	33	0.0150	7.62	9.35	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
1.4	213	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-3.0:

Runoff = 1.81 cfs @ 12.12 hrs, Volume= 6,764 cf, Depth> 1.37"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
4,967	98	Unconnected roofs, HSG A
14,161	98	Paved parking, HSG A
17,069	30	Woods, Good, HSG A
22,865	39	>75% Grass cover, Good, HSG A
59,062	56	Weighted Average
39,934		67.61% Pervious Area
19,128		32.39% Impervious Area
4,967		25.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0220	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.2	89	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	60	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	38	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.3	237	Total			

Summary for Link PA-1:

Inflow Area = 61,649 sf, 17.89% Impervious, Inflow Depth > 0.65" for 10-Yr event
Inflow = 0.51 cfs @ 12.21 hrs, Volume= 3,355 cf
Primary = 0.51 cfs @ 12.21 hrs, Volume= 3,355 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2:

Inflow Area = 31,371 sf, 36.05% Impervious, Inflow Depth > 1.67" for 10-Yr event
Inflow = 1.24 cfs @ 12.11 hrs, Volume= 4,354 cf
Primary = 1.24 cfs @ 12.11 hrs, Volume= 4,354 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2.1:

Inflow Area = 7,081 sf, 22.82% Impervious, Inflow Depth > 1.09" for 10-Yr event
Inflow = 0.17 cfs @ 12.10 hrs, Volume= 645 cf
Primary = 0.17 cfs @ 12.10 hrs, Volume= 645 cf, Atten= 0%, Lag= 0.0 min
Routed to Link PA-2 :

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-3:

Inflow Area = 59,062 sf, 32.39% Impervious, Inflow Depth > 1.37" for 10-Yr event
Inflow = 1.81 cfs @ 12.12 hrs, Volume= 6,764 cf
Primary = 1.81 cfs @ 12.12 hrs, Volume= 6,764 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.0: Runoff Area=61,649 sf 17.89% Impervious Runoff Depth>1.30"
Flow Length=218' Tc=8.6 min CN=45 Runoff=1.48 cfs 6,655 cf

SubcatchmentPRE-2.0: Runoff Area=24,290 sf 39.91% Impervious Runoff Depth>2.89"
Flow Length=266' Tc=7.3 min CN=62 Runoff=1.75 cfs 5,856 cf

SubcatchmentPRE-2.1: Runoff Area=7,081 sf 22.82% Impervious Runoff Depth>1.92"
Flow Length=213' Tc=5.0 min CN=52 Runoff=0.34 cfs 1,134 cf

SubcatchmentPRE-3.0: Runoff Area=59,062 sf 32.39% Impervious Runoff Depth>2.30"
Flow Length=237' Tc=7.3 min CN=56 Runoff=3.27 cfs 11,318 cf

Link PA-1: Inflow=1.48 cfs 6,655 cf
Primary=1.48 cfs 6,655 cf

Link PA-2: Inflow=2.08 cfs 6,990 cf
Primary=2.08 cfs 6,990 cf

Link PA-2.1: Inflow=0.34 cfs 1,134 cf
Primary=0.34 cfs 1,134 cf

Link PA-3: Inflow=3.27 cfs 11,318 cf
Primary=3.27 cfs 11,318 cf

Total Runoff Area = 152,082 sf Runoff Volume = 24,963 cf Average Runoff Depth = 1.97"
72.74% Pervious = 110,618 sf 27.26% Impervious = 41,464 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.0: Runoff Area=61,649 sf 17.89% Impervious Runoff Depth>2.02"
Flow Length=218' Tc=8.6 min CN=45 Runoff=2.61 cfs 10,370 cf

SubcatchmentPRE-2.0: Runoff Area=24,290 sf 39.91% Impervious Runoff Depth>3.97"
Flow Length=266' Tc=7.3 min CN=62 Runoff=2.44 cfs 8,029 cf

SubcatchmentPRE-2.1: Runoff Area=7,081 sf 22.82% Impervious Runoff Depth>2.80"
Flow Length=213' Tc=5.0 min CN=52 Runoff=0.51 cfs 1,655 cf

SubcatchmentPRE-3.0: Runoff Area=59,062 sf 32.39% Impervious Runoff Depth>3.26"
Flow Length=237' Tc=7.3 min CN=56 Runoff=4.78 cfs 16,063 cf

Link PA-1: Inflow=2.61 cfs 10,370 cf
Primary=2.61 cfs 10,370 cf

Link PA-2: Inflow=2.94 cfs 9,684 cf
Primary=2.94 cfs 9,684 cf

Link PA-2.1: Inflow=0.51 cfs 1,655 cf
Primary=0.51 cfs 1,655 cf

Link PA-3: Inflow=4.78 cfs 16,063 cf
Primary=4.78 cfs 16,063 cf

Total Runoff Area = 152,082 sf Runoff Volume = 36,117 cf Average Runoff Depth = 2.85"
72.74% Pervious = 110,618 sf 27.26% Impervious = 41,464 sf

2.2 Pre-Development Watershed Plan

Tighe&Bond

LEGEND

- PRE-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- PA-1 — POINT OF ANALYSIS

251-01
STATE OF NEW HAMPSHIRE
PO BOX 856
CONCORD, NH 03301
2260/1484 & 3371/1194

PARKING LOT STRIPING IS FADED LOCATION APX.

TRAIL

100' WETLAND SETBACK LINE

PROX. FROM CITY GIS DEPARTMENT DATA

SMH 345
RIM = 8.86
INV = 3.1

SMH 346
RIM = 8.25
INV = 2.97

ASPHALT PAVEMENT

SHED

DECK

ENTRY THLD = 40.68'

PEAK = 60.45'

CONC. WINDOW WELL (TYP)

BLDG. OVERHANG

RETAINING WALL

ALTAR

PLAY AREA

#1035 CHURCH PEAK = 63.97'

THLD = 43.37'

PEAK = 76.52'

MEMORIAL GARDEN SEE NOTE #10

THLD = 38.94'

THLD = 43.34'

PEAK = 74.54'

248-01
152,082 SF
3.491 ACRES

ASPHALT PAVEMENT

EXISTING SMH
RIM = 41.10'
INV. IN (SW) = 36.00" 6" VCP
INV. OUT (NE) = 35.95' 6" VCP

25.0' BUFFER

CEMETERY

#1035 EXISTING SINGLE FAMILY DWELLING

PRE 3.0

PRE 2.1

PRE 2.0

PRE 1.0

PA-1

PA-2

PA-2.1

PA-3

APPROX. LOCATION OF DRAINAGE EASEMENT

CORE INTO EXISTING SEWER MANHOLE
INV = 17.89
(SEE UTILITY NOTE #21.
COORD W/ PORTSMOUTH DPW)

EXISTING CB
RIM = 21.17'
INV. IN (SW) =16.27' 15" RCP
INV. OUT (NE) = 15.97'

SIM UNKNOWN

EXISTING CB
RIM = 25.76'
INV. IN (SW) = 20.92' 15" RCP
INV. IN (SE) = 18.85 15" RCP
INV. OUT (NE) = 18.69' 15" RCP

SMH 360
RIM = 32.55
INV = 25.97

SMH 361
RIM = 22.3
INV = 14.89

APPROX. LOCATION OF RETAINING WALL EASEMENT

LAFAYETTE ROAD
US RT 1

EXISTING CB
RIM = 37.57'
DEBRIS =35.50'

EXISTING CB
RIM = 39.57'
DEBRIS =33.82'

EXISTING CB
RIM = 34.11'
INV. IN (SW) = 29.61' 15" RCP
INV. OUT (NE) = 28.16' 15" RCP
INV. OUT (NW) = 28.11' 15" RCP

EXISTING CB
RIM = 40.40'
INV. IN (SW) =34.70' 15" RCP
INV. OUT (NE) = 34.80' 15" RCP

EXISTING CB
RIM = 43.86'
INV. IN (SW) =38.38' 12" HDPE
INV. OUT (NE) = 38.08' 12" HDPE

0 30' 60'
GRAPHIC SCALE

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Saved: 5/20/2024
Printed: May 20, 2024 - 3:02pm By: NWilcox
Tighe & Bond J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg

Section 3
Post-Development Conditions

The post-development condition was analyzed by using the same points of analysis (PA-1, PA-2, PA-2.1 & PA-3.) In the post-development conditions, the total watersheds increased with six (6) total watershed areas. Stormwater runoff from these sub-catchment areas flow via sheet flow to Lafayette Road - US-Route 1, the conservation lands, Sagamore Creek or through the subsurface drainage systems prior to discharging into the proposed surface stormwater systems before ultimately discharging off site.

The point of analysis and its sub-catchment areas are depicted on the plan entitled "Post-Development Watershed Plan," Sheet C-802. The point of analysis and it's contributing watershed areas are described below:

Point of Analysis (PA-1)

Point of analysis 1 (PA-1) includes one (1) Post-Development Watershed Area (POST 1.0). The POST 1.0 area has significantly decreased and is only comprised of a small strip of land to the south of the proposed pavement section. The area is composed of grass and wooded areas.

Point of Analysis (PA-2)

Point of analysis 2 (PA-2) includes two (2) Post-Development Watershed Areas, both depicted as POST 2.0 on the plans. The first POST 2.0 area is abutting Lafayette Road - US-Route 1 and comprised of a small strip of land. This area is mainly composed of grass and wooded area with a small section of pavement.

The second POST 2.0 area is comprised of an area of land located centrally on site. This area is composed of grassed area along with a roof section from the existing church building on site.

Point of Analysis (PA-2.1)

Point of analysis 2.1 (PA-2.1) includes one (1) Post-Development Watershed Area (POST 2.1). POST 2.1 is mainly composed of impervious and grass area.

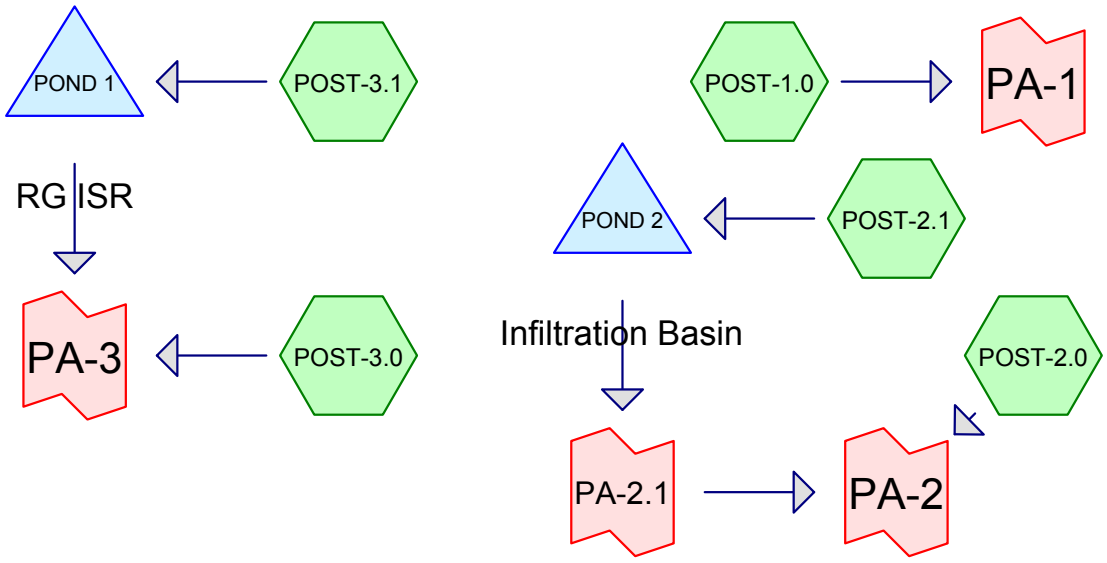
As stated in Section 2, this subcatchment area includes an existing catch basin within the DOT Drainage easement. In order to decrease flows entering this point of analysis, the area around the catch basin will be converted to an Infiltration Basin and the existing catch basin will be removed and an outlet control structure will be constructed in its place.

Point of Analysis (PA-3)

Point of analysis 3 (PA-3) includes two (2) Post-Development Watershed Areas (POST 3.0 & POST 3.1). POST 3.0 is primarily grass and woods area with small sections of existing pavement and roof from the existing Church building. The majority of this subcatchment area will remain undisturbed with no additional impervious surfaces being added. Runoff from this watershed sheet flows stormwater directly into Sagamore Creek and ultimately into the Piscataqua River.

POST 3.1 is the last and largest subcatchment on site and is composed of both the proposed buildings and a section of the existing church building. In addition to the proposed buildings, the remainder of the area is comprised of impervious pavement, concrete, and grassed area. All stormwater will sheet flow into the closed drainage system where it will be discharged into the Bioretention ISR located within the subcatchment, on the Northeastern corner of the development before ultimately discharging into Sagamore Creek, defined as PA-3.

3.1 Post-Development Calculations



Subcat Reach Pond Link

Routing Diagram for P5118-001_POST
Prepared by Tighe & Bond Consulting, Printed 5/20/2024

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
69,136	39	>75% Grass cover, Good, HSG A (POST-1.0, POST-2.0, POST-2.1, POST-3.0, POST-3.1)
9,321	96	Gravel surface, HSG A (POST-3.1)
41,579	98	Paved parking, HSG A (POST-2.0, POST-2.1, POST-3.0, POST-3.1)
22,249	98	Unconnected roofs, HSG A (POST-2.0, POST-3.0, POST-3.1)
9,797	30	Woods, Good, HSG A (POST-1.0, POST-3.0)
152,082	**67**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
152,082	HSG A	POST-1.0, POST-2.0, POST-2.1, POST-3.0, POST-3.1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
152,082		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST-1.0: Runoff Area=2,180 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=211' Slope=0.0140 '/' Tc=9.3 min CN=32 Runoff=0.00 cfs 0 cf

SubcatchmentPOST-2.0: Runoff Area=11,987 sf 25.27% Impervious Runoff Depth>0.19"
Flow Length=84' Tc=5.0 min UI Adjusted CN=48 Runoff=0.01 cfs 190 cf

SubcatchmentPOST-2.1: Runoff Area=11,781 sf 53.68% Impervious Runoff Depth>1.19"
Flow Length=327' Tc=5.0 min CN=71 Runoff=0.36 cfs 1,170 cf

SubcatchmentPOST-3.0: Runoff Area=27,648 sf 26.07% Impervious Runoff Depth>0.22"
Flow Length=230' Tc=5.0 min UI Adjusted CN=49 Runoff=0.05 cfs 501 cf

SubcatchmentPOST-3.1: Runoff Area=98,486 sf 47.99% Impervious Runoff Depth>1.31"
Flow Length=580' Tc=9.7 min CN=73 Runoff=2.92 cfs 10,778 cf

Pond 2P: Infiltration Basin Peak Elev=22.67' Storage=903 cf Inflow=0.36 cfs 1,170 cf
Outflow=0.01 cfs 294 cf

Pond 3P: RG 2.0 Peak Elev=34.56' Storage=5,840 cf Inflow=2.92 cfs 10,778 cf
Outflow=0.39 cfs 5,085 cf

Link PA-1: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link PA-2: Inflow=0.02 cfs 484 cf
Primary=0.02 cfs 484 cf

Link PA-2.1: Inflow=0.01 cfs 294 cf
Primary=0.01 cfs 294 cf

Link PA-3: Inflow=0.41 cfs 5,586 cf
Primary=0.41 cfs 5,586 cf

Total Runoff Area = 152,082 sf Runoff Volume = 12,639 cf Average Runoff Depth = 1.00"
58.03% Pervious = 88,254 sf 41.97% Impervious = 63,828 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST-1.0: Runoff Area=2,180 sf 0.00% Impervious Runoff Depth>0.08"
Flow Length=211' Slope=0.0140 '/' Tc=9.3 min CN=32 Runoff=0.00 cfs 15 cf

SubcatchmentPOST-2.0: Runoff Area=11,987 sf 25.27% Impervious Runoff Depth>0.83"
Flow Length=84' Tc=5.0 min UI Adjusted CN=48 Runoff=0.18 cfs 833 cf

SubcatchmentPOST-2.1: Runoff Area=11,781 sf 53.68% Impervious Runoff Depth>2.59"
Flow Length=327' Tc=5.0 min CN=71 Runoff=0.82 cfs 2,546 cf

SubcatchmentPOST-3.0: Runoff Area=27,648 sf 26.07% Impervious Runoff Depth>0.90"
Flow Length=230' Tc=5.0 min UI Adjusted CN=49 Runoff=0.48 cfs 2,066 cf

SubcatchmentPOST-3.1: Runoff Area=98,486 sf 47.99% Impervious Runoff Depth>2.77"
Flow Length=580' Tc=9.7 min CN=73 Runoff=6.38 cfs 22,745 cf

Pond 2P: Infiltration Basin Peak Elev=22.86' Storage=1,204 cf Inflow=0.82 cfs 2,546 cf
Outflow=0.13 cfs 1,643 cf

Pond 3P: RG 2.0 Peak Elev=34.62' Storage=6,023 cf Inflow=6.38 cfs 22,745 cf
Outflow=7.87 cfs 16,924 cf

Link PA-1: Inflow=0.00 cfs 15 cf
Primary=0.00 cfs 15 cf

Link PA-2: Inflow=0.21 cfs 2,476 cf
Primary=0.21 cfs 2,476 cf

Link PA-2.1: Inflow=0.13 cfs 1,643 cf
Primary=0.13 cfs 1,643 cf

Link PA-3: Inflow=8.22 cfs 18,990 cf
Primary=8.22 cfs 18,990 cf

Total Runoff Area = 152,082 sf Runoff Volume = 28,205 cf Average Runoff Depth = 2.23"
58.03% Pervious = 88,254 sf 41.97% Impervious = 63,828 sf

Summary for Subcatchment POST-1.0:

Runoff = 0.00 cfs @ 15.32 hrs, Volume= 15 cf, Depth> 0.08"
Routed to Link PA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
0	98	Unconnected roofs, HSG A
0	98	Paved parking, HSG A
1,764	30	Woods, Good, HSG A
416	39	>75% Grass cover, Good, HSG A
2,180	32	Weighted Average
2,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0140	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
3.2	161	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.3	211	Total			

Summary for Subcatchment POST-2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.18 cfs @ 12.11 hrs, Volume= 833 cf, Depth> 0.83"
Routed to Link PA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Adj	Description
2,461	98		Unconnected roofs, HSG A
568	98		Paved parking, HSG A
0	30		Woods, Good, HSG A
8,958	39		>75% Grass cover, Good, HSG A
11,987	54	48	Weighted Average, UI Adjusted
8,958			74.73% Pervious Area
3,029			25.27% Impervious Area
2,461			81.25% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	31	0.0050	0.67		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.7	53	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	84	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-2.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 2,546 cf, Depth> 2.59"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
0	98	Unconnected roofs, HSG A
6,324	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
5,457	39	>75% Grass cover, Good, HSG A
11,781	71	Weighted Average
5,457		46.32% Pervious Area
6,324		53.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0360	1.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.9	209	0.0360	3.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	18	0.0250	8.48	6.66	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
1.8	327	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-3.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.48 cfs @ 12.11 hrs, Volume= 2,066 cf, Depth> 0.90"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Adj	Description
2,345	98		Unconnected roofs, HSG A
4,862	98		Paved parking, HSG A
8,033	30		Woods, Good, HSG A
12,408	39		>75% Grass cover, Good, HSG A
27,648	52	49	Weighted Average, UI Adjusted
20,441			73.93% Pervious Area
7,207			26.07% Impervious Area
2,345			32.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	21	0.0050	0.62		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.6	209	0.0960	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-3.1:

[47] Hint: Peak is 214% of capacity of segment #3

Runoff = 6.38 cfs @ 12.14 hrs, Volume= 22,745 cf, Depth> 2.77"
Routed to Pond 3P : RG 2.0

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.62"

Area (sf)	CN	Description
17,443	98	Unconnected roofs, HSG A
29,825	98	Paved parking, HSG A
9,321	96	Gravel surface, HSG A
41,897	39	>75% Grass cover, Good, HSG A
98,486	73	Weighted Average
51,218		52.01% Pervious Area
47,268		47.99% Impervious Area
17,443		36.90% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
2.9	170	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	360	0.0050	3.79	2.98	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
9.7	580	Total			

Summary for Pond 2P: Infiltration Basin

Inflow Area = 11,781 sf, 53.68% Impervious, Inflow Depth > 2.59" for 10-Yr event
Inflow = 0.82 cfs @ 12.08 hrs, Volume= 2,546 cf
Outflow = 0.13 cfs @ 12.61 hrs, Volume= 1,643 cf, Atten= 84%, Lag= 31.7 min
Primary = 0.13 cfs @ 12.61 hrs, Volume= 1,643 cf
Routed to Link PA-2.1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.86' @ 12.61 hrs Surf.Area= 1,609 sf Storage= 1,204 cf
Flood Elev= 25.00' Surf.Area= 2,668 sf Storage= 5,775 cf

Plug-Flow detention time= 211.4 min calculated for 1,640 cf (64% of inflow)
Center-of-Mass det. time= 105.7 min (943.4 - 837.7)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	5,775 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	1,182	0	0
25.00	2,668	5,775	5,775

Device	Routing	Invert	Outlet Devices
#1	Primary	19.37'	**15.0" Round Culvert** L= 27.0' Ke= 0.500 Inlet / Outlet Invert= 19.37' / 18.85' S= 0.0193 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	22.60'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	23.50'	**4.0" W x 4.0" H Vert. Orifice/Grate X 104.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 12.61 hrs HW=22.86' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.13 cfs of 10.01 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.75 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 3P: RG 2.0

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 98,486 sf, 47.99% Impervious, Inflow Depth > 2.77" for 10-Yr event
Inflow = 6.38 cfs @ 12.14 hrs, Volume= 22,745 cf
Outflow = 7.87 cfs @ 12.20 hrs, Volume= 16,924 cf, Atten= 0%, Lag= 3.5 min
Primary = 7.87 cfs @ 12.20 hrs, Volume= 16,924 cf
Routed to Link PA-3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 34.62' @ 12.20 hrs Surf.Area= 3,120 sf Storage= 6,023 cf
Flood Elev= 35.25' Surf.Area= 3,344 sf Storage= 7,263 cf

Plug-Flow detention time= 135.7 min calculated for 16,889 cf (74% of inflow)

Center-of-Mass det. time= 47.1 min (883.7 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1	29.50'	7,263 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.50	2,177	0.0	0	0
31.00	2,177	40.0	1,306	1,306
33.00	2,177	10.0	435	1,742
35.00	3,344	100.0	5,521	7,263

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**15.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0167 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	30.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	33.00'	**10.000 in/hr Exfiltration over Surface area above 33.00'** Excluded Surface area = 2,177 sf
#4	Device 1	34.55'	**4.0" x 4.0" Horiz. Orifice/Grate X 104.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.77 cfs @ 12.20 hrs HW=34.62' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 7.77 cfs of 10.22 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 9.16 fps)
    - **3=Exfiltration** (Passes 0.07 cfs of 0.22 cfs potential flow)
  - **4=Orifice/Grate** (Weir Controls 7.69 cfs @ 0.84 fps)

Summary for Link PA-1:

Inflow Area = 2,180 sf, 0.00% Impervious, Inflow Depth > 0.08" for 10-Yr event
Inflow = 0.00 cfs @ 15.32 hrs, Volume= 15 cf
Primary = 0.00 cfs @ 15.32 hrs, Volume= 15 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2:

Inflow Area = 23,768 sf, 39.35% Impervious, Inflow Depth > 1.25" for 10-Yr event
Inflow = 0.21 cfs @ 12.42 hrs, Volume= 2,476 cf
Primary = 0.21 cfs @ 12.42 hrs, Volume= 2,476 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2.1:

Inflow Area = 11,781 sf, 53.68% Impervious, Inflow Depth > 1.67" for 10-Yr event
Inflow = 0.13 cfs @ 12.61 hrs, Volume= 1,643 cf
Primary = 0.13 cfs @ 12.61 hrs, Volume= 1,643 cf, Atten= 0%, Lag= 0.0 min
Routed to Link PA-2 :

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-3:

Inflow Area = 126,134 sf, 43.19% Impervious, Inflow Depth > 1.81" for 10-Yr event
Inflow = 8.22 cfs @ 12.20 hrs, Volume= 18,990 cf
Primary = 8.22 cfs @ 12.20 hrs, Volume= 18,990 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST-1.0: Runoff Area=2,180 sf 0.00% Impervious Runoff Depth>0.34"
Flow Length=211' Slope=0.0140 '/' Tc=9.3 min CN=32 Runoff=0.00 cfs 62 cf

SubcatchmentPOST-2.0: Runoff Area=11,987 sf 25.27% Impervious Runoff Depth>1.56"
Flow Length=84' Tc=5.0 min UI Adjusted CN=48 Runoff=0.43 cfs 1,556 cf

SubcatchmentPOST-2.1: Runoff Area=11,781 sf 53.68% Impervious Runoff Depth>3.83"
Flow Length=327' Tc=5.0 min CN=71 Runoff=1.22 cfs 3,761 cf

SubcatchmentPOST-3.0: Runoff Area=27,648 sf 26.07% Impervious Runoff Depth>1.65"
Flow Length=230' Tc=5.0 min UI Adjusted CN=49 Runoff=1.07 cfs 3,795 cf

SubcatchmentPOST-3.1: Runoff Area=98,486 sf 47.99% Impervious Runoff Depth>4.04"
Flow Length=580' Tc=9.7 min CN=73 Runoff=9.33 cfs 33,165 cf

Pond 2P: Infiltration Basin Peak Elev=23.14' Storage=1,677 cf Inflow=1.22 cfs 3,761 cf
Outflow=0.26 cfs 2,840 cf

Pond 3P: RG 2.0 Peak Elev=34.63' Storage=6,059 cf Inflow=9.33 cfs 33,165 cf
Outflow=9.97 cfs 27,341 cf

Link PA-1: Inflow=0.00 cfs 62 cf
Primary=0.00 cfs 62 cf

Link PA-2: Inflow=0.56 cfs 4,396 cf
Primary=0.56 cfs 4,396 cf

Link PA-2.1: Inflow=0.26 cfs 2,840 cf
Primary=0.26 cfs 2,840 cf

Link PA-3: Inflow=10.84 cfs 31,136 cf
Primary=10.84 cfs 31,136 cf

Total Runoff Area = 152,082 sf Runoff Volume = 42,339 cf Average Runoff Depth = 3.34"
58.03% Pervious = 88,254 sf 41.97% Impervious = 63,828 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST-1.0: Runoff Area=2,180 sf 0.00% Impervious Runoff Depth>0.71"
Flow Length=211' Slope=0.0140 '/' Tc=9.3 min CN=32 Runoff=0.02 cfs 130 cf

SubcatchmentPOST-2.0: Runoff Area=11,987 sf 25.27% Impervious Runoff Depth>2.35"
Flow Length=84' Tc=5.0 min UI Adjusted CN=48 Runoff=0.70 cfs 2,350 cf

SubcatchmentPOST-2.1: Runoff Area=11,781 sf 53.68% Impervious Runoff Depth>5.04"
Flow Length=327' Tc=5.0 min CN=71 Runoff=1.60 cfs 4,947 cf

SubcatchmentPOST-3.0: Runoff Area=27,648 sf 26.07% Impervious Runoff Depth>2.46"
Flow Length=230' Tc=5.0 min UI Adjusted CN=49 Runoff=1.71 cfs 5,678 cf

SubcatchmentPOST-3.1: Runoff Area=98,486 sf 47.99% Impervious Runoff Depth>5.27"
Flow Length=580' Tc=9.7 min CN=73 Runoff=12.15 cfs 43,286 cf

Pond 2P: Infiltration Basin Peak Elev=23.44' Storage=2,209 cf Inflow=1.60 cfs 4,947 cf
Outflow=0.34 cfs 4,013 cf

Pond 3P: RG 2.0 Peak Elev=34.79' Storage=6,557 cf Inflow=12.15 cfs 43,286 cf
Outflow=10.50 cfs 37,459 cf

Link PA-1: Inflow=0.02 cfs 130 cf
Primary=0.02 cfs 130 cf

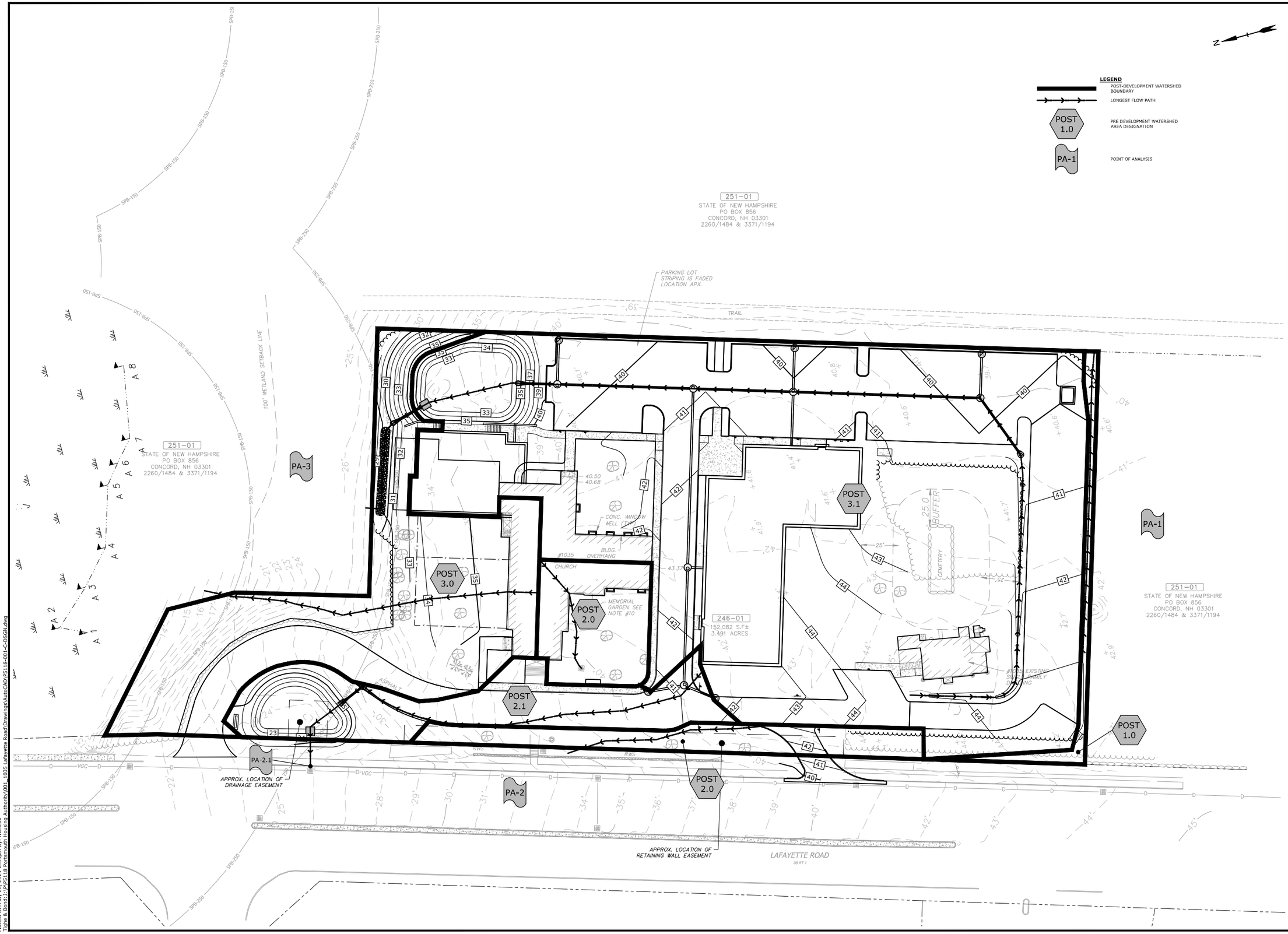
Link PA-2: Inflow=0.94 cfs 6,362 cf
Primary=0.94 cfs 6,362 cf

Link PA-2.1: Inflow=0.34 cfs 4,013 cf
Primary=0.34 cfs 4,013 cf

Link PA-3: Inflow=12.15 cfs 43,137 cf
Primary=12.15 cfs 43,137 cf

Total Runoff Area = 152,082 sf Runoff Volume = 56,391 cf Average Runoff Depth = 4.45"
58.03% Pervious = 88,254 sf 41.97% Impervious = 63,828 sf

3.2 Post-Development Watershed Plan



0 30' 60'
GRAPHIC SCALE

Tighe&Bond

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Saved: 5/20/2024
Printed: May 20, 2024 - 2:03pm By: NWilcox
Tighe & Bond:J:\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg

Section 4
Peak Rate Comparison

The following table summarizes and compares the pre- and post-development peak runoff rates from the 2-year, 10-year, 25-year and 50-year storm events at the point of analysis.

Table 4.1
Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	0.02	0.51	1.48	2.61
PA-2	0.36	1.24	2.08	2.94
PA-2.1	0.02	0.17	0.34	0.51
PA-3	0.38	1.81	3.27	4.78
Post-Development Watershed				
PA-1	0.00	0.00	0.00	0.02
PA-2	0.02	0.21	0.56	0.94
PA-2.1	0.01	0.13	0.26	0.34
PA-3	0.41	8.22	10.84	12.15

The Peak Runoff Control Requirements of Env-Wq 1507.06 are not required to be met for point of analysis 3 (PA-3) per NHDES Alteration of Terrain regulation Env-Wq 1507.06(d).

Section 5
Mitigation Description

The stormwater management system has been designed to provide stormwater treatment as required by the City of Portsmouth Site Review Regulations and NHDES AoT Regulations (Env-Wq 1500).

5.1 Pre-Treatment Methods for Protecting Water Quality

Pre-treatment for the stormwater filtration systems consists of off-line deep sump catch basins.

5.2 Treatment Methods for Protecting Water Quality.

The runoff from proposed impervious areas will be treated using a Bioretention ISR and an Infiltration Basin. These BMPs are sized to treat the Water Quality Flow of their respective subcatchment areas. The systems are outfitted with an outlet control structure to bypass the peak flows away from treatment. The BMP worksheet for this treatment practice has been included in Section 6 of this report.

The proposed stormwater management system is required to remove 80% of the annual Total Suspended Soils (TSS) loads and 50% of the annual Total Nitrogen (TN) loads per the City of Portsmouth's Site Plan regulations, Section 7.6.2.1.a.i. As shown in table 5.1 the pollutant removal efficiencies for the proposed treatment system exceeds the City of Portsmouth's removal requirements.

Table 5.1 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Nitrogen	Total Phosphorus
Bioretention ISR[1]	90%	65%	65%

Table 5.2 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Nitrogen	Total Phosphorus
Infiltration Basin[1]	90%	60%	65%

1. Pollutant removal calculations for Bioretention ISR and Infiltration Basin with deep sump catchbasin pretreatment are shown in Table 5.3 & 5.4.

Table 5.3 – Pollutant Removal Calculations				
Bioretention ISR				
BMP	TSS Removal Rate	Starting TSS Load	TSS Removed	Remaining TSS Load
Deep Sump Catchbasin w/Hood[1]	0.15	1.00	0.15	0.85
Bioretention ISR[2]	0.90	0.85	0.77	0.08
	Total Suspended Solids Removed:			**92%**
	TN Removal Rate	Starting TN Load	TN Removed	Remaining TN Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Bioretention ISR[2]	0.65	0.95	0.62	0.33
	Total Nitrogen Removed:			**67%**
	TP Removal Rate	Starting TP Load	TP Removed	Remaining TP Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Bioretention ISR[2]	0.65	0.95	0.62	0.33
	Total Phosphorus Removed:			**67%**

Table 5.4 – Pollutant Removal Calculations				
Infiltration Basin				
BMP	TSS Removal Rate	Starting TSS Load	TSS Removed	Remaining TSS Load
Deep Sump Catchbasin w/Hood[1]	0.15	1.00	0.15	0.85
Infiltration Basin[3]	0.90	0.85	0.77	0.08
	Total Suspended Solids Removed:			**92%**
	TN Removal Rate	Starting TN Load	TN Removed	Remaining TN Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Infiltration Basin[3]	0.60	0.95	0.57	0.38
	Total Nitrogen Removed:			**62%**
	TP Removal Rate	Starting TP Load	TP Removed	Remaining TP Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Infiltration Basin[3]	0.65	0.95	0.62	0.33
	Total Phosphorus Removed:			**67%**

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.
2. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.
3. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

Section 6
BMP Worksheet

BIORETENTION SYSTEM WITH INTERNAL STORAGE RESERVOIR
(UNH Stormwater Center Specification)

Type/Node Name: **Rain Garden ISR**

Enter the node name in the drainage analysis if applicable.

2.26	ac	A = Area draining to the practice	
1.08	ac	A_I = Impervious area draining to the practice	
0.48	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.48	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.09	ac-in	WQV= 1" x Rv x A	
3,939	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
394	cf	10% x WQV (check calc for sediment forebay)	
985	cf	25% x WQV (check calc for water stored in saturated zone)	
Offline Deep Sump		Method of Pretreatment	
N/A	cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
4,075	cf	Volume below lowest orifice[1]	**≥ 100%WQV**
1,306	cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.09	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
34.55	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.07	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
31.26	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00	in	Depth of Filter Media	**≥ 18"**
3.00	:1	Pond side slopes	**≥ 3:1**
Trash Rack		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
34.79	ft	Peak elevation of the 50-year storm event (E_{50})	
35.25	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

1. Volume stored above the wetland soil and below the high flow by-pass.

Designer's Notes:

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Basin #1**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
0.27	ac	A = Area draining to the practice	
0.15	ac	A_I = Impervious area draining to the practice	
0.56	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.55	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.15	ac-in	WQV= 1" x Rv x A	
539	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
135	cf	25% x WQV (check calc for sediment forebay volume)	
Deep Sump CB		Method of pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
2,525	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
1,182	sf	A_{SA} = Surface area of the bottom of the pond	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
22.00	feet	E_{BTM} = Elevation of the bottom of the basin	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
22.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
22.0	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
N/A	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
N/A		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
Yes	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
3.0	:1	If a basin is proposed, pond side slopes.	≥**3:1**
22.86	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
23.44	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
25.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Stage-Area-Storage for Pond 2P: Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
22.00	1,182	0
22.05	1,207	60
22.10	1,232	121
22.15	1,256	183
22.20	1,281	246
22.25	1,306	311
22.30	1,331	377
22.35	1,355	444
22.40	1,380	512
22.45	1,405	582
22.50	1,430	653
22.55	1,454	725
22.60	1,479	798
22.65	1,504	873
22.70	1,529	949
22.75	1,554	1,026
22.80	1,578	1,104
22.85	1,603	1,184
22.90	1,628	1,264
22.95	1,653	1,346
23.00	1,677	1,430
23.05	1,702	1,514
23.10	1,727	1,600
23.15	1,752	1,687
23.20	1,776	1,775
23.25	1,801	1,864
23.30	1,826	1,955
23.35	1,851	2,047
23.40	1,875	2,140
23.45	1,900	2,235
23.50	1,925	2,330
23.55	1,950	2,427
23.60	1,975	2,525
23.65	1,999	2,625
23.70	2,024	2,725
23.75	2,049	2,827
23.80	2,074	2,930
23.85	2,098	3,034
23.90	2,123	3,140
23.95	2,148	3,247
24.00	2,173	3,355
24.05	2,197	3,464
24.10	2,222	3,574
24.15	2,247	3,686
24.20	2,272	3,799
24.25	2,297	3,913
24.30	2,321	4,029
24.35	2,346	4,145
24.40	2,371	4,263
24.45	2,396	4,383
24.50	2,420	4,503
24.55	2,445	4,625
24.60	2,470	4,747
24.65	2,495	4,872
24.70	2,519	4,997
24.75	2,544	5,123
24.80	2,569	5,251
24.85	2,594	5,380
24.90	2,618	5,511
24.95	2,643	5,642
25.00	**2,668**	**5,775**

STORAGE BELOW LOWEST INVERT OF OUTLET CONTROL STRUCTURE

Tighe&Bond

APPENDIX A

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

April 23, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

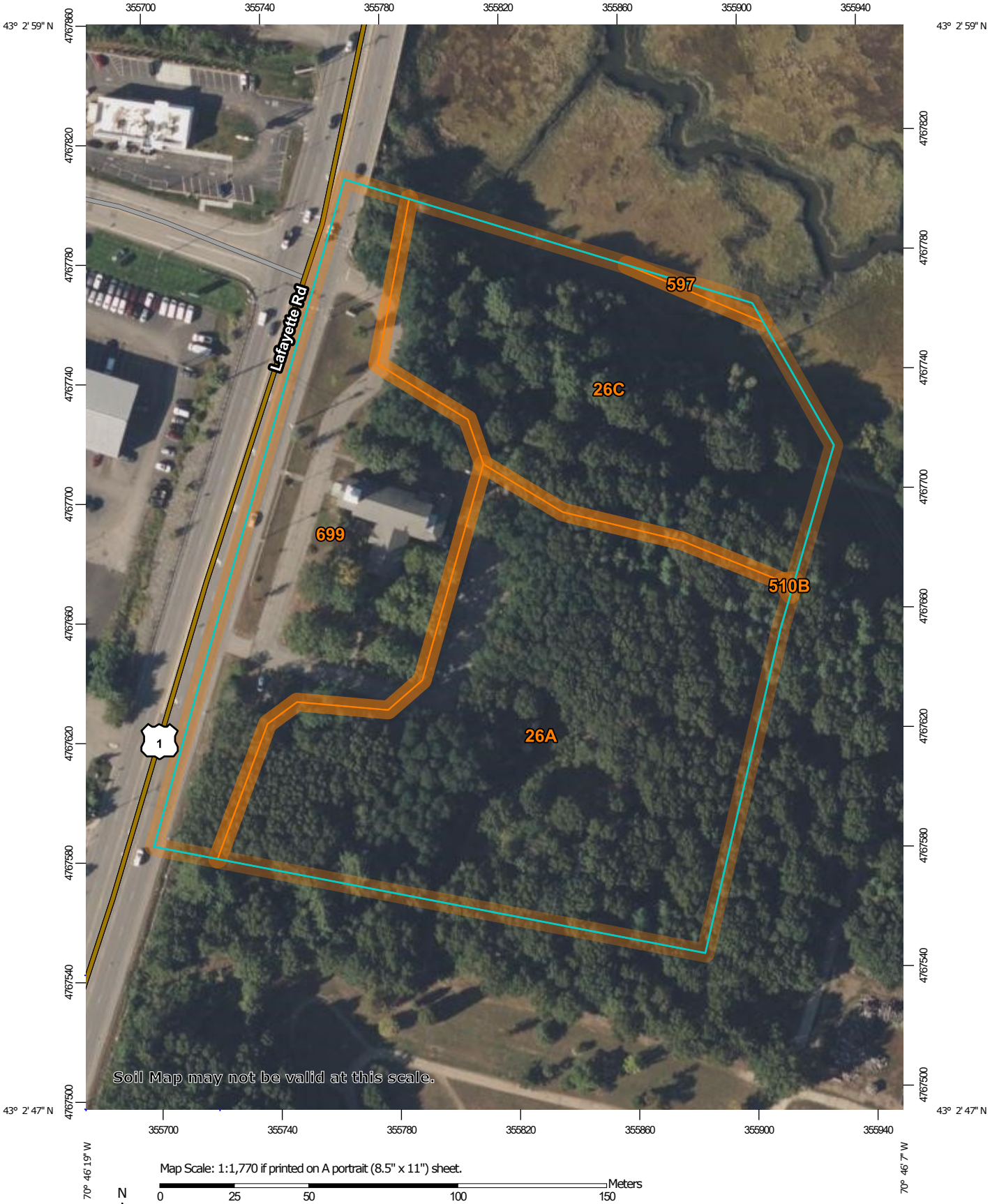
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,770 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	4.5	45.0%
26C	Windsor loamy sand, 8 to 15 percent slopes	2.8	28.2%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
597	Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded	0.0	0.3%
699	Urban land	2.6	26.5%
Totals for Area of Interest		**10.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

26A—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, head slope, nose slope, side slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

26C—Windsor loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svkq
Elevation: 0 to 1,260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: — error in exists on —
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

Ap - 1 to 11 inches: loamy sand
Bw - 11 to 31 inches: loamy sand
C - 31 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, head slope, nose slope, side slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Deerfield

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

510B—Hoosic gravelly fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9cp4
Elevation: 100 to 1,100 feet
Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Hoosic and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting
Parent material: Outwash

Typical profile
H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 10 percent
Hydric soil rating: No

597—Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded

Map Unit Setting
National map unit symbol: 2tyqf
Elevation: 0 to 10 feet
Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Westbrook and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westbrook

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Partly-decomposed herbaceous organic material over loamy mineral material

Typical profile

Oe - 0 to 19 inches: mucky peat
Cg - 19 to 59 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to strongly saline (0.7 to 111.6 mmhos/cm)
Sodium adsorption ratio, maximum: 33.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded, R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

Minor Components

Ipswich

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded, R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

Pawcatuck

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded, R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:1,770 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	A	4.5	45.0%
26C	Windsor loamy sand, 8 to 15 percent slopes	A	2.8	28.2%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	A	0.0	0.0%
597	Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded	B/D	0.0	0.3%
699	Urban land		2.6	26.5%
Totals for Area of Interest			**10.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.052 degrees North
Longitude	70.768 degrees West
Elevation	0 feet
Date/Time	Tue Oct 10 2023 16:27:23 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.57	2.04	2.67	2.93	**1yr**	2.36	2.82	3.23	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.50	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.08	4.60	**5yr**	3.61	4.42	5.06	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.24	2.90	3.76	4.89	5.55	**10yr**	4.33	5.34	6.11	7.14	8.01	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.53	2.15	2.78	3.64	4.76	6.20	7.13	**25yr**	5.49	6.86	7.85	9.07	10.10	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.76	**50yr**	1.79	2.53	3.30	4.34	5.68	7.42	8.62	**50yr**	6.57	8.29	9.48	10.87	12.03	**50yr**
100yr	0.60	0.97	1.25	1.78	2.42	3.27	**100yr**	2.09	2.99	3.92	5.18	6.80	8.90	10.43	**100yr**	7.87	10.03	11.46	13.04	14.35	**100yr**
200yr	0.68	1.10	1.43	2.05	2.83	3.85	**200yr**	2.45	3.53	4.63	6.15	8.12	10.66	12.61	**200yr**	9.44	12.13	13.85	15.64	17.11	**200yr**
500yr	0.80	1.32	1.72	2.49	3.49	4.78	**500yr**	3.01	4.39	5.79	7.74	10.27	13.55	16.22	**500yr**	11.99	15.60	17.81	19.91	21.61	**500yr**

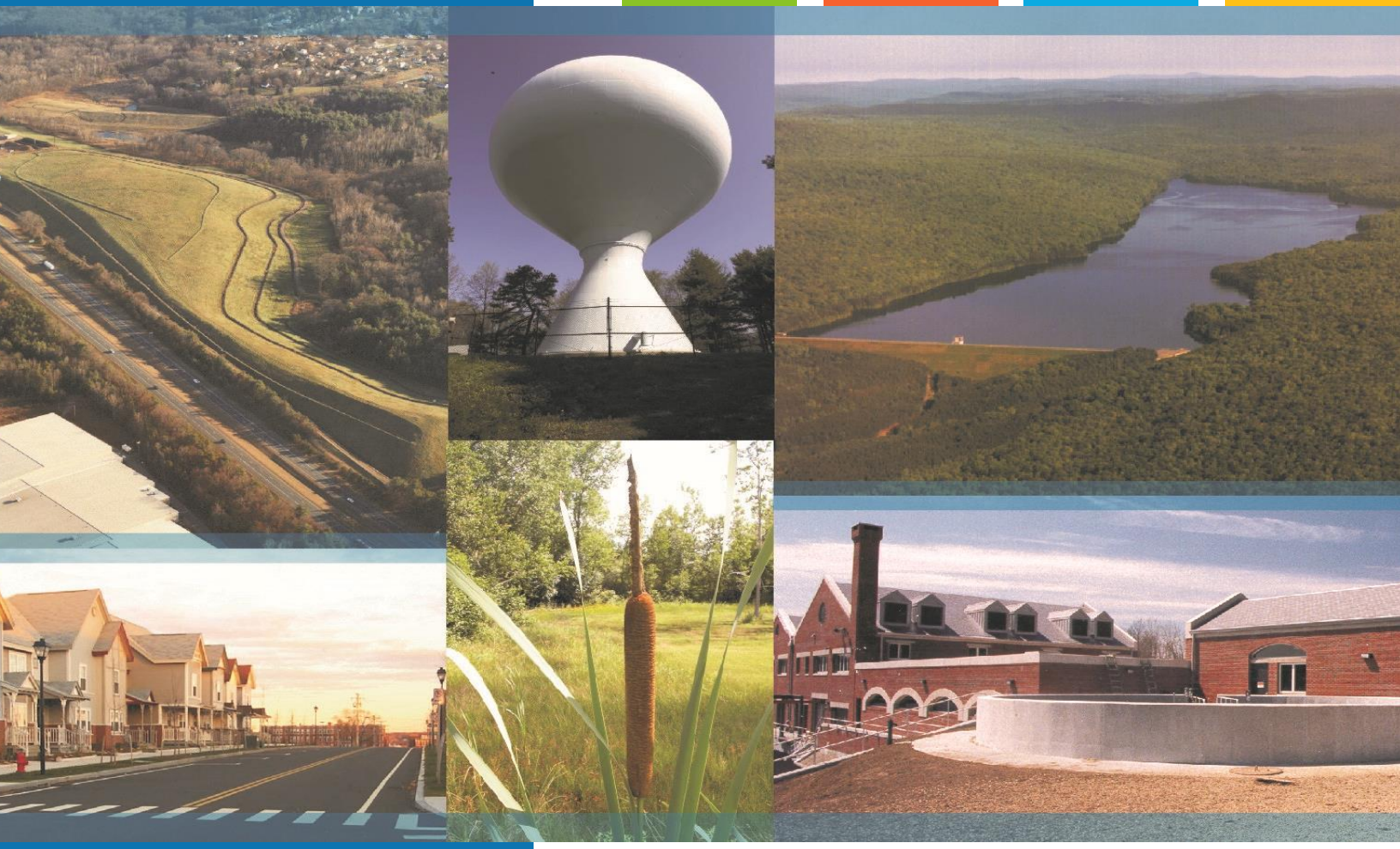
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.87	0.92	1.33	1.68	2.25	2.53	**1yr**	1.99	2.43	2.88	3.18	3.91	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.07	3.47	**2yr**	2.72	3.34	3.84	4.57	5.10	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.81	4.22	**5yr**	3.37	4.06	4.74	5.57	6.28	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.40	4.90	**10yr**	3.89	4.71	5.49	6.46	7.24	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.90	**25yr**	1.35	1.86	2.10	2.75	3.53	4.75	5.95	**25yr**	4.20	5.72	6.72	7.87	8.75	**25yr**
50yr	0.48	0.74	0.92	1.32	1.77	2.17	**50yr**	1.53	2.12	2.35	3.07	3.93	5.37	6.88	**50yr**	4.75	6.61	7.83	9.14	10.11	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.42	2.63	3.41	4.35	6.04	7.95	**100yr**	5.35	7.65	9.12	10.64	11.68	**100yr**
200yr	0.60	0.90	1.14	1.64	2.29	2.82	**200yr**	1.98	2.76	2.94	3.77	4.79	6.78	9.19	**200yr**	6.00	8.84	10.63	12.40	13.51	**200yr**
500yr	0.69	1.03	1.32	1.92	2.73	3.37	**500yr**	2.36	3.30	3.42	4.30	5.45	7.90	11.13	**500yr**	7.00	10.70	13.00	15.20	16.37	**500yr**

Coastal and Great Bay Region Precipitation Increase		
	24-hr Storm Event (in.)	24-hr Storm Event + 15% (in.)
1 Year	2.67	3.07
2 Year	3.22	3.70
10 Year	4.89	5.62
25 Year	6.20	7.13
50 Year	7.42	8.53

www.tighebond.com

100% Recyclable



Proposed Mixed Use Development
1035 Lafayette Rd
Portsmouth, NH

Long-Term Operation & Maintenance Plan

Portsmouth Housing Authority

May 20, 2024

Tighe&Bond

100% Recyclable

Section 1 Long-Term Operation & Maintenance Plan

Section 2 Invasive Species

Section 3 Annual Updates and Log Requirements

Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implement a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

Portsmouth Housing Authority
245 Middle Street
Portsmouth, NH 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Bioretention ISR Maintenance
- Sediment Basin Maintenance
- Infiltration Basin

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Bioretention ISR	Two (2) times annually and following any rainfall event exceeding 2.5 inches in a 24-hour period
Infiltration Basin	Two (2) times annually and following any rainfall event exceeding 2.5 inches in a 24-hour period
Stone Berm Level Spreader	Annually

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Bioretention System Requirements

Underground Detention System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Pretreatment measure	Two (2) times annually	- Removal of accumulated sediment - No less than once annually
Drawdown Time	Once annually	- Removal of accumulated sediments or reconstruction of filter media if system does not drain within 72-hours following a rain event
Vegetation	Once annually	- Vegetation maintained in healthy condition - Pruning - Replacement of dead or diseased vegetation - Removal of invasive species

1.5 Infiltration Basin Requirements

Infiltration Basin Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor to ensure that Basins function effectively after storms	Two (2) times annually and after any rainfall event exceeding 2.5" in a 24-hr period	- Trash and debris to be removed - Any required maintenance shall be addressed
Inspect Vegetation	Annually	- Inspect the condition of all Basin vegetation - Prune back overgrowth - Replace dead vegetation - Remove any invasive species
Inspect Drawdown Time - The system shall drawdown within 48-hours following a rainfall event.	Annually	- Assess the condition of the facility to determine measures required to restore the filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.

1.6 Stone Berm Level Spreader

Stone Berm Level Spreader Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Annually	- Visually inspect for damage and deterioration - Repair damages immediately

1.7 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site (snow storage areas have been shown on the Site Plan). The property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. Any snow accumulation beyond a height of 3' in the snow storage areas will be hauled off-site and legally disposed of. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

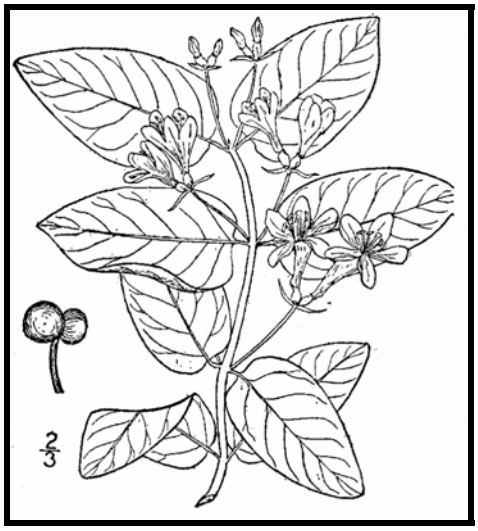
Section 2
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

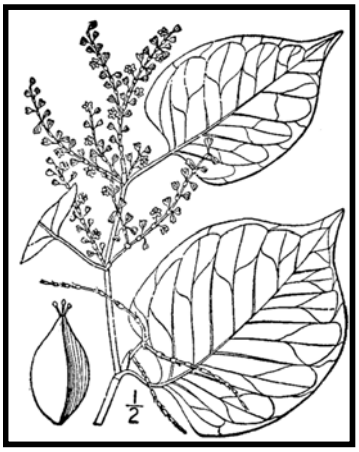
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
  </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.

Using tools to remove woody stems.

Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.

Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.

Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.

Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.

Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 3
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the City of Portsmouth on an annual basis.

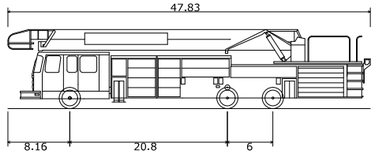
Stormwater Management Report						
Proposed Mixed-Use Development		**1035 Lafayette Road – Tax Map 246 Lot 1**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Deep Sump CB's			❑Yes ❑No			
Bioretention ISR			❑Yes ❑No			
Infiltration Basin			❑Yes ❑No			
Stone Berm Level Spreader			❑Yes ❑No			

www.tighebond.com

100% Recyclable

PROPOSED MIXED-USE DEVELOPMENT
PORTSMOUTH, NH

FIRE TRUCK TURNING EXHIBIT



LEGEND

- FORWARD VEHICLE WHEEL BASE
- FORWARD VEHICLE OVERHANG
- REVERSE VEHICLE WHEEL BASE
- REVERSE VEHICLE OVERHANG

Portsmouth Fire Truck	
Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.432ft
Min Body Ground Clearance	0.862ft
Track Width	8.000ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

251-01
STATE OF NEW HAMPSHIRE
PO BOX 856
CONCORD, NH 03301
2260/1484 & 3371/1194

251-01
STATE OF NEW HAMPSHIRE
PO BOX 856
CONCORD, NH 03301
2260/1484 & 3371/1194

246-01
152,082 S.F.±
3.491 ACRES

#1035
EXISTING
CHURCH

25.0' BUFFER

VEHICLE OVERHANG

VEHICLE WHEEL BASE

APPROX. LOCATION OF DRAINAGE EASEMENT

APPROX. LOCATION OF RETAINING WALL EASEMENT

100' WETLAND SETBACK LINE

LAFAYETTE ROAD
US RT 1

0 30' 60'
GRAPHIC SCALE

Tighe&Bond

May 20, 2024
P5118-001-C-DSGN.dwg

Last Save Date: May 20, 2024, 1:44 PM By: CKOZCIUK
Plot Date: Monday, May 20, 2024 Plotted By: Colter Krcciuk
T&B File Location: J:\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Drawings\AutoCAD\P5118-001-C-DSGN.dwg Layout Tab: TRUCK

P5118-001
May 20, 2024

Mr. Peter Britz, Director of Planning & Sustainability
City of Portsmouth Planning & Sustainability Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Trip Generation Memorandum**
1035 Lafayette Road Development
Portsmouth, New Hampshire

Dear Peter:

Tighe & Bond has prepared a trip generation memorandum to outline the anticipated study area of the Traffic Impact Assessment (TIA) for the proposed mixed-use development located at 1035 Lafayette Road (US Route 1) in Portsmouth, NH. The site is bounded by Lafayette Road (US Route 1) to the west and by Sagamore Creek and Headlands Park to the north, east, and south. With the project, the Portsmouth Housing Authority proposes to construct residential units and office space, and repurpose a portion of the existing building at 1035 Lafayette Road. as part of the project, while a portion of the existing church will be renovated to remain. The project consists of a proposed seven-unit transitional housing area, and a separate three- to four-story apartment building consisting of 44 units. The existing daycare, with a current enrollment of 40 students, is currently housed in the basement of the existing church and will remain as part of the project but has the potential to expand enrollment up to 71 students. On-site parking will be provided by surface parking lots on site. Two existing site access driveways to Lafayette Road will remain, with the northern full-access driveway forming an existing signalized intersection with Lafayette Road opposite Mirona Road, and the southern driveway located approximately 400 feet south of Mirona Road. Lafayette Road is median divided at the southern driveway, prohibiting left turns entering or exiting the site from this driveway. The project will include site, access drive, stormwater management, utilities, lighting, and landscaping improvements. The trip generation estimate for the proposed development presented herein will serve as the basis for the traffic impact assessment.

Study Area

Based on a preliminary review of expected trip generation and distribution for the surrounding area, the following intersections have been identified to be included in the study area:

- US Route 1 (Lafayette Road) at North Site Driveway/Minora Road (signalized)
- US Route 1 (Lafayette Road) at South Site Driveway (unsignalized)

Turning movement count (TMC) data were collected during the weekday morning (7:00-9:00 AM) and weekday afternoon (3:00-6:00 PM) peak periods on Thursday April 18, 2024 and Saturday midday peak period (11:00 AM-1:00 PM) on Saturday April 20, 2024 at the study intersections. An automatic traffic recorder (ATR) count was collected on US Route 1 (Lafayette Road) in the vicinity of the site driveways to collect directional traffic volume flows and vehicular travel speeds. Summarized and adjusted volumes will be presented in a future full Traffic Impact Study (TIS) supporting the project.

Trip Generation

Trips expected to be generated by the proposed development were estimated using the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, 2021. Multifamily Housing (Low-Rise) (LUC-220) was used to estimate vehicle trips for the proposed 44-unit three- to four-story apartment building and seven units of transitional housing. General Office Building (LUC-710) was used to estimate the office trips based on the proposed 6,900 SF building. Small Office Building (LUC-712) was considered given the size of the office component, but LUC 710 was utilized to represent a conservative estimate. The trip generation estimate for the proposed daycare was developed based on a rate established using the April 2024 turning movement counts.

Since the proposed daycare will replace the existing daycare, a credit was applied to account for the existing daycare trips and are subtracted from the proposed site trips to determine the total proposed net trips. ITE LUC 565 (Day Care Center) was considered to estimate both existing and proposed daycare trips. The existing turning movement counts were found to be lower than the ITE data in the morning peak period and higher in the afternoon peak period. The April 2024 turning movement counts were used as the basis for the proposed day care trip generation estimate to present a conservative estimate in the afternoon peak period and to align with the existing daycare operations. Credit for the existing daycare was only applied to the weekday morning and afternoon peak hour trips as the daycare is closed on the weekend. The existing church trips are negligible since the church is only in session on Sunday, outside of the analysis time periods.

Based on the ITE data and after applying the existing daycare trip credit, the proposed development is estimated to generate 77 trips (38 entering, 39 exiting) during the weekday morning peak hour, 92 trips (42 entering, 50 exiting) during the weekday afternoon peak hour, and 21 trips (10 entering, 11 exiting) during the Saturday midday peak hour. Table 1 provides a detailed summary of the trip generation.

Trip Distribution

The distribution of the proposed traffic entering and exiting the site expected to be generated by the mixed-use development was reviewed based on U.S. Census journey-to-work data for people residing in Portsmouth for the residential uses and based on existing travel patterns and anticipated travel patterns for the office and daycare uses. The following arrival/departure distributions are anticipated for the residential uses:

- 30% to/ from the North to Portsmouth Center via US Route 1
- 25% to/ from the South via US Route 1 (Lafayette Road)
- 20% to/ from the West to US Route 4 (Spaulding Turnpike) via US Route 1 Bypass
- 15% to/ from the South to I-95 South via Route 33
- 5% to/ from the West via Route 33
- 5% to/ from the North to I-95 North via US Route 1 Bypass

Based on the residential regional distribution, it is estimated that 55% will access the site to/ from the north via US Route 1, 25% will access the site to/ from the south via US Route 1, and 20% will access the site to/ from the west via Mirona Road.

The following arrival/ departure distribution is anticipated for the office and daycare uses:

- 40% to/ from the North to Portsmouth Center via US Route 1

- 25% to/ from the South via US Route 1 (Lafayette Road)
- 20% to/ from the West to US Route 4 (Spaulding Turnpike) via US Route 1 Bypass
- 5% to/ from the South to I-95 South via Route 33
- 5% to/ from the West via Route 33
- 5% to/ from the North to I-95 North via US Route 1 Bypass

Based on the office/ daycare regional distribution, it is estimated that 65% will access the site to/ from the north via US Route 1, 25% will access the site to/ from the south via US Route 1, and 10% will access the site to/ from the west via Mirona Road.

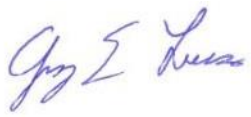
Figure 1 presents the anticipated regional site traffic distributions of the traffic through the study area roadways. Distribution percentages for the office and daycare uses may be updated in development of the TIA based on collected traffic volume data.

Conclusion

The proposed mixed-use development includes 51 residential units, a daycare with enrollment of up to 71 students, and 6,900 SF of office space. Based on the estimated trip generation and trip distribution, the TIA will analyze traffic operations at two intersections during the weekday morning, weekday afternoon, and Saturday midday peak periods.

Sincerely,

TIGHE & BOND, INC.



Greg Lucas, PE, PTOE, RSP1
Senior Project Manager

Copy: Mark Lentz, Portsmouth Housing Authority

Enclosures: Study Area Map (Figure 1)
Site-Generated Traffic Summary (Table 1)
Conceptual Site Layout Plan

\\tighebond.com\data\Data\Projects\P\P5118 Portsmouth Housing Authority\001_1035 Lafayette Road\Report_Evaluation\Reports\Trip Generation Memo\P5118-001 1035 Lafayette Rd Trip Gen Memo.docx

TABLE 1
Site-Generated Traffic Summary

Existing Daycare - 40 Students **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Morning	18	10	28
Weekday Afternoon	15	25	40
Satruday Midday	NO DATA	NO DATA	NO DATA
Weekday	NO DATA	NO DATA	NO DATA
Saturday	NO DATA	NO DATA	NO DATA

Proposed - 51 Units Apartment **Peak Hour Period**	**Enter**	**Exit**	**LUC 220** **Total**
Weekday Morning	9	30	39
Weekday Afternoon	27	15	42
Saturday Midday	11	10	21
Weekday	201	201	402
Saturday	116	116	232

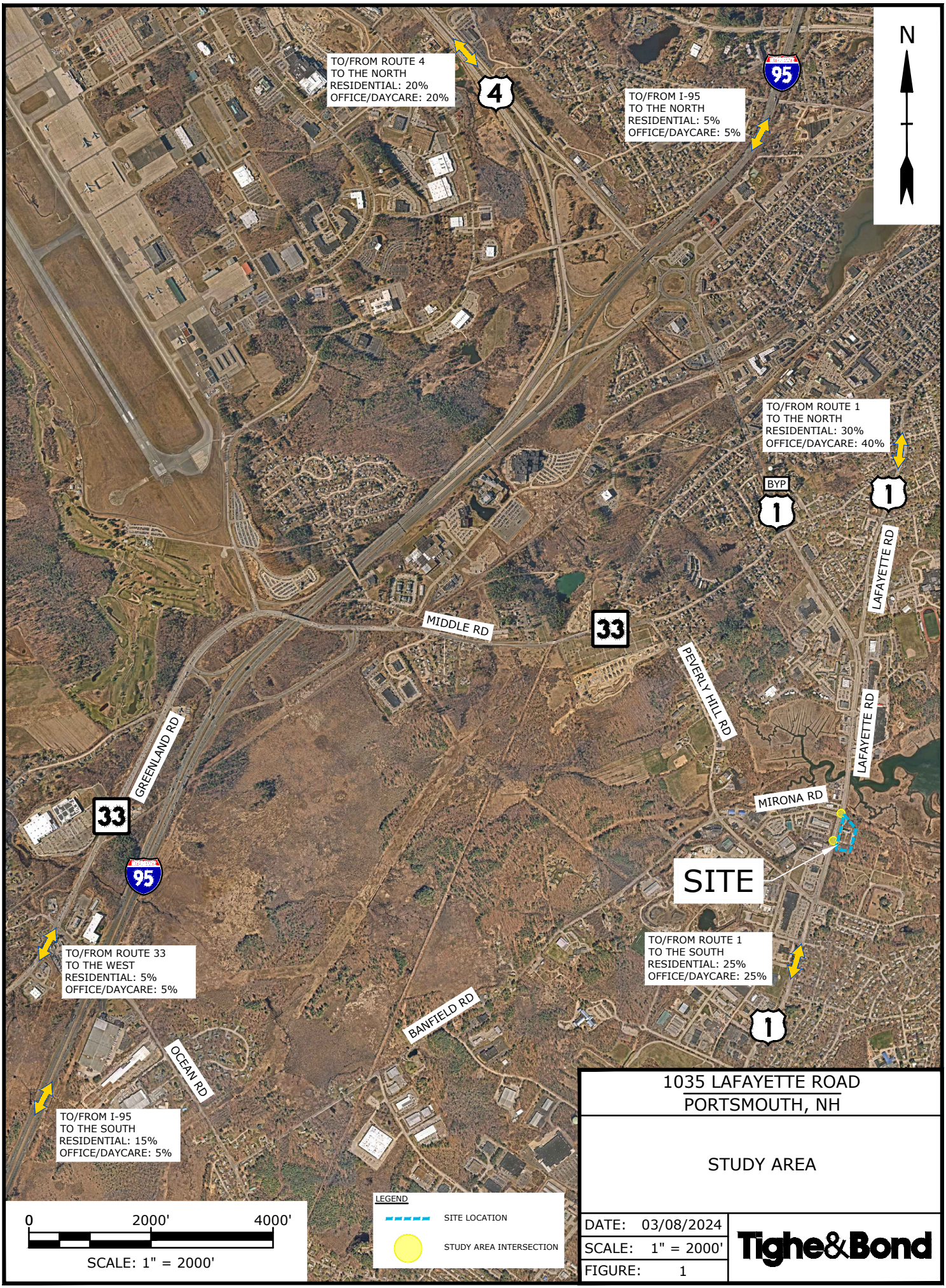
Proposed Daycare - 71 Students **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Morning	32	18	50
Weekday Afternoon	27	44	71
Saturday Midday	NO DATA	NO DATA	NO DATA
Weekday	NO DATA	NO DATA	NO DATA
Saturday	NO DATA	NO DATA	NO DATA

Proposed - 6,900 SF Office Building **Peak Hour Period**	**Enter**	**Exit**	**LUC 710** **Total**
Weekday Morning	15	2	17
Weekday Afternoon	3	15	18
Saturday Midday	NO DATA	NO DATA	NO DATA
Weekday	57	56	113
Saturday	NO DATA	NO DATA	NO DATA

Proposed Total Trips **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Morning	**56**	**49**	**105**
Weekday Afternoon	**57**	**75**	**132**
Saturday Midday	**11**	**10**	**21**
Weekday	**258**	**258**	**516**
Saturday	**116**	**116**	**232**

Net Vehicular Trips (Proposed minus Existing Daycare Trips) **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Morning	**38**	**39**	**77**
Weekday Afternoon	**42**	**50**	**92**
Saturday Midday	**11**	**10**	**21**
Weekday	**258**	**258**	**516**
Saturday	**116**	**116**	**232**

Source: Institute of Transportation Engineers, Trip Generation, 11th Edition, 2021
Land Use - 220 [Multifamily Housing (Low-Rise)]
221 [Residential - Multifamily House (Mid-Rise)]
710 [General Office Building]



1035 LAFAYETTE ROAD
PORTSMOUTH, NH

STUDY AREA

DATE:	03/08/2024
SCALE:	1" = 2000'
FIGURE:	1

Tighe&Bond

SITE DATA:

LOCATION: TAX MAP 273, LOT 3

OWNER: THE PARISH OF CHIRST CHURCH IN PORTSMOUTH
1035 LAFAYETT RD
PORTSMOUTH, NH 03801

ZONING DISTRICT: GATEWAY CORRIDOR (G2)
PROPOSED USE: MIXED USE
MULTIFAMILY
PROPOSED LOT SIZE: ±3.491 ACRES (±152,082 SF)

BUILDING PLACEMENT & LOT STANDARDS

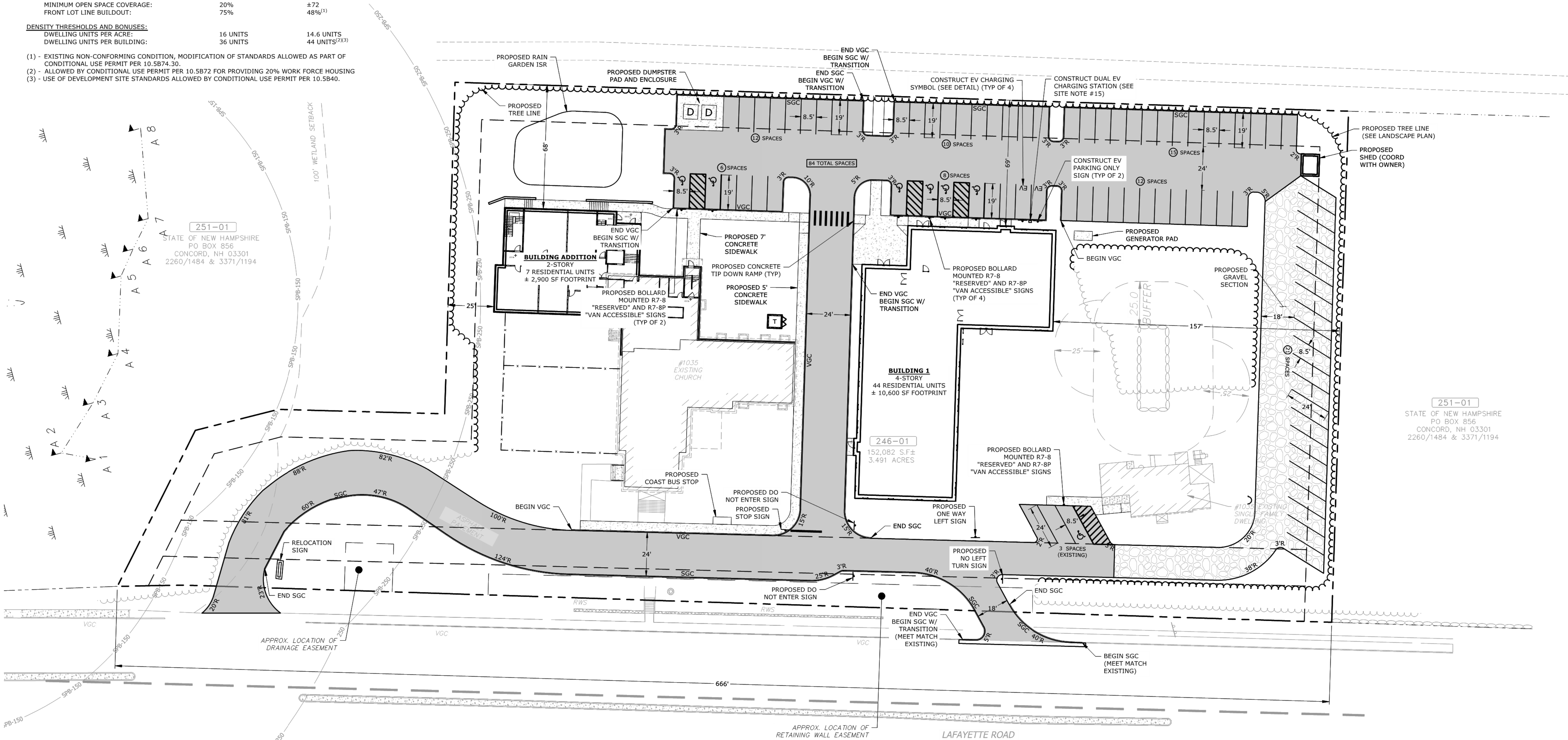
APARTMENT BUILDING STANDARDS:	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	100 FT	±208 FT
MINIMUM STREET FRONTAGE:	50 FT	±666 FT
FRONT YARD SETBACK:		
LAFAYETTE ROAD SETBACK	70-90 FT	± 110 FT[1]
MINIMUM SIDE BUILDING SETBACK:	15 FT	± 25 FT
MINIMUM REAR BUILDING SETBACK:	20 FT	± 68 FT
MINIMUM OPEN SPACE COVERAGE:	20%	±72%
FRONT LOT LINE BUILDOUT:	75%	48%[1]
BUILDING DESIGN STANDARDS:		
MAXIMUM BUILDING HEIGHT:	4 STORIES	4 STORIES
	50 FT	<50 FT
MINIMUM STREET FACING FACADE HEIGHT:	24 FT	>24 FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 IN	<36 IN
MAXIMUM BUILDING FOOTPRINT:	20,000 SF	10,900 SF
MAXIMUM FACADE MODULATION LENGTH:	50 FT	<50 FT
MINIMUM STREET FACING FACADE GLAZING:	20% GROUND FLOOR	>20%
DEVELOPMENT SITE STANDARDS:[3]		
MINIMUM DEVELOPMENT SITE AREA:	20,000 SF	±152,082 SF
MINIMUM SITE WIDTH:	100 FT	±666 FT
MINIMUM SITE DEPTH:	100 FT	±280 FT
MINIMUM PERIMETER BUFFER FROM RESIDENTIAL, MIXED RESIDENTIAL, OR CD4-L1 DISTRICTS:	75 FT	N/A
MAXIMUM DEVELOPMENT BLOCK DIMENSIONS:		
BLOCK LENGTH:	800 FT	N/A
ERIMETER:	200 FT	N/A
MAXIMUM BUILDING COVERAGE:	70%	14
MINIMUM OPEN SPACE COVERAGE:	20%	±72
FRONT LOT LINE BUILDOUT:	75%	48%[1]
DENSITY THRESHOLDS AND BONUSES:		
DWELLING UNITS PER ACRE:	16 UNITS	14.6 UNITS
DWELLING UNITS PER BUILDING:	36 UNITS	44 UNITS[2][3]

(1) - EXISTING NON-CONFORMING CONDITION, MODIFICATION OF STANDARDS ALLOWED AS PART OF CONDITIONAL USE PERMIT PER 10.5B74.30.
(2) - ALLOWED BY CONDITIONAL USE PERMIT PER 10.5B72 FOR PROVIDING 20% WORK FORCE HOUSING
(3) - USE OF DEVELOPMENT SITE STANDARDS ALLOWED BY CONDITIONAL USE PERMIT PER 10.5B40.

PARKING CALCULATIONS:

PARKING SPACE REQUIREMENTS:		
ZONING REQUIRED PARKING SPACES		
OFFICE:		
1 PER 350 SF GFA x 6,900 SF		= 20 SPACES
RESIDENTIAL:		
1.0 SPACES PER UNIT (500-750 SF) x 11UNITS		= 11 SPACES
1.3 SPACES PER UNIT (>750 SF) x 40 UNITS		= 52 SPACES
+1 VISITOR PER 5 UNITS X 51 UNITS		= 11 SPACES
GROUP DAY CARE:		
0.5 PER STUDENT x 71 STUDENTS		= 36 SPACES
PLACE OF WORSHIP:		
1 PER PERSON MAX CAPACITY (40 PERSON)		= 10 SPACES
TOTAL REQUIRED PARKING		= 140 SPACES
TOTAL REQUIRED PER SHARED PARKING ANALYSIS[4]		= 103 SPACES
REQUIRED PARKING SPACES ON A PUBLIC TRANSIT[5] ZONING REQUIREMENTS x 80%		**= 83 SPACES**
PROVIDED PARKING SPACES		
TOTAL PROVIDED SPACES:		**= 84 SPACES**
	REQUIRED	PROPOSED
ACCESSIBLE PARKING SPACES:	4	6
DIMENSIONAL REQUIREMENTS:		
STANDARD 90° PARKING STALL :		
WIDTH	8.5 FT	8.5 FT
LENGTH	19 FT MIN	19 FT
DRIVE AISLE WIDTH:		
90° (2-WAY TRAFFIC)	24 FT	24 FT

(4) - SHARED PARKING ANALYSIS ALLOWED THROUGH A CONDITIONAL USE PERMIT PER SECTION 10.1112.61.
(5) - PUBLIC TRANSIT 20% REDUCTION IN SPACES ALLOWED PER SECTION 10.5B82.10.



SITE RECORDING NOTES:

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
3. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

Proposed Mixed-Use Development

Portsmouth Housing Authority

1035 Lafayette Rd
Portsmouth, NH

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION

PROJECT NO:	P5118-001
DATE:	May 20, 2024
FILE:	P5118-001-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED:	NAH
APPROVED:	PMC

SITE PLAN

SCALE: AS SHOWN

C-102

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Portsmouth Housing Authority Date Submitted: May 20, 2024

Application # (in City's online permitting): LU 23-

Site Address: 1035 Lafayette Rd Map: 246 Lot: Lot 1

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**	Enclosed	N/A
☑	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**	Enclosed	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**		
☑	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	Site Plan Sheet C-102	N/A
☑	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Site Plan Sheet C-102	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Enclosed Cover Sheet	N/A
☑	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	Existing Conditions Plan Sheets	N/A
☑	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
☑	List of reference plans. **(2.5.3.1H)**	General Notes Sheet G-100 & Existing Conditions Plan Sheets	N/A
☑	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	General Notes Sheet G-100	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☑	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☑	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Existing Conditions Plan Sheets	N/A
☑	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☑	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	Existing Conditions Plan Sheet	N/A
☑	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Required on all plan sheets	N/A
☑	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Required on all plan sheets	N/A
☑	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☑	Source and date of data displayed on the plan. **(2.5.4.2D)**	Required on all plan sheets	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Existing Conditions Plan Sheets	
☑	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Architectural Plan Sheets	
☑	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Site Plan Sheet C-102	
☑	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Site Plan Sheet C-102	
☑	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Utilities Plan Sheet C-104	
☑	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	Utilities Plan Sheet C-104	

☑	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Utilities Plan Sheet C-104	
☑	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	Site Plan Sheet C-102	
☑	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Grading and Drainage Plan Sheet C-103	
☑	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	Photometrics Plan	
☑	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Photometrics Plan	
☑	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Landscape Plan Sheet	
☑	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading and Drainage Plan Sheet C-103	
☑	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Site Plan Sheet C-102	
☑	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Existing Conditions Plan Sheets	
☑	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	Site Plan Sheet C-102	
☑	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	N/A	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	Enclosed	
☑	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Grading and Drainage Plan Sheet C-103	
☑	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☑	Stormwater Management and Erosion Control Plan. **(7.4)**	Enclosed	
☑	Inspection and Maintenance Plan **(7.6.5)**	Enclosed	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Cover Sheet	
☑	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Enclosed	
☑	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	The applicant is currently working with Eversource to get a will serve letter.	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	Cover Sheet	
☑	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Site Plan Sheet C-102	N/A
☑	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☑	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Site Plan Sheet C-102	N/A

Applicant's Signature: _____ **Date:** 5/20/2024

City of Portsmouth Planning Department

Site Plan Review Application Fee

Project: 1035 Lafayette Rd **Map/Lot:** Map 246 Lot 1

Applicant: Portsmouth Housing Authority

All development

Base fee $600			$600.00
Plus $5.00 per $1,000 of site costs			
Site costs	$1,000,000	+	$5,000.00
Plus $10.00 per 1,000 S.F. of site development area			
Site development area	142,460 S.F.	+	$1,424.60
		Fee	**$7,024.60**

Maximum fee: $20,000.00

Fee received by: _____ Date: _____

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.