AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

1 May, 2024

Rick Chellman, Planning Board Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Supplemental Submission for Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Chellman and Planning Board Members:

On behalf of Atlas Common, LLC (Owner) we submit this updated supporting material for the above-mentioned project. We understand that the application will be placed on the Agenda for the **May 16, 2024, Planning Board meeting**. The April 1, 2024, submission included design plans and a project narrative which described the actual existing site condition along Lafayette Road. The existing site has 30 parking spaces which encroach into the NHDOT right-of-way. The plans outlined an alternative parking design which would be completed if the NHDOT required the encroachment to be removed. This supplemental submission shows the removal of the encroachment. In addition, the applicant has re-programmed some interior space which had been reserved for restaurant expansion to storage for the residential dwelling units. This change re-calculates the parking demand, resulting in a conforming site design which does not require the use of any off-site easement parking to meet Portsmouth Ordinance parking requirements.

Proposed Development Revision

The submission includes a revision to the basement parking level, expanding a section towards Lafayette Road. The revised Basement Level will provide a parking level with eighty vehicle, eight bike, five motorcycle, and six scooter spaces. The first-floor level remains the same and contains seventy-three vehicle spaces, seventy-four bicycle spaces, and two motorcycle spaces. The exterior parking spaces are reduced from thirty to twenty. The site plan revision removes some on site pavement and reduces the on-site impervious surface coverage by 519 square feet. The revision to the existing first floor commercial space and the creation of the storage area for the residential units is shown on Architectural Plan PB 1.01.

Project Parking

The revised Basement Level parking spaces are shown on Architectural Plans PB 1.00. The revised site plan contains a total of 173 parking spaces (formerly 178 parking spaces).

Tandem parking spaces will still be assigned to particular residential units, as well as assigned to the restaurants as employee and valet spaces. The assignments are detailed on Sheet C4.

<u>Traffic and Access</u>

The site access is established and not changing. The previously submitted Trip Generation Memo and Traffic Impact Study are not impacted by this change.

<u>Project Site Details</u>

The complete development plan set was submitted with the April 1, 2024, submission package. The change to the site would require re-plotting most of the plan set, but we believe the supplemental changes are highlighted in the following updated plans. The entire set would be updated to show the revised layout as a Condition of Approval. The revised Site Plans for this Supplemental Submission include:

- Cover Sheet – Updated submission date and included (supplemental) plans list.
- Sheet C2 – Demolition Plan: The plan update details the off-site pavement removal.
- Sheet C3 –Site Plan: This sheet shows the re-design of the parking required by the removal of the pavement on NHDOT property. Parking has been re-designed as angled parking.
- Sheet C4 – Parking Plan: The plan shows the basement and first floor parking and the totals, as well as the stacked parking assignments.
- Sheet C5 – Utility Plan: The plan shows the proposed hydrant and sewer relocation to accommodate the parking and basement revisions.
- Floor Plans – Basement and First Floor – The expanded basement parking is detailed, and the first floor included for reference. The architectural plans remain the same for the upper floors.

<u>Parking Calculations</u>

Included in this supplemental submission are revised parking calculations with the updated parking from the revised plans. The calculations show that 173 spaces are provided where the maximum total required parking is 162 spaces.

<u>Approval Requested</u>

We look forward to a Planning Board review of this submission and our in-person presentation at your meeting.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward

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581 Lafayette Road

PARKING ANALYSIS

Zoning Ordinance 10.1112

April 30, 2024

Apartments Parking Required				**with gateway deduct - 20%**
subtotal base parking spaces required				86.00
Gateway deduct -20%				(17.20)
Subtotal parking required				68.80
	# excess bike spaces		# car spaces deducted	
Bicycle parking deduction 1 space for 6 bikes, max 5%:	(24.0)	4.66%	(4.0)	64.80
max 5% allowed = 4.3 spaces				
Apartment Parking Required (adjusted for gateway & bikes)			Rounded Up	**65.00**

Restaurant/Recreation Parking Required	**spaces/gfa**	**gfa or occ**		**spaces** (rounded up)	**subtotal w/20% gateway**	**bicycle deduct 5%**	**total**
Restaurant , Suite 1 (Tour)	1/100	8,562		86	69		
Restaurant , Suite 3 (Thai)	1/100	3,506		36	29		
Mezzanine Office (restaurant)	1/350	1,060		4	4		
Recreation (golf)	1per 4 occ.	20		5	4		
subtotal				131			
Gateway deduct -20%				-26.2		(6.00)	92.0
Subtotal restaurant/recreation parking required				105	106	0.00	4.0
	# excess bike spaces		# car spaces deducted	**round down**		**0.00**	**4.0**
Bicycle parking deduction - 1 space for 6 bikes, max 5%	(37.0)	-5.87%	(6.2)	(6.00)			
max 5% allowed = 5.25 spaces							
Restaurant/Recreation Parking Required (adjusted for gateway & bikes)					**100**		

9. Eating and Drinking Places		
9.10-9.50	All eating and drinking places	1 per 100 sf GFA

4. Recreational Uses		
4.10	Religious, sectarian or private non-profit recreational use	Parking demand analysis
4.20	Cinema or similar indoor amusement **use** with no live performance	0.4 per seat, or Parking demand analysis
4.30	Indoor recreation **use**, such as bowling alley or arcade	1 per 4 persons **maximum occupancy**
4.40	Health club, yoga studio, martial arts school, or similar **use**	1 per 250 sf GFA
4.50	**Outdoor recreation use**	Parking demand analysis
4.60	**Amusement park**, **water park** or **theme park**	NA – Prohibited Use

TOTAL parking required all uses (adjusted for gateway & bikes)	**165.0**

Shared Parking 10.1112.60

Total Parking Required	**Weekday**					**Weekend**				**Nighttime**		
Land Use	**daytime (8am-5pm)**	**spaces required**	**evening (6-12pm)**	**spaces required**		**daytime (8am-5pm)**	**spaces required**	**evening (6-midnight)**	**spaces required**	**(midnight-6am)**	**spaces required**	**Maximum TOTAL Required**
Apartments	60%	39.0	100%	65.0		80%	52.0	100%	65.0	100%	65.0	
restaurant	70%	64.4	100%	92.0		80%	73.6	100%	92.0	10%	9.2	
Office	100%	4.0	20%	0.8		10%	0.4	5%	0.2	5%	0.2	
Entertainment (golf)	40%	1.6	100%	4.0		80%	3.2	100%	4.0	10%	0.4	
ADJUSTED TOTAL Required, all uses, shared		109.0		161.80			129.2		161.2		74.8	**162**

Total Parking Proposed	
In-building, level 1 + basement	153
Open air, on site	**20**
Off-site parking per deeded easement	**0**
Total parking proposed	**173**
EXCESS (Defecit)	**11**
Existing total available-today	154
Proposed Net **Increase** (reduction) in parking	**8**

581 Lafayette Road
Unit/Parking Analysis
April 30, 2024

Level	Room No.	# bedrooms	Area (sf)	spaces/unit	Workforce	Accessible
LEVEL 5	B504	STUDIO	369	0.50		
LEVEL 5	A505	STUDIO	424	0.50		
LEVEL 5	A507	STUDIO	424	0.50		
LEVEL 5	A503	STUDIO	425	0.50		
LEVEL 5	A504	STUDIO	425	0.50		
LEVEL 5	A509	STUDIO	425	0.50		
LEVEL 4	B406	STUDIO	425	0.50		
LEVEL 3	B306	STUDIO	426	0.50		
LEVEL 5	B503	STUDIO	434	0.50		
LEVEL 5	A511	STUDIO	457	0.50		
LEVEL 4	B411	STUDIO- ACCESSIBLE	494	0.50		Fully Accessible-1
LEVEL 5	A508	STUDIO	499	0.50		
LEVEL 3	B303	1BR	499	0.50		
LEVEL 3	B311	1BR	499	0.50		
LEVEL 4	B403	1BR	499	0.50		
LEVEL 3	B304	1BR	524	1.00		
LEVEL 4	B404	1BR	531	1.00		
LEVEL 5	B505	1BR	532	1.00		
LEVEL 5	B506	1BR	532	1.00		
LEVEL 5	B502	1BR	541	1.00		
LEVEL 2	B207	1BR	542	1.00		
LEVEL 3	B309	1BR	572	1.00		
LEVEL 4	B409	1BR	572	1.00		
LEVEL 4	A407	STUDIO- ACCESSIBLE	580	1.00		Fully Accessible-2
LEVEL 4	B410	1BR	599	1.00		
LEVEL 4	A408	1BR	620	1.00		
LEVEL 3	B310	1BR	621	1.00		
LEVEL 3	B307	1BR- ACCESSIBLE	644	1.00		Fully Accessible-3
LEVEL 4	B408	1BR	645	1.00		
LEVEL 2	B206	1BR	651	1.00		
LEVEL 3	B308	1BR	652	1.00		
LEVEL 4	B407	1BR	659	1.00		
LEVEL 2	A205	1BR	660	1.00		
LEVEL 3	A305	1BR	660	1.00		
LEVEL 4	B401	1BR	667	1.00		
LEVEL 5	A502	1BR	672	1.00		
LEVEL 3	A309	1BR	682	1.00		
LEVEL 3	A307	1BR	694	1.00		
LEVEL 2	A207	1BR	698	1.00		
LEVEL 3	A308	1BR	699	1.00		
LEVEL 4	A405	1BR	702	1.00		
LEVEL 3	B301	1BR	703	1.00		
LEVEL 4	B402	2BR	708	1.00		
LEVEL 2	A209	1BR	709	1.00		
LEVEL 2	A208	1BR	723	1.00		
LEVEL 5	B507	2BR- ACCESSIBLE	733	1.00		Fully Accessible-4
LEVEL 4	A406	1BR	749	1.00		
LEVEL 3	B305	2BR	749	1.00		
LEVEL 4	B405	2BR	749	1.00		
LEVEL 3	B302	2BR	780	1.30		
LEVEL 2	B202	2BR	782	1.30		
LEVEL 2	A206	1BR	786	1.30		
LEVEL 3	A306	1BR	823	1.30		
LEVEL 2	B201	2BR-WORKFORCE	872	1.30	Workforce 1	
LEVEL 2	A203	1BR- ACCESSIBLE- WF	886	1.30	Workforce 2	Fully Accessible-5
LEVEL 5	A506	1BR- ACCESSIBLE- WF	910	1.30	Workforce 3	Fully Accessible-6
LEVEL 3	A303	2BR- WF	988	1.30	Workforce 4	
LEVEL 5	B501	2BR-WORKFORCE	1007	1.30	Workforce 5	
LEVEL 2	B203	3BR-WORKFORCE	1146	1.30	Workforce 6	
LEVEL 4	A402	3BR-WORKFORCE	1365	1.30	Workforce 7	
LEVEL 2	B204	3BR- WF	1456	1.30	Workforce 8	
LEVEL 2	B205	3BR-WORKFORCE- ACCESSIBL	1497	1.30	Workforce 9	Fully Accessible-7
LEVEL 3	A302	3BR-WORKFORCE	1504	1.30	Workforce 10	
LEVEL 2	A202	3BR-WORKFORCE	1535	1.30	Workforce 11	
LEVEL 5	A510	3BR- WF	1535	1.30	Workforce 12	
LEVEL 4	A403	3BR- WF	1726	1.30	Workforce 13	
LEVEL 4	A401	3BR-WORKFORCE	2034	1.30	Workforce 14	
LEVEL 3	A301	3BR-WORKFORCE	2056	1.30	Workforce 15	
LEVEL 2	A204	3BR	2144	1.30		
LEVEL 4	A404	3BR	2153	1.30		
LEVEL 3	A304	3BR-ACCESSIBLE	2172	1.30		Fully Accessible-8
LEVEL 2	A201	3BR	2200	1.30		
	Total Units			Parking Req.	workforce housing	
Total Units:		72		71.40	20% of units	average unit size
Visitor Parking - 1 space per every 5 dwellings				14.40	14.4	848
Residential automobile parking required (base, unadjusted)				85.80	86.00	ROUNDED UP

Car Parking Spaces Required per Unit Size				
0-500	0.5			
500-750	1.0			
751-1900	1.3			

Bicycle Parking Required			
use	spaces required per use	total required	
multifamily	1 bicycle for every 5 dwelling units	15	
restaurant/rec	1 bicycle for each 10 car parking spaces	11	
TOTAL Required		**26**	
Total Provided (in building, basement + 1st floor)		82	
Total Provided (outside)		8	
Total Provided, inside & outside		**90**	
Excess Provided (beyond required)		64	CAR SPACES DEDUCTED @ 1:6
Excess applied to New Additions (housing)		24.0	4
Excess applied to Existing Building		37.0	6
Net leftover excess bicycle parking		**3.0**	10
Scooter parking provided (none required)		**18**	
Motorcycle parking provided (none required)		**7**	

Apartment Types - Unit Mix & Locations

	number of bedrooms per apartment				
level	S	1	2	3	Total
5	9	5	2	1	17
4	3	10	2	4	19
3	1	13	3	3	20
2	0	8	2	6	16
total	**13**	**36**	**9**	**14**	**72**
Total bedrooms	13	36	18	42	109

Apartment Types - Unit Distribution per Building

Level	Building A	Building B	TOTAL
5	10	7	17
4	8	11	19
3	9	11	20
2	9	7	16
total units	**36**	**36**	**72**

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1 April, 2024

Rick Chellman, Planning Board Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Submission for Conditional Use Permit and Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Chellman and Planning Board Members:

On behalf of Atlas Common, LLC (Owner) we submit the attached Plans and additional supporting material for the above-mentioned project. We request that the application be placed on the Agenda for the **April 18, 2024, Planning Board meeting**. The project consists of the addition of 72 residential units (including 20% of the units as Workforce Housing) at 581 Lafayette Road with two new building additions, with the associated and required site improvements. The site is currently developed with two restaurants. The re-development will include creating additional car parking below first floor building level. The project received approval at the March 5, 2024, Technical Advisory Committee meeting. The project specifics are as follows.

Project Summary

The project is located at 581 Lafayette Road at the corner of Lafayette Road and Ledgewood Drive, the lot is known as Tax Map 229, Lot 8B. The lot is a 98,124 square foot parcel with frontage on both streets. The existing conditions plan shows the current site features.

The existing building was renovated in 2016 when the site was changed from a Cinema to the Tuscan Restaurant – Tuscan Marketplace. The Tuscan Restaurant moved to downtown Portsmouth, and that portion of the site was re-purposed to a restaurant with golf simulators, known as Tour. The Tuscan Marketplace closed, but recently the Tuscan Marketplace space was converted to another restaurant known as Five 81° Northeast Thai Restaurant. Both restaurants have outside seating as depicted on the Site Plan. The project consists of two proposed additions to an existing building, and associated site improvements.

The property is in the Gateway Neighborhood Mixed-Use District - G1. The purpose of the district is to support the goals of the Portsmouth Master Plan and Housing Policy. The aim of the policy is to encourage walkable, mixed-use development, and continued economic vitality in the cities primary gateway areas. The district seeks to ensure that new developments complement and enhance the surroundings, provide housing stock that is suitable for changing demographics, and accommodate the housing needs of the city's current and future workforce. This plan works towards that standard by adding a housing component to the existing site. Two additions are proposed with 72 new dwelling units, 15 of which will be Workforce Units, as defined in the application in the "Workforce Housing Covenant" document, detailing the workforce housing restrictions. The workforce housing units will be affordable to a household earning 60 % of the Average Median Income (AMI) for the Portsmouth-Rochester Metropolitan Area. The proposed site components, restaurant use and dwelling units, are both permitted uses in the district.

Proposed Development

The proposed building is submitted as a Mixed-Use Building on a single lot under Section 10.5B34.80 of the Portsmouth Ordinance. The existing commercial building (15,153 SF) with the restaurant uses will be increased with two first floor and above additions (16,096 SF and 11,185 SF), each with 36 dwelling units. The project includes a new basement level under both additions which is accessed from Ledgewood Drive. The Basement Level will provide a parking level with seventy-five vehicle, eight bike, five motorcycle, and eighteen scooter spaces. The basement level is below and between the proposed upper floor building additions. The first-floor level building space is set back to allow for parking under the upper floors of the building and contains seventy-three vehicle spaces, seventy-four bicycle spaces, and two motorcycle spaces. There are thirty exterior parking spaces. The proposed loading zone for the commercial (restaurant) uses is at the first-floor level, accessed from the rear of the site, and open to the sky. Site Plan Sheet C3 shows the first-floor building locations, the extent of the basement, and the upper story building extents. On the Ledgewood Drive side of the development the elevation of the building and the associated setbacks comply with Section 10.5B22.20 of the Ordinance. Currently the project proposes additions that are set back 38 feet from Ledgewood Drive, 40 feet from Lafayette Road, 23 feet from the southerly abutting property line, and 38 feet from the easterly abutting property line. The site complies with Section 10.5B34.80 Mixed Use Building Type Standards with the exception of Maximum Building Footprint and Dwelling Units per Building, even after the density bonus incentives, which we address with waiver requests to those standards, as allowed in the Conditional Use Permit process.

The proposed building additions maintain the ability for traffic circulation around the property, as required by deed restrictions and easements on the property. The proposed building height increase, allowed by Section 10.5B72.30 with a Conditional Use Permit from the Planning Board, in addition to the dwelling unit increase allowed by Section 10.5B70.10, create the need for a Public Realm improvement under Section 10.5B73.20. The Public Realm is discussed in detail later in this letter.

The Portsmouth Ordinance has special setback requirements on Lafayette Road, specifically:

> *Special **Setback** Requirements on Lafayette Road: For all **lots** and **development sites** with **frontage** on Lafayette Road **buildings** shall be **setback** a minimum of 70 feet and a maximum of 90 feet from the centerline of the road.*

Regarding the special setback requirement on Lafayette Road, the project is in a location where there is a significant open space in front of the subject parcel. This open space was created when the Lafayette Road / Route 1 Bypass intersection was restructured around 2011. The relocation of the intersection created a large open space area in front of the lot. The location of 581 Lafayette Road property is outside even the 90-foot offset line from the centerline of Lafayette Road at the location. Since the ordinance section cannot be complied with, a Waiver to the Portsmouth Ordinance Section 10.5B22.40 is included in the Planning Board application package. A plan showing the offset line is included in the submission.

The submitted site plan shows the impervious surface calculations for the proposed development. When the site was redeveloped to the Tuscan Restaurant and Marketplace, relief was provided by a Variance from the Zoning Board of Adjustment allowing 16.5% open space where 20% open space was required. The submitted site plan proposes a coverage reduction of impervious surfaces with the replacement of some hardscape spaces to porous surfaces. When the proposed open space is calculated with the allowable 50% impervious / 50% non-impervious allowance for sidewalks, the proposed open space is compliant with the 20% requirement.

Project Parking

The project parking spaces are shown on the Architectural Plans PB 1.00 and PB 1.01, and also on-Site Plan C4. The proposed site plan contains a total of 178 parking spaces. Tandem parking spaces will be assigned to particular residential units, as well as assigned to the restaurants as valet spaces. The assignments are detailed on Sheet C4. Level 1 parking spaces are accessed from driveways to the parking areas at first floor level, as shown on the plan. Basement Level parking is accessed from a driveway ramp on the north side of the proposed structure off Ledgewood Drive. The total parking provided meets the ordinance requirements of the city of Portsmouth, as detailed in the attached parking calculations. The site's proximity to a dedicated bus route allows a reduction in the required parking. The parcel benefits from a cross parking easement with the abutting property owner, as recorded in the Rockingham Registry of Deeds in Book 5446 Page 2588. Any future loss of parking spaces is easily provided for in the cross-parking easement. A copy of the recorded easement depicting the shared parking rights, and a plan showing the ownership at the time of the creation of the shared parking rights, is also included in the submission. Also included is a parking summary of the 599 Lafayette Road required and provided parking for the adjacent property included and subject to the shared parking agreement.

There is an existing encroachment of approximately 30 parking spaces (as adjusted to current code for landscape island adjustments) on a portion of the land owned by the State of New Hampshire as a part of the Route 1 Corridor. The encroachment results in parking spaces being approximately zero to seven feet onto property owned by the State of New Hampshire. The land area involved is approximately 1200 square feet. This parking encroachment has existed for many decades and the encroachment is shown on the State of New Hampshire plans for the widening of Route 1, which occurred when the overpass over Route 1 was eliminated in favor of the traffic lights and traffic lanes that exist today, around 2011. A copy of the NHDOT Highway plans, showing the relationship between the right-of-way line and the pavement at the time of the improvement project, are included in the submission.

The applicant proposes no changes to those parking spaces in that area other than adding current ordinance parking lot design required landscape islands, and a space for a new transformer, and therefore requests they be left as is in their nonconforming use, as adjusted. As a Planning Board Condition of Approval for leaving the parking encroachment as-is, the Applicant proposes to pay the cost and reconfigure that immediate area, when and if the State of New Hampshire formally requires the Applicant to cease use of the encroachment area. The abutting property owner has a similar encroachment of parking spaces onto State of New Hampshire land and there are many parking encroachments of State-owned land system wide. Some encroachments have existed for many decades, some for longer than 20 years. The Applicant does not want to voluntarily give up a long-established use. Should the Applicant be required to cease use of the parking encroachment, then improvements would be completed in accordance with the Alternative Parking Layout as shown on Sheet C4 of the plan set. If that area is required to be vacated and parking spaces installed according to the Alternative Parking Layout, then a total of 7 parking spaces would be lost.

Traffic and Access

The site access is established and not changing. Included in the submission is a Trip Generation Memo and a Traffic Impact Study. The Portsmouth TAC approved the project without requiring any off-site traffic improvements.

Project Drainage

The existing site drainage consists of roof drain connections and parking lot catch basins connected to the City of Portsmouth drainage network, which flow off-site. The property drainage is divided into two watersheds, one that flows to the south along the front of the adjacent mall and the other flows to the south along the back of the adjacent mall and across the adjacent property. The intent of this design is to maintain those flow directions, and re-purpose the drainage in accordance with the proposed site addition roof drains. The roof drains will replace the catch basins that served the surface parking (now replaced with covered parking) and direct the water in the same direction and flow amounts as the previous approved design, with the same contributing areas. The current site plan calls for the addition of a Jellyfish Filter, which will provide more advanced treatment than the existing on-site mechanical separator.

Density Bonus

The proposed development requests two Density Bonus Incentives, as allowed under Section 10.5B72 of the Zoning Ordinance. The project seeks a bonus under Section 10.5B72.10 to allow 36 dwelling units per building (with a waiver to more units) and Section 10.5B72.30 to allow an increase in building height by one story. In order to receive the multiple bonus incentives requested, the project needs to comply with the Bonus Incentive Requirements listed in Section 10.5B73. The development was designed in compliance with Section 10.5B73.10 Workforce Housing by providing 20% of the proposed dwelling units (15) as workforce housing units for rent, and under Section 10.5B73.20 by providing Public Realm Improvements.

Workforce Housing

The development includes a Workforce Housing Covenant Document that outlines the intended compliance with the workforce Housing Requirement. The Architectural details identify the units within the project that will be workforce housing, with locations and square foot areas.

Proposed Public Realm

Under Section 10.5B73.20(1) the development proposes an off-site sidewalk connection to Portsmouth High School and an improved basketball facility with bench seating at the end of Ledgewood Drive, all on city property. A conceptual plan of the public realm improvements is included in the plan set. The submission also includes a Draft Memorandum of Understanding (MOU) that outlines that the Developer would be responsible for planning and building the public realm project. Since the final design needs to be completed with the input of all of the stakeholders, namely, the School Board, City Council, abutters and the public, with detailed cost estimates, and funding identified, we hereby request that the project be approved with a condition that the completion of the public realm plan must occur prior to issuance of a building permit.

The development team has worked with the Planning Department regarding the use of the School property to construct the Public Realm Improvement required for this project. Peter Britz met with the City Manager and School Superintendent, and they reviewed and approved the direction proposed by the applicant, subject to final engineering and design by the applicant, and a scope of work and contract for the proposed improvements. This requires that the Planning Board allow the public realm improvement to be located on a different lot than the development lot, as allowed in Section 10.5B73.20(4). Relief from subsection (b) is requested, as the property proposed for the public realm is zoned Municipal, a different designation than the subject property.

Given the need for this public connection, as evidenced by an existing unauthorized trail serving the same purpose, which is on private property, these ordinance issues should be overcome given the need and overall usefulness of the proposal. An exhibit showing how this connection relates to the city's bicycle / pedestrian network is included in the submission.

Project Community Space

The Community Space on the site plan consists of an Outdoor Dining Café and a Pocket Park. The Pocket Park includes a proposed public bike rack in close proximity to the existing bus stop. The Outdoor Dining Café provides an area of outside use for the public, as well as the building residents, which will be furnished with tables and chairs. The area includes an outdoor fireplace. The space dedicated to the existing restaurants for outdoor dining is not included in the Community Space Easement area.

The Site Plan provides for 7.6% Community Space where 10% is required, thereby requiring a waiver from the Ordinance, which is permitted by the Planning Board. The Developer has met with city staff and has identified areas adjacent to the on-site Community Space on property owned by the City of Portsmouth and State of New Hampshire that can be expanded and enhanced. Those spaces will be landscaped and maintained by the developer under a license agreement. The Applicant requests approval with the condition a license agreement is approved by the Legal Department and as required the City Council prior to issuance of a building permit. The area of the proposed off-site landscaping and the proposed plantings are identified on the Landscaping Plans in the plan set.

Conditional Use Permit – Modification of Standards

Modifications to the standards are allowed for requirements in Section 10.5B74 Density Bonus Incentives under Section 10.5B74.30 Modification of Standards, as a part of the Conditional Use Permit. In granting a conditional use permit, the Planning Board may modify specific standards and requirements set forth in Section 10.5B20, 10.5B30, 10.5B40 and 10.5B70 provided that the Planning Board finds such modification will promote design flexibility and overall project quality, or that such modification is required for the development to provide a proposed workforce housing component, and that such modification is consistent with the purpose and intent set forth in Section 10.5B11. We submit that the project meets the purpose (and intent) of Section 10.5b11 as follows:

> 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 supports the Master Plan goals in a significant way by providing affordable housing and creating a mixed-use development.**
>
> Section 10.5B11.20 sets forth the intent of the standards. **The project meets the standards and will create a mixed-use development that will help to create a vibrant neighborhood. The introduction of Workforce Housing provides much needed relief to the need for affordable housing in an area outside of the downtown core, with easy access to abutting retail and public transportation. The project will be the other bookend from the recently approved residential development at the other end of this commercial strip.**
>
> The specific standards of 10.5B11.20 are listed below:
>
> a) Promote development that is consistent with the goals of the Master Plan to create vibrant, authentic, diverse, connected and resilient neighborhoods;
>
> > **This project bookends another recently approved residential development in an area where dense housing in close proximity to retail and other services serves to create a vibrant neighborhood.**

b) Encourage high quality housing for a variety of household types and income ranges.

The project Architecture is high quality, and at the same time integrates affordable housing at the desired scale and percentage of units.

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 character of the building provides a unique quality and a varied building type with quality as a key component.

d) Create quality places by allowing for whole site development with meaningful public spaces and neighborhood centers.

The inclusion of Community Space provides the public spaces needed for the enjoyment of the residents. The public space at the other end of the neighborhood (adjacent to the marsh and Sagamore Creek) provide and enhance the area and create a defined neighborhood.

Under Section 10.5B74.31 in considering a request for a modification of the standards and requirements, the Planning Board may request that the applicant provide additional documentation and information from the applicant demonstrating that the requirements of this Ordinance are prohibitive to the successful completion of the project as proposed. Such information shall include, but not be limited to, project cost factors related to land acquisition, improvements for roads, utilities & drainage, insurance, labor, building materials, and profit to identify a total gross cost of the project and per unit gross costs.

We believe that this proposed development fits the intent of the Gateway Neighborhood Mixed Use District Ordinance. The submission package contains an identification of improvements to infrastructure and site development needed to be complete. If the Board needs additional information the development team is ready to assist. The modifications requested by the Applicant will promote design flexibility and quality and are needed to provide for the proposed workforce housing, particularly in light of the unique location and configuration of the parcel.

Project Site Details

The complete development plan is shown on the attached Proposed Site Plans and the Supplemental Material. The development Site Plans include:

- Cover Sheet – Shows the Development Team, Zoning, Location, and Utility contacts.
- Community Space Easement Plan – Proposed project easements.
- Sheet C1 – Existing Conditions Plan: The plan shows current site conditions.
- Sheet C2 – Demolition Plan: The plan shows required site demolition.

- Sheet C3 –Site Plan: This sheet shows the location of the proposed building additions, outdoor seating area, and associated site improvements.
- Sheet L1 – L3 – This plan shows the site landscaping, on-site and off-site.
- Sheet LT1 – Lighting Plan – site lighting and illumination levels.
- Sheet C4 – Parking Plan: The plan shows the basement and first floor parking and the totals, as well as the stacked parking assignments.
- Sheet C5 – Utility Plan: The plan shows proposed utility connections.
- Sheet C6 – Grading, Drainage, Erosion Control Plan: The plan shows the proposed drainage connections for the site.
- Sheet C7 – Open Space Plan - The plan shows proposed site open space.
- Sheet C8 – On-site Community Space Plan - The plan shows proposed on-site Community Space.
- Sheet C8.1 – Off Site Landscape Maintenance Area - The plan shows proposed off-site landscape maintenance area.
- Sheet C9 and C10 – Public Realm Plan: These plans shows proposed public realm off-site improvements.
- Sheet T1 & T2 – Turning Plans: The plans show fire truck and delivery truck turning movements.
- Sheets D1 to D6 – These sheets show the site construction details, including erosion control.
- Floor Plans - Elevations - Renderings - These are the Architectural site designs.

Supplemental Material

The following Supplemental Material is submitted herewith:

Green Building Statement
Property Deed (with Easements)
Lot Plan (Historic)
Workforce Housing Covenants
Conservation Easement Deed
Memorandum of Agreement – Public Realm
Waiver Requests
Trip Generation
Abutting Property Parking Analysis
Traffic Impact Statement
US Route One Construction Plans – 2011
Bicycle Network Plan
Drainage Study
Jellyfish Design Calculations
Lighting Specifications
TAC Comments
Basement Sewer Design

Project Approvals

The Technical Advisory Committee approval comments are repeated below, with our response in **bold text**:

1. The public realm improvements must be reviewed and approved by all relevant parties. **The development team has worked with the Planning Department and our understanding is that the City Manager and Portsmouth School Superintendent reviewed and approved the direction proposed by the applicant, subject to final engineering and design by the applicant, and construction of the proposed improvements at the sole expense of the applicant.**

2. All updates as discussed during the 3/5/2024 TAC meeting will be made to final set of plans, including:

a. A complete list of previous staff comments and responses. **Previous staff comment emails repeated with responses are attached hereto in the supplemental material for the Planning Board's review.**

b. Please provide a complete list of changes that were made to the plan set between the dates of 2/6/2024 and 3/5/2024. **The plans were revised as follows:**

- **The building footprint was revised by the Architectural team to respond to the comments regarding conforming ADA parking spaces, and to expand the amount of parking on site. Those changes were brought to the site plan and minor adjustments made to align.**
- **Changes to individual sheets are noted in the Revision Block(s).**

c. Place labels on the shelf pipe profile and on Sheet C5 that indicate the size of the pipe (8"). **Sheet C5 has been updated, and a Basement Sewer Plan and Profile updated.**

d. Final sewer pipe design to be reviewed and approved by DPW. **DPW has updated plans with the requested changes.**

e. The 4" PVC pipe coming from the manhole for the vent should be changed to a gasketed pipe as it will be underground, this should be changed from the Scheduled 40 to an SDR 35. **Plans have been updated.**

f. A sidewalk detail will be included for Ledgewood Drive. **The detail has been included on the C9 Public Realm Plan.**

g. Fire hydrant to be added to the final set of plans with proposed location reviewed and approved by Fire Department. **The location has been added to the plans and submitted to the Fire Department.**

h. Sliders for bicycle parking must have fire rating confirmed in the final building design. **This should be a condition of the Building Permit.**

To be satisfied subsequent to Planning Board approval:

1. Landscape license with adequate insurance for maintenance on City property. **We assume this will be a Condition of Planning Board Approval.**

Planning Board Relief

The following is a list of the approval requirements for the project, as a recap and for clarity of the application:

- Section 10.5B41.10 Development Site Standards: Conditional Use Permit approval from the Planning Board.
- Section 10.5B74 Approval of Density Bonus Incentives: Conditional Use Permit from the Planning Board for an increase in the maximum building height by one story, and a building with 72 units is proposed.
- Condition of Approval Section under Section 10.5B73.20 1) Off road trail equal in length to the public street frontage of the site as provided in 10.5B73.20 (4) to be located on a different lot than the development lot, with a waiver to criteria (b) as the Public Realm Improvement is on a lot that is in a different Zoning District.
- Section 10.5B41.80 (2) Community Space coverage relief is sought from the required 10% of lot area as Community Space.
- Planning Board Waiver from Section 10.5B22.40, Special Setback Requirement from Lafayette Road.

Approval Requested

We look forward to a Planning Board review of this submission and our in-person presentation at your meeting. We hereby request that the project be approved and allowed to move forward to a conclusion based on satisfaction of any Conditions of Approval.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward

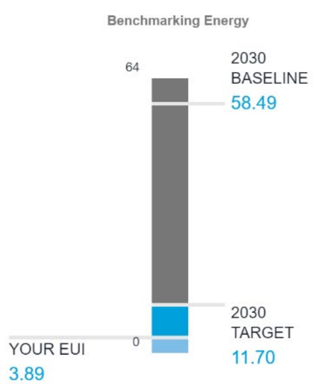
P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Applications\Portsmouth Site Plan\581 Lafayette Planning Board Submission 3-27-24.doc

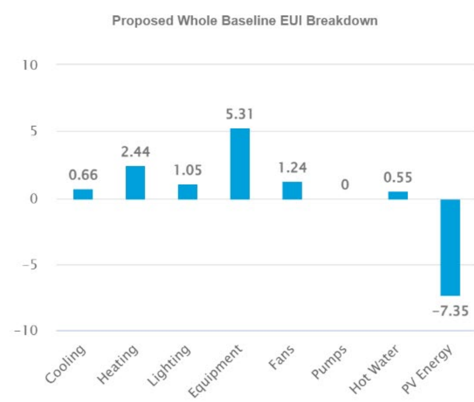
581 Lafayette Apartment

Green Building Statement

3/04/24

Energy modelling was performed using CoveTool software. The results show energy use intensity of the building is 3.89 kBtu/ft²/yr which is a reduction by 92% of the baseline average building energy usage with the same function, area, occupancy load and in the same climate zone. The Baseline is based on the RECS 2001 (RESIDENTIAL ENERGY CONSUMPTION SURVEY by the U.S. Energy Information Administration) database.





1 Passive Strategies

1.1 Orientation

The building orientation has been balancing between site efficiency and is to provide daylight optimizing as much solar orientation for passive heating and cooling strategies.

1.2 Shading

The building shading devices are designed to protect the fenestrations from excess solar radiation during the summer and provide passive heat by solar radiation during winter. This strategy helps to provide a comfort level for occupants and reduces the energy consumption of the building.

1.3 Envelope

1.3.1 Daylight

The envelope fenestrations are designed to maximize the natural daylight which provides a comfortable lighting level during the day and cuts down the energy consumption. The building will also have daylight and occupancy sensors, that helps to cut down the need for turning on the lighting fixtures.

1.3.2 Air Infiltration

The envelope is designed to meet 0.03 air changes per hour with tight envelope detailing and products such as smart membrane to seal the envelope.

1.3.3 Walls and roof insulation
The walls are designed to have cavity insulation of R-19 plus continuous of R-15 to reduce the heat gains or losses. The roof is vented with R-60 insulation to reduce heat losses or gains as much as possible. Below grade walls and slabs have continuous R-20.

1.3.4 Fenestration performance
The building uses high-performance glazing with a maximum U-value of 0.14 and low E film to optimize solar heat gains or losses.

2 Active strategies

2.1 Mechanical Systems
The building uses a fresh air mechanical system with an energy recovery ventilator heat exchanger to capture heat from conditioned air before exhausting.,

2.2 Lighting fixtures
LED lighting with occupancy and daylight sensors throughout.

2.3 Appliances
Energy Star rating appliances.

Building Performance -- Use industry tools to monitor and benchmark buildings.
Train staff on proper building operation with comprehensive Facilities Staff Training protocols.

3 MATERIALS & RESOURCES
Minimize waste (during construction and operation)
Use regional, renewable materials.
Embodied carbon interior finishes such as wood millwork, flooring, and natural fiber textiles.

Low carbon building materials such as concrete and insulation.

4 Renewable Energy
Rooftop Solar Photovoltaic system of 10,000 sf and Solar Hot Water collectors of 1,000 sf for 65% of the building's energy needs.

5 Water
Protect water quality – Reduce parking asphalt by adding landscaped traffic aisles and edges.
Conserve Water -- Target 30% reduction in fixtures water use over building code, meeting EPACT 2005.

E # 23008674 03/30/2023 02:09:28 PM
Book 6474 Page 1538 Page 1 of 4
Register of Deeds, Rockingham County

Cathy Ann Stacey

LCHIP	ROA646155	25.00
RECORDING		22.00
SURCHARGE		2.00

WARRANTY DEED

JOHN GALT, LLC, a New Hampshire limited liability company with a mailing address of 3 Pleasant Street, Suite 400, Portsmouth, New Hampshire 03801 ("Grantor") for consideration paid grants to **ATLAS COMMONS, LLC,** a New Hampshire limited liability company with a mailing address of 3 Pleasant Street, Suite 400, Portsmouth, New Hampshire 03801 ("Grantee") **WITH WARRANTY COVENANTS**

THE FOLLOWING DESCRIBED PREMISES:

1. A certain tract or parcel of land, together with any buildings or improvements thereon, situate in Portsmouth, County of Rockingham and State of New Hampshire, bounded and described as follows:

   Beginning at a point in the Easterly sideline of Lafayette Road at the Northwesterly corner of the parcel herein described and at land of the City of Portsmouth; thence running North 81°43 East by City of Portsmouth land, two hundred eighty-one and seven tenths (281.7) feet to a corner at land of Ledgewood Manor Associates; thence turning and running South 5°56' West two hundred forty-six and thirty-one hundredths (246.31) feet, South 15°05'30" West fourteen and twenty-one hundredths (14.21) feet, South 07°12' West seventy-two and no hundredths (72.00) feet, South 48°45' East thirty-three and thirty-two hundredths (33.32) feet and South 39°04' East seventy-five and seven hundredths (75.07) feet, all by land of Ledgewood Manor Associates to a corner of land now or formerly of William N. Genimatas; thence turning and running North 84°04' West three hundred thirty and forty hundredths (330.40) feet by land of said Genimatas to Lafayette Road; thence turning and running North 05°56' East two hundred thirty-nine and thirty-nine hundredths (239.39) feet and North 05°31' West ninety-six and two tenths (96.2) feet by said Lafayette Road to the point of beginning. Containing 2.25 acres, more or less.

2. Together with the perpetual right to use in common with DLR, Inc., and William N. Genimatas, their heirs, devisees, successors and assigns, the Lafayette Road entrance-exit way as developed by DLR, Inc., (formerly MDL, Inc.) near the southwest corner of the land retained by Genimatas, together with the perpetual right hereby granted to grantees,

their heirs, devisees and assigns, to use in common with said DLR, Inc., and Genimatas, their heirs, devisees, successors and assigns, the other Lafayette Road entrance-exit ways on the DLR, Inc. and the Bowl-O-Rama lots adjoining the premises hereby conveyed.

3. Subject to, and with the benefit of mutual parking rights in common with said DLR, Inc., and said Genimatas respecting this lot and the adjoining Bowl-O-Rama and DLR, Inc., lots, namely and respectively, that said DLR, Inc., Genimatas and Robbins shall have free parking as may be necessarily available on any of these three parcels of land, and such parking rights for each of them in each other's adjacent land shall be mutually interchangeable, for said Genimatas, DLR, Inc., and said Robbins, their respective heirs, devisees, successors and assigns, such mutual parking rights and benefits to extend to any other persons or corporations and any other lands and premises, which said Genimatas, said Robbins, MGR Realty and/or MGR Realty, Inc., may have heretofore conveyed and reserved such rights, benefits or privileges. The foregoing parking rights shall not limit or restricts the rights of the owners of the said lots to construct buildings or additions to same, upon the said lots, provided no unreasonable imposition of owner's parking is caused the abutters by such buildings or additions thereto.

4. Also being conveyed with the benefit of, a certain right of way in common with others, including Petzold, et al, and Ledgewood Manor Associates on the Southerly part of the DLR, Inc., Lot #3, second lot south of this lot, said right of way being also subject to a restriction against the erection of a barrier, fence or other obstruction on either side of said right of way as it runs to Lafayette Road, all as per agreement acknowledged on July 23, 1973, recorded in Rockingham Registry of Deeds, Book 2209, Page 1400.

5. The foregoing premises are further conveyed subject to, and with the benefit of, a perpetual easement for a roadway thirty (30) feet in width extending from Lafayette Road on the South, adjacent to land of Petzold, running thence along the southerly and easterly boundary of the DLR (former Tower Restaurant) Lot of 1.92 acres, the easterly boundary of the Genimatas (Bowl-O-Rama) Lot of 2.82 acres, and the easterly boundary of the Robbins (Jerry Lewis Cinema) Lot of2.25 acres, as shown on plan of "Subdivision of Land, Portsmouth, N.H., for Genimatas and Robbins" dated November 1978, Revised June 7, 1979 which roadway easement is reserved for use in common of, and the benefit in common of, William N. Genimatas, Henry J. Robbins, Joan M. Robbins, and DLR, Inc., and their respective heirs, devisees, successors and assigns. Owners of Lots #1, 2, and 3 in said Subdivision agree that they will equally contribute to development and maintenance of such thirty (30) foot right-of-right as a passable gravel way, excluding winter maintenance such as snow plowing and clearing way of snow, ice, slush or water.

6. The premises hereby conveyed (the "Premises").shall be SUBJECT TO the restriction (this "Use Restriction") that the business of a movie theater shall not be conducted or maintained upon the Premises or any portion thereof for a period of twenty (20) years from October 10, 2007, the date of the recording of the deed from Canavan Properties, LLC, to MANI Properties, LLC recorded in the Rockingham County Registry of Deeds at Book 4851, Page 526 (the "Restriction Term"). By the acceptance of this Deed, the within grantee agrees to be bound by this Use Restriction. This Use Restriction shall run with the land and be binding upon the within grantee, the within grantee's successor and

assigns, and the Premises and every part thereof for the duration of the Restriction Term; and in each and every Deed to the Premises or any portion thereof given during the Restriction Term, the then grantor shall undertake to insert a clause referring to this Use Restriction. This Use Restriction is for the benefit of Hoyts Cinemas Corporation, a Delaware Corporation, and its subsidiaries, and their respective successors and assigns (collectively, "Hoyts"), and Hoyts, as a former tenant of the Premises and for consideration paid to the within grantor, shall have the right to enforce this Use Restriction.

7. A portion of the above premises, more particularly bounded and described as set forth below, is subject to a perpetual easement for the installation and maintenance of utility lines:

A certain tract or parcel of land situate on the Easterly side of Lafayette Road, Portsmouth, Rockingham County, New Hampshire, described as follows:

Beginning at a point in the Easterly sideline of Lafayette Road at the Northwest comer of the parcel herein described and the Southwest comer of land of the City of Portsmouth; thence running North 81°43' East two hundred eighty-one and seven tenths (281.7) feet to an iron pipe at land now or formerly of Ledgewood Manor Associates; thence turning and running South 05°56' West by said Ledgewood Manor Associates land ten and thirty-two hundredths (10.32) feet to a comer at other land now or formerly of MGR Realty; thence turning and running South 81°43' West sixty-seven and fifty-six hundredths (67.56) feet; South 59°00' West ten and eighty-eight hundredths (10.88) feet and South 66°12' West one hundred seventy-eight and ten hundredths (178.10) feet to a point; thence continuing on the arc of a curve to the left having a radius of 50 feet an arc distance of fifty-two and fifty-nine hundredths (52.59) feet to a point in the easterly sideline of Lafayette Road, said previous four courses being along land now or formerly of MGR Realty; thence turning and running North 05°56' East one and sixty-nine hundredths (1.69) feet and North 05°31' West ninety-six and two tenths (96.2) feet by the Easterly sideline of Lafayette Road to the point of beginning.

The said easement rights are preserved and more fully described in a certain Partial Termination of Easement granted by RPL Properties, LLC to DiLorenzo Lafayette Ledgewood Real Estate, LLC, dated November 3, 2015 and recorded in the Rockingham County Registry of Deeds as of the date hereof, and as set forth therein consist of the rights of RPL Properties, LLC, its successors and assigns ("RPL") to install, lay, maintain, replace and repair and use utility lines of all types including, without limitation, water mains, gas mains, electric wires (above and below grade) and telephone lines (above and below grade), storm and sanitary sewer drains and catch basins, together with all facilities related to the use, operations and maintenance of such utility lines, and the right to pass and re-pass over said premises for the foregoing purposes. Any such work performed by RPL shall be undertaken so as to minimize disruption, disturbance or damage to the premises herein conveyed, and once commenced, such work shall be diligently pursued to completion. Any damage or disturbance to the premises herein conveyed shall be repaired or restored in a prompt and workmanlike manner as nearly as practicable to the condition that existed immediately prior to such damage or destruction.

Meaning and intending to convey Lot #1, as shown on plan entitled "Subdivision of Land, Portsmouth, N.H., for Genimatas and Robbins" dated November 1978, Revised June 7, 1979, being Durgin Plan #5558, File #689, drawn by John W. Durgin Civil Engineers, which Plan is recorded in the Rockingham County Registry of Deeds as Plan D-8806. See also Warranty Deed of DiLorenzo Lafayette Ledgewood Real Estate, LLC to Grantor dated November 9, 2015 and recorded in the Rockingham County Registry of Deeds at Book 5669, Page 667.

Meaning and intending to describe and convey the same premises conveyed to the Grantor by deed of OMJ Realty dated October 20, 2022 and recorded in the Rockingham County Registry of Deeds at Book 6448, Page 1309 on October 25, 2022.

Transfer Tax: This transfer is exempt from transfer tax pursuant to RSA 78-B:2, XXII.

Homestead: This is not homestead property.

March 30, 2023

John Galt, LLC

By:______________________

Mark A. McNabb, Manager

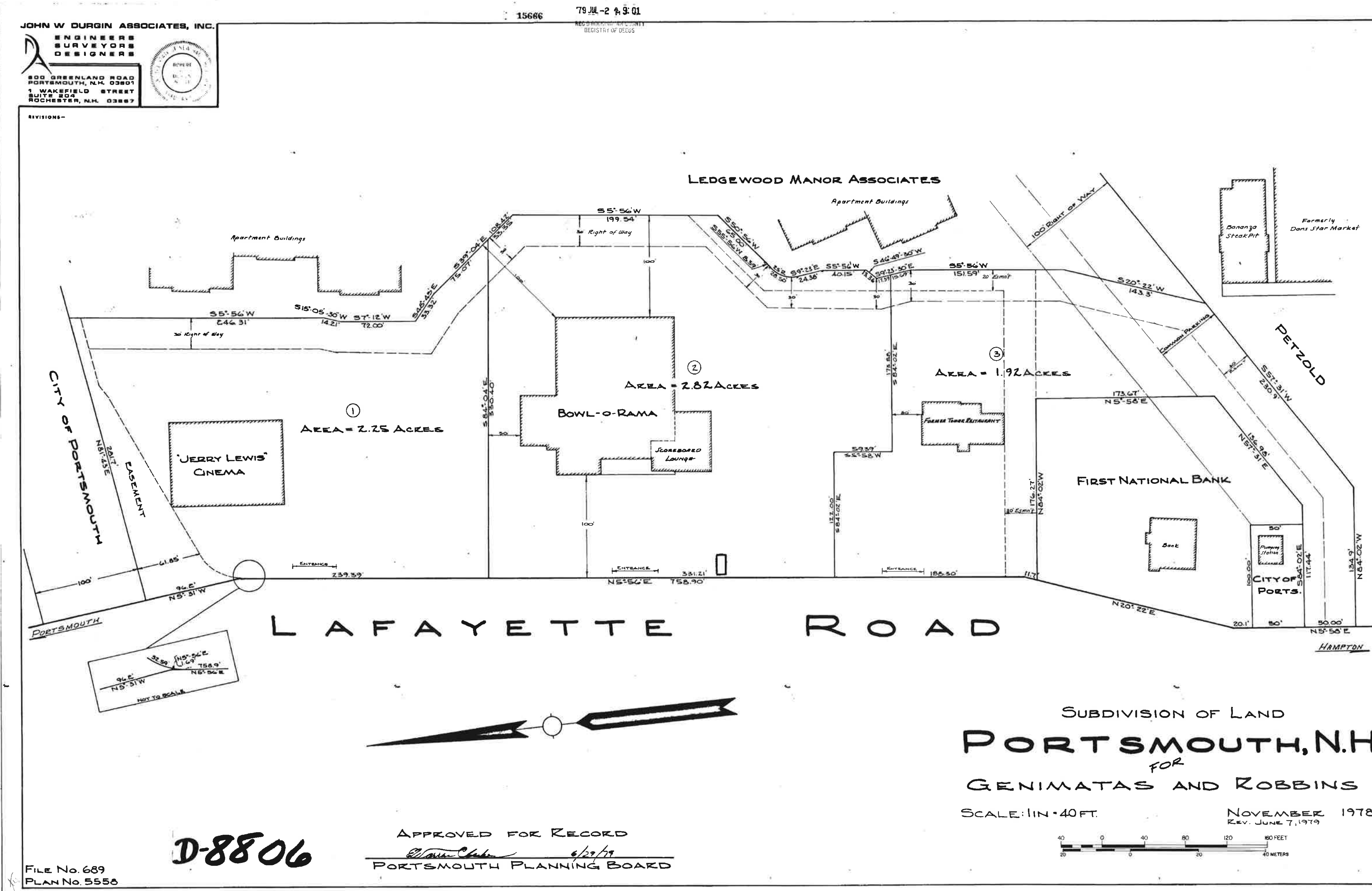
STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

The foregoing instrument was acknowledged before me this 30 day of March, 2023 by Mark A. McNabb, Manager of John Galt, LLC a New Hampshire limited liability company, on behalf of the company.

____

Notary Public/Justice of the Peace
My Commission expires:

JOHN K. BOSEN
JUSTICE OF THE PEACE
NEW HAMPSHIRE
MY COMMISSION EXPIRES DEC. 2, 2025


15666
'79 JUL -2 PM 3:01
REGISTRY OF DEEDS
JOHN W DURGIN ASSOCIATES, INC.
ENGINEERS
SURVEYORS
DESIGNERS
800 GREENLAND ROAD
PORTSMOUTH, N.H. 03801
1 WAKEFIELD STREET
SUITE 204
ROCHESTER, N.H. 03867
REVISIONS-
LEDGEWOOD MANOR ASSOCIATES
Apartment Buildings
Apartment Buildings
Bonanza Steak Pit
Formerly Dans Star Market
S5°-56'W 199.54'
30' Right of Way
100' Right of Way
S5°-56'W 246.31'
30' Right of Way
S15°-05'-30"W 14.21'
S7°-12'W 72.00'
S46°-45'E 33.32'
S39°-04'E 75.07'
S9°-23'E 24.38'
S5°-56'W 40.15'
S46°-49'-30"W
S9°-23'-30"E
S5°-56'W 151.59'
20' Esmt
S20°-22'W 143.3'
PETZOLD
S57°-31'W 230.9'
COMMON PARKING
CITY OF PORTSMOUTH
N81°-43'E 281.7'
EASEMENT
"JERRY LEWIS" CINEMA
① AREA = 2.25 ACRES
S84°-04'E 330.40
BOWL-O-RAMA
SCOREBOARD LOUNGE
② AREA = 2.82 ACRES
S84°-02'E 173.88
③ AREA = 1.92 ACRES
FORMER TOWNE RESTAURANT
59.37' S5°-58'W
S84°-02'E 177.00
N84°-02'W 176.27'
20' Esmt
173.67' N5°-58'E
N57°-31'E 136.98'
FIRST NATIONAL BANK
Bank
Pumping Station
CITY OF PORTS.
S84°-02'E 117.44
N84°-02'W 134.9'
100.00'
50'
ENTRANCE
ENTRANCE
ENTRANCE
100'
61.85'
96.2' N5°-31'W
239.39'
331.21'
N5°-56'E 758.90'
188.50'
11.7'
N20°-22'E
20.1'
50'
50.00' N5°-58'E
PORTSMOUTH
HAMPTON
LAFAYETTE ROAD
32.59'
N5°-56'E
758.9'
N5°-56'E
96.2'
N5°-31'W
NOT TO SCALE
SUBDIVISION OF LAND
PORTSMOUTH, N.H.
FOR
GENIMATAS AND ROBBINS
SCALE: 1IN = 40 FT.
NOVEMBER 1978
REV. JUNE 7, 1979
40 0 40 80 120 160 FEET
20 0 20 40 METERS
D-8806
APPROVED FOR RECORD
6/29/79
PORTSMOUTH PLANNING BOARD
FILE No. 689
PLAN No. 5558

Return to:
City of Portsmouth
Legal Department
1 Junkins Ave
Portsmouth, NH 03801

WORKFORCE HOUSING COVENANT

THIS LAND USE RESTRICTION COVENANT FOR WORKFORCE HOUSING ("Covenant") is made and entered into on this _______ day of _________________, 2024 between the **City of Portsmouth**, a municipal corporation organized under the laws of the State of New Hampshire and having a place of business at 1 Junkins Avenue, Portsmouth, County of Rockingham, State of New Hampshire (the “City”) and **Atlas Commons, LLC** , a New Hampshire limited company with an address of 3 Pleasant Street, Suite 400, Portsmouth, New Hampshire 03801 (the “Owner”)(the City and the Owner are collectively the “Parties”).

PREAMBLE

WHEREAS, the Owner owns a certain tract or parcel of land, together with any buildings or improvements thereon, situated at 581 Lafayette Road in the City of Portsmouth, County of Rockingham and State of New Hampshire as defined, described and identified in the Warranty Deed dated March 30, 2023, recorded in the Rockingham County Registry of Deeds (“Registry”), Book 6474, Page 1538 (the “Property”); and

WHEREAS, the Owner has obtained site plan approval of as mixed-use development (the “Project”) and a conditional use permit from the City Planning Board to develop the property pursuant to correspondence from the City Planning Department dated ___________________ (the “Approval”); and

WHEREAS, as part of the approval process for the Project, the Owner agreed to maintain 20% of the completed residential dwellings at the Property, evenly distributed, as workforce housing units as defined herein; and

WHEREAS, the Owner further agreed to a stipulation with the Portsmouth Planning Board at the meeting on _____________________, to allow units that are affordable to a household with a HUD Median Family Income for the Portsmouth-Rochester Metropolitan Area program of 60% of AMI for a 3-person household to qualify as workforce housing; and

WHEREAS, this Covenant is designed to satisfy the aforementioned stipulations placed on the Approval by requiring that 20% percent of the residential dwelling Units (the "Designated Workforce Housing Units"), shall be maintained for a full term of 30 years as workforce housing for a household with an income of 60% of the median income for a 3-person housing for the Portsmouth-Rochester HUD Metropolitan Fair Market Rent; and

WHEREAS, this Covenant shall apply solely to the "Designated Workforce Housing Units" in the Project, and the Parties agree that this Covenant shall not apply to, burden or encumber the remaining dwelling units in the Project, or the tenants of those units; and

WHEREAS, this Covenant is intended to require that any tenant of the Workforce Housing Unit qualify as a Qualifying Occupant; and

WHEREAS, this Covenant shall apply to and be enforceable by the City as set forth in this Covenant; and

WHEREAS, the City or its designated agent or successor, shall have the authority to monitor and enforce this Covenant.

NOW, THEREFORE, in consideration of the mutual covenants and undertakings set forth herein, and other good and valuable consideration the receipt and sufficiency of which are hereby acknowledged, the City and the Owner do hereby contract and agree as follows:

COVENANT

Section 1. Definitions and Interpretation. In addition to the words and terms defined elsewhere in this Covenant, unless otherwise expressly provided herein or unless the context clearly requires otherwise, the following terms shall have the respective meanings set forth below for all purposes of this Covenant:

"Affordable" means that the rent shall be affordable to a Qualifying Tenant. Rent for any unit shall be set at the 60% Rent Limit for a 3-person household, determined on a per-bedroom basis, as established by the Portsmouth-Rochester HUD Metropolitan Fair Market Rent Areas as published annually by HUD.

"Annual Income Certification" means the Annual Income Certification described in Section 4(b) of this Covenant.

“Certification of Continuing Program Compliance” means the Certification of Continuing Compliance described in Section 4(d) of this Covenant and by any document required by the City or the City’s agent confirming compliance.

“Gross Rent” means net rent plus utilities, including electricity, heating and ventilation, water heating, and cooking, but shall not include telephone, television (cable or satellite) services, Wi-Fi, internet services, web-based services, or other such electronic systems or services. Calculation of utility costs may be based on the Utility Allowance Schedule for New Hampshire, published by the New Hampshire Housing Finance Authority.

"Qualifying Occupant" means any individual (a prospective tenant or present tenant of the Project) whose income is 60% or less of median income for a three (3) person household in the Portsmouth-Rochester HUD Metropolitan Fair Market Rent as published annually by HUD.

"State" means the state of New Hampshire.

"Term" or "Term of this Covenant" means the period during which this Covenant is in effect, as determined pursuant to Section 6.

“Workforce Housing” means a dwelling, or group of dwellings, developed as a single project, containing workforce housing units, provided that a housing development that excludes minor children from more than 20 percent of the units, or in which more than 50 percent of the dwelling units have fewer than two bedrooms, shall not constitute workforce housing for the purposes of this Covenant.

“Workforce Housing Unit” means a housing unit which qualifies as “workforce housing” under this Covenant, including rental housing which is Affordable to a Qualifying Tenant.

All capitalized words and terms used but not defined in this Covenant shall have the common and ordinary meaning ascribed to them unless the word or term is defined in this Covenant including any future amendments hereto to the extent applicable to the Project.

Unless the context clearly requires otherwise, words of the masculine gender shall be construed to include correlative words of the feminine and neuter genders and vice versa, and words of the singular number shall be construed to include correlative words of the plural number and vice versa. This Covenant and all the terms and provisions hereof shall be construed to effectuate the purposes set forth herein and to sustain the validity hereof.

The titles and headings of the sections of this Covenant have been inserted for convenience of reference only and are not to be considered a part hereof and shall not in any way modify or restrict any of the terms or provisions hereof and shall never be considered or given any effect in construing this Covenant or any provision hereof or in ascertaining intent if any question of intent shall arise.

Section 2. Representations, Covenants and Warranties of Owner.

(a) The Owner

(i) is a New Hampshire limited liability company duly organized under the laws of the State of New Hampshire, and is qualified to transact business under the laws of the State,

(ii) has the power and authority to own its properties and assets and to carry on its business as now being conducted and as now contemplated by this Covenant, and

(iii) has the full legal right, power and authority to execute and deliver this Covenant and to perform all the undertakings of the Owner hereunder.

(b) The execution and performance of this Covenant by the Owner

(i) will not violate or, as applicable, have not violated a provision of law, rule or regulation, or any order of any court or other agency or governmental body, and

(ii) will not violate or, as applicable, have not violated any provision of any indenture, Covenant, mortgage, mortgage note, or other instrument to which the Owner is a party or by which it or its property is bound, and

(iii) will not result in the creation or imposition of any prohibited lien, charge or encumbrance of any nature. The Owner agrees to obtain the written recordable consent of any prior lienholder to this Covenant, and to record it prior to the issuance of any building permit for this project.

Section 3. Workforce Housing. The City and the Owner hereby declare their understanding and intent that the Property will be owned, managed, and operated to always include the 20% "Designated Workforce Housing Units" during the Term of this Covenant. To that end, the Owner hereby represents, covenants, and agrees that:

(a) At least 20% of the completed dwelling units to be developed in the Project shall be Workforce Housing as defined herein. The Designated Workforce Housing Units shall be evenly distributed throughout the building.

(b) Any tenant or leasee of any Workforce Housing Unit, if any, shall also qualify as Qualifying Occupants for the Term of this Covenant.

(c) Each of the Designated Workforce Housing Units shall be both Affordable and occupied by a Qualifying Tenants.

(d) The form of lease to be utilized by the Owner in renting any Designated Workforce Housing Units in the Project to any person who is intended to be a Qualifying Tenant shall provide for termination of the lease and consent by such person to immediate eviction for failure to qualify as a Qualifying Tenant as a result of any material misrepresentation made by such person with respect to the income certification at the time of lease or the failure by such tenant to execute an income certification annually or within 12 months of disqualifying as a Qualifying Tenant. If a Qualifying Tenant exceeds the income requirements because of an improved financial condition, that tenant shall be entitled to ninety (90) day notice of eviction but shall be responsible for complying with all terms of this Covenant and the Tenant's lease after the notice of eviction is served.

(e) Owner agrees to take any reasonable lawful action (including amendment of this Covenant as may be necessary) to comply fully with all applicable rules, rulings, or additional regulations relating and affecting the Project.

(f) If the Owner becomes aware of any situation, event or condition which would result in Non-compliance of the Project or the Owner with this Covenant, the Owner shall promptly give written notice thereof to the City.

(g) The Owner shall insure that the Designated Workforce Housing Units occupied by Qualifying Tenants with valid leases shall be of comparable quality to other apartment units of the Project; and the Designated Workforce Housing Units must be suitable for occupancy, subject to reasonable wear and tear. Notwithstanding the terms of this Section 3(g) the Qualifying Tenant, and not the Owner, shall remain fully responsible for any intentional or negligent acts of Qualifying Tenant, members of the Qualifying Tenants' household, and/or those in the Designated Workforce Housing Units or on the Property at the invitation or control of the Qualifying Tenant, which causes damage to the condition or habitability of the Designated Workforce Housing Units.

(h) Any Qualifying Tenant that does not abide by the terms of the lease or occupancy agreement, or by the terms of this Covenant, may be evicted from any Designated Workforce Housing Unit by the Owner, and said eviction, shall not change the character of the apartment as being designated as one of the Designated Workforce Housing Units during the time the tenant is being removed from the apartment, provided however, the apartment is re-rented to a new Qualifying Tenant subsequent to the prior Qualifying Tenant's eviction and removal.

Section 4. Records and Certifications.

(a) During the Term of this Covenant, the Owner shall deliver to the City, or its designee, any and all documents related to costs, expenses and income for the Designated Workforce Housing Units, required to be provided to the City or that the City's agents may require or request.

(b) During the Term of this Covenant, the Owner will maintain complete and accurate records pertaining to the Designated Workforce Housing Units which are the subject of this Covenant. Without limiting the generality of the foregoing, the Owner will obtain and maintain on file an Annual Income Certification from each Qualifying Occupant within any Designated Workforce Housing Units.

(c) the Owner will permit any duly authorized representative of the City to inspect, and make copies of the books and records of the Owner pertaining to the incomes of present, past or prospective Qualified Tenants of the Project upon reasonable notice and at reasonable times; and

(d) At all times during the term of this Covenant, the Owner shall maintain with the Planning Department of the City, or its designee, a Certification of Continuing Compliance including verification that the rent for the Designated Workforce Housing Units and that the Qualifying Tenants meet the definitions as provided in this covenant.

Section 5. Reliance. The Owner hereby agrees that the representations and covenants set forth herein and in the Annual Income Certification by the Owner to the City may be relied upon by the City. In performing its duties and obligations hereunder, the City may rely upon the statements and certificates of the Owner. In addition, at its own expense, the City may consult with counsel, and the opinion of such counsel shall be full and complete authorization and protection in respect of any action taken or suffered by the City hereunder in good faith and in conformity with the opinion of such counsel. In performing its duties and obligation hereunder, the Owner may rely upon certificates of Qualifying Tenants reasonably believed to be genuine and to have been executed by the proper person or persons.

Section 6. Term

(a) This Covenant became effective on ______________ and shall remain in full force and effect for a period of thirty (30) years following the date of issuance of a certificate of occupancy, for the Designated Workforce Housing Units.

Section 7. Defaults and Remedies & Right to Cure. Any failure by the Owner to perform or comply with any obligation, agreement, covenant, or warranty of the Owner under this Covenant that is not corrected within a reasonable period after written notice from the City to the Owner setting forth the specific details of the event of default shall constitute an “event of default” hereunder. For the purposes of this Covenant a “reasonable period” is not more than sixty (60) days after such failure is first discovered by the Owner or would have been discovered by the exercise of reasonable diligence.

Upon the occurrence of an event of default hereunder that is not cured within 60 days after City provides Owner with a written notice of default, the City may take whatever action may be permitted at law or in equity or in this Covenant to enforce the obligations of and restrictions applying to the Owner hereunder. The City shall have the right to require the curing of any failure of the Owner to perform or comply with any obligation, agreement, covenant, or warranty of the Owner under this Covenant prior to the time such failure has become an event of default hereunder as the City may deem necessary.

Each Party acknowledges and agrees that a breach or threatened breach by such Party of any of its obligations hereunder would cause the other Party irreparable harm for which monetary damages would not be an adequate remedy and agrees that, in the event of breach or threatened breach, the other Party will be entitled to equitable relief, including a restraining order, an injunction, specific performance and any other relief that may be available from any court. Such remedies are not exclusive and are in addition to all other remedies that may be available at law, in equity or otherwise. Without limiting the generality of the foregoing, the City shall have the right to seek specific performance of any obligation, agreement, covenant, or warranty of the Owner hereunder, whether or not failure to comply with the obligation, agreement, covenant or warranty for which specific performance is sought has become an event of default hereunder.

No remedy conferred upon or reserved to the City by this Covenant is intended to be exclusive of any other available remedy or remedies, but each such remedy shall be cumulative and shall be in addition to every other remedy given under this Covenant or any other document now or hereafter existing at law or in equity. No delay or omission to exercise any right or power accruing upon any failure of the Owner to perform or comply with any obligation, agreement, covenant, or warranty of the Owner under this Covenant shall impair any such right or power or shall be construed to be a waiver thereof.

The terms of this Section 7 are to ensure the Owner's compliance with the terms of this Covenant to the City only, namely, to provide the Designated Workforce Housing Units occupied by Qualifying Tenants as defined herein. At no time shall the terms of this Section 7 or the rights and remedies set forth under the terms of this Section 7, give any Qualifying Tenant any rights or remedies against the Owner for violation of the terms of this Covenant. In addition, at no time shall any Qualifying Tenant use or allege the Owner's breach of the terms of this Covenant, as grounds to avoid eviction from the Designated Workforce Housing Unit, if the Qualifying Tenant is otherwise in violation of the terms of its lease or occupancy agreement with the Owner.

Notwithstanding the terms of this Section 7, the Owner is not waiving any rights, remedies, or defenses, it might have to validly contest any alleged default of the Owner under this Covenant.

Section 8. <u>Recording and Filing; Covenants To Run with the Land; Successors Bound</u>.

(a) A signed executed Covenant shall be submitted to the Planning Department for recording at the Rockingham County Registry of Deeds.

(b) This Covenant and the covenants contained herein shall run with the land. These Covenants and the covenants contained herein shall bind, and the benefits shall inure to, respectively, the Owner and its successors and assigns and all subsequent Owners of the Project or any interest therein, the City's agent and each of the Qualifying Tenants during said Tenants' occupancy of a Designated Workforce Housing Unit during the Term of this Covenant.

Section 9. <u>Governing Law</u>. This Covenant shall be governed by the laws of the State of New Hampshire.

Section 10. <u>Notices</u>. Any notice, demand or other communication required or permitted hereunder shall be in writing unless explicitly permitted to be given otherwise than in writing and shall be deemed to have been given if personally delivered, or when deposited in United States express mail, postage prepaid, or with a private courier service guaranteeing next day delivery. Any such notice, demand or other communication shall be addressed as set forth below or to such other address as the entity to receive such notice may have designated to all other entities named in this list by notice in accordance herewith:

If to the Owner:

Atlas Commons, LLC
3 Pleasant Street, Suite 400
Portsmouth, New Hampshire 03801

If to the City:

City Manager
Portsmouth City Hall
Municipal Complex
1 Junkins Avenue
Portsmouth, NH 03801

Section 11. Severability. If any provision of this Covenant shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining portions shall not in any way be affected or impaired.

Section 12. Multiple Counterparts. This Covenant may be executed in counterparts, each of which shall be deemed to be an original, and such counterparts shall together constitute but one and the same instrument.

Section 13. Arbitration. In the event of any controversy or dispute arising out of or relating to this Covenant or the breach or default thereon, such controversy, breach, default, or dispute shall be resolved by arbitration in Rockingham County, New Hampshire, in an arbitration proceeding conforming to the rules of the American Arbitration Association.

Section 14. Modification or Amendment. Any modifications or amendments to this Covenant shall require approval by the Portsmouth Planning Board.

IN WITNESS WHEREOF, the Owner and the City have caused this Covenant to be executed under seal and by duly authorized representatives, all as of the date first written hereinabove.

CITY OF PORTSMOUTH

By: ____________________________________
Name and Title: Karen Conard, City Manager
Date: ____________________________________

Atlas Commons LLC

By: __________________
Name and Title: Mark A. McNabb, Manager
Date: ____________________________________

ACKNOWLEDGEMENT

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this _____ day of _________________, 2024,by Karen Conard, Portsmouth City Manager.

____
Notary Public
(Seal, if any)
My Commission Expires:

____

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this ____ day of __________________, 2024, by Mark A. McNabb, Manager of Atlas Commons, LLC.

____
Notary Public/Justice of the Peace
(Seal, if any)
My Commission Expires: __________________________

<u>After recording return to:</u>
City of Portsmouth
Planning Department
1 Junkins Avenue
Portsmouth, NH 03801

EASEMENT FOR PUBLIC ACCESS AND USE OF COMMUNITY SPACE

THIS EASEMENT FOR PUBLIC ACCESS AND USE OF COMMUNITY SPACE (the "Community Space Easement") is granted this _____ day of ____________, 2024 by **Atlas Commons, LLC** , a New Hampshire limited company with an address of 3 Pleasant Street, Suite 400, City of Portsmouth, County of Rockingham, State of New Hampshire 03801, ("Grantor") and for consideration of One Dollar ($1.00) paid by the City, and other good and valuable consideration, receipt of which is acknowledged by Grantor, grants unto the **City of Portsmouth**, a municipal corporation, 1 Junkins Avenue, City of Portsmouth, County of Rockingham, State of New Hampshire 03801 ("City") with warranty covenants, an easement for public access to and use of certain community space as set forth herein as an outdoor dining café easement and a pocket park easement..

WITNESSETH

WHEREAS, Grantor acquired a tract of land located at 581 Lafayette Road, City of Portsmouth, County of Rockingham, State of New Hampshire, identified as Map 229, Lot 8B (the "Property"), by Warranty Deed of John Galt, LLC, dated March 30, 2023 and recorded at the Rockingham County Registry of Deeds at Book 6474, Page 1538, where a future building to be known as 581 Lafayette Road will be constructed; and

WHEREAS, reference is made to a plan entitled "Community Space Easement Plan," prepared by Haley Ward, dated January, 2024, as revised, and recorded at the Rockingham County Registry of Deeds as Plan ______ (the "Easement Plan"); and

WHEREAS, reference is made to a site plan entitled "Site Plan," prepared by Haley Ward, dated July, 2023, as revised, and recorded at the Rockingham County Registry of Deeds as Plan ___________ (the "Site Plan").

NOW THEREFORE, in consideration of the sum of One Dollar ($1.00), to be paid, and other good and valuable consideration, the receipt of which is hereby acknowledged by the Grantor, Grantor conveys the easements as follows, located in the City of Portsmouth, County of Rockingham, State of New Hampshire (hereinafter collectively referred to as the "Easements"):

1. Outdoor Dining Cafe Easement 1. The Grantor hereby grants to the City and declares for the benefit of the public a permanent right to use and enjoy the area identified on the Easement Plan as a "Outdoor Dining Café Easement 1."

2. Pocket Park Easement 2. The Grantor hereby grants to the City and declares for the benefit of the public a permanent right to use and enjoy the area identified on the Easement Plan as a "Pocket Park Easement 2."

The Easements granted herein shall be subject to the following terms and conditions:

1. **Terms of Public Use:** The public use (the "Public Use") permitted by the Easements shall be governed and determined at the sole discretion of the City, as expressed by the City Manager or the highest-ranking administrative officer of the City, subject to the terms and conditions of these easement. The City shall provide reasonable notice to the Grantor of an extraordinary event to be scheduled for the easement areas but failure to do so shall not be a breach of these easements.

2. **Rights to Private Property:** This Community Space Easement does not convey any right to the public to access or utilize the private property of the Grantor outside the easement areas. Grantor's use of the Easements shall be subject to and regulated through the City of Portsmouth's rules and ordinances governing public sidewalks.

3. **Maintenance:** Maintenance of the easement areas shall be the sole responsibility of the Grantor, its successors, or assigns. The City shall have the right, but not the obligation, to access the easement areas for the purpose of maintenance, repair, or replacement, after providing reasonable notice to the Grantor of the scope and cost of such work, all as reasonably determined by the City. Such maintenance costs incurred by the City shall be at the sole expense of the Grantor, its successors, or assigns.

4. **Encroachments:** The Easements are subject to all existing encroachments of utilities and improvements on, over and under the Easements.

5. **Covenants Run with the Land:** The Easements granted herein shall be perpetual in nature, shall run with the land and shall benefit and be binding upon the Grantor, its successors and assigns. The Easements shall be recorded in the Rockingham County Registry of Deeds.

6. **City Ordinance Application:** Any use, public or private, of the Easements shall be subject to and comply with the City Ordinances of the City of Portsmouth.

7. **Notices:** Any notice, demand, request, or other communication that either party desires or is required to give to the other under this Easement shall be in writing and either served personally or sent by United States mail, postage prepaid, certified, return receipt requested, and shall be mailed to the parties at the following addresses:

To Grantor:

Atlas Commons, LLC
3 Pleasant Street, Suite 400
Portsmouth, NH 03801

(or as listed and at the address shown on the City's current Tax Records)

To City:

City Manager (or the highest-ranking administrative officer)
City of Portsmouth, New Hampshire
1 Junkins Avenue
Portsmouth, NH 03801

8. **Amendment**: Grantor, or its successors and/or assigns, and City may mutually agree to amend or modify the Community Space Easement, provided that any such amendment or modification is approved by the City Council at a noticed public hearing, in writing and signed by both parties, and is consistent with the purpose and intent of the Zoning Ordinance. No amendment or modification of this Community Space Easement shall take effect unless and until it is recorded in the Rockingham County Registry of Deeds.

9. **Costs and Liabilities:** Grantor agrees to bear all costs and liabilities of any kind related to the operation, upkeep, and maintenance of the Property, and to defend, indemnify, hold harmless, and release the City of Portsmouth, from and against any and all actions, claims, damages, liabilities, or expenses that may be asserted by any person or entity, including Grantor, relating thereto. Without limiting the foregoing, the City of Portsmouth shall not be liable to Grantor or any other person or entity in connection with any entry upon the Property pursuant to this Community Space Easement, or on account of any claim, liability, damage, or expense suffered or incurred by or threatened against Grantor or any other person or entity, except as such claim, liability, damage, or expense is the result of the City of Portsmouth's, its agents or employee's negligence or willful misconduct.

10. **Applicable Law:** This Community Space Easement shall be construed and interpreted according to the substantive laws of the State of New Hampshire.

11. **Community Space Easement to Bind Successors:** The provisions of this Community Space Easement shall be binding upon and insure to the benefit of Grantor and its successors and assigns. The Community Space Easement shall be appurtenant to, and for the benefit of, Grantee and shall run with title to the Property and shall continue in perpetuity.

Meaning and intending to convey an easement over a portion of the Property conveyed to the Grantor by Warranty Deed of John Galt, LLC, dated March 30, 2023, and recorded at the Rockingham County Registry of Deeds at Book 6474, Page 1538.

This is an exempt transfer pursuant to RSA 78-B:2(I).

IN WITNESS WHEREOF, Grantor and City have executed this Community Space Easement as set forth, below.

Grantor:

Atlas Commons, LLC

By: ___________________________________
Mark A. McNabb, Manager

Grantee:

City of Portsmouth, New Hampshire

By: ___________________________________
Karen S. Conard, City Manager

As authorized by vote of the Portsmouth City Council taken on _______, during its meeting that commenced on _______.

ACKNOWLEDGEMENTS

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this ____ day of ______________, 2024, before me, the undersigned notary public, personally appeared Mark A. McNabb, Manager of Atlas Commons, LLC, a New Hampshire limited liability company, proved to me through satisfactory evidence of identification, which was a valid driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

____
Notary Public:
My Commission Expires:

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this ____ day of _____________, 2024, before: me, the undersigned notary public, personally appeared Karen S. Conard, City Manager of the City of Portsmouth New Hampshire, proved to me through satisfactory evidence of identification, which was a valid driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it in his/her capacity as stated therein and voluntarily for its stated purpose.

____
Notary Public:
My Commission Expires:

MEMORANDUM OF AGREEMENT

THIS AGREEMENT ("Agreement") is entered into this _____ day of, 2024, between the **Atlas Commons, LLC**, a New Hampshire limited liability company, with an address of 3 Pleasant Street, Suite 400, Portsmouth, NH 03801 (the "Developer") and the **City of Portsmouth [School Board?]**, a New Hampshire municipality, with an address of 1 Junkins Avenue, Portsmouth, NH 03801 (the "City"). The Developer and the City may be collectively referred to herein as the "Parties."

WITNESSETH:

WHEREAS, the Developer is the owner of certain real property located at 581 Lafayette Road in the City of Portsmouth, located at Tax Map/Lot 229/8B (the "Atlas Property"); and

WHEREAS, the City is the owner of certain adjacent real property located at 50 Andrew Jarvis Drive in the City of Portsmouth, located at Tax Map/Lot 229/3, which property currently serves at Portsmouth High School and which property contains a certain right of way abutting the Atlas Property known as Ledgewood Drive and associated cul-de-sac (the "School Property"); and

WHEREAS, the Developer has obtained certain approvals from the City's land use boards to construct a 5-story mixed-use building with associated on-site and off-site improvements (see generally City permit number LU-23-189) (the "Developer's Project"); and

WHEREAS, the Developer is seeking a density incentive bonus pursuant to Section 10.5B73 of the Portsmouth Zoning Ordinance (the "Ordinance"), and, as such, the Parties have entered into this Agreement to satisfy the requirements of Section 10.5B73.20 of the Ordinance and the Parties recognize the public benefit to be derived from creating greater pedestrian connectivity from Ledgewood Drive through and to the School Property; and

WHEREAS, the Parties desire for the Developer, at its sole cost, to design, engineer and construct certain public realm improvements within the School Property (collectively, and as further defined herein, the "Public Realm Improvements").

NOW, THEREFORE, the Parties agree as follows:

Section I: The Developer's Obligations.

A. <u>The Public Realm Improvements</u>

The Developer shall, at its sole cost and obligation design, engineer and install the following and other minimal Public Realm Improvements shown on the plan set entitled, "Public Realm Plan," dated January 4, 2024, as revised, prepared by Haley Ward and attached as <u>Exhibit A</u> within the School Property:

1. Install an 8 foot gravel path with lighting and benches that extends from the existing sidewalk on Ledgewood Drive over and across the School Property.

2. Install public benches, a bike rack, a picnic table, basketball court markings, and other minor infrastructure within the School Property.

3. All Public Realm Improvements made by the Developer on the School Property shall be compliant with the Americans with Disabilities Act (ADA),.

4. All changes to the Public Realm Improvements from what is depicted in Exhibit A shall be submitted to the City Manager in writing and reviewed and approved by the Director of Public Works.

B. Construction Obligations

The Developer shall complete at its sole cost and obligation the following tasks to secure the construction of the infrastructure described in Section I, A:

1. Prior to commencing any construction, the Developer shall submit construction plans to the City (the "Construction Plans"). The construction plans must be reviewed and approved by the Director of Public Works for consistency with City standards. The City may, at its sole discretion and cost, employ a third-party engineer to conduct a peer review of the construction plans.

2. The Developer shall secure the construction of the items above via a security instrument, such as a bond or letter of credit, in a form acceptable to the City Attorney. The value of the security instrument shall be estimated by the Developer and set by the Director of Public Works.

3. The Developer shall enter into a Construction Management Mitigation Agreement (CMMP) with the City sufficient to describe the Developer's construction plan for the Public Realm Improvements and the Developer's Project.

4. As a part of the CMMP, the Developer shall designate a Project Manager, who shall serve as the point of contact for all public inquiries regarding the Public Realm Improvements, the Developer's Project, and the related impacts on vehicular travel. This point of contact shall be available to respond to public inquiries and respond to requests within 24 hours.

5. The Developer shall provide the City with proof of insurance at the City's customary levels for the period of construction of the Public Realm Improvements. The proof of insurance shall list the City as an additional insured.

Section II: The City's Obligations

1. The City shall employ a third-party engineer to oversee the construction of the Public Realm Improvements. The cost of the third-party engineer shall be paid by the City.

2. The City hereby waives all fees applicable to the construction of the Public Realm Improvements. This provision shall not apply to any permit fees required pursuant to the Developer's Project.

3. The City shall designate a Project Manager for the Public Realm Improvements. All communications regarding the Public Realm Improvements from the Developer shall be addressed to the Project Manager, with a copy to the City Attorney.

4. Following approval of the Public Realm Improvements by the City's third-party engineer and the Director of Public Works, the City shall accept ownership in writing of all Public Realm Improvements. If review by the City's third-party engineer or the City's Public Works Department reveal the Public Realm Improvements are not constructed to City standards or the Construction Plans, the Developer shall cause the insufficiencies to be remedied to the City's satisfaction.

Section III: Miscellaneous

1. Compliance with other laws: The Developer acknowledges that their obligations under this contract are subject to full compliance with all applicable state, federal, and local laws, and failure to adhere to such laws shall constitute a material breach of this contract.

2. Costs: Following acceptance of the Public Realm Improvements by the City, the City shall assume maintenance of the Public Realm Improvements. The City's maintenance obligations shall not exceed the ordinary maintenance responsibilities for any property in the City.

3. Entire Agreement. This Agreement and the attachments hereto, each of which is hereby incorporated herein, sets forth all the agreements, promises, covenants conditions and undertakings between the parties with respect to the subject matter hereof, and supersedes all prior and contemporaneous agreements and understandings, inducements, or conditions, express or implied, oral or written.

4. Amendment. No waiver or modification of any of the terms of this Agreement shall be valid unless in writing and signed by each of the parties hereto. Failure by any party to enforce any rights under this Agreement shall not be construed as a waiver of such rights, and a waiver by any party of a default hereunder in one or more instances shall not be construed as constituting a continuing waiver or as a waiver of other instances of default.

5. Waiver of Breach: The failure of either party to enforce any provision of this contract shall not be construed as a waiver of subsequent breaches or as a relinquishment of the right to enforce such provisions. No waiver by either party of any breach of this contract shall be deemed to be a waiver of any other or subsequent breach.

6. Governing Law. The construction and effect of the terms of this Agreement shall be determined in accordance with the laws of the State of New Hampshire.

As authorized by vote of the Portsmouth City Council taken on ____________, during its meeting that commenced ______________________.

Atlas Commons, LLC

By: ____________________________
Mark. A. McNabb
Its Manager

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this _____ day of __________, 2024, before: me, the undersigned notary public, personally appeared Mark A. McNabb, Manager of Atlas Commons, LLC, proved to me through satisfactory evidence of identification, which was a valid driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it in his capacity as stated therein and voluntarily for its stated purpose.

____
Notary Public
My Commission expires:

City of Portsmouth, New Hampshire

By: _________________________________
Karen S. Conard, City Manager

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this _____ day of __________, 2024, before: me, the undersigned notary public, personally appeared Karen S. Conard, City Manager of the City of Portsmouth New Hampshire, proved to me through satisfactory evidence of identification, which was a valid driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it in her capacity as stated therein and voluntarily for its stated purpose.

____
Notary Public:
My Commission Expires:

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

27 March, 2024

Rick Chellman, Chair
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for Waiver of Zoning Ordinance Section 10.5B34.80 for property located at 581 Lafayette Road. (Map 229 / Lot 8B)

Dear Mr. Chellman and Planning Board members:

On behalf of Atlas Common, LLC (Owner) we submit this Waiver Request for conformance with Section 10.5B34.80 of the Portsmouth Zoning Ordinance, Article 5 B Gateway Neighborhood Mixed Use District. The Ordinance sections states, under Design Standards in the Table:

Maximum building footprint: 20,000 square feet

The applicant is submitting plans for a Density Bonus Incentive with the inclusion of 20% Workforce Housing. Under Section 10.5B72.30 the allowable maximum building footprint is allowed to increase by 20%, for an allowable footprint of 24,000 square feet. The proposal is to construct a Mixed-Use Building Type, combining the existing commercial building with residential additions to create a building footprint with a total square footage of 42,434 square feet. We hereby request that the Planning Board allow the expanded building footprint to be 42,434 square feet, where 24,000 square feet is allowed.

The proposed building additions are 16,096 square feet and 11,185 square feet, both within the 20,000 square foot allowance when taken separately. When combined, the building is larger than the ordinance maximum. The project would qualify for a larger single mixed use building under Section 10.5B42.20 as a Mixed Use Development, allowing 70% Building Coverage (a potential footprint of 68,686 square feet at this property), however the requirements of Section10.5B50 regulating building additions, which are non-waivable, contain specific regulations which don't work with this property, as it is currently developed. The waiver is in keeping with the Portsmouth Master Plan.

Planning Board approval of this Waiver is hereby requested.

Sincerely,

John Chagnon, PE

P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Applications\Portsmouth Site Plan\Planning Board Waiver Request Building Square Footage.doc

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

26 March, 2024

Rick Chellman, Chair
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for Waiver of Zoning Ordinance Section 10.5B41.80 for property located at 581 Lafayette Road. (Map 229 / Lot 8B)

Dear Mr. Chellman and Planning Board members:

On behalf of Atlas Common, LLC (Owner) we submit this Waiver Request for conformance with Section 10.5B41.80 of the Portsmouth Zoning Ordinance, Article 5 B Gateway Neighborhood Mixed Use District. The Ordinance sections states, under Open Space and Community Space Coverage:

> *2) In the G1 District, the minimum community space coverage shall be equal to 10% of the total site area of the development site.*

The Site Plan provides for 7.6% Community Space where 10% is required. The property is a previously developed site with the building in the center and parking along the edges. The parcel is burdened by an access easement which allows travel between adjacent commercial properties. The project abuts significant green spaces along Lafayette Road and Ledgewood Drive. The developer met with city staff and identified areas adjacent to the on-site Community Space that can be expanded and enhanced. Those spaces are on property owned by the City of Portsmouth and State of New Hampshire (DOT), with the DOT space landscaped and under a city obligation to maintain. With this proposal the spaces shown on the site plan will be professionally landscaped and maintained by the developer under a license agreement. The area of the proposed off-site landscaping and the proposed plantings are identified on the Landscaping Plans in the plan set. The additional landscaped space will seamlessly integrate the on-site Community Space into a larger area, in keeping with the spirit and intent of the ordinance.

Planning Board approval of this Waiver is hereby requested.

Sincerely,

John Chagnon, PE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

26 March, 2024

Rick Chellman, Chair
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for Waiver of Zoning Ordinance Section 10.5B34.80 for property located at 581 Lafayette Road. (Map 229 / Lot 8B)

Dear Mr. Chellman and Planning Board members:

On behalf of Atlas Common, LLC (Owner) we submit this Waiver Request for conformance with Section 10.5B34.80 of the Portsmouth Zoning Ordinance, Article 5 B Gateway Neighborhood Mixed Use District. The Ordinance sections states, under Building and Lot Use in the Standards:

Maximum dwelling units per building: 24

The applicant is submitting plans for a Density Bonus Incentive with the inclusion of 20% Workforce Housing to allow 36 dwelling units per building. The proposal is to construct a Mixed-Use Building Type, combining the existing commercial building with residential additions to create a building with a total of 72 dwelling units. We hereby request that the Planning Board allow the building to contain 72 units where 36 units are allowed.

The proposal provides much needed workforce housing. Allowing additional density creates more workforce units. The building density request has been granted at other locations for similar projects. The change is in keeping with the Portsmouth Master Plan.

Planning Board approval of this Waiver is hereby requested.

Sincerely,

John Chagnon, PE

P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Applications\Portsmouth Site Plan\Planning Board Waiver Request Dwelling Units per Building.doc

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

24 March, 2024

Rick Chellman, Chair
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for Waiver of Zoning Ordinance Section 10.5B22.40 for property located at 581 Lafayette Road. (Map 229 / Lot 8B)

Dear Mr. Chellman and Planning Board members:

On behalf of Atlas Common, LLC (Owner) we submit this Waiver Request for conformance with Section 10.5B22.40 of the Portsmouth Zoning Ordinance, Article 5 B Gateway Neighborhood Mixed Use District. The Ordinance sections states:

> *Special **Setback** Requirements on Lafayette Road: For all **lots** and **development sites** with **frontage** on Lafayette Road **buildings** shall be **setback** a minimum of 70 feet and a maximum of 90 feet from the centerline of the road.*

Please find attached a Plan titled "Ordinance Section 10.5B22.40 Waiver Request". The plan shows the location of the centerline of Lafayette Road (shown in red) at the 581 Lafayette Road property in the background ortho-photo image. The plan shows the 581 Lafayette Road property line (black line). The plan also shows a 90-foot offset line (also shown in red), from the Lafayette Road centerline. The offset line falls outside the 581 property line. Clearly, the ordinance section cannot be complied with, since the maximum building offset line does not even reach property under control of the developer and the subject of this application. Since there is no way to comply, and as advised by the Planning Department, a Waiver is required.

Planning Board approval of this Waiver is hereby requested.

Sincerely,

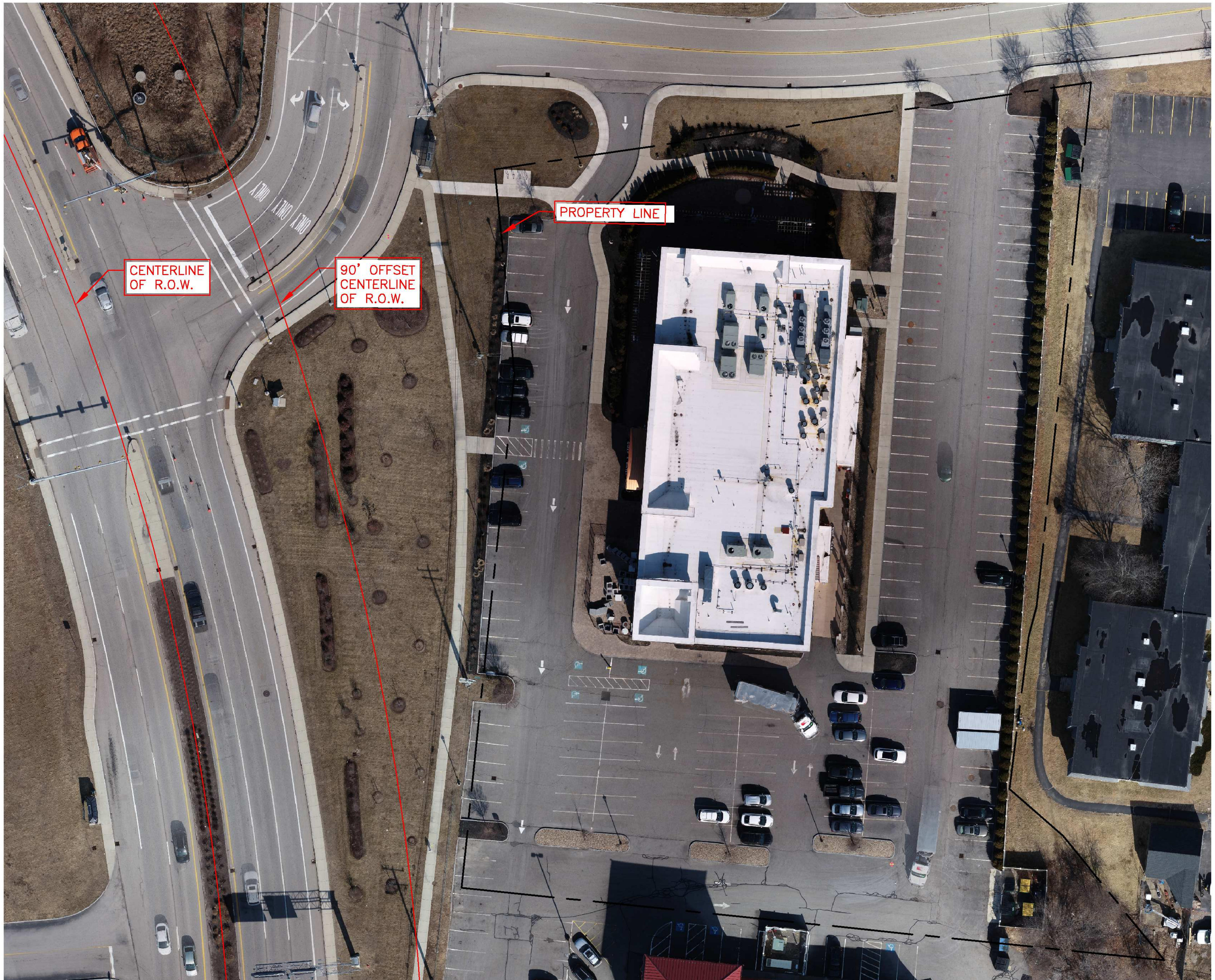
John Chagnon, PE

P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Applications\Portsmouth Site Plan\Planning Board Waiver Request.doc

ORDINANCE SECTION 10.5B22.40 WAIVER REQUEST

OWNER: JOHN GALT, LLC
581 LAFAYETTE ROAD

CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE



NEW HAMPSHIRE STATE PLANE NAD 83

1" = 50'

5 MARCH 2024

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

WWW.HALEYWARD.COM

200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

FB 259, PG 10

5010156–1397.04

581 Lafayette Road
Unit/Parking Analysis
March 27, 2024

Level	Room No.	# bedrooms	Area (sf)	spaces/unit	Workforce	Accessible
LEVEL 5	B504	STUDIO	369	0.50		
LEVEL 5	A505	STUDIO	424	0.50		
LEVEL 5	A507	STUDIO	424	0.50		
LEVEL 5	A503	STUDIO	425	0.50		
LEVEL 5	A504	STUDIO	425	0.50		
LEVEL 5	A509	STUDIO	425	0.50		
LEVEL 4	B406	STUDIO	425	0.50		
LEVEL 3	B306	STUDIO	426	0.50		
LEVEL 5	B503	STUDIO	434	0.50		
LEVEL 5	A511	STUDIO	457	0.50		
LEVEL 4	B411	STUDIO- ACCESSIBLE	494	0.50		Fully Accessible-1
LEVEL 5	A508	STUDIO	499	0.50		
LEVEL 3	B303	1BR	499	0.50		
LEVEL 3	B311	1BR	499	0.50		
LEVEL 4	B403	1BR	499	0.50		
LEVEL 3	B304	1BR	524	1.00		
LEVEL 4	B404	1BR	531	1.00		
LEVEL 5	B505	1BR	532	1.00		
LEVEL 5	B506	1BR	532	1.00		
LEVEL 5	B502	1BR	541	1.00		
LEVEL 2	B207	1BR	542	1.00		
LEVEL 3	B309	1BR	572	1.00		
LEVEL 4	B409	1BR	572	1.00		
LEVEL 4	A407	STUDIO- ACCESSIBLE	580	1.00		Fully Accessible-2
LEVEL 4	B410	1BR	599	1.00		
LEVEL 4	A408	1BR	620	1.00		
LEVEL 3	B310	1BR	621	1.00		
LEVEL 3	B307	1BR- ACCESSIBLE	644	1.00		Fully Accessible-3
LEVEL 4	B408	1BR	645	1.00		
LEVEL 2	B206	1BR	651	1.00		
LEVEL 3	B308	1BR	652	1.00		
LEVEL 4	B407	1BR	659	1.00		
LEVEL 2	A205	1BR	660	1.00		
LEVEL 3	A305	1BR	660	1.00		
LEVEL 4	B401	1BR	667	1.00		
LEVEL 5	A502	1BR	672	1.00		
LEVEL 3	A309	1BR	682	1.00		
LEVEL 3	A307	1BR	694	1.00		
LEVEL 2	A207	1BR	698	1.00		
LEVEL 3	A308	1BR	699	1.00		
LEVEL 4	A405	1BR	702	1.00		
LEVEL 3	B301	1BR	703	1.00		
LEVEL 4	B402	2BR	708	1.00		
LEVEL 2	A209	1BR	709	1.00		
LEVEL 2	A208	1BR	723	1.00		
LEVEL 5	B507	2BR- ACCESSIBLE	733	1.00		Fully Accessible-4
LEVEL 4	A406	1BR	749	1.00		
LEVEL 3	B305	2BR	749	1.00		
LEVEL 4	B405	2BR	749	1.00		
LEVEL 3	B302	2BR	780	1.30		
LEVEL 2	B202	2BR	782	1.30		
LEVEL 2	A206	1BR	786	1.30		
LEVEL 3	A306	1BR	823	1.30		
LEVEL 2	B201	2BR-WORKFORCE	872	1.30		
LEVEL 2	A203	1BR- ACCESSIBLE- WF	886	1.30	**Workforce 1**	Fully Accessible-5
LEVEL 5	A506	1BR- ACCESSIBLE- WF	910	1.30	**Workforce 2**	Fully Accessible-6
LEVEL 3	A303	2BR- WF	988	1.30	**Workforce 3**	
LEVEL 5	B501	2BR-WORKFORCE	1007	1.30	**Workforce 4**	
LEVEL 2	B203	3BR-WORKFORCE	1146	1.30	**Workforce 5**	
LEVEL 4	A402	3BR-WORKFORCE	1365	1.30	**Workforce 6**	
LEVEL 2	B204	3BR- WF	1456	1.30	**Workforce 7**	
LEVEL 2	B205	3BR-WORKFORCE- ACCESSIBL	1497	1.30	**Workforce 8**	Fully Accessible-7
LEVEL 3	A302	3BR-WORKFORCE	1504	1.30	**Workforce 9**	
LEVEL 2	A202	3BR-WORKFORCE	1535	1.30	**Workforce 10**	
LEVEL 5	A510	3BR- WF	1535	1.30	**Workforce 11**	
LEVEL 4	A403	3BR- WF	1726	1.30	**Workforce 12**	
LEVEL 4	A401	3BR-WORKFORCE	2034	1.30	**Workforce 13**	
LEVEL 3	A301	3BR-WORKFORCE	2056	1.30	**Workforce 14**	
LEVEL 2	A204	3BR	2144	1.30	**Workforce 15**	
LEVEL 4	A404	3BR	2153	1.30		
LEVEL 3	A304	3BR-ACCESSIBLE	2172	1.30		Fully Accessible-8
LEVEL 2	A201	3BR	2200	1.30		
	Total Units			**Parking Req.**	**workforce housing**	
Total Units:		**72**		71.40	20% of units	average unit size
Visitor Parking - 1 space per every 5 dwellings				14.40	14.4	848
Residential automobile parking required (base, unadjusted)				85.80	86.00	ROUNDED UP

Car Parking Spaces Required per Unit Size				
0-500	0.5			
500-750	1.0			
751-1900	1.3			

Bicycle Parking Required			
use	spaces required per use	total required	
multifamily	1 bicycle for every 5 dwelling units	15	
restaurant/rec	1 bicycle for each 10 car parking spaces	12	
TOTAL Required		**27**	
Total Provided (in building, basement + 1st floor)		82	
Total Provided (outside)		8	
Total Provided, inside & outside		**90**	
Excess Provided (beyond required)		63	CAR SPACES DEDUCTED @ 1:6
Excess applied to New Additions (housing)		24.0	4
Excess applied to Existing Building		36.0	6
Net leftover excess bicycle parking		**3.0**	10
Scooter parking provided (none required)		**18**	
Motorcycle parking provided (none required)		**7**	

Apartment Types - Unit Mix & Locations

	number of bedrooms per apartment				
level	**S**	**1**	**2**	**3**	**Total**
5	9	5	2	1	17
4	3	10	2	4	19
3	1	13	3	3	20
2	0	8	2	6	16
total	**13**	**36**	**9**	**14**	**72**
Total bedrooms	13	36	18	42	109

Apartment Types - Unit Distribution per Building

Level	**Building A**	**Building B**	**TOTAL**
5	10	7	17
4	8	11	19
3	9	11	20
2	9	7	16
total units	**36**	**36**	**72**

ARCOVE ARCHITECTS

581 Lafayette Road
PARKING ANALYSIS
Zoning Ordinance 10.1112
March 27, 2024

Apartments Parking Required					**with gateway deduct -20%**
subtotal base parking spaces required					86.00
Gateway deduct -20%					(17.20)
Subtotal parking required					68.80
	# excess bike spaces		# car spaces deducted		
Bicycle parking deduction 1 space for 6 bikes, max 5%:	(24.0)	4.66%	(4.0)		64.80
max 5% allowed =	4.3 spaces				
Apartment Parking Required (adjusted for gateway & bikes)				Rounded Up	**65.00**

Restaurant/Recreation Parking Required	**spaces/gfa**	**gfa or occ**		**spaces** (rounded up)	**subtotal w/20% gateway**
restaurant	1/100	13,982.00		140	112
mezzanine office	1/350	1,060.00		4	4
recreation (golf)	1per 4 occ.	20.00		5	4
subtotal				149	
Gateway deduct -20%				-29.8	
Subtotal restaurant/recreation parking required				120	120
	# excess bike spaces	# car spaces deducted	**round down**		
Bicycle parking deduction - 1 space for 6 bikes, max 5%	(36.0) -5.00%	(6.0)	(6.00)		
max 5% allowed =	6 spaces				
Restaurant/Recreation Parking Required (adjusted for gateway & bikes)					**114**

bicycle deduct 5%	**total**
(6.00)	106.0
0.00	4.0
0.00	**4.0**

9. Eating and Drinking Places		
9.10-9.50	All eating and drinking places	1 per 100 sf GFA
4. Recreational Uses		
4.10	Religious, sectarian or private non-profit recreational use	Parking demand analysis
4.20	Cinema or similar indoor amusement **use** with no live performance	0.4 per seat, or Parking demand analysis
4.30	Indoor recreation **use**, such as bowling alley or arcade	1 per 4 persons **maximum occupancy**
4.40	Health club, yoga studio, martial arts school, or similar **use**	1 per 250 sf GFA
4.50	**Outdoor recreation use**	Parking demand analysis
4.60	**Amusement park**, **water park** or **theme park**	NA – Prohibited Use

TOTAL parking required all uses (adjusted for gateway & bikes)	**179.0**

Shared Parking 10.1112.60

Total Parking Required	**Weekday**					**Weekend**				**Nighttime**		**Maximum**
Land Use	**daytime (8am-5pm)**	**spaces required**	**evening (6-12pm)**	**spaces required**		**daytime (8am-5pm)**	**spaces required**	**evening (6-midnight)**	**spaces required**	**(midnight-6am)**	**spaces required**	**TOTAL Required**
Apartments	60%	39.0	100%	65.0		80%	52.0	100%	65.0	100%	65.0	
restaurant	70%	74.2	100%	106.0		80%	84.8	100%	106.0	10%	10.6	
Office	100%	4.0	20%	0.8		10%	0.4	5%	0.2	5%	0.2	
entertainment (golf)	40%	1.6	100%	4.0		80%	3.2	100%	4.0	10%	0.4	
ADJUSTED TOTAL Required, all uses, shared		118.8		175.80			140.4		175.2		76.2	176

Total Parking Proposed	
In-building, level 1 + basement	148
Open air, on site	32
Off-site parking per deeded easement	**0**
Total parking proposed	**180**
Excess (Defecit)	**4**
Existing total available-today	154
Proposed Net **Increase** (reduction) in parking	**22**

599 Lafayette Tenant SF & Parking Analysis

Tenant	Unit	S.F.	Use/Occ.	Parking Req.	Spaces/unit	
Convenient Md, Inc.	1	5,326	B	1/250 gfa	21	
Steven Little dba Seacoast Hearing Center	2	1,050	B	1/250 gfa	4	
Route 1 Carpet and Decor.	2B	1,160	M	1/300 gfa	4	
Cortes Deli (Honey Ham)	3	883	A2	1/100 gfa	9	
Bowl O' Rama	4	21,890	A3	parking analy	93	
New England Printing & Copying	6	2,668	B	1/400 gfa	7	
Seacoast Sewing & Quilting	7	2,450	M	1/300 gfa	8	
Port City Coin & Jewelry	8	1,135	M	1/300 gfa	4	
Peter Fisher (Station 23 Grooming)	9	2,553	B	1/400 gfa	6	
Mac Edge, LLC	10	3,528	M	1/300 gfa	12	
Route 1 Carpet and Decor.	11	2,599	M	1/300 gfa	9	
L.A. Nails	12	1,795	B	1/400 gfa	5	
Kim Lai Chinese Food	13	2,407	A2	1/100 gfa	24	
Domino's	14	1,745	A2	1/100 gfa	18	
AAA Travel & Insurance	15	2,735	B	1/350 gfa	8	
Total: 15 Spaces		53,924			232	
					311 existing spaces	
Bowl O' Rama Parking Analysis						
Renovated restaurant + kitchen = 2,180 sf / 100 = 22 spaces						
New function rooms = 772 sf. @ 1 occ. / 15 sf. = 51 occ. / 4 = 13 spaces						
Bowling alley = 22 lanes @ 5 occ. / lane = 110 occ / 4 = 28 spaces						
Arcade = 1,828 sf / 100 = 18 spaces						
Staff areas = 1,137 s.f / 100 = 12 spaces						

A5109-001
November 10, 2023

Mr. Roger Appleton, P.E.
Assistant District 6 Engineer
New Hampshire Department of Transportation
271 Main Street, P.O. Box 740
Durham, New Hampshire 03824

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

Dear Roger:

Tighe & Bond has prepared a trip generation memorandum to outline the anticipated study area of the Traffic Impact Assessment (TIA) for the proposed Lafayette Road residential development located at 581 Lafayette Road (US Route 1) in Portsmouth, NH. The project proposes to add 72 residential units to the to the existing restaurant and restaurant/ indoor golf uses at 581 Lafayette Road. The site is bounded by Ledgewood Drive to the north, residential land use to the east, a shopping plaza to the south, and Lafayette Road (US Route 1) to the west. The project consists of the construction of 72 residential units in two new buildings adjacent to the existing building, which is to remain. Structured parking will be provided below the apartments on the ground level and basement levels of the building. The existing parking area will be reconfigured to accommodate the building addition. Access to the development will be provided via three driveways. The existing western entrance-only driveway located on Ledgewood Drive will be maintained. The existing eastern driveway on Ledgewood Drive will be replaced by two separate full-access driveways, one providing access to the structured parking and the other providing access to the surface parking spaces. The trip generation estimate for the proposed development 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 Bypass at Greenleaf Avenue (signalized)
- US Route 1 Bypass at Lafayette Road (US Route 1) (signalized)
- US Route 1 at North Shopping Plaza Driveway (Bowl-O-Rama/ Urgent Care)
- Lafayette Road (US Route 1) at Ledgewood Drive (signalized)
- Ledgewood Drive at East Site Driveway
- Ledgewood Drive at West Site Driveway

Turning movement count (TMC) data was collected at the study area intersections on Wednesday November 1, 2023 and Saturday November 4, 2023. Automatic traffic recorder (ATR) counts were collected along Ledgewood Drive in the vicinity of the site driveways. The ATR was installed for a 48-hour period from October 31 to November 1, 2023, collecting directional traffic volume flows and vehicular travel speeds.

The anticipated study area intersections are shown in Figure 1.

Traffic Volume Adjustments

The NHDOT continuous count station located along Route 16 (Spaulding Turnpike) between Exit 6 and Exit 7 (ID 02125090) will be used to compare 2023 traffic volumes to 2019 traffic volumes to determine if any adjustments to the turning movement counts are necessary per current NHDOT guidelines.

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 (Mid-Rise) (LUC-221) was used to estimate vehicle trips generated by the development based on the current development program, which proposes 5-story buildings with structured parking on the ground level and residential units on floors 2 through 5.

Based on the ITE data, the proposed development is estimated to generate 27 trips (6 entering, 21 exiting) during the weekday morning peak hour, 28 trips (17 entering, 11 exiting) during the weekday afternoon peak hour, and 29 trips (15 entering, 14 exiting) during the Saturday midday peak hour. There will be no changes to the existing uses on site; trips generated by these uses will be captured through existing turning movement counts. Table 1 provides a detailed summary of the trip generation.

TABLE 1
Site-Generated Traffic Summary

Proposed - 72 Apartments **Peak Hour Period**	**Enter**	**Exit**	**LUC** **Total**
Weekday Morning	6	21	27
Weekday Afternoon	17	11	28
Saturday Midday	15	14	29
Weekday	164	163	327
Saturday	175	176	351

Source: Institute of Transportation Engineers, Trip Generation, 11th Edition, 2021
Land Use - 221 [Multifamily Housing (Mid-Rise)]

Trip Distribution

The distribution of the proposed traffic entering and exiting the site expected to be generated by the proposed residential use was reviewed based on U.S. Census journey-to-work data for people residing in Portsmouth. The following arrival/departure distributions are anticipated:

- 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 regional distribution, it is estimated that 45% of site traffic will access the site via US Route 1 Bypass to the northwest, 30% will access the site to/ from the northeast via US Route 1 and 25% will access the site to/ from the south via US Route 1.

Figure 1 presents the anticipated regional site traffic distributions of the traffic through the study area roadways.

Conclusion

The proposed development program includes 72 residential units. Based on the estimated trip generation and trip distribution, the TIA will analyze traffic operations at three intersections during the weekday morning, weekday afternoon, and Saturday midday peak periods.

Sincerely,

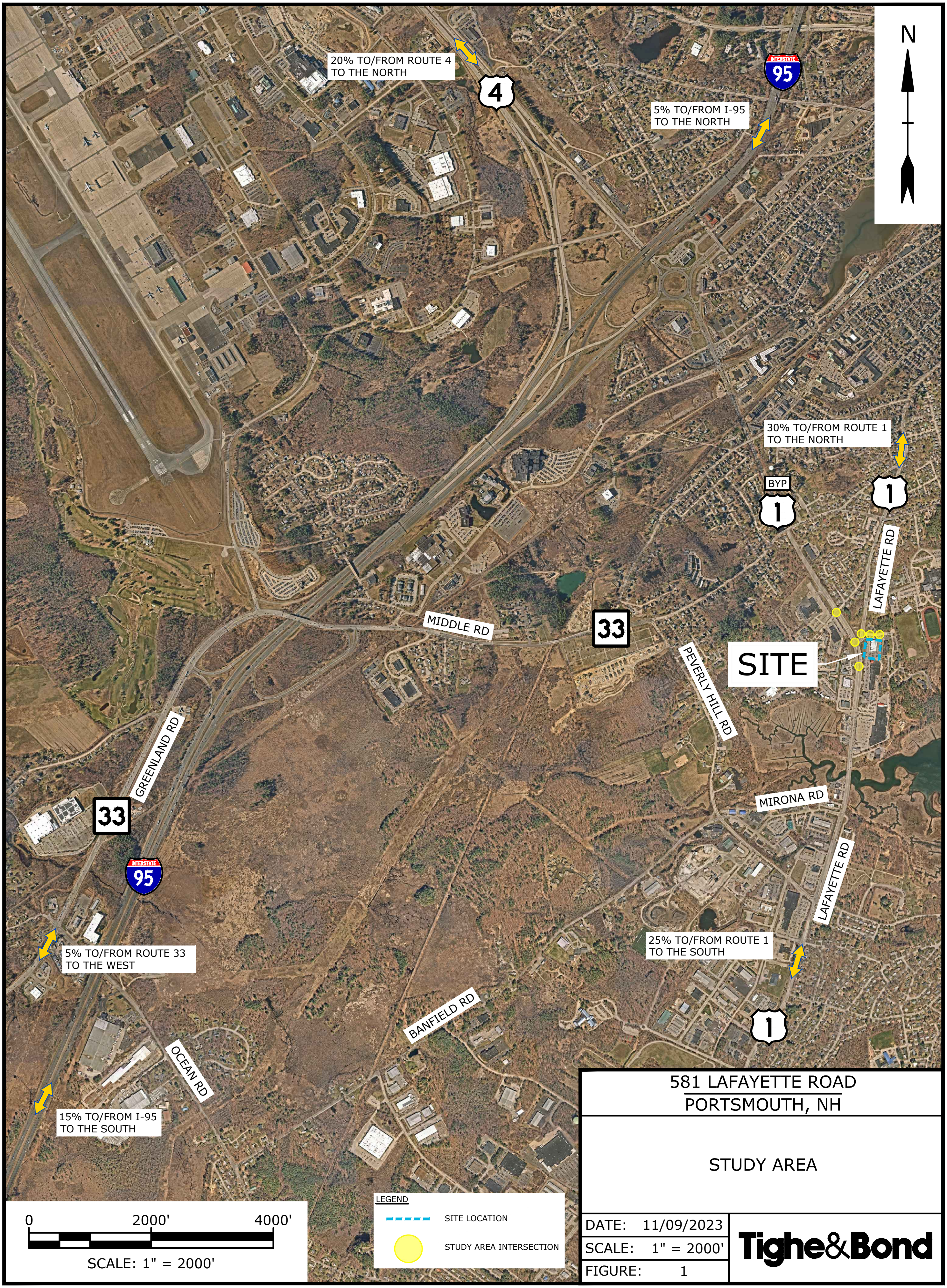
TIGHE & BOND, INC.

Greg Lucas, PE, PTOE, RSP1
Senior Project Manager

Copy: Marie Bodi, Atlas Commons, LLC
John Chagnon, Ambit Engineering, Inc.

Enclosures: Study Area Map (Figure 1)

\\tighebond.com\data\Data\Projects\A\A5109 Atlas Commons, LLC\001 - 581 Lafayette Road Traffic Study\Reports\2023-11-09 Trip Generation Memo\A5109-001 581 Lafayette Rd Trip Gen Memo.docx



581 LAFAYETTE ROAD
PORTSMOUTH, NH

STUDY AREA

DATE: 11/09/2023
SCALE: 1" = 2000'
FIGURE: 1

Tighe&Bond

Nov 09, 2023-2:54pm Plotted By: MStoutz
Tighe & Bond, Inc. J:\A\A5109 Atlas Commons, LLC\001 - 581 Lafayette Road Traffic Study\Drawings\AutoCAD\Figures\A5109-001 Traffic Study Area Figure.dwg

581 Lafayette Road Residential Development
Portsmouth, NH

TRAFFIC IMPACT STUDY

Atlas Commons, LLC

February 28, 2024

Tighe&Bond

100% Recyclable

Section 1 Study Overview

Section 2 Existing Conditions

Section 3 No-Build Conditions

Section 4 Proposed Conditions

Section 5 Build Conditions

Section 6 Conclusions & Recommendations

Section 7 Tables

Section 8 Figures

Technical Appendices (Available Upon Request Under Separate Cover)

Section 1
Study Overview

This Traffic Impact Study (TIS) evaluates the potential traffic impact of the proposed residential development located at 581 Lafayette Road, in the City of Portsmouth, New Hampshire. The site is bounded by Ledgewood Drive to the north, residential land use to the east, a shopping plaza to the south, and Lafayette Road (US Route 1) to the west. Figure 1 shows the Site location relative to the surrounding roadway network.

The project proposes the construction of 72 residential units in two new buildings adjacent to the existing building. The existing building, which houses a restaurant and a restaurant/indoor golf area, will remain. Structured parking will be provided below the apartments on the ground level and basement levels of the building. The existing surface parking lot will be reconfigured to accommodate the building addition. Site access will be provided via three driveways. The existing western driveway entrance will be maintained, and the existing eastern driveway will be replaced by two separate full-access driveways. The project is expected to be completed in 2025.

Based on the analyses conducted, it is the professional opinion of Tighe & Bond that the additional traffic expected to be generated by the proposed residential development is not expected to have a significant impact to traffic operations within the study area.

Section 2
Existing Conditions

The Project site is bounded by Ledgewood Drive to the north, residential land use to the east, a shopping plaza to the south, and Lafayette Road (US Route 1) to the west. The property is currently accessible via two driveways from Ledgewood Drive and from the shopping plaza to the south that has multiple entrances onto Lafayette Road. The eastern driveway from Ledgewood Drive is full-access and the western driveway is entrance only; both driveways are unsignalized. The following sections provide details on the adjacent roadways within the study area.

2.1 Roadways

2.1.1 Lafayette Road (US Route 1)

Lafayette Road (US Route 1) is classified as a principal arterial adjacent to the project site. The roadway runs in a north-south direction, providing local and regional connectivity through southeastern New Hampshire, generally running parallel to I-95 between the Massachusetts state line and the Maine state line.

Adjacent to the project site, Lafayette Road (US Route 1) intersects with itself at a signalized intersection with US Route 1 Bypass. Lafayette Road (US Route 1) to the south and US Route 1 Bypass to the north form a continuous roadway, generally providing two travel lanes in each direction, with additional turn lanes provided at signalized intersections. A third travel lane is provided northbound from the North Shopping Plaza driveway to the intersection with Lafayette Road, supporting northbound right turning traffic remaining on Lafayette Road. North of this intersection, Lafayette Road (US Route 1) generally provides one travel lane in each direction with additional turn lanes provided at signalized intersections. Lafayette Road is under NHDOT District 6 jurisdiction south of this signalized intersection, and under City of Portsmouth jurisdiction north of the intersection.

A sidewalk is provided along the east side of Lafayette Road adjacent to the project site with crosswalks provided at the intersections with US Route 1 Bypass and Ledgewood Drive. A wide shoulder with a width of 11 feet is provided in the northbound direction south of Ledgewood Drive to accommodate a bus stop. Outside of the bus stop, a shoulder of typically 3 to 5 feet wide exists delineated by a solid white edge line. The speed limit is posted at 30 miles per hour (mph) in both directions in the vicinity of the site for the segment of Lafayette Road north of US Route 1 Bypass, and posted at 35 mph for the continuous segment of Lafayette Road and US Route 1 Bypass.

2.1.2 US Route 1 Bypass

US Route 1 Bypass is classified as a principal arterial under NHDOT District 6 jurisdiction. The roadway runs primarily in the north-south direction, beginning at the intersection with Lafayette Road (US Route 1) , providing access to the Portsmouth Traffic Circle to the northeast and running north to the Maine state line. Within the study area, US Route 1 Bypass typically provides two lanes of travel in each direction, with a median barrier dividing northbound and southbound traffic.

A sidewalk is provided along both sides of the roadway, ending at the intersection with Greenleaf Avenue. An outside shoulder of typically 4 to 5 feet wide exists delineated by a solid white edge line and an inside shoulder of typically 2 to 4 feet wide exists delineated by a solid yellow edge line. The speed limit is posted at 35 mph in both directions in the vicinity of the site.

2.2 Study Area Intersections

2.2.1 US Route 1 Bypass at Greenleaf Avenue

Greenleaf Avenue intersects US Route 1 Bypass from the east and west to form a four-way signalized intersection. The northbound and southbound approaches provide a shared through/right-turn lane, a through lane, and a dedicated left-turn lane. Both the northbound and southbound left-turn movements operate under a protected signal phase. Both the eastbound and westbound approaches provide a single all-purpose lane.

A marked crosswalk is provided only on the south leg with a concurrent pedestrian phase provided. A sidewalk is present on both sides of the south leg and only on the south side of the east and west legs; no sidewalk is present at the north leg. The south and north legs have a concrete raised median of about 4 feet wide separating northbound and southbound traffic. Marked edge lines provide 4 to 6 foot shoulders on the northbound and southbound approaches.

2.2.2 US Route 1 Bypass and Lafayette Road (US Route 1)

Lafayette Road (US Route 1) intersects Lafayette Road and US Route 1 Bypass from the east to form a three-way signalized intersection. The southbound approach provides two through lanes and a dedicated right-turn lane and is separated from opposing traffic by a 12 foot wide raised concrete median. The northbound approach provides two through lanes and a dedicated left-turn lane which are separated from opposing traffic by a 4 foot wide raised concrete median. The left-turn movement operates under a protected signal phase. The westbound approach provides two dedicated left-turn lanes and a dedicated right-turn lane and is separated from opposing traffic by a 4 foot wide raised concrete median. An overlap phase accommodates northbound right turns with a green right arrow concurrent with the westbound phase, serving the continuous movement of US Route 1 in both directions.

A marked crosswalk is provided across the south and east legs with an exclusive pedestrian phase. Sidewalks are present on both sides of the north and south legs and the southern side of the east leg. Four foot wide shoulders are provided with marked edge lines on all approaches.

2.2.3 Lafayette Road (US Route 1) at North Shopping Plaza Driveway

The North Shopping Plaza Driveway provides access to a shopping plaza that contains a bowling alley, an urgent care facility, and several other businesses; the plaza also provides connection to the south edge of the Project site. The driveway intersects with the northbound direction of US Route 1, with a raised median prohibiting turns to and from US Route 1 southbound.

US Route 1 provides two lanes of through traffic which widens to accommodate a third lane of through traffic north of the intersection. A bus stop is located on the right shoulder 75 feet south of the intersection. The driveway provides a single approach lane under stop control. A sidewalk is provided along the east side of US Route 1 northbound, with no formalized, marked crosswalk across the driveway.

2.2.4 Lafayette Road (US Route 1) at Ledgewood Drive

Ledgewood Drive intersects Lafayette Road (US Route 1) from the east to form a three-way unsignalized intersection with Ledgewood Drive operating under stop control. The northbound and westbound approaches have one all purpose lane. The southbound approach has three lanes that are marked for the Lafayette Road/ US Route 1 Bypass intersection which is located approximately 150 feet to the south. The marked left-turn lane serves as a through/left-turn lane at this intersection. The intersection is marked with Do Not Block Intersection pavement markings.

A crosswalk is provided across Ledgewood Drive and sidewalks are present on the eastern side of Lafayette Road and the southern side of Ledgewood Drive. A 12 foot wide shoulder is provided at the northbound approach which also functions as a bus stop. Marked edge lines provide 4 to 6 foot shoulders at the westbound and southbound approaches.

2.2.5 Ledgewood Drive at West Site Driveway

The West Site Driveway intersects Ledgewood Drive from the south and is located approximately 85 feet east of the Lafayette Road (US Route 1)/Ledgewood Drive intersection. Ledgewood Drive has one travel lane in each direction and the driveway is one-way entering only. A sidewalk is present on the southern side of Ledgewood Drive and on both sides of the entrance driveway.

2.2.6 Ledgewood Drive at East Site Driveway

The East Site Driveway intersects Ledgewood Drive from the south and is located approximately 150 feet east of the West Site Driveway. Ledgewood Drive has one travel lane in each direction and the driveway is full-access with one all-purpose lane under stop control. A sidewalk is present along the southern side of Ledgewood Drive and the western side of the driveway.

2.3 Traffic Volumes

Turning movement counts (TMC) were collected at the study area intersections on Wednesday, November 1, 2023, during the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon peak periods (4:00 PM to 6:00 PM) and on Saturday, November 4, 2023, during the weekend afternoon peak period (11:00 AM to 2:00 PM). Automatic Traffic Recorder (ATR) counts were collected along Ledgewood Drive in the vicinity of the site driveways during a 48-hour period from Tuesday, October 31, 2023, thru Wednesday, November 1, 2023, concurrently with the TMC to record hourly traffic volumes and vehicular speeds.

Based on current NHDOT guidance, 2023 traffic volumes were compared to 2019 traffic volumes to determine if adjustments to the collected traffic volumes should be made to account for pandemic-related impacts to daily traffic volumes. The City of Portsmouth provided continuous TMC data for the intersection of Lafayette Road and South Street, which is located approximately a third of a mile north of the Project study area. Localized data from Lafeyette Road was determined to be more applicable to the study area than permanent count station data maintained by NHDOT on I-95 and Spaulding Turnpike. The average traffic volumes from Tuesday to Thursday during the same week in November 2019 and November 2023 were used as a basis for comparison for weekday morning and weekday afternoon peak periods. The traffic volume from Saturday during the same week in November 2019 and November 2023 was used as a basis of comparison for the weekend afternoon peak period. The review shows November 2023 traffic volumes at the intersection during the week the TMC were collected were 19.0% higher during the weekday morning peak hour than 2019 data. The City of Portsmouth provided an hourly count breakdown for the Lafayette Street and South Street intersection so two time periods were considered for comparison since the afternoon peak hour was 4:30 PM to 5:30 PM. The hours from 4:00-5:00 PM and from 5:00-6:00 PM saw an increase in November 2023 of 6.5% and 16.1%, respectively, compared to 2019 data. The review shows that the November 2023 traffic volumes were slightly lower for the Saturday midday peak period with a minimal decrease of 0.7%. The daily volume data for both weekday and Saturday were higher in November 2023 than in November 2019. Given the overall increases in weekday hourly data, weekday daily data, and Saturday midday data, and given the decrease of less than one percent in the Saturday midday, no pandemic-related adjustment were made to the weekday morning, weekday afternoon, or weekend afternoon peak periods.

The ATR data from Ledgewood Drive indicates average daily traffic (ADT) of approximately 550 vehicles per day in the eastbound direction and 650 vehicles per day in the westbound direction. The measured 85th percentile speeds, also known as the operating speed of the roadway, were approximately 23 mph and 24 mph in the eastbound and westbound directions, respectively.

The weekday morning and weekday afternoon turning movement counts were each seasonally adjusted to the peak and adjusted as applicable based on the historical volume comparison per NHDOT guidelines. The adjusted 2023 existing traffic volumes for the weekday morning, weekday afternoon, weekend afternoon peak hours are shown in Figure 2. The raw TMC data and ATR data are provided in Appendix A. The City of Portsmouth historical TMC from Lafayette Street and South Street intersection, seasonal adjustment factors, and historical growth rates are enclosed in Appendix B. The traffic volume adjustment factor calculation and supporting data is provided in Appendix C.

2.4 Capacity and Queue Analyses - Existing Condition

Capacity and queue analyses were performed for the study intersections for the 2023 Existing Conditions during the weekday morning, weekday afternoon, and weekend peak hours. Analyses were conducted using Trafficware Synchro Studio 11 software, which conducts the analysis based on *Highway Capacity Manual (HCM)* methodology. Consistent with NHDOT guidelines, analyses for signalized intersections were conducted using methods of the 2000 HCM, while analysis for unsignalized intersections utilized the HCM 6th Edition methodology. The analysis results are categorized in terms of Level of Service (LOS), which describes the qualitative intersection operational conditions based on the calculated average delay per vehicle. A summary of the HCM capacity analysis methodology and a detailed definition of LOS is provided in Appendix D. The queue analysis results are summarized based upon the length of vehicle queueing on an intersection approach. For unsignalized intersections, queues are quantified for 95th percentile (design queues). For signalized intersections, queues are quantified by 95th percentile (design) and 50th percentile (average) queues. Tables 1 and 2 in Section 7 summarize the capacity and queue analyses results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix E.

As shown in Table 1, the majority of the overall intersections and individual intersection approaches operated acceptably at LOS D or better during the peak hours with the following exceptions:

- **US Route 1 Bypass at Lafayette Road (US Route 1)**
  - The southbound left turn movement to Lafayette Road operates at LOS E during the weekday afternoon peak hour.
- **US Route 1 Bypass at Greenleaf Avenue**
  - The eastbound shared approach operates at LOS E during the weekday morning and weekday afternoon peak hours.
  - The northbound left turn movement operates at LOS E during the Saturday midday peak hour.
- **Lafayette Road (US Route 1) at Ledgewood Drive**
  - The Ledgewood Drive approach operates at LOS E during the weekday morning peak hour.

A review of the queuing results in Table 2 shows that a majority of the design queues are accommodated within the available storage between intersections. The following queue extends past available storage:

- **US Route 1 Bypass at Greenleaf Avenue**
  - Design queues on the shared northbound through/ right movements are shown to exceed available storage by approximately five vehicle lengths and spill back beyond the US Route 1 Bypass and Lafayette Road (US Route 1) intersection to the south during the weekday afternoon peak period.

2.5 Collision History

Vehicle collision data for the study intersections was provided by the Portsmouth Police Department (PPD). Traffic accident data for the areas around Lafayette Road and Route 1 Bypass for a four-year period between January 2020 and December 2023 was reviewed. Table 3 provides a summary of the collisions within the study area including type, severity, day and time, and location. Appendix J includes detailed collision summaries for each of the study intersections.

As shown in Table 3, there were 27 motor vehicle collisions reported in the study area during the four-year period analyzed. Crashes most frequently occurred at the US Route 1 Bypass and Lafayette Road intersection with 14 total collisions and accounting for about 52% of the reported total. The US Route 1 Bypass at Greenleaf Avenue intersection experienced the second highest number of collisions with eight, accounting for about 30% of the total crashes. The Lafayette Road and Ledgewood Drive intersection experienced the third highest reported collisions with four, accounting for 15% of total crashes. The remaining one reported crash occurred at the intersection of US Route 1 and the North Shopping Plaza Driveway. Both the West Site Driveway and the East Site Driveway with Ledgewood Drive experienced zero reported collisions in the time period analyzed.

The most frequent type of collisions was rear-end, accounting for about 52% of the total collisions within the study area. The second most frequent collision type was angle which made up about 19% of the total collisions. The remainder of collisions were fixed object or sideswipe, same direction collisions, both of which had four reported collisions and accounted for about 15% of the total collisions each.

About 82% of the collisions occurred on weekdays, spread throughout the day. Weather and roadway conditions at the time of the collisions were not able to be determined from the police reports.

The collisions data indicates no reported fatalities and four crashes with injuries recorded: three suspected minor injuries and one incapacitating injury. The remaining crashes resulted in property damage only.

TABLE 3
Study Area Crash History Summary

COLLISION TYPE

	2020	2021	2022	2023	Total	Percent
Angle	1	2	1	1	**5**	**18.5%**
Fixed Object	1	0	0	3	**4**	**14.8%**
Rear-End	3	4	5	2	**14**	**51.9%**
Sideswipe, Same Direction	1	2	0	1	**4**	**14.8%**
TOTAL	**6**	**8**	**6**	**7**	**27**	**100%**

SEVERITY

	2020	2021	2022	2023	Total	Percent
Personal Injury	1	1	1	1	**4**	**14.8%**
Property Damage Only (PDO)	5	7	5	6	**23**	**85.2%**
TOTAL	**6**	**8**	**6**	**7**	**27**	**100%**

DAY & TIME

	2020	2021	2022	2023	Total	Percent
Weekday 6-9 A.M.	0	1	0	0	**1**	**3.7%**
Weekday 3-6 P.M.	3	3	1	0	**7**	**25.9%**
Weekday Off-Peak	2	4	3	5	**14**	**51.9%**
Weekend Off-Peak	1	0	2	2	**5**	**18.5%**
TOTAL	**6**	**8**	**6**	**7**	**27**	**100%**

CRASHES BY STUDY AREA INTERSECTION

	2020	2021	2022	2023	Total	Percent
US 1 at N Shopping Plaza Driveway	0	1	0	0	**1**	**3.7%**
US 1 Bypass at Lafayette Road	2	3	5	4	**14**	**51.9%**
Lafayette Road at Ledgewood Drive	2	1	1	0	**4**	**14.8%**
US 1 Bypass at Greenleaf Avenue	2	3	0	3	**8**	**29.6%**
TOTAL	**6**	**8**	**6**	**7**	**27**	**100%**

2.6 Alternative Travel Modes

The study area is in a moderately densely developed setting in the City of Portsmouth where several multimodal travel options are readily available. The following summarizes the details of various alternative travel modes supported within the study area.

Pedestrian facilities are present throughout the study area. There are existing sidewalks on both sides of US Route 1/US Route 1 Bypass until the intersection with Greenleaf Avenue. Ledgewood Drive and Lafayette Road both have sidewalks on one side of the roadway. Marked crosswalks are provided at both signalized intersections; US Route 1 Bypass/Greenleaf Avenue provides a concurrent pedestrian phase and US Route 1 Bypass/ Lafayette Road (US Route 1) provides an exclusive pedestrian phase.

The Cooperative Alliance for Seacoast Transportation (COAST) provides transit service within the study area. Bus Route 41 is the primary bus route in the study area with stops along Lafayette Road between Hanover Station to the north and Hillcrest Estimates to the south. An existing bus stop is located less than a quarter mile south of the site, just south of the US Route 1 and North Shopping Plaza Driveway and another stop is located approximately 200 feet west of the site, located just south of the Lafayette Road and Ledgewood Drive intersection. The route operates from 6:00 AM to 8:49 PM Monday through Saturday. The Route 41 map and schedule are included in Appendix F.

Section 3
No-Build Conditions

The No-Build Condition represents the projection of traffic volumes and operating conditions without the anticipated additional site generated traffic. Consistent with NHDOT guidelines, the study area is analyzed for an Opening Year (2025) and Design Year (2035). This section describes the growth and development considerations included in the 2025 and 2035 No-Build traffic volumes.

3.1 Traffic Growth

To develop the traffic volumes for the 2025 and 2035 No-Build Conditions, the 2023 Existing traffic volumes were grown by one percent per year to represent the general growth of traffic on the study area roadways. This growth rate is consistent with the average growth rate in NHDOT Region E - Southeast, the region in which Portsmouth is located. Background NHDOT growth data is included in Appendix B.

NHDOT and the City of Portsmouth were contacted about other planned/approved developments in the area that may add new traffic to the study area prior to 2025. The following developments were identified:

- **815 Lafayette Road – Residential Development:** The project proposes 72 residential units. The project has been approved and is anticipated to be occupied in 2025. Estimated site traffic volumes were reviewed from the project's Traffic Impact Assessment and included in the development of the 2025 and 2035 No-Build traffic volumes.

- **105 Bartlett Street – North Mill Pond Residential Development:** The project proposes to construct 152 residential units. The project has been approved and construction is anticipated to begin in Spring 2024. Based on a review of the previous analyses, it was determined that the estimated project trips will not add traffic to the study intersections based on anticipated travel patterns, and therefore was not added to the No-Build traffic volumes.

It is assumed that other smaller developments or small vacancies in existing developments are also captured by the background traffic growth rate. The 2025 and 2035 No-Build traffic volumes for the weekday morning, weekday afternoon, and Saturday midday peak hours are shown in Figures 3 and 4, respectively.

3.2 Capacity and Queue Analyses – No-Build Conditions

Capacity and queue analyses were conducted for the 2025 and 2035 No-Build Conditions traffic volumes for all peak periods using the methodology described in Section 2.4. Tables 1 and 2 in Section 7 summarize the capacity and queue results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix E.

The increase in expected future traffic based on the one percent per year compounded growth rate and background development traffic volumes that were added to the existing 2023 traffic volumes resulted in no degradation in LOS of operations when compared to existing conditions for the 2025 No-Build Condition. The 2035 No-Build

Condition resulted in some degradation of LOS based on the addition of ten years of compounded annual growth. The following intersections showed some degradation of operations in the future 2035 No-Build Conditions compared to existing:

- **US Route 1 Bypass at Lafayette Road (US Route 1)**
  - The northbound through movement degrades from LOS D to LOS F for the weekday morning peak hour.
- **Lafayette Road (US Route 1) at Ledgewood Drive**
  - The westbound approach degrades from LOS E to LOS F for the weekday morning peak hour.
- **US Route 1 at Greenleaf Avenue**
  - It should be noted that while the overall LOS of the intersection remains the same and the volume-to-capacity ratio increases in 2025 during the Saturday midday peak hour, the northbound left turn movement improves in LOS from E to D due to a decrease of less than one second of average delay. This improvement is offset by an increase in delay for the eastbound and southbound approaches.

Design queues increased by two vehicle lengths or less at all intersection approaches between the existing and 2025 No-Build conditions. Design queues exceeding available storage that were not predicted in 2023 are now predicted at the following movements in 2035 as a result of compounded annual growth and background development:

- **US Route 1 Bypass at Lafayette Road (US Route 1)**
  - Design queue for the northbound through approach is predicted to exceed available storage by approximately two vehicle lengths during the weekday afternoon peak period and spillback into the Lafayette Road (US Route 1) and Greenleaf Woods Drive intersection.
  - Design queue for the southbound through approach is predicted to exceed available storage by three vehicle lengths during the weekday afternoon peak period and spillback into the US Route 1 Bypass and Greenleaf Avenue intersection.
- **US Route 1 Bypass at Greenleaf Avenue**
  - An increase in the design queue of approximately five vehicle lengths is predicted on the northbound through/ right turn movements. The increased queue will increase the spillback into the US Route 1 Bypass and Lafayette Road (US Route 1) intersection.

It is important to note that the 95th percentile (design queue) is the queue length that is predicted to be reached only 5 percent of the time, or approximately 3 minutes out of 60 minutes in the affected peak hour.

Section 4
Proposed Conditions

The proposed 72-unit residential development will include two new buildings with structured parking on the ground level and basement level of each building. The existing building will remain on the site and the existing parking area will be reconfigured to accommodate the two additional buildings. The proposed development is expected to be complete and occupied in 2025. The Site Plan is presented in Appendix H.

4.1 Site Access

Access to the site is currently provided via two driveways on Ledgewood Drive. The western driveway is located approximately 85 feet east of the Lafeyette Road (US Route 1) and Ledgewood Drive intersection. The existing enter-only western driveway provides will be maintained as part of the project. The existing eastern driveway, located approximately 150 feet east of the western driveway, will be shifted approximately 30 feet east and will continue to provide access to the surface parking. A new driveway located 100 feet east of the existing western driveway will provide access to the underground parking only.

Stopping sight distance (SSD) and intersection sight distance (ISD) were reviewed at the proposed site driveways on Ledgewood Road, in accordance with criteria set forth in the AASHTO publication *A Policy on the Geometric Design of Highways and Streets*, 7th Edition, 2018. Available sight distances were estimated based on the site layout plan and available aerial mapping. The 85th percentile speeds were measured to be approximately 23 mph in the eastbound direction and 24 mph in the westbound direction on Ledgewood Drive. A design speed of 25 mph was used as a basis for the analysis.

Based on AASHTO guidelines, roadway grades, and the 85th percentile speed of the roadway, the stopping sight distance requirement is 155 feet for vehicles traveling in both the eastbound and westbound directions. Available sight distance exceeds the required SSD at the proposed garage driveway and shifted eastern driveway for vehicles traveling both eastbound and westbound.

Recommended intersection sight distance was also reviewed at the proposed parking garage driveway and shifted eastern site driveway. The desirable ISD based on AASHTO guidelines and a design speed of 25 mph is 280 feet. Based on the proposed development plan and measurement of sight distance utilizing available aerial mapping, the ISD is only met for the east site driveway looking left. Approximately 180 feet of sight distance is provided looking right at the eastern site driveway. The proposed garage driveway will provide approximately 230 feet and 180 feet of sight distance looking left and right, respectively. Sight lines looking left to the west are limited by the terminus of Ledgewood Drive at the intersection with Lafayette Road. Sight lines looking right to the east are limited by the curvature of Ledgewood Drive. However, it is expected that the east site driveway will operate safely given the low volume of traffic traveling westbound on Ledgewood Road as shown in the collected traffic volume data and presumed slower westbound travel speeds around the curve. Similarly, at the proposed garage driveway it is reasonable to assume that vehicles turning onto Ledgewood Drive from Lafayette Road will be traveling at a lower rate of speed after completing their turning movement and thus require less sight distance, allowing the intersection to operate safely.

4.2 Trip Generation

Site generated traffic volumes for the proposed residential development were estimated using rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, 2021. Land Use Code (LUC) 221 – Residential – Multifamily Housing (Mid-Rise) was used, with the proposed site generated traffic volumes calculated based on the number of proposed apartments. Trip generation is based on the peak hour of the adjacent street (site). It is estimated that the proposed development may generate a total of 27 trips (6 entering, 21 exiting) during the weekday morning peak hour, 28 trips (17 entering, 11 exiting) during the weekday afternoon peak hour, and 29 trips (15 entering, 14 exiting) during the Saturday midday peak hour. The proposed site generated traffic is summarized in Table 4.

TABLE 4
Site-Generated Traffic Summary

Proposed - 72 Apartments (4 Stories)			**LUC 221**
Peak Hour Period	**Enter**	**Exit**	**Total**
Weekday Morning	6	21	27
Weekday Afternoon	17	11	28
Saturday Midday	15	14	29
Weekday	164	163	327
Saturday	175	176	351

Source: Institute of Transportation Engineers, Trip Generation, 11th Edition, 2021
Land Use - 221 [Multifamily Housing (Mid-Rise)]

4.3 Arrival and Departure Distribution

The distribution of the proposed site-generated traffic entering and exiting the Site was applied to the roadway network based on existing traffic patterns within the study area as well as a review of US Census Journey-to-Work data which is included in Appendix G. The following arrival/departure distributions are anticipated:

- 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 regional distribution, it is estimated that 45% of site traffic will access the site via US Route 1 Bypass to the northwest, 30% will access the site to/ from the northeast via US Route 1 and 25% will access the site to/ from the south via US Route 1.

Figure 5 presents the arrival and departure distributions of the traffic through the study area by intersection movement. Figure 6 shows the proposed site generated traffic distributed to the study area roadways for the weekday morning, weekday afternoon peak periods, and Saturday midday peak periods.

Section 5
Build Conditions

The anticipated site generated traffic volumes associated with the proposed development were added to the 2025 and 2035 No-Build Conditions traffic volumes to develop the 2025 and 2035 Build Conditions traffic volumes, which are presented in Figures 7 and 8, respectively.

5.1 Capacity and Queue Analyses - Build Condition

Capacity and queue analyses were conducted for the 2025 and 2035 Build Conditions for the peak hours using the methodology described in Section 2.4. Tables 1 and 2 in Section 7 summarize the capacity and queue results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix E.

A majority of the study area intersections and individual intersection approaches continue to operate at acceptable LOS D or better during the peak hours in the 2025 and 2035 Build Conditions. Study area intersections that were identified in Section 2.4 and 3.2 to operate at LOS E or LOS F in the 2025 No-Build Conditions continue to operate at the same LOS under 2025 Build Conditions, with the exception of the following:

- **Lafayette Road (US Route 1) at Ledgewood Drive**
    - The westbound approach is predicted to degrade from LOS E to LOS F during the weekday morning peak hour.

All study area intersections that were identified in Section 2.4 and 3.2 to operate at LOS E or LOS F in the 2035 No-Build Conditions continue to operate at the same LOS under the 2035 Build Conditions.

Design queues on all intersection approaches increased by less than two vehicle lengths or experience increases in design queues that are accommodated within available storage when compared to 2025 and 2025 No-Build Conditions.

Section 6
Conclusions & Recommendations

1. The project proposes to construct 72 residential units in two new buildings adjacent to the existing building located at 581 Lafayette Road. The existing building and its current restaurant and restaurant/indoor golf uses will remain. Structured parking will be provided below the apartments on the ground level and basement levels of the building. The existing surface parking lot will be reconfigured to accommodate the building addition. The development is expected to be complete and occupied in 2025.

2. Access to the site will be provided via three driveways to Ledgewood Drive. An existing entrance-only driveway will be retained. The existing second driveway will be relocated slightly to the east, with a new middle driveway added to provide direct access to proposed structured parking. Exit driveways will operate under stop control.

3. Based on the ITE data, the project is expected to generate 27 trips during the weekday morning peak hour (6 entering, 17 exiting), 28 trips during the weekday afternoon peak hour (17 entering, 11 exiting), and 29 trips during the Saturday midday peak hour (15 entering, 14 exiting).

4. The project proposes internal sidewalk connections to the existing sidewalk network along Ledgewood Drive and Lafayette Road, promoting connections to the existing sidewalk network along study area roadways.

5. Vehicle collision history, compiled from local police, do not indicate a significant or notable pattern of collisions in the study area.

6. Consistent with NHDOT guidelines, existing traffic volumes have been seasonally adjusted to the peak month condition. A review of 2023 and 2019 data provided by the City of Portsmouth revealed higher or stagnant volumes in 2023; therefore, no adjustment to a pre-pandemic condition was necessary.

7. The capacity analyses show that the study area intersections will continue to operate at the same LOS under Build Conditions as compared to the No-Build Conditions for both the 2025 opening year and 2035 design year, except for the Ledgewood Drive approach at Lafayette Road which experiences a minor increase in delay and degradation from LOS E to LOS F in the weekday morning peak hour in the 2025 Build Condition. A review of design queues indicates minor increases of two vehicles of less in the 2025 and 2035 Build Conditions compared to the corresponding No Build Conditions.

8. Based on the results of the foregoing analysis, it is the professional opinion of Tighe & Bond that the addition of site-generated traffic is expected to have a negligible effect on traffic operations within the study area.

Section 7
Tables

TABLE 1
Intersection Operation Summary - Capacity

	Lane Use	2023 Existing LOS	2023 Existing Delay	2023 Existing V/C	2025 No-Build LOS	2025 No-Build Delay	2025 No-Build V/C	2035 No-Build LOS	2035 No-Build Delay	2035 No-Build V/C	2025 Build LOS	2025 Build Delay	2025 Build V/C	2035 Build LOS	2035 Build Delay	2035 Build V/C
		Weekday Morning Peak Hour														
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)																
Overall		**B**	**19.1**	**0.83**	**C**	**20.3**	**0.90**	**D**	**36.1**	**1.11**	**C**	**20.8**	**0.91**	**D**	**36.9**	**1.12**
Lafayette Road (US Route 1)	WBL	C	28.8	0.59	C	28.3	0.59	C	28.3	0.63	C	28.3	0.59	C	28.5	0.64
	WBR	B	12.8	0.06	B	12.1	0.06	B	10.6	0.07	B	11.9	0.07	B	10.6	0.08
US Route 1	NBT	C	32.3	0.83	D	38.7	0.90	F	94.8	1.11	D	40.5	0.91	F	98.2	1.12
	NBR	A	9.9	0.41	B	10.3	0.43	B	11.7	0.47	B	10.5	0.43	B	11.9	0.47
US Route 1 Bypass	SBL	C	25.5	0.48	C	23.8	0.48	C	22.8	0.47	C	23.5	0.48	C	22.7	0.47
	SBT	A	8.0	0.47	A	6.8	0.49	A	9.3	0.56	A	6.9	0.49	A	9.3	0.56
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue																
Overall		**C**	**26.5**	**0.84**	**C**	**27.4**	**0.85**	**C**	**29.3**	**0.90**	**C**	**27.3**	**0.85**	**C**	**29.3**	**0.90**
Greenleaf Avenue	EB	E	55.6	0.84	E	56.9	0.85	E	64.7	0.90	E	56.9	0.85	E	64.7	0.90
	WB	C	27.9	0.25	C	27.7	0.25	C	26.5	0.27	C	27.7	0.25	C	26.5	0.27
US Route 1 Bypass	NBL	B	18.2	0.33	B	15.8	0.32	B	15.6	0.36	B	16.0	0.32	B	15.8	0.36
	NBTR	C	30.8	0.62	C	30.8	0.64	C	32.8	0.75	C	30.5	0.65	C	32.6	0.76
	SBL	D	38.7	0.44	D	38.7	0.45	D	38.8	0.48	D	38.7	0.45	D	38.8	0.48
	SBTR	B	15.9	0.60	B	18.1	0.65	B	19.5	0.71	B	18.2	0.65	B	19.5	0.71
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway																
North Shopping Plaza Driveway	WBR	C	18.8	0.02	C	19.5	0.02	C	21.6	0.02	C	19.5	0.02	C	21.6	0.02
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive																
Ledgewood Drive	WB	E	36.1	0.44	E	40.0	0.47	F	62.3	0.65	F	53.9	0.64	F	95.1	0.85
Lafayette Road (US Route 1)	SBL	B	10.3	0.05	B	10.4	0.05	B	11.0	0.06	B	10.5	0.05	B	11.1	0.07
Unsignalized TWSC - Ledgewood Drive at West Site Driveway																
Ledgewood Drive	WB	A	7.4	0.00	A	7.4	0.00	A	7.4	0.00	A	7.4	0.00	A	7.4	0.00
Unsignalized TWSC - Ledgewood Drive at East Site Driveway																
East Site Driveway	NB	A	9.3	0.04	A	9.3	0.04	A	9.5	0.06	A	9.6	0.08	A	9.7	0.10
Ledgewood Drive	WB	A	7.4	0.01	A	7.4	0.01	A	7.4	0.01	A	7.4	0.01	A	7.4	0.01
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway																
Proposed Garage Driveway	NB	--	--	--	--	--	--	--	--	--	A	9.2	0.01	A	9.2	0.01
Ledgewood Drive	WB	--	--	--	--	--	--	--	--	--	A	0.0	0.00	A	0.0	0.00

Legend
LOS - Level of Service
Delay - average delay per vehicle in seconds
V/C - volume to capacity ratio

TABLE 1 (CONTINUED)
Intersection Operation Summary - Capacity

		Weekday Afternoon Peak Hour														
	Lane Use	2023 Existing			2025 No-Build			2035 No-Build			2025 Build			2035 Build		
		LOS	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)																
Overall		**C**	**27.2**	**0.75**	**C**	**28.1**	**0.79**	**C**	**33.3**	**0.93**	**C**	**28.6**	**0.80**	**C**	**34.3**	**0.94**
Lafayette Road (US Route 1)	WBL	D	51.0	0.66	D	50.2	0.67	D	48.1	0.67	D	50.0	0.66	D	47.9	0.67
	WBR	C	31.7	0.02	C	30.8	0.02	C	28.3	0.03	C	30.3	0.03	C	27.8	0.03
US Route 1	NBT	C	32.4	0.75	C	34.6	0.79	D	47.7	0.93	D	35.6	0.80	D	50.3	0.94
	NBR	A	8.7	0.37	A	8.9	0.38	A	9.8	0.44	A	9.2	0.39	B	10.1	0.44
US Route 1 Bypass	SBL	E	64.0	0.54	E	64.0	0.55	E	64.1	0.57	E	64.3	0.57	E	64.3	0.59
	SBT	B	15.3	0.46	B	16.2	0.48	B	19.1	0.55	B	16.4	0.48	B	19.2	0.55
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue																
Overall		**C**	**32.0**	**0.91**	**C**	**33.1**	**0.91**	**D**	**44.5**	**0.98**	**C**	**33.3**	**0.91**	**D**	**45.0**	**0.98**
Greenleaf Avenue	EB	E	62.9	0.91	E	63.9	0.91	E	69.5	0.95	E	63.9	0.91	E	69.5	0.95
	WB	C	28.0	0.17	C	27.7	0.17	C	25.8	0.19	C	27.7	0.17	C	25.8	0.19
US Route 1 Bypass	NBL	D	53.3	0.32	D	53.5	0.33	D	53.7	0.36	D	53.5	0.33	D	53.7	0.36
	NBTR	C	29.5	0.79	C	31.1	0.82	D	50.6	0.98	C	31.3	0.83	D	51.5	0.98
	SBL	D	51.8	0.47	D	51.9	0.48	D	52.2	0.51	D	51.9	0.48	D	52.2	0.51
	SBTR	C	25.0	0.69	C	26.0	0.72	C	33.3	0.84	C	26.2	0.72	C	33.6	0.85
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway																
North Shopping Plaza Driveway	WBR	C	23.8	0.14	C	24.8	0.15	D	29.4	0.20	C	24.8	0.15	D	29.6	0.20
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive																
Ledgewood Drive	WB	C	19.9	0.23	C	21.0	0.25	D	25.1	0.32	C	23.3	0.31	D	28.5	0.39
Lafayette Road (US Route 1)	SBL	A	9.1	0.05	A	9.2	0.06	A	9.5	0.07	A	9.3	0.06	A	9.6	0.07
Unsignalized TWSC - Ledgewood Drive at West Site Driveway																
Ledgewood Drive	WB	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00
Unsignalized TWSC - Ledgewood Drive at East Site Driveway																
East Site Driveway	NB	A	9.1	0.02	A	9.1	0.02	A	9.2	0.03	A	9.1	0.03	A	9.2	0.03
Ledgewood Drive	WB	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway																
Proposed Garage Driveway	NB	--	--	--	--	--	--	--	--	--	A	9.1	0.01	A	9.2	0.01
Ledgewood Drive	WB	--	--	--	--	--	--	--	--	--	A	0.0	0.00	A	0.0	0.00

Legend
LOS - Level of Service
Delay - average delay per vehicle in seconds
V/C - volume to capacity ratio

TABLE 1 (CONTINUED)
Intersection Operation Summary - Capacity

	Lane Use	Saturday Midday Peak Hour														
		2023 Existing			2025 No-Build			2035 No-Build			2025 Build			2035 Build		
		LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)																
Overall		**B**	**19.9**	**0.76**	**C**	**20.3**	**0.78**	**C**	**23.8**	**0.90**	**C**	**20.5**	**0.78**	**C**	**24.3**	**0.91**
Lafayette Road (US Route 1)	WBL	C	30.2	0.54	C	30.1	0.54	C	29.5	0.57	C	30.2	0.55	C	29.5	0.57
	WBR	B	20.0	0.02	B	19.9	0.02	B	18.7	0.02	B	19.7	0.03	B	18.6	0.03
US Route 1	NBT	C	24.8	0.76	C	25.6	0.78	C	34.5	0.90	C	26.1	0.78	D	35.7	0.91
	NBR	A	7.5	0.29	A	7.5	0.29	A	7.9	0.32	A	7.6	0.29	A	8.0	0.32
US Route 1 Bypass	SBL	D	52.6	0.54	D	52.7	0.55	D	52.5	0.58	D	52.6	0.57	D	53.2	0.61
	SBT	B	13.8	0.51	B	14.2	0.53	B	16.1	0.60	B	14.2	0.53	B	16.1	0.60
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue																
Overall		**B**	**17.3**	**0.72**	**B**	**17.7**	**0.73**	**B**	**19.3**	**0.78**	**B**	**17.7**	**0.73**	**B**	**19.3**	**0.78**
Greenleaf Avenue	EB	D	43.1	0.72	D	44.1	0.73	D	47.7	0.78	D	44.1	0.73	D	47.7	0.78
	WB	C	29.3	0.19	C	29.1	0.19	C	28.1	0.20	C	29.1	0.19	C	28.1	0.20
US Route 1 Bypass	NBL	E	55.1	0.31	E	55.6	0.31	D	55.0	0.33	E	55.5	0.31	D	54.0	0.33
	NBTR	B	11.0	0.56	B	11.3	0.59	B	11.5	0.68	B	11.3	0.60	B	11.6	0.68
	SBL	D	41.5	0.45	D	38.6	0.36	D	38.7	0.39	D	38.6	0.36	D	38.7	0.39
	SBTR	B	15.0	0.64	B	15.6	0.66	B	18.6	0.75	B	15.7	0.66	B	18.7	0.75
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway																
North Shopping Plaza Driveway	WBR	C	20.3	0.15	C	20.8	0.16	C	23.8	0.20	C	20.8	0.16	C	23.9	0.20
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive																
Ledgewood Drive	WB	C	18.9	0.25	C	19.6	0.26	C	23.3	0.33	C	22.3	0.35	D	27.8	0.44
Lafayette Road (US Route 1)	SBL	A	9.1	0.06	A	9.1	0.06	A	9.4	0.07	A	9.2	0.07	A	9.5	0.08
Unsignalized TWSC - Ledgewood Drive at West Site Driveway																
Ledgewood Drive	WB	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00	A	7.5	0.00
Unsignalized TWSC - Ledgewood Drive at East Site Driveway																
East Site Driveway	NB	A	9.0	0.03	A	9.0	0.03	A	9.1	0.03	A	9.1	0.04	A	9.4	0.05
Ledgewood Drive	WB	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	7.3	0.01
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway																
Proposed Garage Driveway	NB	--	--	--	--	--	--	--	--	--	A	9.1	0.01	A	9.2	0.01
Ledgewood Drive	WB	--	--	--	--	--	--	--	--	--	A	0.0	0.00	A	0.0	0.00

Legend
LOS - Level of Service
Delay - average delay per vehicle in seconds
V/C - volume to capacity ratio

TABLE 2
Intersection Operation Summary - Queues (In Feet)

	Lane Use	Available Storage	2023 Existing 50th	2023 Existing 95th	2025 No-Build 50th	2025 No-Build 95th	2035 No-Build 50th	2035 No-Build 95th	2025 Build 50th	2025 Build 95th	2035 Build 50th	2035 Build 95th
			Weekday Morning Peak Hour									
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)												
Lafayette Road (US Route 1)	WBL	280	124	141	125	145	140	161	126	147	142	163
	WBR	280	0	14	0	13	0	13	0	14	0	14
US Route 1	NBT	1000	237	386	254	416	339	486	256	417	341	487
	NBR	560	0	36	0	38	0	41	0	38	0	41
US Route 1 Bypass	SBL	230	82	81	41	75	91	81	42	75	91	82
	SBT	500	214	28	106	29	267	32	116	29	267	32
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue												
Greenleaf Avenue	EB	900	94	151	96	166	107	199	96	166	107	199
	WB	100	20	72	21	74	22	79	21	74	22	79
US Route 1 Bypass	NBL	170	9	13	13	18	10	10	13	18	10	11
	NBTR	475	290	356	296	339	333	314	298	337	336	314
	SBL	200	39	77	40	78	44	85	40	78	44	85
	SBTR	680	147	330	238	349	198	433	238	350	199	435
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway												
North Shopping Plaza Drivewa	WBR	50	--	0	--	0	--	3	--	0	--	3
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive												
Ledgewood Drive	WB	210	--	53	--	57	--	90	--	93	--	143
Lafayette Road (US Route 1)	SBL	180	--	3	--	5	--	5	--	5	--	5
Unsignalized TWSC - Ledgewood Drive at West Site Driveway												
Ledgewood Drive	WB	120	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at East Site Driveway												
East Site Driveway	NB	25	--	3	--	3	--	5	--	8	--	8
Ledgewood Drive	WB	100	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway												
Proposed Garage Driveway	NB	30	--	--	--	--	--	--	--	0	--	0
Ledgewood Drive	WB	35	--	--	--	--	--	--	--	0	--	0

Legend

50th & 90th - 50th and 95th percentile queue lengths in feet

TABLE 2 (CONTINUED)
Intersection Operation Summary - Queues (In Feet)

			Weekday Afternoon Peak Hour									
	Lane Use	Available Storage	2023 Existing		2025 No-Build		2035 No-Build		2025 Build		2035 Build	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)												
Lafayette Road (US Route 1)	WBL	280	222	260	230	267	250	285	107	137	251	286
	WBR	280	0	13	0	13	0	12	0	10	0	12
US Route 1	NBT	1000	388	897	409	948	518	1132	236	608	525	1144
	NBR	560	4	59	6	69	16	125	0	46	16	130
US Route 1 Bypass	SBL	230	82	138	84	140	92	150	58	96	100	160
	SBT	500	191	446	203	474	257	571	86	395	257	571
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue												
Greenleaf Avenue	EB	900	202	224	205	229	235	264	84	131	235	264
	WB	100	22	39	21	39	24	42	16	62	24	42
US Route 1 Bypass	NBL	170	19	47	20	49	22	53	13	19	22	53
	NBTR	475	406	596	429	621	563	726	11	253	566	730
	SBL	200	45	87	45	89	51	96	30	61	51	96
	SBTR	680	344	468	366	494	441	621	165	387	446	627
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway												
North Shopping Plaza Drivewa	WBR	50	--	13	--	13	--	18	--	13	--	18
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive												
Ledgewood Drive	WB	210	--	23	--	23	--	33	--	33	--	45
Lafayette Road (US Route 1)	SBL	180	--	5	--	5	--	5	--	5	--	5
Unsignalized TWSC - Ledgewood Drive at West Site Driveway												
Ledgewood Drive	WB	120	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at East Site Driveway												
East Site Driveway	NB	25	--	3	--	3	--	3	--	3	--	3
Ledgewood Drive	WB	100	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway												
Proposed Garage Driveway	NB	30	--	--	--	--	--	--	--	0	--	0
Ledgewood Drive	WB	35	--	--	--	--	--	--	--	0	--	0

Legend

50th & 90th - 50th and 95th percentile queue lengths in feet

TABLE 2 (CONTINUED)
Intersection Operation Summary - Queues (In Feet)

	Lane Use	Available Storage	Saturday Midday Peak Hour 2023 Existing		2025 No-Build		2035 No-Build		2025 Build		2035 Build	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
Traffic Signal - US Route 1 Bypass at Lafayette Road (US Route 1)												
Lafayette Road (US Route 1)	WBL	280	104	133	106	136	115	150	107	137	116	152
	WBR	280	0	9	0	9	0	9	0	10	0	10
US Route 1	NBT	1000	224	595	233	608	286	676	236	608	288	676
	NBR	560	0	45	0	46	0	48	0	46	0	48
US Route 1 Bypass	SBL	230	53	92	53	90	60	89	58	96	63	94
	SBT	500	84	383	86	395	97	463	86	395	97	463
Traffic Signal - US Route 1 Bypass at Greenleaf Avenue												
Greenleaf Avenue	EB	900	81	127	84	131	93	147	84	131	93	147
	WB	100	15	61	16	62	16	65	16	62	16	65
US Route 1 Bypass	NBL	170	13	19	13	19	14	18	13	19	14	19
	NBTR	475	10	245	11	251	12	311	11	253	13	314
	SBL	200	29	60	30	61	33	65	30	61	33	65
	SBTR	680	155	368	163	381	206	488	165	387	208	492
Unsignalized TWSC - US Route 1 at North Shopping Plaza Driveway												
North Shopping Plaza Drivewa	WBR	50	--	13	--	13	--	18	--	13	--	18
Unsignalized TWSC - Lafayette Road (US Route 1) at Ledgewood Drive												
Ledgewood Drive	WB	210	--	23	--	25	--	35	--	38	--	53
Lafayette Road (US Route 1)	SBL	180	--	5	--	5	--	5	--	5	--	5
Unsignalized TWSC - Ledgewood Drive at West Site Driveway												
Ledgewood Drive	WB	120	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at East Site Driveway												
East Site Driveway	NB	25	--	3	--	3	--	3	--	3	--	3
Ledgewood Drive	WB	100	--	0	--	0	--	0	--	0	--	0
Unsignalized TWSC - Ledgewood Drive at Proposed Garage Driveway												
Proposed Garage Driveway	NB	30	--	--	--	--	--	--	--	0	--	0
Ledgewood Drive	WB	35	--	--	--	--	--	--	--	0	--	0

Legend

50th & 90th - 50th and 95th percentile queue lengths in feet

Section 8
Figures

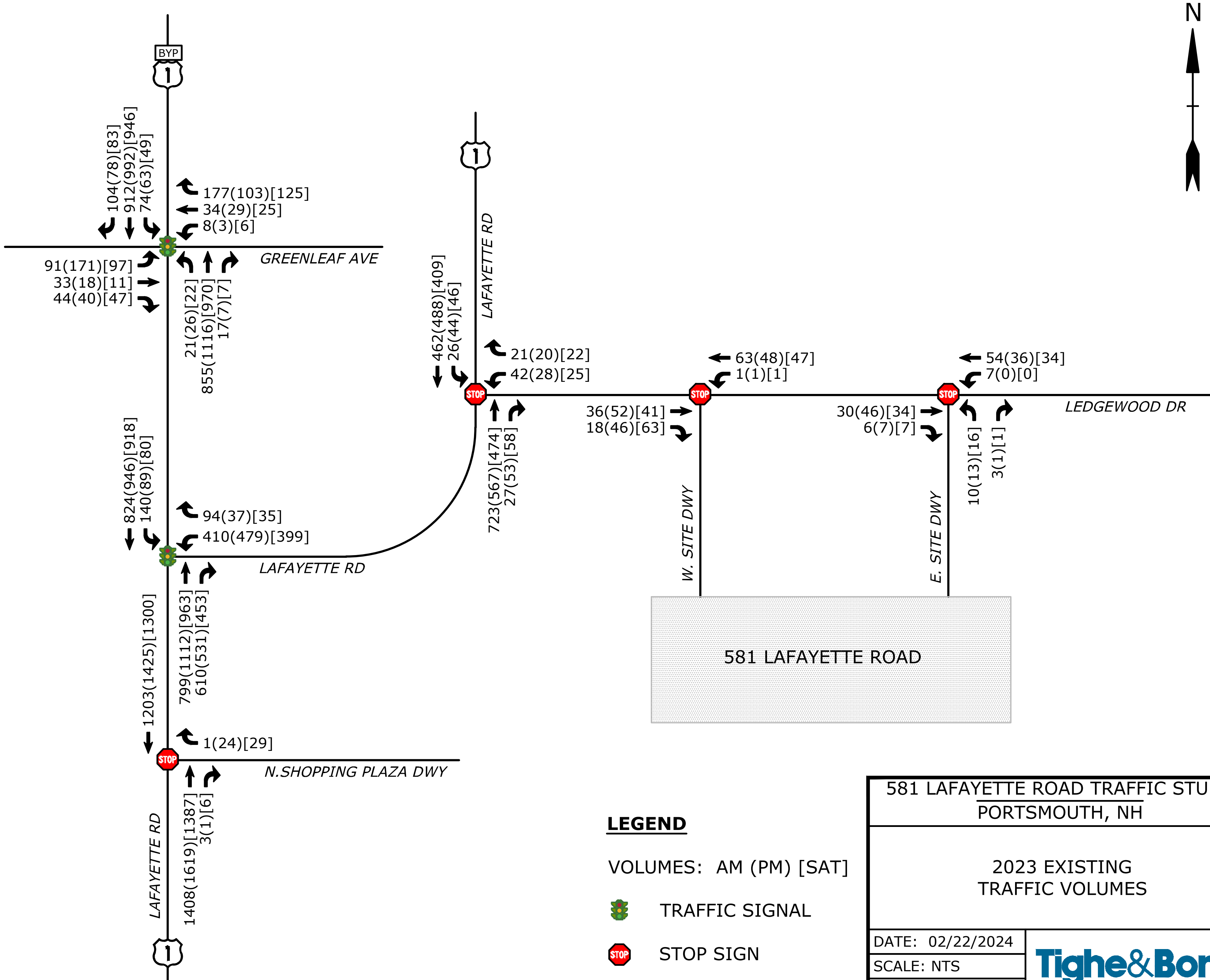
581 LAFAYETTE ROAD
PORTSMOUTH, NH

STUDY AREA

DATE: 02/19/2024
SCALE: 1" = 1000'
FIGURE: 1

Tighe&Bond

Feb 19, 2024-9:08am Plotted By: MStoutz
Tighe & Bond, Inc. J:\A\A5109 Atlas Commons, LLC\001 - 581 Lafayette Road Traffic Study\Drawings\AutoCAD\Figures\A5109-001 TIS Study Area.dwg

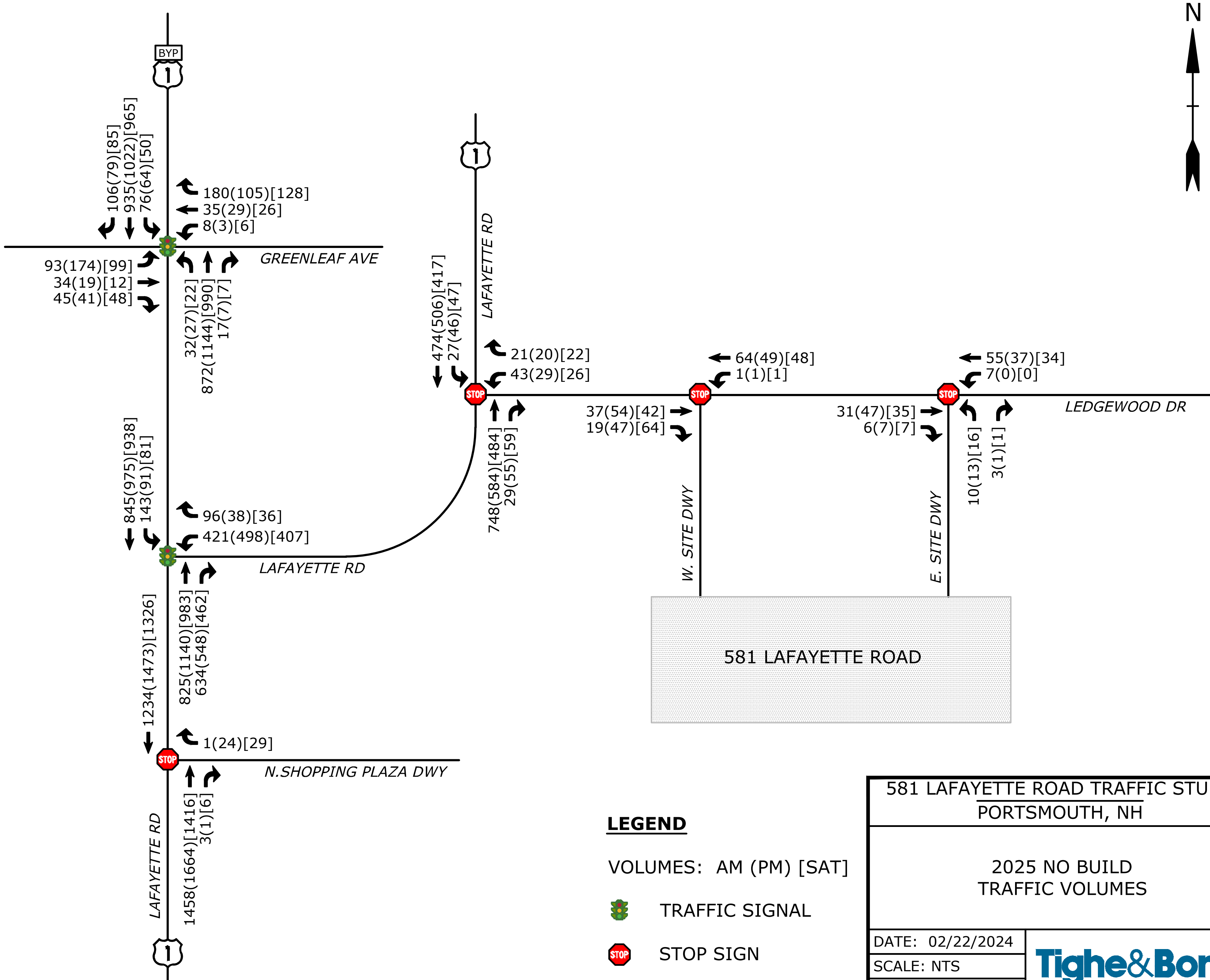


581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

2023 EXISTING
TRAFFIC VOLUMES

DATE: 02/22/2024
SCALE: NTS
FIGURE 2

Tighe&Bond



LEGEND

VOLUMES: AM (PM) [SAT]

TRAFFIC SIGNAL

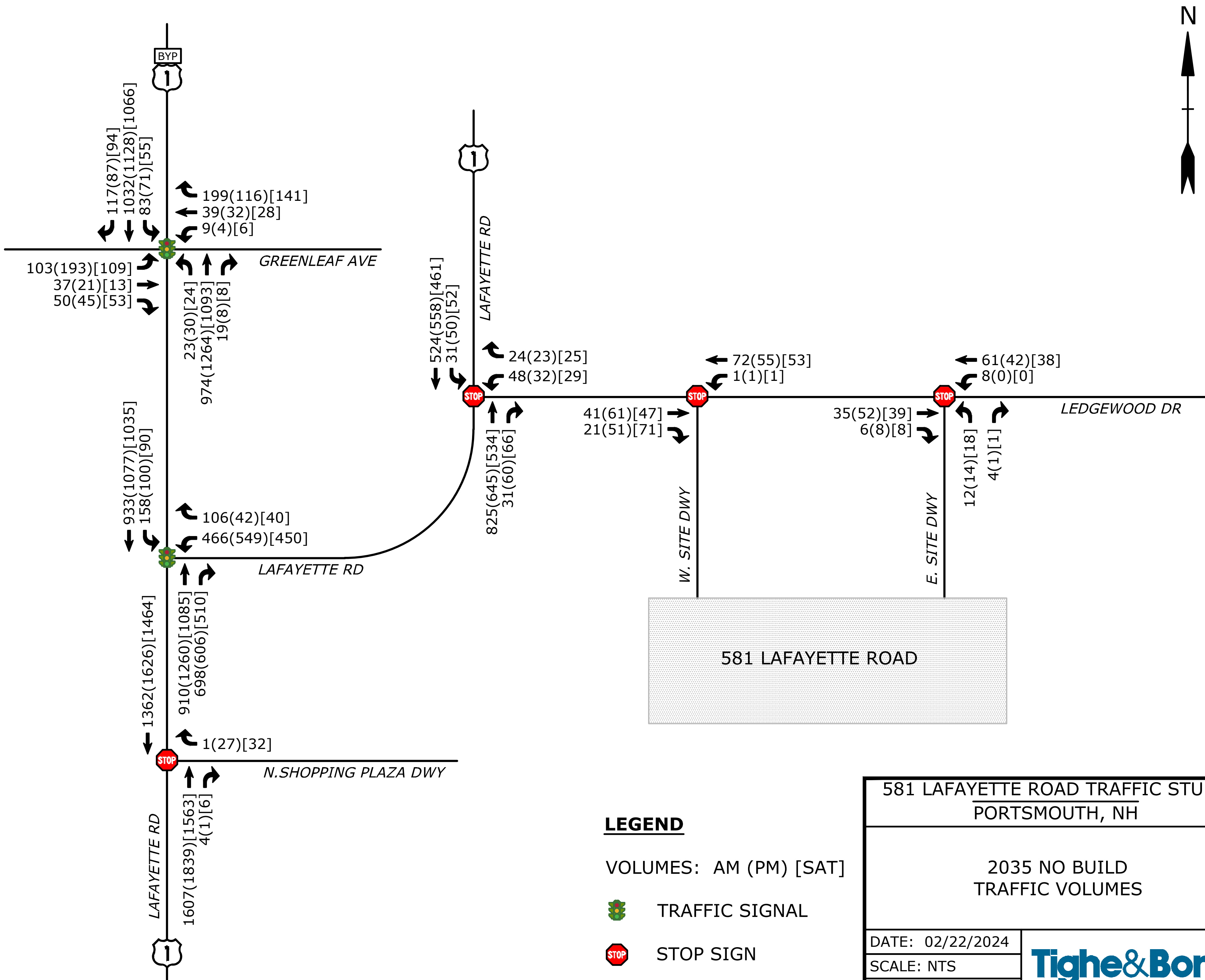
STOP SIGN

581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

2025 NO BUILD
TRAFFIC VOLUMES

DATE: 02/22/2024
SCALE: NTS
FIGURE 3

Tighe&Bond



LEGEND

VOLUMES: AM (PM) [SAT]

TRAFFIC SIGNAL

STOP SIGN

581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

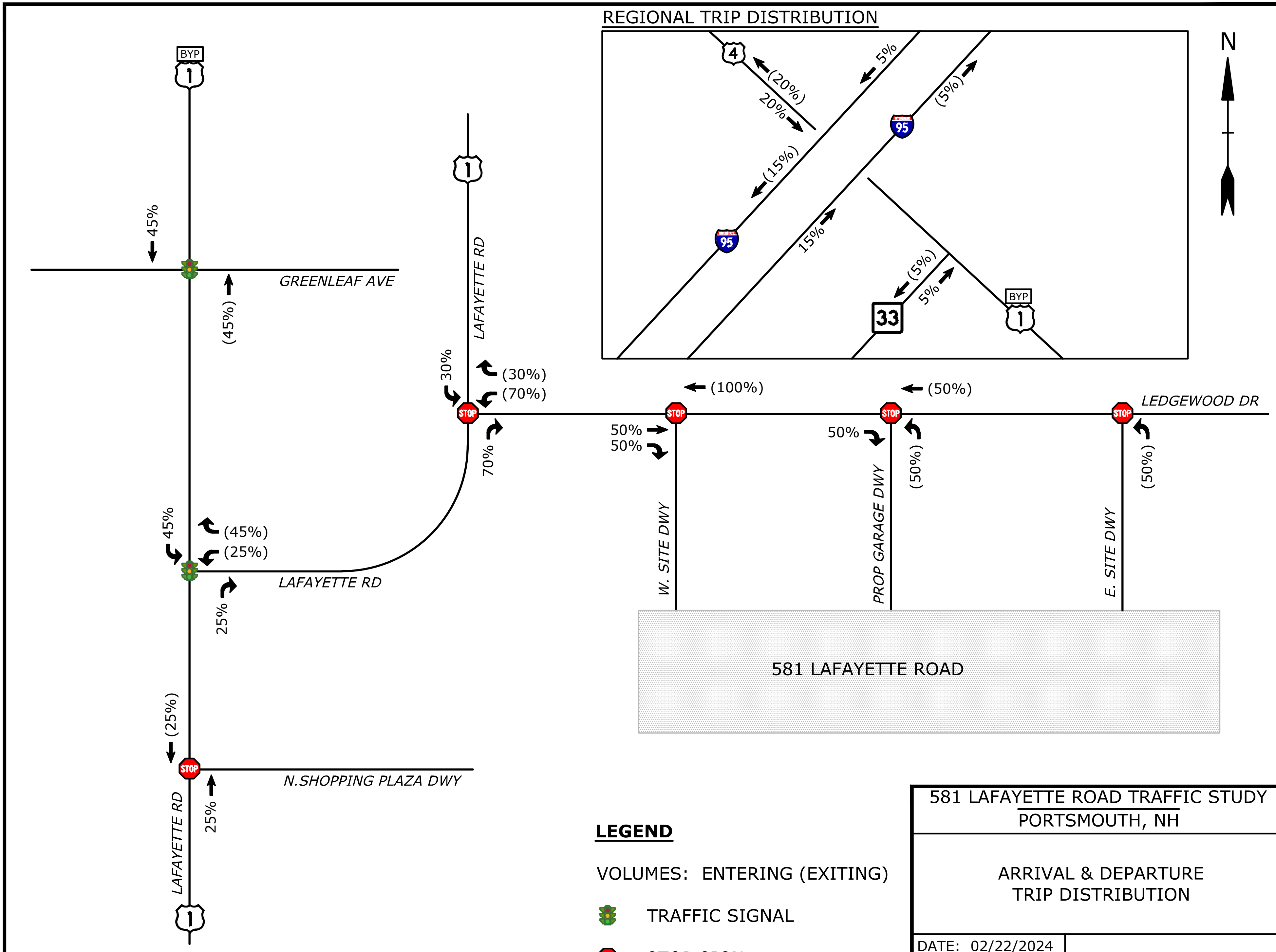
2035 NO BUILD
TRAFFIC VOLUMES

DATE: 02/22/2024

SCALE: NTS

FIGURE 4

Tighe&Bond



LEGEND

VOLUMES: ENTERING (EXITING)

TRAFFIC SIGNAL

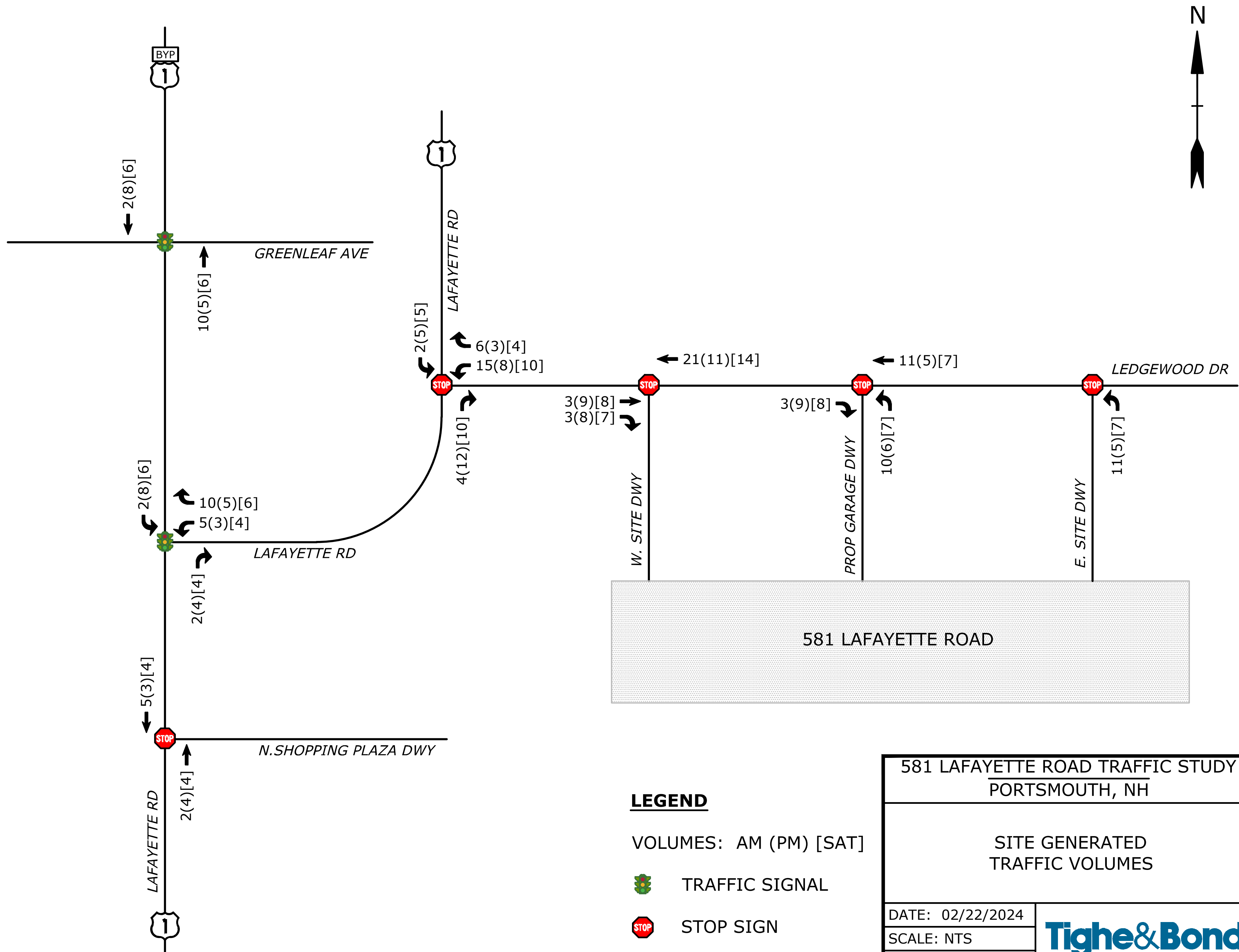
STOP SIGN

581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

ARRIVAL & DEPARTURE
TRIP DISTRIBUTION

DATE: 02/22/2024
SCALE: NTS
FIGURE 5

Tighe&Bond



LEGEND

VOLUMES: AM (PM) [SAT]

TRAFFIC SIGNAL

STOP SIGN

581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

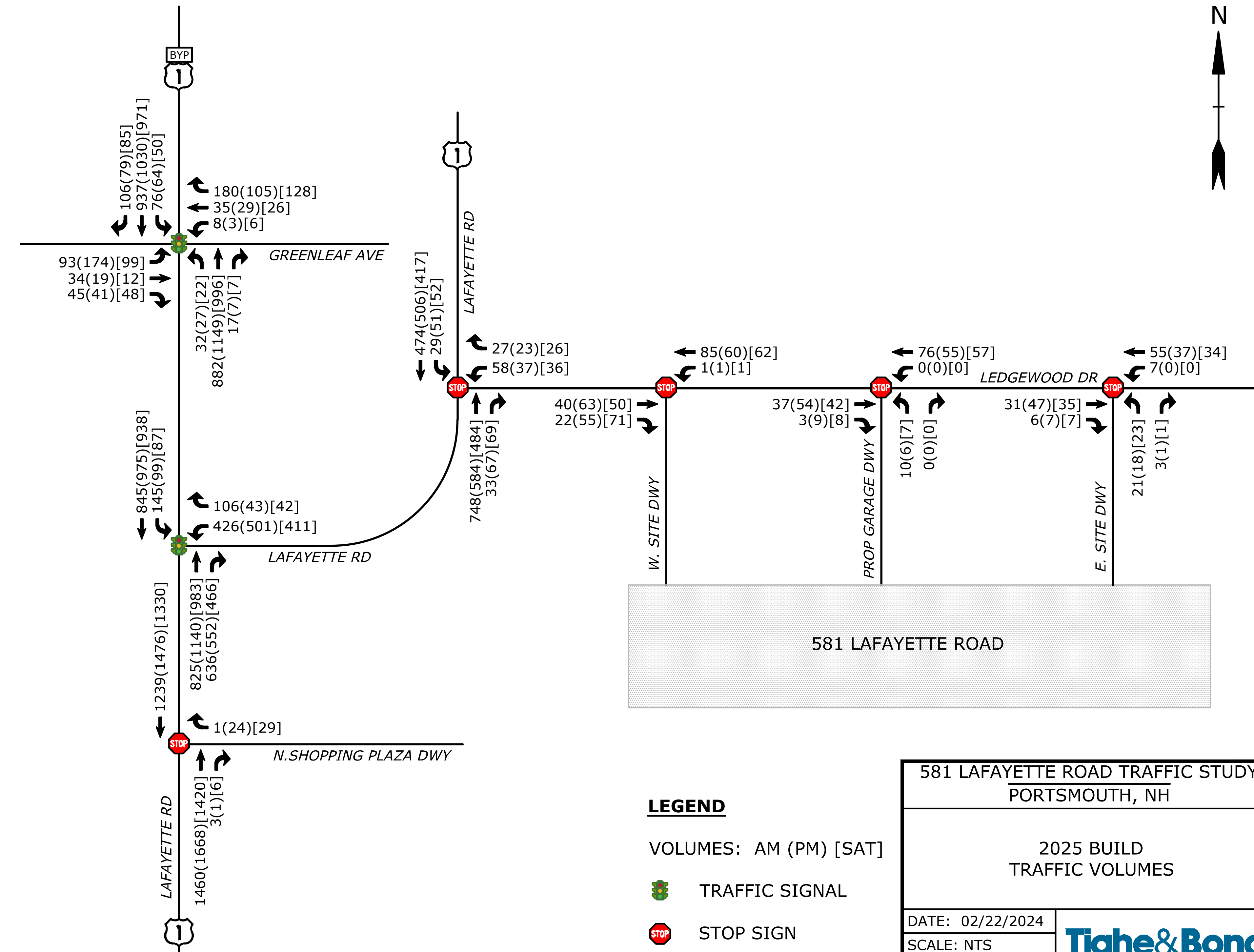
SITE GENERATED
TRAFFIC VOLUMES

DATE: 02/22/2024

SCALE: NTS

FIGURE 6

Tighe&Bond



LEGEND

VOLUMES: AM (PM) [SAT]

TRAFFIC SIGNAL

STOP SIGN

581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH

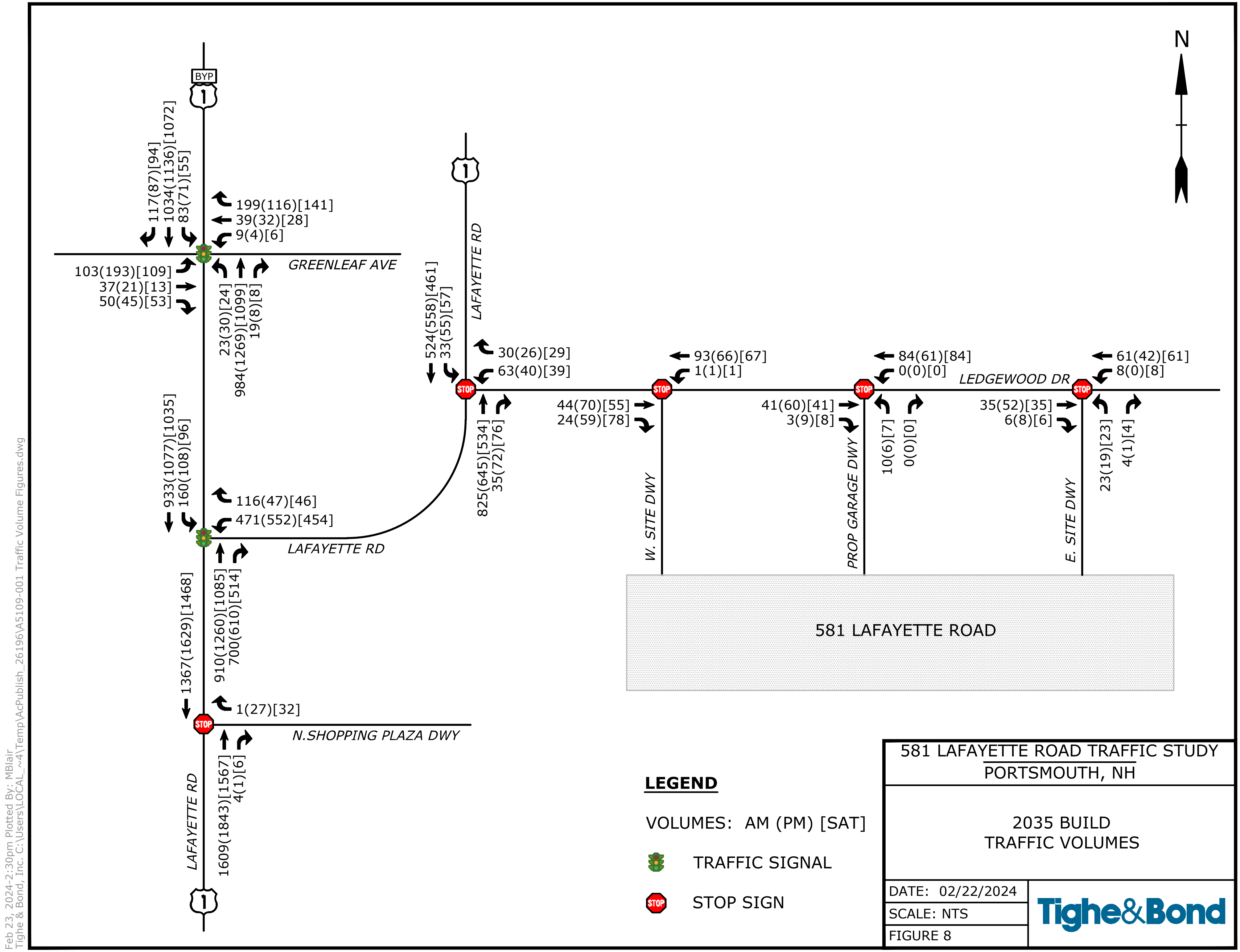
2025 BUILD
TRAFFIC VOLUMES

DATE: 02/22/2024

SCALE: NTS

FIGURE 7

Tighe&Bond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LEDGEWOOD DR
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6(8)[6]
23(19)[23]
4(1)[4]
W. SITE DWY
PROP GARAGE DWY
E. SITE DWY
933(1077)[1035]
160(108)[96]
116(47)[46]
471(552)[454]
LAFAYETTE RD
910(1260)[1085]
700(610)[514]
581 LAFAYETTE ROAD
1367(1629)[1468]
1(27)[32]
N.SHOPPING PLAZA DWY
1609(1843)[1567]
4(1)[6]
LAFAYETTE RD
LEGEND
VOLUMES: AM (PM) [SAT]
TRAFFIC SIGNAL
STOP SIGN
STOP
581 LAFAYETTE ROAD TRAFFIC STUDY
PORTSMOUTH, NH
2035 BUILD
TRAFFIC VOLUMES
DATE: 02/22/2024
SCALE: NTS
FIGURE 8
Tighe&Bond
Feb 23, 2024-2:30pm Plotted By: MBlair
Tighe & Bond, Inc. C:\Users\LOCAL_~4\Temp\AcPublish_26196\A5109-001 Traffic Volume Figures.dwg

APPENDIX A

Traffic Count Data

518 Lafayette Rd Counts Map

TMC: 6 intersections
Weekday 7-9AM and 4-6 PM, Sat 11AM-2PM

ATR: 48-hour on Ledgewood Drive

BOSTON TRAFFIC DATA	BTD ID: 1385_2_TB	Portsmouth, NH	# of TMC's: 06	Client: Tighe & Bond
		Collected on Nov. 1 to 2 & 4, 2023	# of ATR's: 01	Contact: Matthew Stoutz, PE, PTOE, RSP1

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 1
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	North Shopping Plaza Driveway
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	139	0	0	0	168	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	189	0	0	0	184	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	196	1	0	0	202	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	229	0	0	0	229	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	292	1	0	0	242	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	296	1	0	0	259	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	224	0	0	0	217	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	272	1	0	0	207	0	0	0	0	0	0	0	0	0

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	293	0	0	0	251	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	312	0	0	0	271	0	0	0	0	0	0	0	0	6
4:30 PM	0	0	291	0	0	0	297	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	304	1	0	0	244	0	0	0	0	0	0	0	0	4
5:00 PM	0	0	310	0	0	0	283	0	0	0	0	0	0	0	0	6
5:15 PM	0	0	339	0	0	0	272	0	0	0	0	0	0	0	0	5
5:30 PM	0	0	285	2	0	0	213	0	0	0	0	0	0	0	0	5
5:45 PM	0	0	282	2	0	0	194	0	0	0	0	0	0	0	0	5

AM PEAK HOUR 8:00 AM to 9:00 AM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1084**	**3**	**0**	**0**	**925**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.91**				**0.89**				**0.00**				**0.25**			
HV %	**0.0%**	**0.0%**	**4.5%**	**0.0%**	**0.0%**	**0.0%**	**4.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1244**	**1**	**0**	**0**	**1096**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18**
PHF	**0.92**				**0.92**				**0.00**				**0.75**			
HV %	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 1
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: North Shopping Plaza Driveway
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	9	0	0	0	9	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	13	0	0	0	7	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	17	0	0	0	9	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	14	0	0	0	4	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	12	0	0	0	13	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	10	0	0	0	13	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	10	0	0	0	7	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	17	0	0	0	5	0	0	0	0	0	0	0	0	0

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**53**	**0**	**0**	**0**	**39**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.78**				**0.75**				**0.00**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**15**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.75**				**0.63**				**0.00**				**0.00**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 1
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: North Shopping Plaza Driveway
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
8:00 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1

PM PEAK HOUR[1]	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
4:30 PM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 1
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	North Shopping Plaza Driveway
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	262	0	0	0	216	0	0	0	0	0	0	0	0	5
11:15 AM	0	0	252	0	0	0	209	0	0	0	0	0	0	0	0	7
11:30 AM	0	0	252	0	0	0	257	0	0	0	0	0	0	0	0	8
11:45 AM	0	0	285	0	0	0	245	0	0	0	0	0	0	0	0	7
12:00 PM	0	0	248	1	0	0	286	0	0	0	0	0	0	0	0	8
12:15 PM	0	0	264	1	0	0	231	0	0	0	0	0	0	0	0	5
12:30 PM	0	0	268	2	0	0	260	0	0	0	0	0	0	0	0	4
12:45 PM	0	0	287	0	0	0	222	0	0	0	0	0	0	0	0	5
1:00 PM	0	0	266	0	0	0	215	0	0	0	0	0	0	0	0	12
1:15 PM	0	0	280	0	0	0	240	0	0	0	0	0	0	0	0	5
1:30 PM	0	0	279	0	0	0	247	0	0	0	0	0	0	0	0	8
1:45 PM	0	0	279	0	0	0	230	0	0	0	0	0	0	0	0	7

MID PEAK HOUR 11:45 AM to 12:45 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1065**	**4**	**0**	**0**	**1022**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**
PHF	**0.94**				**0.89**				**0.00**				**0.75**			
HV %	**0.0%**	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 1
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: North Shopping Plaza Driveway
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
11:00 AM to 12:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**12**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.75**				**0.58**				**0.00**				**0.00**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 1
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: North Shopping Plaza Driveway
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				North Shopping Plaza Driveway Westbound			
11:45 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Lafayette Road
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	105	29	0	6	140	0	0	0	0	0	0	34	0	5
7:15 AM	0	0	136	51	0	18	132	0	0	0	0	0	0	46	0	2
7:30 AM	0	0	138	61	0	21	159	0	0	0	0	0	0	39	0	4
7:45 AM	0	0	143	80	0	24	152	0	0	0	0	0	0	78	0	5
8:00 AM	0	0	141	145	0	34	182	0	0	0	0	0	0	64	0	14
8:15 AM	0	0	149	149	0	29	161	0	0	0	0	0	0	104	0	18
8:30 AM	0	0	142	81	0	20	138	0	0	0	0	0	0	77	0	20
8:45 AM	0	0	175	93	1	22	141	0	0	0	0	0	0	72	0	10

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	203	76	0	20	170	0	0	0	0	0	0	78	0	10
4:15 PM	0	0	236	88	0	13	183	0	0	0	0	0	0	88	0	8
4:30 PM	0	0	212	84	0	10	192	0	0	0	0	0	0	93	0	10
4:45 PM	0	0	192	107	0	13	163	0	0	0	0	0	0	80	0	8
5:00 PM	1	0	212	106	0	15	181	0	0	0	0	0	0	104	0	4
5:15 PM	0	0	225	111	0	22	174	0	0	0	0	0	0	91	0	6
5:30 PM	0	0	187	99	0	16	130	0	0	0	0	0	0	92	0	15
5:45 PM	0	0	188	102	0	20	141	0	0	0	0	0	0	60	0	10

AM PEAK HOUR 8:00 AM to 9:00 AM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**607**	**468**	**1**	**105**	**622**	**0**	**0**	**0**	**0**	**0**	**0**	**317**	**0**	**62**
PHF	**0.90**				**0.84**				**0.00**				**0.78**			
HV %	**0.0%**	**0.0%**	**6.4%**	**2.8%**	**0.0%**	**5.7%**	**4.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**	**4.8%**

PM PEAK HOUR 4:30 PM to 5:30 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**0**	**841**	**408**	**0**	**60**	**710**	**0**	**0**	**0**	**0**	**0**	**0**	**368**	**0**	**28**
PHF	**0.93**				**0.95**				**0.00**				**0.92**			
HV %	**0.0%**	**0.0%**	**0.8%**	**1.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Lafayette Road
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	9	0	0	1	12	0	0	0	0	0	0	1	0	0
7:15 AM	0	0	10	2	0	0	6	0	0	0	0	0	0	1	0	0
7:30 AM	0	0	14	3	0	1	9	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	12	2	0	0	5	0	0	0	0	0	0	1	0	0
8:00 AM	0	0	10	4	0	2	8	0	0	0	0	0	0	4	0	0
8:15 AM	0	0	6	3	0	1	9	0	0	0	0	0	0	6	0	1
8:30 AM	0	0	7	3	0	2	6	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	16	3	0	1	4	0	0	0	0	0	0	1	0	1

	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	4	0	0
4:15 PM	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	4	2	0	0	1	0	0	0	0	0	0	1	0	0
5:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0
5:15 PM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0

AM PEAK HOUR	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
7:30 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
8:30 AM	**0**	**0**	**42**	**12**	**0**	**4**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**1**
PHF	**0.79**				**0.88**				**0.00**				**0.43**			

PM PEAK HOUR	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
4:00 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:00 PM	**0**	**0**	**11**	**3**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**
PHF	**0.58**				**0.67**				**0.00**				**0.31**			

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Lafayette Road
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0

	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	U.S. Route 1 Bypass				U.S. Route 1 Bypass								Lafayette Road			
4:30 PM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Lafayette Road
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	174	87	0	19	124	0	0	0	0	0	0	87	0	9
11:15 AM	0	0	179	84	1	12	148	0	0	0	0	0	0	65	0	5
11:30 AM	0	0	184	78	0	12	182	0	0	0	0	0	0	69	0	10
11:45 AM	4	0	188	98	0	11	169	0	0	0	0	0	0	68	0	6
12:00 PM	2	0	184	72	1	11	208	0	0	0	0	0	0	81	0	4
12:15 PM	0	0	187	79	0	18	154	0	0	0	0	0	0	80	0	4
12:30 PM	0	0	180	95	0	11	191	0	0	0	0	0	0	73	0	8
12:45 PM	0	0	185	101	0	23	149	0	0	0	0	0	0	69	0	11
1:00 PM	0	0	203	81	0	16	137	0	0	0	0	0	0	70	0	9
1:15 PM	0	0	211	71	0	12	168	0	0	0	0	0	0	72	0	6
1:30 PM	0	0	201	89	0	9	170	0	0	0	0	0	0	73	0	5
1:45 PM	0	0	189	93	0	10	159	0	0	0	0	0	0	65	0	10

MID PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
11:45 AM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:45 PM	**6**	**0**	**739**	**344**	**1**	**51**	**722**	**0**	**0**	**0**	**0**	**0**	**0**	**302**	**0**	**22**
PHF	**0.94**				**0.88**				**0.00**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.4%**	**0.6%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Lafayette Road
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	3	1	0	0	1	0	0	0	0	0	0	1	0	0
11:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	4	1	0	0	2	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
12:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0
1:00 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0

MID PEAK HOUR 11:00 AM to 12:00 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**9**	**3**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
PHF	**0.60**				**0.50**				**0.00**				**0.25**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 2
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: Lafayette Road
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
11:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
11:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Eastbound				Lafayette Road Westbound			
11:45 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Greenleaf Avenue
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	3	113	1	0	12	146	20	0	5	0	3	0	0	1	25
7:15 AM	0	4	131	1	0	13	148	32	0	4	4	3	0	3	5	27
7:30 AM	0	4	138	2	1	11	170	31	0	12	3	5	0	2	4	44
7:45 AM	0	3	148	1	0	12	180	28	0	24	7	10	0	2	8	35
8:00 AM	0	3	157	3	0	15	197	16	0	18	4	14	0	2	4	31
8:15 AM	1	5	162	4	0	20	185	19	0	18	12	8	0	1	12	39
8:30 AM	1	3	151	1	1	12	155	20	0	12	5	7	0	2	4	37
8:45 AM	0	5	188	3	0	12	164	25	0	20	4	5	0	1	6	27

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	1	9	214	1	2	15	193	18	0	30	3	10	0	2	4	41
4:15 PM	0	6	236	1	4	11	174	21	0	30	0	8	0	2	3	30
4:30 PM	0	9	217	0	0	7	203	17	0	52	1	8	0	0	6	17
4:45 PM	0	5	197	2	1	11	169	18	0	21	7	6	0	0	7	22
5:00 PM	0	2	209	1	2	15	196	9	0	36	3	6	0	3	3	25
5:15 PM	0	4	224	2	0	14	193	12	0	22	3	11	0	0	6	17
5:30 PM	0	4	194	1	1	11	143	21	0	24	6	9	0	2	4	21
5:45 PM	0	2	207	0	0	10	145	13	0	22	0	9	0	2	4	9

AM PEAK HOUR 7:30 AM to 8:30 AM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**15**	**605**	**10**	**1**	**58**	**732**	**94**	**0**	**72**	**26**	**37**	**0**	**7**	**28**	**149**
PHF	**0.92**				**0.97**				**0.82**				**0.88**			
HV %	**0.0%**	**13.3%**	**6.3%**	**0.0%**	**0.0%**	**0.0%**	**3.6%**	**4.3%**	**0.0%**	**1.4%**	**0.0%**	**8.1%**	**0.0%**	**0.0%**	**0.0%**	**1.3%**

PM PEAK HOUR 4:00 PM to 5:00 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**29**	**864**	**4**	**7**	**44**	**739**	**74**	**0**	**133**	**11**	**32**	**0**	**4**	**20**	**110**
PHF	**0.92**				**0.95**				**0.72**				**0.71**			
HV %	**0.0%**	**0.0%**	**0.9%**	**0.0%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**6.3%**	**0.0%**	**0.0%**	**0.0%**	**0.9%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Greenleaf Avenue
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	9	0	0	0	13	2	0	0	0	0	0	0	0	0
7:15 AM	0	0	9	0	0	0	4	1	0	0	2	0	0	2	0	0
7:30 AM	0	1	13	0	0	0	8	0	0	0	0	1	0	0	0	0
7:45 AM	0	1	10	0	0	0	4	0	0	0	0	1	0	0	0	0
8:00 AM	0	0	8	0	0	0	10	1	0	1	0	1	0	0	0	0
8:15 AM	0	0	7	0	0	0	4	3	0	0	0	0	0	0	0	2
8:30 AM	0	0	8	0	0	1	8	1	0	1	0	0	0	0	0	0
8:45 AM	0	1	15	0	0	0	5	0	0	0	0	0	0	0	1	0

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0
4:15 PM	0	0	2	0	0	0	3	0	0	0	0	1	0	0	0	0
4:30 PM	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	1
4:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
7:00 AM to 8:00 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**2**	**41**	**0**	**0**	**0**	**29**	**3**	**0**	**0**	**2**	**2**	**0**	**2**	**0**	**0**
PHF	**0.77**				**0.53**				**0.50**				**0.25**			

PM PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
4:00 PM to 5:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**8**	**0**	**0**	**0**	**6**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1**
PHF	**0.50**				**0.50**				**0.75**				**0.25**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 3
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: Greenleaf Avenue
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
7:30 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
4:00 PM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	U.S. Route 1 Bypass
Street 2:	Greenleaf Avenue
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	1	6	170	1	2	5	135	11	0	19	2	4	0	2	8	25
11:15 AM	1	7	175	5	2	7	158	8	0	14	4	2	0	1	4	22
11:30 AM	0	2	189	2	0	13	186	11	0	21	2	5	0	2	6	20
11:45 AM	1	4	188	2	2	7	170	10	0	16	1	10	0	0	3	29
12:00 PM	0	3	182	2	1	8	215	15	0	26	2	7	0	1	3	23
12:15 PM	0	5	188	0	1	11	158	17	0	15	1	11	0	0	5	28
12:30 PM	1	5	176	1	1	6	183	16	0	16	4	12	0	2	7	19
12:45 PM	0	4	196	1	0	13	169	14	0	16	2	6	0	1	4	25
1:00 PM	1	9	198	2	3	10	143	9	0	21	4	4	0	2	7	25
1:15 PM	0	9	209	1	0	6	176	16	0	13	4	7	0	0	6	13
1:30 PM	0	5	204	0	2	14	168	18	0	18	6	5	0	1	6	22
1:45 PM	1	8	185	4	2	5	166	11	0	17	0	5	0	0	6	14

MID PEAK HOUR 11:30 AM to 12:30 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**14**	**747**	**6**	**4**	**39**	**729**	**53**	**0**	**78**	**6**	**33**	**0**	**3**	**17**	**100**
PHF	**0.98**				**0.86**				**0.84**				**0.91**			
HV %	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.7%**	**3.8%**	**0.0%**	**1.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 3
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: Greenleaf Avenue
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
12:15 PM	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
12:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 11:00 AM to 12:00 PM	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**9**	**0**	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.56**				**0.63**				**0.00**				**0.25**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 3
Location: Portsmouth, NH
Street 1: U.S. Route 1 Bypass
Street 2: Greenleaf Avenue
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	U.S. Route 1 Bypass Northbound				U.S. Route 1 Bypass Southbound				Greenleaf Avenue Eastbound				Greenleaf Avenue Westbound			
11:30 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
12:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Lafayette Road
Street 2:	Ledgewood Drive
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	35	0	0	1	37	0	0	0	0	0	0	6	0	2
7:15 AM	0	0	65	4	0	6	39	0	0	0	0	0	0	5	0	3
7:30 AM	0	0	78	4	0	4	45	0	0	0	0	0	0	4	0	1
7:45 AM	0	0	100	4	0	2	69	0	0	0	0	0	0	5	0	4
8:00 AM	0	0	174	5	0	5	71	0	0	0	0	0	0	11	0	2
8:15 AM	1	0	171	5	0	7	110	0	0	0	0	0	0	10	0	7
8:30 AM	1	0	96	4	0	4	94	0	0	0	0	0	0	4	0	3
8:45 AM	0	0	107	6	0	4	80	0	0	0	0	0	0	7	0	4

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	85	12	0	7	81	0	0	0	0	0	0	9	0	4
4:15 PM	1	0	96	5	0	7	95	0	0	0	0	0	0	5	0	5
4:30 PM	0	0	85	8	0	8	96	0	0	0	0	0	0	9	0	5
4:45 PM	0	0	111	9	0	6	84	0	0	0	0	0	0	6	0	4
5:00 PM	0	0	113	8	0	7	94	0	0	0	0	0	0	2	0	4
5:15 PM	0	0	118	15	0	12	100	0	0	0	0	0	0	4	0	2
5:30 PM	0	0	106	8	0	8	91	0	0	0	0	0	0	9	0	4
5:45 PM	0	0	108	15	0	11	71	0	0	0	0	0	0	5	0	4

AM PEAK HOUR 8:00 AM to 9:00 AM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	2	**0**	**548**	**20**	**0**	**20**	**355**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**0**	**16**
PHF	**0.80**				**0.80**				**0.00**				**0.71**			
HV %	**0.0%**	**0.0%**	**3.3%**	**5.0%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.1%**	**0.0%**	**6.3%**

PM PEAK HOUR 4:45 PM to 5:45 PM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**448**	**40**	**0**	**33**	**369**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**0**	**14**
PHF	**0.92**				**0.90**				**0.00**				**0.67**			
HV %	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Lafayette Road
Street 2:	Ledgewood Drive
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	5	1	0	0	3	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	4	0	0	0	7	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 8:00 AM to 9:00 AM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**18**	**1**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
PHF	**0.79**				**0.46**				**0.00**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
PHF	**0.38**				**0.25**				**0.00**				**0.25**			

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Lafayette Road
Street 2:	Ledgewood Drive
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

AM PEAK HOUR[1]	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
8:00 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5

PM PEAK HOUR[1]	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
4:45 PM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 4
Location: Portsmouth, NH
Street 1: Lafayette Road
Street 2: Ledgewood Drive
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

BOSTON TRAFFIC DATA
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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	94	11	0	7	87	0	0	0	0	0	0	6	0	2
11:15 AM	0	0	84	10	0	6	63	0	0	0	0	0	0	6	0	4
11:30 AM	0	0	85	8	0	3	71	0	0	0	0	0	0	9	0	7
11:45 AM	0	0	98	11	0	9	63	0	0	0	0	0	0	11	0	4
12:00 PM	0	0	78	5	0	13	86	0	0	0	0	0	0	1	0	6
12:15 PM	0	0	82	14	0	10	80	0	0	0	0	0	0	2	0	4
12:30 PM	0	0	96	11	0	5	72	0	0	0	0	0	0	6	0	1
12:45 PM	0	0	109	16	0	7	73	0	0	0	0	0	0	10	0	6
1:00 PM	0	0	84	10	0	3	71	0	0	0	0	0	0	7	0	1
1:15 PM	0	0	76	9	0	2	73	0	0	0	0	0	0	6	0	8
1:30 PM	0	0	87	11	0	5	70	0	0	0	0	0	0	4	0	1
1:45 PM	1	0	96	5	0	8	71	0	0	0	0	0	0	5	0	1

MID PEAK HOUR 12:00 PM to 1:00 PM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**365**	**46**	**0**	**35**	**311**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**17**
PHF	**0.82**				**0.87**				**0.00**				**0.56**			
HV %	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Lafayette Road
Street 2:	Ledgewood Drive
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
11:00 AM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:00 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.75**				**0.25**				**0.00**				**0.00**			

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Lafayette Road
Street 2:	Ledgewood Drive
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	10
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 12:00 PM to 1:00 PM	Lafayette Road Northbound				Lafayette Road Southbound				Eastbound				Ledgewood Drive Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	West Site Driveway
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	9	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	6	4	0	0	7	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	5	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	3	0	0	10	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	5	5	0	0	12	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	9	3	0	1	17	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	2	0	0	8	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	6	4	0	0	10	0

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	14	5	0	0	13	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	13	0	0	0	10	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	9	7	0	0	13	0
4:45 PM	0	0	0	0	0	0	0	0	1	0	10	4	0	1	11	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	8	6	0	0	6	0
5:15 PM	0	0	0	1	0	0	0	0	0	0	11	17	0	0	7	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	4	12	0	0	13	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	13	13	0	0	8	0

AM PEAK HOUR 8:00 AM to 9:00 AM	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**14**	**0**	**1**	**47**	**0**
PHF	**0.00**				**0.00**				**0.83**				**0.67**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**7.7%**	**0.0%**	**0.0%**	**0.0%**	**4.3%**	**0.0%**

PM PEAK HOUR 5:00 PM to 6:00 PM	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**36**	**48**	**0**	**0**	**34**	**0**
PHF	**0.25**				**0.00**				**0.75**				**0.65**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 5
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: West Site Driveway
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	West Site Driveway								Ledgewood Drive				Ledgewood Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	West Site Driveway								Ledgewood Drive				Ledgewood Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	West Site Driveway								Ledgewood Drive				Ledgewood Drive			
	Northbound				Southbound				Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**
PHF	**0.00**				**0.00**				**0.75**				**0.38**			

PM PEAK HOUR 4:00 PM to 5:00 PM	West Site Driveway								Ledgewood Drive				Ledgewood Drive			
	Northbound				Southbound				Eastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**
PHF	**0.00**				**0.00**				**0.25**				**0.25**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 5
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: West Site Driveway
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
8:00 AM to 9:00 AM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
5:00 PM to 6:00 PM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 5
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: West Site Driveway
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	0	0	0	0	7	11	0	1	8	0
11:15 AM	0	0	0	0	0	0	0	0	1	0	7	7	0	0	10	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	5	7	0	0	15	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	9	11	0	0	15	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	7	11	0	1	7	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	7	17	0	0	8	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	6	10	0	0	5	0
12:45 PM	0	2	0	0	0	0	0	0	0	0	12	10	0	0	14	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	6	8	0	0	8	0
1:15 PM	0	1	0	0	0	0	0	0	0	0	7	4	0	0	13	0
1:30 PM	0	1	0	0	0	0	0	0	0	0	7	9	0	0	4	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	3	10	0	0	6	0

MID PEAK HOUR 11:30 AM to 12:30 PM	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**46**	**0**	**1**	**45**	**0**
PHF	**0.00**				**0.00**				**0.77**				**0.77**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 5
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: West Site Driveway
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 10:00 AM to 11:00 AM	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**				**0.00**				**0.00**			

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	West Site Driveway
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	West Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
11:30 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
12:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	East Site Driveway
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	7	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	5	1	0	0	6	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	2	2	0	0	4	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	10	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	2	0	3	12	0
8:15 AM	0	5	0	3	0	0	0	0	0	0	7	2	0	2	13	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	6	0	0	0	7	0
8:45 AM	0	2	0	0	0	0	0	0	0	0	5	0	0	0	8	0

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	4	0	0	0	0	0	0	0	0	14	0	0	0	9	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	12	0	0	1	10	0
4:30 PM	0	2	0	0	0	0	0	0	0	0	9	0	0	0	10	0
4:45 PM	0	4	0	0	0	0	0	0	1	0	7	3	0	0	7	0
5:00 PM	0	2	0	0	0	0	0	0	0	0	8	0	0	0	5	0
5:15 PM	0	2	0	1	0	0	0	0	0	0	11	1	0	0	4	0
5:30 PM	0	4	0	1	0	0	0	0	0	0	4	0	0	0	8	0
5:45 PM	0	2	0	0	0	0	0	0	0	0	13	0	0	0	6	0

AM PEAK HOUR 8:00 AM to 9:00 AM	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**8**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**4**	**0**	**5**	**40**	**0**
PHF	**0.34**				**0.00**				**0.69**				**0.75**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**9.5%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**0.0%**

PM PEAK HOUR 4:00 PM to 5:00 PM	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**10**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**42**	**3**	**0**	**1**	**36**	**0**
PHF	**0.69**				**0.00**				**0.82**				**0.84**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.4%**	**0.0%**	**0.0%**	**0.0%**	**2.8%**	**0.0%**

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	East Site Driveway
Count Date:	11/1/2023
Day of Week:	Wednesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**
PHF	**0.00**				**0.00**				**0.75**				**0.38**			

PM PEAK HOUR 4:00 PM to 5:00 PM	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**
PHF	**0.00**				**0.00**				**0.25**				**0.25**			

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 6
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: East Site Driveway
Count Date: 11/1/2023
Day of Week: Wednesday
Weather: Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
8:00 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	23

PM PEAK HOUR[1]	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
4:00 PM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	East Site Driveway
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	2	0	1	0	0	0	0	0	0	5	2	0	0	7	0
11:15 AM	0	5	0	0	0	0	0	0	0	0	6	1	0	0	5	0
11:30 AM	0	4	0	0	0	0	0	0	0	0	5	0	0	1	11	0
11:45 AM	0	2	0	0	0	0	0	0	0	0	6	2	0	0	12	0
12:00 PM	0	3	0	0	0	0	0	0	0	0	6	1	0	0	5	0
12:15 PM	0	3	0	0	0	0	0	0	0	0	6	1	0	0	5	0
12:30 PM	0	3	0	1	0	0	0	0	0	0	5	0	0	0	2	0
12:45 PM	0	3	0	0	0	0	0	0	0	0	9	3	0	0	10	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	8	0
1:15 PM	0	5	0	0	0	0	0	0	0	0	6	1	0	0	8	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	6	1	0	0	4	0
1:45 PM	0	2	0	0	0	0	0	0	0	0	2	1	0	0	4	0

MID PEAK HOUR	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
11:00 AM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:00 PM	**0**	**13**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**5**	**0**	**1**	**35**	**0**
PHF	**0.70**				**0.00**				**0.84**				**0.75**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client: Matthew Stoutz
Project #: 1385_2_TB
BTD #: Location 6
Location: Portsmouth, NH
Street 1: Ledgewood Drive
Street 2: East Site Driveway
Count Date: 11/4/23
Day of Week: Saturday
Weather: Clouds & Sun, 50°F

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HEAVY VEHICLES

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 10:00 AM to 11:00 AM	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**				**0.00**				**0.00**			

Client:	Matthew Stoutz
Project #:	1385_2_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Ledgewood Drive
Street 2:	East Site Driveway
Count Date:	11/4/23
Day of Week:	Saturday
Weather:	Clouds & Sun, 50°F

BOSTON TRAFFIC DATA
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PEDESTRIANS & BICYCLES

	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
11:15 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
11:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	East Site Driveway Northbound				Southbound				Ledgewood Drive Eastbound				Ledgewood Drive Westbound			
11:00 AM to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
12:00 PM	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Speed Report

Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200’ east of Lafayette Rd
Dir Eastbound
Tuesday, October 31, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
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Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	10	0	0	1	4	4	1	0	0	0	0	0	0	0	0	0	0
0100	7	0	1	0	5	1	0	0	0	0	0	0	0	0	0	0	0
0200	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
0300	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0
0400	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0500	6	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0
0600	9	0	1	0	4	4	0	0	0	0	0	0	0	0	0	0	0
0700	16	0	0	1	9	6	0	0	0	0	0	0	0	0	0	0	0
0800	22	0	1	3	7	10	1	0	0	0	0	0	0	0	0	0	0
0900	20	0	0	0	7	10	3	0	0	0	0	0	0	0	0	0	0
1000	26	0	0	5	6	12	3	0	0	0	0	0	0	0	0	0	0
1100	19	0	0	2	9	7	1	0	0	0	0	0	0	0	0	0	0
1200	43	0	0	3	12	26	2	0	0	0	0	0	0	0	0	0	0
1300	31	0	0	4	14	12	1	0	0	0	0	0	0	0	0	0	0
1400	44	0	0	2	23	17	2	0	0	0	0	0	0	0	0	0	0
1500	42	0	0	4	22	15	1	0	0	0	0	0	0	0	0	0	0
1600	50	0	1	1	18	24	6	0	0	0	0	0	0	0	0	0	0
1700	40	0	0	2	15	21	2	0	0	0	0	0	0	0	0	0	0
1800	34	0	0	3	16	13	2	0	0	0	0	0	0	0	0	0	0
1900	44	0	1	0	22	18	3	0	0	0	0	0	0	0	0	0	0
2000	35	0	0	1	19	15	0	0	0	0	0	0	0	0	0	0	0
2100	25	0	1	0	9	12	3	0	0	0	0	0	0	0	0	0	0
2200	26	0	0	1	11	13	1	0	0	0	0	0	0	0	0	0	0
2300	10	0	0	1	2	7	0	0	0	0	0	0	0	0	0	0	0
Total	**566**	**0**	**6**	**35**	**241**	**252**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**1.06%**	**6.18%**	**42.58%**	**44.52%**	**5.65%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 29.6 mph, Minimum = 5.9 mph, Mean = 19.6 mph
85% Speed = 22.59 mph, 95% Speed = 25.61 mph, Median = 19.99 mph
10 mph Pace = 14 - 24, Number in Pace = 490 (87.81%)
Variance = 11.91, Standard Deviation = 3.45 mph

Speed Report

BOSTON TRAFFIC DATA
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Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200' east of Lafayette Rd
Dir Eastbound
Wednesday, November 1, 2023

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	8	0	0	0	5	3	0	0	0	0	0	0	0	0	0	0	0
0100	9	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	0
0200	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0
0300	5	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0
0400	5	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0
0500	4	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
0600	7	0	1	0	3	2	1	0	0	0	0	0	0	0	0	0	0
0700	15	0	0	0	10	5	0	0	0	0	0	0	0	0	0	0	0
0800	26	0	0	1	12	13	0	0	0	0	0	0	0	0	0	0	0
0900	17	0	0	2	5	8	1	1	0	0	0	0	0	0	0	0	0
1000	30	0	0	6	14	9	1	0	0	0	0	0	0	0	0	0	0
1100	26	0	0	1	15	9	1	0	0	0	0	0	0	0	0	0	0
1200	31	0	2	3	15	11	0	0	0	0	0	0	0	0	0	0	0
1300	29	0	0	2	16	10	1	0	0	0	0	0	0	0	0	0	0
1400	39	0	0	4	16	15	4	0	0	0	0	0	0	0	0	0	0
1500	46	0	0	2	25	19	0	0	0	0	0	0	0	0	0	0	0
1600	47	0	0	3	15	23	6	0	0	0	0	0	0	0	0	0	0
1700	37	0	0	4	16	15	2	0	0	0	0	0	0	0	0	0	0
1800	35	0	0	1	20	13	1	0	0	0	0	0	0	0	0	0	0
1900	27	0	0	3	12	11	1	0	0	0	0	0	0	0	0	0	0
2000	24	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0
2100	34	0	1	2	10	17	4	0	0	0	0	0	0	0	0	0	0
2200	26	0	0	0	11	14	1	0	0	0	0	0	0	0	0	0	0
2300	14	0	0	1	3	9	1	0	0	0	0	0	0	0	0	0	0
Total	**544**	**0**	**4**	**36**	**251**	**226**	**26**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.74%**	**6.62%**	**46.14%**	**41.54%**	**4.78%**	**0.18%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 30.1 mph, Minimum = 5.3 mph, Mean = 19.7 mph
85% Speed = 22.96 mph, 95% Speed = 25.04 mph, Median = 19.80 mph
10 mph Pace = 15 - 25, Number in Pace = 478 (87.87%)
Variance = 10.82, Standard Deviation = 3.29 mph

Speed Report

Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200' east of Lafayette Rd
Dir Westbound
Tuesday, October 31, 2023

BOSTON
TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	3	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
0100	4	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
0200	4	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0
0300	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0
0400	13	0	0	1	7	4	1	0	0	0	0	0	0	0	0	0	0
0500	13	0	0	0	3	10	0	0	0	0	0	0	0	0	0	0	0
0600	26	0	0	1	7	18	0	0	0	0	0	0	0	0	0	0	0
0700	39	0	0	1	18	17	3	0	0	0	0	0	0	0	0	0	0
0800	48	0	0	6	20	17	5	0	0	0	0	0	0	0	0	0	0
0900	32	0	0	0	7	21	4	0	0	0	0	0	0	0	0	0	0
1000	37	0	0	3	13	15	6	0	0	0	0	0	0	0	0	0	0
1100	38	0	0	3	16	17	2	0	0	0	0	0	0	0	0	0	0
1200	50	0	0	7	14	23	5	1	0	0	0	0	0	0	0	0	0
1300	42	0	2	8	14	17	1	0	0	0	0	0	0	0	0	0	0
1400	47	0	0	5	17	25	0	0	0	0	0	0	0	0	0	0	0
1500	44	0	0	5	19	17	2	1	0	0	0	0	0	0	0	0	0
1600	38	0	2	1	9	21	4	1	0	0	0	0	0	0	0	0	0
1700	35	0	0	9	15	11	0	0	0	0	0	0	0	0	0	0	0
1800	43	0	0	4	17	20	2	0	0	0	0	0	0	0	0	0	0
1900	26	0	0	2	15	6	3	0	0	0	0	0	0	0	0	0	0
2000	32	0	0	1	17	12	2	0	0	0	0	0	0	0	0	0	0
2100	17	0	1	3	4	7	2	0	0	0	0	0	0	0	0	0	0
2200	14	0	0	0	5	8	1	0	0	0	0	0	0	0	0	0	0
2300	6	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0
Total	**654**	**0**	**6**	**64**	**242**	**294**	**45**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.92%**	**9.79%**	**37.00%**	**44.95%**	**6.88%**	**0.46%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 33.3 mph, Minimum = 6.3 mph, Mean = 19.8 mph
85% Speed = 23.38 mph, 95% Speed = 26.14 mph, Median = 20.19 mph
10 mph Pace = 14 - 24, Number in Pace = 550 (84.36%)
Variance = 14.73, Standard Deviation = 3.84 mph

Speed Report

Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200’ east of Lafayette Rd
Dir Westbound
Wednesday, November 1, 2023

BOSTON
TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
0000	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0
0100	5	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0300	6	0	0	1	1	4	0	0	0	0	0	0	0	0	0	0	0
0400	14	0	0	3	7	3	1	0	0	0	0	0	0	0	0	0	0
0500	15	0	0	0	3	9	3	0	0	0	0	0	0	0	0	0	0
0600	25	0	0	1	12	10	2	0	0	0	0	0	0	0	0	0	0
0700	30	0	0	1	9	16	4	0	0	0	0	0	0	0	0	0	0
0800	48	0	1	2	19	21	5	0	0	0	0	0	0	0	0	0	0
0900	35	0	0	3	12	17	3	0	0	0	0	0	0	0	0	0	0
1000	35	0	0	5	13	15	2	0	0	0	0	0	0	0	0	0	0
1100	48	0	1	7	17	22	1	0	0	0	0	0	0	0	0	0	0
1200	40	0	0	5	14	18	3	0	0	0	0	0	0	0	0	0	0
1300	32	0	0	4	11	13	4	0	0	0	0	0	0	0	0	0	0
1400	48	0	0	4	20	18	6	0	0	0	0	0	0	0	0	0	0
1500	43	0	0	5	21	15	2	0	0	0	0	0	0	0	0	0	0
1600	48	0	0	3	19	24	2	0	0	0	0	0	0	0	0	0	0
1700	33	0	0	2	20	9	2	0	0	0	0	0	0	0	0	0	0
1800	36	0	0	3	18	15	0	0	0	0	0	0	0	0	0	0	0
1900	29	0	0	2	18	7	2	0	0	0	0	0	0	0	0	0	0
2000	32	0	0	4	18	6	4	0	0	0	0	0	0	0	0	0	0
2100	21	0	0	2	10	8	0	1	0	0	0	0	0	0	0	0	0
2200	9	0	0	1	2	6	0	0	0	0	0	0	0	0	0	0	0
2300	6	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0
Total	**642**	**0**	**2**	**59**	**272**	**261**	**47**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.31%**	**9.19%**	**42.37%**	**40.65%**	**7.32%**	**0.16%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 32.8 mph, Minimum = 8.6 mph, Mean = 19.9 mph
85% Speed = 23.82 mph, 95% Speed = 25.77 mph, Median = 19.80 mph
10 mph Pace = 15 - 25, Number in Pace = 534 (83.18%)
Variance = 13.28, Standard Deviation = 3.64 mph

Volume Report

Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200’ east of Lafayette Rd

BOSTON TRAFFIC DATA
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Tuesday, October 31, 2023

Time	Total		EB		WB		Time	Total		EB		WB	
0000	4		3		1		1200	22		12		10	
0015	3		3		0		1215	19		11		8	
0030	3		2		1		1230	28		12		16	
0045	3	13	2	10	1	3	1245	24	93	8	43	16	50
0100	7		4		3		1300	20		12		8	
0115	2		2		0		1315	20		7		13	
0130	0		0		0		1330	22		7		15	
0145	2	11	1	7	1	4	1345	11	73	5	31	6	42
0200	2		1		1		1400	21		11		10	
0215	1		1		0		1415	29		11		18	
0230	2		1		1		1430	24		12		12	
0245	2	7	0	3	2	4	1445	17	91	10	44	7	47
0300	2		2		0		1500	14		7		7	
0315	3		1		2		1515	31		13		18	
0330	1		0		1		1530	24		12		12	
0345	0	6	0	3	0	3	1545	17	86	10	42	7	44
0400	3		1		2		1600	27		16		11	
0415	3		0		3		1615	18		12		6	
0430	4		0		4		1630	23		11		12	
0445	4	14	0	1	4	13	1645	20	88	11	50	9	38
0500	2		0		2		1700	22		15		7	
0515	4		4		0		1715	20		10		10	
0530	8		2		6		1730	15		7		8	
0545	5	19	0	6	5	13	1745	18	75	8	40	10	35
0600	9		1		8		1800	20		10		10	
0615	5		1		4		1815	22		7		15	
0630	10		2		8		1830	17		7		10	
0645	11	35	5	9	6	26	1845	18	77	10	34	8	43
0700	13		3		10		1900	22		15		7	
0715	15		5		10		1915	13		6		7	
0730	11		4		7		1930	16		12		4	
0745	16	55	4	16	12	39	1945	19	70	11	44	8	26
0800	25		8		17		2000	19		8		11	
0815	25		7		18		2015	19		9		10	
0830	10		3		7		2030	20		15		5	
0845	10	70	4	22	6	48	2045	9	67	3	35	6	32
0900	11		5		6		2100	6		4		2	
0915	8		3		5		2115	7		3		4	
0930	21		6		15		2130	17		8		9	
0945	12	52	6	20	6	32	2145	12	42	10	25	2	17
1000	16		9		7		2200	15		9		6	
1015	17		6		11		2215	8		5		3	
1030	20		8		12		2230	14		10		4	
1045	10	63	3	26	7	37	2245	3	40	2	26	1	14
1100	12		5		7		2300	8		5		3	
1115	6		3		3		2315	5		5		0	
1130	19		7		12		2330	2		0		2	
1145	20	57	4	19	16	38	2345	1	16	0	10	1	6
							Total	**1220**		**566**		**654**	

Volume Report

Job 1385_2_TB_ATR
Area Portsmouth, NH
Location Ledgewood Drive, ~150-200’ east of Lafayette Rd

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Wednesday, November 1, 2023

Time	Total		EB		WB			Time	Total		EB		WB	
0000	6		6		0			1200	26		10		16	
0015	2		1		1			1215	18		8		10	
0030	1		0		1			1230	16		8		8	
0045	2	11	1	8	1	3		1245	11	71	5	31	6	40
0100	3		3		0			1300	18		6		12	
0115	5		2		3			1315	13		5		8	
0130	1		1		0			1330	14		8		6	
0145	5	14	3	9	2	5		1345	16	61	10	29	6	32
0200	0		0		0			1400	14		7		7	
0215	1		1		0			1415	19		9		10	
0230	2		1		1			1430	34		18		16	
0245	1	4	1	3	0	1		1445	20	87	5	39	15	48
0300	4		2		2			1500	12		8		4	
0315	2		0		2			1515	29		16		13	
0330	3		1		2			1530	26		12		14	
0345	2	11	2	5	0	6		1545	22	89	10	46	12	43
0400	3		2		1			1600	27		14		13	
0415	5		2		3			1615	23		13		10	
0430	7		1		6			1630	22		9		13	
0445	4	19	0	5	4	14		1645	23	95	11	47	12	48
0500	3		1		2			1700	14		8		6	
0515	1		0		1			1715	18		12		6	
0530	6		2		4			1730	17		4		13	
0545	9	19	1	4	8	15		1745	21	70	13	37	8	33
0600	4		0		4			1800	16		8		8	
0615	6		1		5			1815	21		11		10	
0630	11		3		8			1830	19		8		11	
0645	11	32	3	7	8	25		1845	15	71	8	35	7	36
0700	9		1		8			1900	20		11		9	
0715	13		6		7			1915	11		5		6	
0730	9		4		5			1930	12		4		8	
0745	14	45	4	15	10	30		1945	13	56	7	27	6	29
0800	17		5		12			2000	15		4		11	
0815	27		9		18			2015	21		9		12	
0830	14		6		8			2030	14		9		5	
0845	16	74	6	26	10	48		2045	6	56	2	24	4	32
0900	11		6		5			2100	14		8		6	
0915	9		5		4			2115	16		10		6	
0930	13		2		11			2130	16		10		6	
0945	19	52	4	17	15	35		2145	9	55	6	34	3	21
1000	17		6		11			2200	11		9		2	
1015	15		8		7			2215	10		8		2	
1030	21		9		12			2230	7		5		2	
1045	12	65	7	30	5	35		2245	7	35	4	26	3	9
1100	12		7		5			2300	9		7		2	
1115	18		4		14			2315	7		3		4	
1130	14		6		8			2330	2		2		0	
1145	30	74	9	26	21	48		2345	2	20	2	14	0	6
								Total	**1186**		**544**		**642**	

APPENDIX B
NHDOT Traffic Data

Year 2019 Monthly Data

Group 4 Averages: Urban Highways

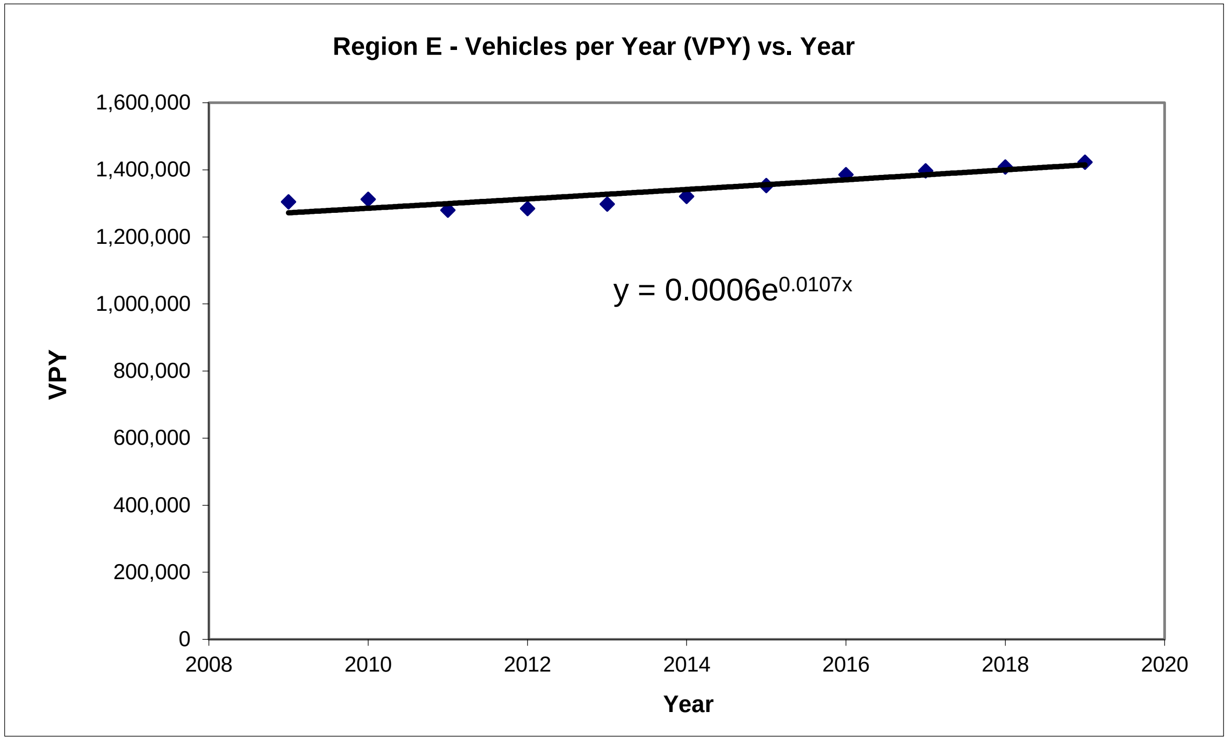
Month	ADT	Adjustment to Average	Adjustment to Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22

Average ADT: 12,838
Peak ADT: 14,016

GROUP	COUNTER	TOWN	LOCATION
04	02051003	BOW	NH 3A south of Robinson Rd
04	02089001	CHICHESTER	NH 28 (Suncook Valley Rd) north of Bear Hill Rd
04	02091001	CLAREMONT	NH 12/103 east of Vermont SL
04	62099056	CONCORD	NH 106 (Sheep Davis Rd) at Loudon TL (north of Ashby Rd)
04	72099278	CONCORD	US 3 (Fisherville Rd) north of Sewalls Falls Rd
04	02125001	DOVER	Dover Point Rd south of Thornwood Ln
04	02133021	DURHAM	US 4 east of NH 108
04	82197076	HAMPTON	US 1 (Lafayette Rd) south of Ramp to NH 101
04	*02229022*	*HUDSON**	*Circumferential Hwy east of Nashua TL*
04	02253025	LEBANON	NH 120 1 mile south of Hanover TL (south of Lahaye Dr)
04	02255001	LEE	NH 125 (Calef Hwy) north of Pinkham Rd
04	02287001	MARLBOROUGH	NH 12 at Swanzey TL
04	02297001	MERRIMACK	US 3 (Daniel Webster Hwy) north of Hilton Dr
04	*02303001*	*MILFORD**	*NH 101A at Amherst TL (west of Overlook Dr)*
04	*02315051*	*NASHUA**	*NH 111 (Bridge / Ferry St) at Hudson TL*
04	02339001	NEWPORT	NH 10 1 mile south of Croydon TL (north of Corbin Rd)
04	02345001	NORTH HAMPTON	US 1 (Lafayette Rd) north of North Rd
04	*62387052*	*RINDGE**	*US 202 at Jaffrey TL (north of County Rd)*
04	02445001	TEMPLE	NH 101 at Wilton TL (west of Old County Farm Rd)
04	02489001	WINDHAM	NH 28 at Derry TL (north of Northland Rd)

** denotes counter that is not included in calculation*

Year	Total
2009	1303948
2010	1312251
2011	1279824
2012	1284314
2013	1298171
2014	1320862
2015	1353486
2016	1385361
2017	1396932
2018	1408237
2019	1422176
CAGR	0.87%
Exp	1.07%
Avg	0.97%



APPENDIX C

Traffic Volume Adjustment Calculation

Traffic Volume Adjustment Check

City of Portsmouth (GRIDSMART Turning Movement Counts) - South & Lafayette

Time Period	2019 Traffic Volumes Tues 11/05/19	Wed 11/06/19	Thurs 11/07/19	Sat 11/09/19	Average (Tues-Thurs)	2023 Traffic Volumes Tues 11/07/23	Wed 11/08/23	Thurs 11/09/23	Sat 11/11/23	Average (Tues-Wed)	Average (Tues-Thurs)	Comparison Tues-Tues Comparison	Wed-Wed Comparison	Thurs-Thurs Comparison	Tues-Wed Avg Comparison	Tues-Thurs Average Comparison	Saturday Comparison
Weekday AM Peak (8-9AM)	1,015	1,157	1,002	--	1,058	1,238	1,360	1,179	--	1,299	1,259	*22.0%*	*17.5%*	*17.7%*	*19.6%*	*19.0%*	--
Weekday PM Peak (4-5PM)	985	1,200	1,002	--	1,062	1,166	1,192	1,037	--	1,179	1,132	*18.4%*	*-0.7%*	*3.5%*	*7.9%*	*6.5%*	--
Weekday PM Peak (5-6PM)	821	875	835	--	844	1,004	1,015	920	--	1,010	980	*22.3%*	*16.0%*	*10.2%*	*19.0%*	*16.1%*	--
Sat Midday Peak (12PM-1PM)	--	--	--	1,011	--	--	--	--	1,004	--	--	--	--	--	--	--	*-0.7%*
Daily (Weekday)	13,365	14,618	14,143	--	14,042	14,840	15,057	13,898	--	14,598	14,598	*11.0%*	*3.0%*	*-1.7%*	*4.3%*	*4.0%*	--
Saturday	--	--	--	11,787	--	--	--	--	12,253	--	--	--	--	--	--	--	*4.0%*

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/5/2019

	Northbound			Eastbound			Southbound				Westbound			
	R	T	L	R	T	L	R	T	L	U	R	T	L	U
00:00		4	2	3	4	1		14	1			4	6	
01:00		2		4	2		1	6				1		
02:00		3		1	1	1	1	6	1		1	2		
03:00		7	1	1		1		6	1			4	4	
04:00	6	9		5	4	1	2	18			2	11	16	
05:00	14	48	5	8	11	1	4	58	1		6	23	41	
06:00	74	134	9	5	65	21	4	92	2		3	63	114	
07:00	92	239	31	33	121	56	12	268	28		33	108	168	
08:00	89	260	20	27	117	53	12	201	7		15	97	117	
09:00	78	281	32	20	94	68	5	196	8		16	84	115	
10:00	119	241	37	20	85	64	9	205	7		9	72	114	
11:00	89	304	18	22	102	89	10	251	13		17	90	162	
12:00	92	339	17	21	85	76	12	228	18	1	10	74	140	
13:00	100	263	26	15	75	54	9	232	8		14	77	131	
14:00	90	239	22	28	109	57	9	245	9		22	91	149	1
15:00	117	319	55	18	110	70	12	250	16		33	110	153	
16:00	89	179	25	40	129	33	11	244	15		29	86	105	
17:00	56	147	23	54	127	21	5	173	11		22	77	105	
18:00	71	97	21	30	87	19	3	118	8		12	29	86	
19:00	41	94	24	15	55	8	2	94	11		11	40	58	
20:00	22	50	15	21	49	6	2	87	6		11	36	33	
21:00	14	39	3	14	19	5	3	56	2		3	18	37	
22:00	6	16	8	3	14	2		38			3	15	17	
23:00	3	6	3	1	8	2	1	20			1	12	17	
Total	**1262**	**3320**	**397**	**409**	**1473**	**709**	**129**	**3106**	**173**	**1**	**273**	**1224**	**1888**	**1**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/6/2019

	Northbound				Eastbound			Southbound			Westbound			
	R	T	L	U	R	T	L	R	T	L	R	T	L	U
00:00	2	4			2	7	1		16		1	3	4	
01:00	1	1	1		1	1			7			1	5	
02:00	1	3	1		2	4			4		1	5	4	
03:00	3	4			2		1		9	2		2	4	
04:00	8	11			6	6		1	24		2	9	19	
05:00	18	36	5		5	9	2	4	54	1	2	22	32	
06:00	56	116	11		6	71	15	3	85	4	2	63	115	
07:00	78	266	21		38	121	47	40	351	21	27	113	136	
08:00	66	274	25		27	130	61	12	316	4	15	78	149	
09:00	87	246	21		20	82	55	8	201	10	11	58	120	
10:00	95	238	17	2	17	97	52	14	173	10	6	65	108	
11:00	83	276	24	1	28	100	65	10	227	17	16	68	115	
12:00	81	315	29		25	92	57	11	236	11	19	80	115	1
13:00	78	276	40	1	28	92	64	9	238	9	11	77	131	
14:00	120	279	21	1	36	123	70	10	261	12	32	76	118	
15:00	95	326	63		28	127	85	17	281	13	37	140	172	
16:00	96	245	46		38	128	78	6	267	23	24	121	128	
17:00	67	147	32		59	127	27	6	227	15	18	70	80	
18:00	40	99	25		35	85	20	5	131	10	8	41	74	
19:00	42	60	16		23	46	7	4	129	12	8	22	35	
20:00	22	35	10		9	44	6	5	122	2		24	46	
21:00	14	24	3		6	46	3	3	56	1	4	14	21	
22:00	3	13	2		3	17	3	1	26		3	19	22	
23:00	5	9	3		2	10	3		19			11	11	
Total	**1161**	**3303**	**416**	**5**	**446**	**1565**	**722**	**169**	**3460**	**177**	**247**	**1182**	**1764**	**1**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/7/2019

	Northbound				Eastbound			Southbound				Westbound		
	R	T	L	U	R	T	L	R	T	L	U	R	T	L
00:00	1	4			3	3	2		7				4	2
01:00	1	4	1			2	1		7					1
02:00		5				4	1		2			2	6	3
03:00	3	1	1		1	2			9			3	4	4
04:00	4	10			5	6		1	22			3	12	12
05:00	9	45	3		3	9	4	4	64	2			22	31
06:00	49	135	7		8	58	14	5	91			6	57	96
07:00	81	244	36		32	132	61	8	258	30		33	105	146
08:00	81	261	39		17	103	64	6	195	2		12	91	131
09:00	95	232	25		18	77	47	10	180	8		14	68	127
10:00	79	243	20	1	19	104	68	10	206	6		19	70	101
11:00	84	281	17		26	86	83	10	223	12		16	77	116
12:00	99	293	31	1	16	79	75	18	206	10		13	78	125
13:00	78	263	34		16	103	82	9	212	12		8	89	105
14:00	95	269	31		25	107	70	13	268	16	1	19	111	154
15:00	106	339	50		20	109	82	17	274	10		44	129	165
16:00	61	176	23		52	147	29	3	245	8		22	112	124
17:00	53	185	20		56	105	26	9	190	11		14	67	99
18:00	52	123	23		37	92	10	6	163	5	1	11	50	71
19:00	32	84	31		17	40	6	1	79	4		26	46	62
20:00	13	54	12		17	46	4	1	93	5		12	26	44
21:00	8	27	8		4	20	4	2	79	1		4	20	21
22:00	5	14	5		5	16	2		34	1		3	14	22
23:00	2	8	1		2	11	1		24			1	14	8
Total	**1091**	**3300**	**418**	**2**	**399**	**1461**	**736**	**133**	**3131**	**143**	**2**	**285**	**1272**	**1770**

GRIDSMART®

Turning Movement Counts

Intersection South & Lafayette
Date 11/9/2019

	Northbound				Eastbound			Southbound				Westbound			
	R	T	L	U	R	T	L	R	T	L	U	R	T	L	U
00:00	4	12	2		5	11	2	2	36			1	5	8	
01:00	1	12	1		1	4			32				6	8	
02:00		6				3			10				2	4	
03:00	3	3				1		1	10			1	2	2	
04:00	8	5			3	10			11	1			7	10	
05:00	8	13			1	11	1		19			1	11	10	
06:00	40	54	2		7	24	3	1	40	1		3	18	32	
07:00	34	127	8		5	42	7	7	113	5		8	51	60	1
08:00	58	173	18		19	75	21	6	210	11		13	72	109	
09:00	70	227	22		19	91	30	8	176	16		18	104	145	
10:00	69	279	29	2	20	101	24	8	187	11		10	97	129	
11:00	84	292	24		26	133	34	11	207	16	1	20	83	128	
12:00	93	274	17		25	111	32	10	200	16		25	88	120	
13:00	81	273	27		15	130	35	10	203	7		15	80	143	
14:00	90	278	26		32	109	36	8	205	16		31	75	108	
15:00	90	261	39		9	87	21	7	172	13		16	72	118	
16:00	54	158	12		17	76	23	8	205	8		5	64	108	
17:00	53	102	15		26	72	17	12	171	8		7	31	73	
18:00	36	78	5		11	47	17	5	151	8		7	32	49	
19:00	31	68	11		16	36	10	4	107	4		6	32	65	
20:00	16	40	6		15	27	2	4	89	3		1	34	48	
21:00	16	32	5		6	29	9	5	108	3		5	18	33	
22:00	8	30	4		7	25	4	2	79	2		4	23	37	
23:00	8	22	3		5	15	4	2	45	1		3	16	14	
Total	**955**	**2819**	**276**	**2**	**290**	**1270**	**332**	**121**	**2786**	**150**	**1**	**200**	**1023**	**1561**	**1**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/7/2023

	Northbound				Eastbound			Southbound				Westbound		
	R	T	L	U	R	T	L	R	T	L	U	R	T	L
00:00	2	6	1		1	6			10				4	10
01:00	2	2	1		2	1			7				1	2
02:00	1	7	2			1	1		5	1			3	3
03:00	2	11	1		1				3			1	1	4
04:00	1	23	1		1	3		1	12			1	6	14
05:00	10	54	2		6	14		1	42	1		1	16	40
06:00	58	93	8		9	73	4	2	79	5		4	46	93
07:00	102	175	12		46	132	12	11	151	11		9	100	182
08:00	121	254	53	3	49	181	11	12	219	25		14	116	180
09:00	135	201	39		28	104	14	6	175	10		16	99	177
10:00	119	235	34	1	21	110	11	8	170	19		17	82	152
11:00	128	249	39	3	41	136	20	9	185	17		25	92	175
12:00	128	296	31		39	105	21	5	210	11		21	94	164
13:00	130	215	33	2	26	121	14	11	206	7		26	89	149
14:00	108	239	46	1	35	128	11	16	192	11		26	118	141
15:00	143	267	70	2	48	133	29	9	258	14	1	38	159	214
16:00	133	287	31		37	127	22	5	202	7		11	155	149
17:00	93	298	22		40	130	16	7	166	15		20	84	113
18:00	67	219	18		31	76	19	2	113	9	1	8	57	73
19:00	46	126	6		21	45	10	3	102	8		6	23	52
20:00	37	92	7		11	36	6	3	82	2		5	34	47
21:00	17	57	2		10	22	5	1	72	3		1	24	33
22:00	10	27	2		3	14	3	1	34	1			11	13
23:00	5	17			2	4	1		14				11	23
Total	**1598**	**3450**	**461**	**12**	**508**	**1702**	**230**	**113**	**2709**	**177**	**2**	**250**	**1425**	**2203**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/8/2023

	Northbound				Eastbound			Southbound				Westbound		
	R	T	L	U	R	T	L	R	T	L	U	R	T	L
00:00	2	6				3	2	1	10				3	8
01:00	1	7							4					2
02:00		4					2		6	2			2	1
03:00	3	9			2				2				1	3
04:00	2	28	1						15				5	17
05:00	17	49			9	12		2	27	2		1	18	47
06:00	65	89	8		8	88	1	5	85	3		5	50	88
07:00	95	192	23		30	134	14	29	183	15		14	114	185
08:00	126	292	53	1	39	202	12	24	321	31		12	85	162
09:00	88	232	51	2	21	100	17	11	153	14		21	79	143
10:00	121	223	24		32	105	16	5	183	8		12	98	168
11:00	121	256	25	1	36	103	21	9	209	11	1	9	104	157
12:00	146	278	29		40	100	14	7	228	10		11	100	187
13:00	125	223	34		23	114	21	7	218	14		18	105	155
14:00	122	212	41		36	115	23	11	191	12	1	28	127	222
15:00	115	272	66		50	144	29	9	256	22		31	155	213
16:00	130	288	32		32	138	24	11	239	16		13	132	137
17:00	84	322	28		38	117	27	3	163	12		11	101	109
18:00	55	220	13		36	64	17	6	124	9		9	43	71
19:00	49	116	13		21	40	10	2	106	1		4	40	52
20:00	38	99	6		15	38	13	1	77	4		2	20	39
21:00	17	59	2		8	22	5	3	70	4		1	25	35
22:00	12	31	1		7	10	1	1	32				15	16
23:00	8	18				7	1		13				9	23
Total	**1542**	**3525**	**450**	**4**	**483**	**1656**	**270**	**147**	**2915**	**190**	**2**	**202**	**1431**	**2240**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/9/2023

	Northbound				Eastbound			Southbound			Westbound		
	R	T	L	U	R	T	L	R	T	L	R	T	L
00:00	2	6	1		2	5			12			2	7
01:00	3	5			2	3			6			1	5
02:00	1	4				1	1		4	1		4	2
03:00	3	10							5			3	2
04:00	1	21	1			1			10	1		2	15
05:00	7	46	4		13	8	2	3	33	1		12	42
06:00	40	79	7		2	67	5	4	75	1	2	52	80
07:00	98	185	17		28	78	6	8	164	16	7	84	167
08:00	132	215	47	3	62	174	14	8	233	32	14	105	140
09:00	106	212	25	1	19	106	14	7	169	11	13	82	134
10:00	101	233	28		20	97	11	7	168	10	13	79	138
11:00	106	267	38		24	85	17	11	185	15	7	94	148
12:00	123	251	34		25	111	15	16	208	9	13	88	147
13:00	107	214	33	1	28	105	6	6	215	10	15	103	150
14:00	119	225	40	1	38	124	21	12	198	8	21	118	164
15:00	120	255	67	3	47	118	26	10	216	14	40	131	192
16:00	102	257	27		40	125	38	6	157	9	20	126	130
17:00	93	288	20		39	95	19	5	140	9	10	94	108
18:00	64	220	24		37	80	18	5	100	11	10	40	64
19:00	34	144	24		22	42	8	2	70	3	5	27	56
20:00	29	89	14		9	30	10	4	72	5	4	28	44
21:00	12	67	3		12	25	10	6	65	1	2	18	53
22:00	12	34	8		5	17	5	2	46	3		18	34
23:00	3	22	1		4	11	2	1	24		1	8	19
Total	**1418**	**3349**	**463**	**9**	**478**	**1508**	**248**	**123**	**2575**	**170**	**197**	**1319**	**2041**

GRIDSMART

Turning Movement Counts

Intersection South & Lafayette
Date 11/11/2023

	Northbound				Eastbound			Southbound				Westbound		
	R	T	L	U	R	T	L	R	T	L	U	R	T	L
00:00	6	16	1		3	5	2	1	33	1			8	10
01:00	3	14			1	5			20			1		5
02:00	1	5			2	1			11	2		1	5	4
03:00	3	2				1	1			2				4
04:00	1	1						2	4	1			1	3
05:00	5	9			2	2	1		8				9	11
06:00	37	24	4	1	3	22	1		27			1	19	47
07:00	32	89	8		8	32	2	14	106	2		4	30	82
08:00	62	144	20	1	30	70	6	9	192	5		8	40	90
09:00	78	214	29		20	83	12	9	187	9		11	80	135
10:00	118	233	23		24	103	18	14	180	6		15	109	151
11:00	126	297	26	4	45	123	26	6	207	5		16	111	178
12:00	95	286	28		34	131	17	6	165	17		12	72	141
13:00	99	264	23		22	108	22	10	209	9		16	82	144
14:00	117	246	35		19	137	23	11	178	13	1	15	84	136
15:00	83	261	19		21	135	19	2	187	31		20	81	151
16:00	82	237	22		41	99	19	7	158	11		10	67	113
17:00	54	199	8		49	79	19	7	126	10		3	47	91
18:00	43	180	7		29	60	14	3	91	5		8	40	78
19:00	51	140	10		28	43	8	3	77	4		1	22	58
20:00	27	117	11		20	32	11	1	86	4		2	22	46
21:00	19	65	4		7	22	7	9	82	3		4	48	58
22:00	10	47	4		4	36	6	3	60	4		4	24	43
23:00	8	39			4	12	4		46			2	13	32
Total	**1160**	**3129**	**282**	**6**	**416**	**1341**	**238**	**117**	**2440**	**144**	**1**	**154**	**1014**	**1811**

APPENDIX D
Capacity Analysis Methodology

CAPACITY ANALYSIS METHODOLOGY

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM).[1] The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- *LOS A* describes conditions with little to no delay to motorists.
- *LOS B* represents a desirable level with relatively low delay to motorists.
- *LOS C* describes conditions with average delays to motorists.
- *LOS D* describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- *LOS E* represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- *LOS F* is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

Signalized Intersections

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on average *control* delay. Control delay is used to establish the operating characteristics for an intersection or an approach to an intersection. Volume-to-capacity (v/c) ratios are also used to help signify the utilization of a lane group's capacity at an intersection. A v/c ratio of ≥1.00 represents conditions when the traffic signal cycle capacity is fully utilized and indicates a capacity failure. The level-of-service criteria for signalized intersections are shown in Table A-1.

[1]*Highway Capacity Manual, 6TH Edition: A Guide for Multimodal Mobility Analysis.* Washington, D.C.: Transportation Research Board, 2016.

Unsignalized Intersections

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay at an unsignalized intersection is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position.

Volume-to-capacity (v/c) ratios are also used to help signify the utilization of a movement's capacity at an intersection. A v/c ratio of ≥1.00 represents conditions when the movement is fully utilized and indicates a capacity failure. The capacity of the movements is based on the distribution of gaps in the major street traffic stream, the selection of gaps to complete the desired movement, and the follow-up headways for each driver in the queue. When an unsignalized intersection is located within 0.25 miles of a signalized intersection, traffic flows may not be random and some platoon structure may exist, thereby affecting the minor street operations. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

TABLE A-1
Level-of-Service Criteria for Intersections

Level of Service	**Signalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)	**Unsignalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)	**V/C Ratio >1.00[a]**
A	≤10	≤10	F
B	>10 and ≤20	>10 and ≤15	F
C	>20 and ≤35	>15 and ≤25	F
D	>35 and ≤55	>25 and ≤35	F
E	>55 and ≤80	>35 and ≤50	F
F	>80	>50	F

Note: [a]For approach-based and intersection-wide assessments, LOS is defined solely by control delay.

Source: *Highway Capacity Manual, 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, D.C.: Transportation Research Board, 2016. Exhibit 19-8, Pg. 19-16.

For signalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups on the minor street approaches or to the left turns from the major street approaches.

APPENDIX E

Capacity Analysis Worksheets

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	410	94	799	610	140	824
Future Volume (vph)	410	94	799	610	140	824
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3352	1706	3288	1471	1736	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3352	1706	3288	1471	1736	3471
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.84	0.84
Adj. Flow (vph)	526	121	888	678	167	981
RTOR Reduction (vph)	0	65	0	277	0	0
Lane Group Flow (vph)	526	56	888	401	167	981
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	22.8	39.9	28.1	50.9	17.1	51.2
Effective Green, g (s)	22.8	39.9	28.1	50.9	17.1	51.2
Actuated g/C Ratio	0.27	0.46	0.33	0.59	0.20	0.60
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	888	910	1074	973	345	2066
v/s Ratio Prot	c0.16	0.01	c0.27	0.11	0.10	c0.28
v/s Ratio Perm		0.02		0.16		
v/c Ratio	0.59	0.06	0.83	0.41	0.48	0.47
Uniform Delay, d1	27.5	12.7	26.7	9.5	30.5	9.8
Progression Factor	1.00	1.00	1.00	1.00	0.79	0.75
Incremental Delay, d2	1.2	0.0	5.6	0.4	1.3	0.7
Delay (s)	28.8	12.8	32.3	9.9	25.5	8.0
Level of Service	C	B	C	A	C	A
Approach Delay (s)	25.8		22.6			10.6
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	33	44	8	34	177	21	855	17	74	912	104
Future Volume (vph)	91	33	44	8	34	177	21	855	17	74	912	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.89		1.00	1.00		1.00	0.98	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1673		1662	3314		1694	3336	
Flt Permitted		0.56			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		989			1652		1662	3314		1694	3336	
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	111	40	54	9	39	201	23	929	18	76	940	107
RTOR Reduction (vph)	0	16	0	0	155	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	189	0	0	94	0	23	946	0	76	1040	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		19.6			19.6		3.6	39.6		8.8	44.8	
Effective Green, g (s)		19.6			19.6		3.6	39.6		8.8	44.8	
Actuated g/C Ratio		0.23			0.23		0.04	0.46		0.10	0.52	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		225			376		69	1525		173	1737	
v/s Ratio Prot							0.01	0.29		c0.04	c0.31	
v/s Ratio Perm		c0.19			0.06							
v/c Ratio		0.84			0.25		0.33	0.62		0.44	0.60	
Uniform Delay, d1		31.7			27.2		40.0	17.5		36.3	14.3	
Progression Factor		1.00			1.00		0.39	1.71		1.00	1.00	
Incremental Delay, d2		23.9			0.7		2.5	0.7		2.4	1.5	
Delay (s)		55.6			27.9		18.2	30.8		38.7	15.9	
Level of Service		E			C		B	C		D	B	
Approach Delay (s)		55.6			27.9			30.5			17.4	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1408	3	0	1203
Future Vol, veh/h	0	1	1408	3	0	1203
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	25	25	91	91	89	89
Heavy Vehicles, %	0	0	4	4	4	4
Mvmt Flow	0	4	1547	3	0	1352

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	776	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	265	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	265	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	265	-
HCM Lane V/C Ratio	-	-	0.015	-
HCM Control Delay (s)	-	-	18.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	21	723	27	26	462
Future Vol, veh/h	42	21	723	27	26	462
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	71	71	80	80	80	80
Heavy Vehicles, %	4	4	3	3	3	3
Mvmt Flow	59	30	904	34	33	578

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1224	927	0	0	944	0
Stage 1	927	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.51	6.46	-	-	4.145	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	6.46	-	-	-	-	-
Follow-up Hdwy	3.688	3.338	-	-	2.2285	-
Pot Cap-1 Maneuver	187	305	-	-	719	-
Stage 1	334	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	173	303	-	-	715	-
Mov Cap-2 Maneuver	173	-	-	-	-	-
Stage 1	332	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.1	0	0.7
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	202	715	-
HCM Lane V/C Ratio	-	-	0.439	0.045	-
HCM Control Delay (s)	-	-	36.1	10.3	0.2
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	36	18	1	63	0	0
Future Vol, veh/h	36	18	1	63	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	67	67	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	43	22	1	94	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	151	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1523	-	846	1018
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1522	-	844	1017
Mov Cap-2 Maneuver	-	-	-	-	844	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	932	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1522	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	6	7	54	10	3
Future Vol, veh/h	30	6	7	54	10	3
Conflicting Peds, #/hr	0	3	3	0	1	23
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	75	75	34	34
Heavy Vehicles, %	7	7	4	4	0	0
Mvmt Flow	43	9	9	72	29	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	142	74
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1537	-	856	993
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	847	971
Mov Cap-2 Maneuver	-	-	-	-	847	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	873	-	-	1533	-
HCM Lane V/C Ratio	0.044	-	-	0.006	-
HCM Control Delay (s)	9.3	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1609	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1609	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1609	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	479	37	1112	531	89	946
Future Volume (vph)	479	37	1112	531	89	946
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1494	1787	3574
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1494	1787	3574
Peak-hour factor, PHF	0.92	0.92	0.93	0.93	0.95	0.95
Adj. Flow (vph)	521	40	1196	571	94	996
RTOR Reduction (vph)	0	27	0	164	0	0
Lane Group Flow (vph)	521	13	1196	407	94	996
Confl. Peds. (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	31.9	45.5	65.3	97.2	13.6	84.9
Effective Green, g (s)	31.9	45.5	65.3	97.2	13.6	84.9
Actuated g/C Ratio	0.23	0.33	0.47	0.70	0.10	0.61
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	784	569	1590	1109	174	2182
v/s Ratio Prot	c0.15	0.00	c0.35	0.08	0.05	c0.28
v/s Ratio Perm		0.01		0.19		
v/c Ratio	0.66	0.02	0.75	0.37	0.54	0.46
Uniform Delay, d1	48.7	31.7	30.2	8.5	59.7	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	2.2	0.3	4.2	0.7
Delay (s)	51.0	31.7	32.4	8.7	64.0	15.3
Level of Service	D	C	C	A	E	B
Approach Delay (s)	49.7		24.8			19.5
Approach LOS	D		C			B

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	18	40	3	29	103	26	1116	7	63	992	78
Future Volume (vph)	171	18	40	3	29	103	26	1116	7	63	992	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1686		1728	3452		1728	3417	
Flt Permitted		0.61			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1112			1675		1728	3452		1728	3417	
Peak-hour factor, PHF	0.72	0.72	0.72	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	238	25	56	4	41	145	28	1213	8	66	1044	82
RTOR Reduction (vph)	0	8	0	0	100	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	311	0	0	90	0	28	1220	0	66	1122	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		34.1			34.1		5.6	49.0		8.9	52.3	
Effective Green, g (s)		34.1			34.1		5.6	49.0		8.9	52.3	
Actuated g/C Ratio		0.31			0.31		0.05	0.45		0.08	0.48	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		344			519		87	1537		139	1624	
v/s Ratio Prot							0.02	c0.35		c0.04	c0.33	
v/s Ratio Perm		c0.28			0.05							
v/c Ratio		0.91			0.17		0.32	0.79		0.47	0.69	
Uniform Delay, d1		36.4			27.7		50.4	26.2		48.3	22.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		26.5			0.3		2.9	3.4		3.5	2.4	
Delay (s)		62.9			28.0		53.3	29.5		51.8	25.0	
Level of Service		E			C		D	C		D	C	
Approach Delay (s)		62.9			28.0			30.1			26.5	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	24	1619	1	0	1425
Future Vol, veh/h	0	24	1619	1	0	1425
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	75	75	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	32	1760	1	0	1549

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	881	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	223	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	223	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	223	-
HCM Lane V/C Ratio	-	-	0.143	-
HCM Control Delay (s)	-	-	23.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	20	567	53	44	488
Future Vol, veh/h	28	20	567	53	44	488
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	67	67	92	92	90	90
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	42	30	616	58	49	542

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	961	646	0	0	675	0
Stage 1	646	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	276	458	-	-	920	-
Stage 1	475	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	458	-	-	919	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	313	919	-
HCM Lane V/C Ratio	-	-	0.229	0.053	-
HCM Control Delay (s)	-	-	19.9	9.1	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	46	1	48	0	0
Future Vol, veh/h	52	46	1	48	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	65	65	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	69	61	2	74	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	131	0	179	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1467	-	815	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	950	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1466	-	813	959
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	949	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1466	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	7	0	36	13	1
Future Vol, veh/h	46	7	0	36	13	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	84	84	69	69
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	56	9	0	43	19	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	67	0	106	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1528	-	897	1007
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1525	-	895	1005
Mov Cap-2 Maneuver	-	-	-	-	895	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	985	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	902	-	-	1525	-
HCM Lane V/C Ratio	0.022	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1615	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1615	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1615	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

101: US Route 1 Bypass & Lafayette Road
2023 Existing Conditions Saturday Midday Peak

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	399	35	963	453	80	918
Future Volume (vph)	399	35	963	453	80	918
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1515	1805	3610
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1515	1805	3610
Peak-hour factor, PHF	0.95	0.95	0.94	0.94	0.88	0.88
Adj. Flow (vph)	420	37	1024	482	91	1043
RTOR Reduction (vph)	0	25	0	179	0	0
Lane Group Flow (vph)	420	12	1024	303	91	1043
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	19.6	27.6	34.4	54.0	8.0	48.4
Effective Green, g (s)	19.6	27.6	34.4	54.0	8.0	48.4
Actuated g/C Ratio	0.23	0.32	0.40	0.63	0.09	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	778	558	1354	1056	167	2031
v/s Ratio Prot	c0.12	0.00	c0.30	0.07	0.05	c0.29
v/s Ratio Perm		0.00		0.13		
v/c Ratio	0.54	0.02	0.76	0.29	0.54	0.51
Uniform Delay, d1	29.2	20.0	22.2	7.3	37.3	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.31	1.13
Incremental Delay, d2	0.9	0.0	2.6	0.2	3.7	0.8
Delay (s)	30.2	20.0	24.8	7.5	52.6	13.8
Level of Service	C	B	C	A	D	B
Approach Delay (s)	29.3		19.3			16.9
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	11	47	6	25	125	22	970	7	49	946	83
Future Volume (vph)	97	11	47	6	25	125	22	970	7	49	946	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1749			1674		1728	3451		1711	3380	
Flt Permitted		0.64			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1160			1651		1728	3451		1711	3380	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.98	0.98	0.98	0.86	0.86	0.86
Adj. Flow (vph)	115	13	56	7	27	137	22	990	7	57	1100	97
RTOR Reduction (vph)	0	20	0	0	110	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	164	0	0	61	0	22	997	0	57	1192	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.0			17.0		3.5	44.6		6.4	47.5	
Effective Green, g (s)		17.0			17.0		3.5	44.6		6.4	47.5	
Actuated g/C Ratio		0.20			0.20		0.04	0.52		0.07	0.55	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		229			326		70	1789		127	1866	
v/s Ratio Prot							0.01	0.29		c0.03	c0.35	
v/s Ratio Perm		c0.14			0.04							
v/c Ratio		0.72			0.19		0.31	0.56		0.45	0.64	
Uniform Delay, d1		32.2			28.7		40.1	14.0		38.1	13.3	
Progression Factor		1.00			1.00		1.31	0.75		1.00	1.00	
Incremental Delay, d2		10.8			0.6		2.5	0.5		3.4	1.7	
Delay (s)		43.1			29.3		55.1	11.0		41.5	15.0	
Level of Service		D			C		E	B		D	B	
Approach Delay (s)		43.1			29.3			12.0			16.2	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	29	1387	6	0	1300
Future Vol, veh/h	0	29	1387	6	0	1300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	69	69	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	42	1491	6	0	1494

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	749	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	277	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	277	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	277	-
HCM Lane V/C Ratio	-	-	0.152	-
HCM Control Delay (s)	-	-	20.3	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	22	474	58	46	409
Future Vol, veh/h	25	22	474	58	46	409
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	56	56	82	82	87	87
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	45	39	578	71	53	470

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	908	614	0	0	649	0
Stage 1	614	-	-	-	-	-
Stage 2	294	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	297	479	-	-	941	-
Stage 1	493	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	274	479	-	-	941	-
Mov Cap-2 Maneuver	274	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	18.9		0		1.1	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	343	941	-
HCM Lane V/C Ratio	-	-	0.245	0.056	-
HCM Control Delay (s)	-	-	18.9	9.1	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	63	1	47	0	0
Future Vol, veh/h	41	63	1	47	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	82	1	61	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	135	0	157	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1462	-	839	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1462	-	838	968
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	964	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1462	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	7	0	34	16	1
Future Vol, veh/h	34	7	0	34	16	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	75	75	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	40	8	0	45	23	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	48	0	89	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1572	-	917	1032
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1572	-	917	1032
Mov Cap-2 Maneuver	-	-	-	-	917	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	923	-	-	1572	-
HCM Lane V/C Ratio	0.026	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1635	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1635	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	421	96	825	634	143	845
Future Volume (vph)	421	96	825	634	143	845
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3352	1706	3288	1471	1736	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3352	1706	3288	1471	1736	3471
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.84	0.84
Adj. Flow (vph)	540	123	917	704	170	1006
RTOR Reduction (vph)	0	64	0	292	0	0
Lane Group Flow (vph)	540	59	917	412	170	1006
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	23.5	41.2	26.8	50.3	17.7	50.5
Effective Green, g (s)	23.5	41.2	26.8	50.3	17.7	50.5
Actuated g/C Ratio	0.27	0.48	0.31	0.58	0.21	0.59
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	915	936	1024	962	357	2038
v/s Ratio Prot	c0.16	0.01	c0.28	0.12	0.10	c0.29
v/s Ratio Perm		0.02		0.16		
v/c Ratio	0.59	0.06	0.90	0.43	0.48	0.49
Uniform Delay, d1	27.1	12.0	28.3	9.9	30.1	10.3
Progression Factor	1.00	1.00	1.00	1.00	0.75	0.59
Incremental Delay, d2	1.2	0.0	10.4	0.4	1.2	0.7
Delay (s)	28.3	12.1	38.7	10.3	23.8	6.8
Level of Service	C	B	D	B	C	A
Approach Delay (s)	25.3		26.4			9.3
Approach LOS	C		C			A

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	34	45	8	35	180	32	872	17	76	935	106
Future Volume (vph)	93	34	45	8	35	180	32	872	17	76	935	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.89		1.00	1.00		1.00	0.98	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1673		1662	3314		1694	3336	
Flt Permitted		0.55			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		982			1652		1662	3314		1694	3336	
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	113	41	55	9	40	205	35	948	18	78	964	109
RTOR Reduction (vph)	0	16	0	0	158	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	193	0	0	96	0	35	965	0	78	1066	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		19.9			19.9		5.6	39.2		8.9	42.5	
Effective Green, g (s)		19.9			19.9		5.6	39.2		8.9	42.5	
Actuated g/C Ratio		0.23			0.23		0.07	0.46		0.10	0.49	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		227			382		108	1510		175	1648	
v/s Ratio Prot							0.02	0.29		c0.05	c0.32	
v/s Ratio Perm		c0.20			0.06							
v/c Ratio		0.85			0.25		0.32	0.64		0.45	0.65	
Uniform Delay, d1		31.6			27.0		38.4	18.0		36.2	16.2	
Progression Factor		1.00			1.00		0.38	1.67		1.00	1.00	
Incremental Delay, d2		25.3			0.7		1.4	0.7		2.5	2.0	
Delay (s)		56.9			27.7		15.8	30.8		38.7	18.1	
Level of Service		E			C		B	C		D	B	
Approach Delay (s)		56.9			27.7			30.2			19.5	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	0					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1458	3	0	1234
Future Vol, veh/h	0	1	1458	3	0	1234
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	25	25	91	91	89	89
Heavy Vehicles, %	0	0	4	4	4	4
Mvmt Flow	0	4	1602	3	0	1387

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	804	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	253	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	253	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	253	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	19.5	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection						
Int Delay, s/veh	2.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	21	748	29	27	474
Future Vol, veh/h	43	21	748	29	27	474
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	71	71	80	80	80	80
Heavy Vehicles, %	4	4	3	3	3	3
Mvmt Flow	61	30	935	36	34	593

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1264	959	0	0	977	0
Stage 1	959	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.51	6.46	-	-	4.145	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	6.46	-	-	-	-	-
Follow-up Hdwy	3.688	3.338	-	-	2.2285	-
Pot Cap-1 Maneuver	177	291	-	-	699	-
Stage 1	322	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	163	289	-	-	695	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	40	0	0.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	190	695	-
HCM Lane V/C Ratio	-	-	0.474	0.049	-
HCM Control Delay (s)	-	-	40	10.4	0.2
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	2.3	0.2	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	19	1	64	0	0
Future Vol, veh/h	37	19	1	64	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	67	67	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	45	23	1	96	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	69	0	156	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1519	-	840	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1518	-	838	1013
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1518	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	2.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	6	7	55	10	3
Future Vol, veh/h	31	6	7	55	10	3
Conflicting Peds, #/hr	0	3	3	0	1	23
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	75	75	34	34
Heavy Vehicles, %	7	7	4	4	0	0
Mvmt Flow	45	9	9	73	29	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	57	0	145	76
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1535	-	852	991
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1531	-	843	969
Mov Cap-2 Maneuver	-	-	-	-	843	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	869	-	-	1531	-
HCM Lane V/C Ratio	0.044	-	-	0.006	-
HCM Control Delay (s)	9.3	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1609	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1609	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1609	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	498	38	1140	548	91	975
Future Volume (vph)	498	38	1140	548	91	975
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1494	1787	3574
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1494	1787	3574
Peak-hour factor, PHF	0.92	0.92	0.93	0.93	0.95	0.95
Adj. Flow (vph)	541	41	1226	589	96	1026
RTOR Reduction (vph)	0	27	0	165	0	0
Lane Group Flow (vph)	541	14	1226	424	96	1026
Confl. Peds. (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	33.1	46.8	64.0	97.1	13.7	83.7
Effective Green, g (s)	33.1	46.8	64.0	97.1	13.7	83.7
Actuated g/C Ratio	0.24	0.34	0.46	0.70	0.10	0.60
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	813	585	1559	1108	176	2152
v/s Ratio Prot	c0.16	0.00	c0.36	0.09	0.05	c0.29
v/s Ratio Perm		0.01		0.19		
v/c Ratio	0.67	0.02	0.79	0.38	0.55	0.48
Uniform Delay, d1	47.9	30.8	31.7	8.6	59.7	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	2.9	0.3	4.3	0.8
Delay (s)	50.2	30.8	34.6	8.9	64.0	16.2
Level of Service	D	C	C	A	E	B
Approach Delay (s)	48.8		26.2			20.3
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	19	41	3	29	105	27	1144	7	64	1022	79
Future Volume (vph)	174	19	41	3	29	105	27	1144	7	64	1022	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1685		1728	3452		1728	3418	
Flt Permitted		0.60			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1109			1674		1728	3452		1728	3418	
Peak-hour factor, PHF	0.72	0.72	0.72	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	242	26	57	4	41	148	29	1243	8	67	1076	83
RTOR Reduction (vph)	0	8	0	0	101	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	317	0	0	92	0	29	1250	0	67	1155	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		34.6			34.6		5.6	48.5		8.9	51.8	
Effective Green, g (s)		34.6			34.6		5.6	48.5		8.9	51.8	
Actuated g/C Ratio		0.31			0.31		0.05	0.44		0.08	0.47	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		348			526		87	1522		139	1609	
v/s Ratio Prot							0.02	c0.36		c0.04	c0.34	
v/s Ratio Perm		c0.29			0.05							
v/c Ratio		0.91			0.17		0.33	0.82		0.48	0.72	
Uniform Delay, d1		36.2			27.3		50.4	27.0		48.3	23.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.6			0.3		3.1	4.2		3.6	2.8	
Delay (s)		63.9			27.7		53.5	31.1		51.9	26.0	
Level of Service		E			C		D	C		D	C	
Approach Delay (s)		63.9			27.7			31.6			27.5	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	24	1664	1	0	1473
Future Vol, veh/h	0	24	1664	1	0	1473
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	75	75	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	32	1809	1	0	1601

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	905	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	214	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	214	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	214	-
HCM Lane V/C Ratio	-	-	0.15	-
HCM Control Delay (s)	-	-	24.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection						
Int Delay, s/veh	1.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	20	584	55	46	506
Future Vol, veh/h	29	20	584	55	46	506
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	67	67	92	92	90	90
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	43	30	635	60	51	562

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	993	666	0	0	696	0
Stage 1	666	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	264	446	-	-	904	-
Stage 1	464	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	446	-	-	903	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	464	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	298	903	-
HCM Lane V/C Ratio	-	-	0.245	0.057	-
HCM Control Delay (s)	-	-	21	9.2	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	47	1	49	0	0
Future Vol, veh/h	54	47	1	49	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	65	65	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	72	63	2	75	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	136	0	184	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1461	-	810	955
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1460	-	808	954
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1460	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	7	0	37	13	1
Future Vol, veh/h	47	7	0	37	13	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	84	84	69	69
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	57	9	0	44	19	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	68	0	108	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1527	-	894	1006
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	892	1004
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	899	-	-	1524	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1615	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1615	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1615	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	407	36	983	462	81	938
Future Volume (vph)	407	36	983	462	81	938
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1515	1805	3610
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1515	1805	3610
Peak-hour factor, PHF	0.95	0.95	0.94	0.94	0.88	0.88
Adj. Flow (vph)	428	38	1046	491	92	1066
RTOR Reduction (vph)	0	26	0	183	0	0
Lane Group Flow (vph)	428	12	1046	308	92	1066
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	19.8	27.8	34.2	54.0	8.0	48.2
Effective Green, g (s)	19.8	27.8	34.2	54.0	8.0	48.2
Actuated g/C Ratio	0.23	0.32	0.40	0.63	0.09	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	786	562	1346	1056	167	2023
v/s Ratio Prot	c0.13	0.00	c0.31	0.07	0.05	c0.30
v/s Ratio Perm		0.01		0.14		
v/c Ratio	0.54	0.02	0.78	0.29	0.55	0.53
Uniform Delay, d1	29.1	19.8	22.6	7.3	37.3	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.31	1.14
Incremental Delay, d2	1.0	0.0	3.1	0.2	3.8	0.8
Delay (s)	30.1	19.9	25.6	7.5	52.7	14.2
Level of Service	C	B	C	A	D	B
Approach Delay (s)	29.3		19.8			17.3
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	12	48	6	26	128	22	990	7	50	965	85
Future Volume (vph)	99	12	48	6	26	128	22	990	7	50	965	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1676		1728	3452		1711	3380	
Flt Permitted		0.63			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1145			1653		1728	3452		1711	3380	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.98	0.98	0.98	0.86	0.86	0.86
Adj. Flow (vph)	118	14	57	7	29	141	22	1010	7	58	1122	99
RTOR Reduction (vph)	0	20	0	0	112	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	169	0	0	65	0	22	1016	0	58	1216	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.4			17.4		3.5	42.6		8.0	47.1	
Effective Green, g (s)		17.4			17.4		3.5	42.6		8.0	47.1	
Actuated g/C Ratio		0.20			0.20		0.04	0.50		0.09	0.55	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		231			334		70	1709		159	1851	
v/s Ratio Prot							0.01	0.29		c0.03	c0.36	
v/s Ratio Perm		c0.15			0.04							
v/c Ratio		0.73			0.19		0.31	0.59		0.36	0.66	
Uniform Delay, d1		32.1			28.5		40.1	15.5		36.6	13.7	
Progression Factor		1.00			1.00		1.32	0.69		1.00	1.00	
Incremental Delay, d2		12.0			0.6		2.5	0.6		1.9	1.8	
Delay (s)		44.1			29.1		55.6	11.3		38.6	15.6	
Level of Service		D			C		E	B		D	B	
Approach Delay (s)		44.1			29.1			12.3			16.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	29	1416	6	0	1326
Future Vol, veh/h	0	29	1416	6	0	1326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	69	69	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	42	1523	6	0	1524

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	765	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	270	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	270	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	270	-
HCM Lane V/C Ratio	-	-	0.156	-
HCM Control Delay (s)	-	-	20.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection						
Int Delay, s/veh	1.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	22	484	59	47	417
Future Vol, veh/h	26	22	484	59	47	417
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	56	56	82	82	87	87
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	46	39	590	72	54	479

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	626	0	0	662	0
Stage 1	626	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	289	471	-	-	930	-
Stage 1	486	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	266	471	-	-	930	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.6	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	332	930	-
HCM Lane V/C Ratio	-	-	0.258	0.058	-
HCM Control Delay (s)	-	-	19.6	9.1	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	42	64	1	48	0	0
Future Vol, veh/h	42	64	1	48	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	55	83	1	62	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	138	0	161	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1458	-	835	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1458	-	834	965
Mov Cap-2 Maneuver	-	-	-	-	834	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	963	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1458	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	7	0	34	16	1
Future Vol, veh/h	35	7	0	34	16	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	75	75	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	42	8	0	45	23	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	91	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1570	-	914	1029
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1570	-	914	1029
Mov Cap-2 Maneuver	-	-	-	-	914	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	920	-	-	1570	-
HCM Lane V/C Ratio	0.026	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1635	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1635	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	466	106	910	698	158	933
Future Volume (vph)	466	106	910	698	158	933
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3352	1706	3288	1471	1736	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3352	1706	3288	1471	1736	3471
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.84	0.84
Adj. Flow (vph)	597	136	1011	776	188	1111
RTOR Reduction (vph)	0	66	0	340	0	0
Lane Group Flow (vph)	597	70	1011	436	188	1111
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	24.4	44.1	23.9	48.3	19.7	49.6
Effective Green, g (s)	24.4	44.1	23.9	48.3	19.7	49.6
Actuated g/C Ratio	0.28	0.51	0.28	0.56	0.23	0.58
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	951	993	913	928	397	2001
v/s Ratio Prot	c0.18	0.02	c0.31	0.13	0.11	c0.32
v/s Ratio Perm		0.02		0.16		
v/c Ratio	0.63	0.07	1.11	0.47	0.47	0.56
Uniform Delay, d1	26.8	10.6	31.1	11.2	28.7	11.3
Progression Factor	1.00	1.00	1.00	1.00	0.76	0.74
Incremental Delay, d2	1.5	0.0	63.7	0.5	1.0	0.9
Delay (s)	28.3	10.6	94.8	11.7	22.8	9.3
Level of Service	C	B	F	B	C	A
Approach Delay (s)	25.0		58.7			11.3
Approach LOS	C		E			B

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	50	9	39	199	23	974	19	83	1032	117
Future Volume (vph)	103	37	50	9	39	199	23	974	19	83	1032	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.89		1.00	1.00		1.00	0.98	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1673		1662	3314		1694	3336	
Flt Permitted		0.54			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		955			1651		1662	3314		1694	3336	
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	126	45	61	10	44	226	25	1059	21	86	1064	121
RTOR Reduction (vph)	0	16	0	0	169	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	216	0	0	111	0	25	1079	0	86	1178	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		21.7			21.7		3.6	37.1		9.2	42.7	
Effective Green, g (s)		21.7			21.7		3.6	37.1		9.2	42.7	
Actuated g/C Ratio		0.25			0.25		0.04	0.43		0.11	0.50	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		240			416		69	1429		181	1656	
v/s Ratio Prot							0.02	0.33		c0.05	c0.35	
v/s Ratio Perm		c0.23			0.07							
v/c Ratio		0.90			0.27		0.36	0.75		0.48	0.71	
Uniform Delay, d1		31.1			25.8		40.1	20.6		36.1	16.9	
Progression Factor		1.00			1.00		0.36	1.56		1.00	1.00	
Incremental Delay, d2		33.5			0.7		1.1	0.7		2.7	2.6	
Delay (s)		64.7			26.5		15.6	32.8		38.8	19.5	
Level of Service		E			C		B	C		D	B	
Approach Delay (s)		64.7			26.5			32.4			20.8	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	0					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1607	4	0	1362
Future Vol, veh/h	0	1	1607	4	0	1362
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	25	25	91	91	89	89
Heavy Vehicles, %	0	0	4	4	4	4
Mvmt Flow	0	4	1766	4	0	1530

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	886	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	221	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	221	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	221	-
HCM Lane V/C Ratio	-	-	0.018	-
HCM Control Delay (s)	-	-	21.6	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.7					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	24	825	31	31	524
Future Vol, veh/h	48	24	825	31	31	524
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	71	71	80	80	80	80
Heavy Vehicles, %	4	4	3	3	3	3
Mvmt Flow	68	34	1031	39	39	655

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1397	1057	0	0	1076	0
Stage 1	1057	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.51	6.46	-	-	4.145	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	6.46	-	-	-	-	-
Follow-up Hdwy	3.688	3.338	-	-	2.2285	-
Pot Cap-1 Maneuver	147	254	-	-	641	-
Stage 1	286	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	253	-	-	637	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	62.3	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	157	637	-
HCM Lane V/C Ratio	-	-	0.646	0.061	-
HCM Control Delay (s)	-	-	62.3	11	0.3
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	3.6	0.2	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	21	1	72	0	0
Future Vol, veh/h	41	21	1	72	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	67	67	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	49	25	1	107	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	172	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1512	-	823	1007
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1511	-	821	1006
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1511	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	6	8	61	12	4
Future Vol, veh/h	35	6	8	61	12	4
Conflicting Peds, #/hr	0	3	3	0	1	23
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	75	75	34	34
Heavy Vehicles, %	7	7	4	4	0	0
Mvmt Flow	51	9	11	81	35	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	63	0	163	82
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1527	-	832	983
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	925	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1523	-	822	961
Mov Cap-2 Maneuver	-	-	-	-	822	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	853	-	-	1523	-
HCM Lane V/C Ratio	0.055	-	-	0.007	-
HCM Control Delay (s)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1609	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1609	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1609	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	549	42	1260	606	100	1077
Future Volume (vph)	549	42	1260	606	100	1077
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1495	1787	3574
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1495	1787	3574
Peak-hour factor, PHF	0.92	0.92	0.93	0.93	0.95	0.95
Adj. Flow (vph)	597	46	1355	652	105	1134
RTOR Reduction (vph)	0	29	0	168	0	0
Lane Group Flow (vph)	597	17	1355	484	105	1134
Confl. Peds. (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	36.3	50.7	60.1	96.4	14.4	80.5
Effective Green, g (s)	36.3	50.7	60.1	96.4	14.4	80.5
Actuated g/C Ratio	0.26	0.36	0.43	0.69	0.10	0.58
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	892	634	1464	1101	185	2069
v/s Ratio Prot	c0.17	0.00	c0.40	0.11	0.06	c0.32
v/s Ratio Perm		0.01		0.21		
v/c Ratio	0.67	0.03	0.93	0.44	0.57	0.55
Uniform Delay, d1	46.0	28.3	37.3	9.4	59.3	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.0	10.4	0.4	4.8	1.0
Delay (s)	48.1	28.3	47.7	9.8	64.1	19.1
Level of Service	D	C	D	A	E	B
Approach Delay (s)	46.7		35.4			22.9
Approach LOS	D		D			C

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	21	45	4	32	116	30	1264	8	71	1128	87
Future Volume (vph)	193	21	45	4	32	116	30	1264	8	71	1128	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1685		1728	3452		1728	3418	
Flt Permitted		0.59			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1087			1669		1728	3452		1728	3418	
Peak-hour factor, PHF	0.72	0.72	0.72	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	268	29	62	6	45	163	33	1374	9	75	1187	92
RTOR Reduction (vph)	0	7	0	0	107	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	353	0	0	107	0	33	1382	0	75	1275	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		37.6			37.6		5.8	45.1		9.3	48.6	
Effective Green, g (s)		37.6			37.6		5.8	45.1		9.3	48.6	
Actuated g/C Ratio		0.34			0.34		0.05	0.41		0.08	0.44	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		371			570		91	1415		146	1510	
v/s Ratio Prot							0.02	c0.40		c0.04	c0.37	
v/s Ratio Perm		c0.32			0.06							
v/c Ratio		0.95			0.19		0.36	0.98		0.51	0.84	
Uniform Delay, d1		35.3			25.5		50.3	31.9		48.2	27.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		34.2			0.3		3.3	18.7		4.0	5.9	
Delay (s)		69.5			25.8		53.7	50.6		52.2	33.3	
Level of Service		E			C		D	D		D	C	
Approach Delay (s)		69.5			25.8			50.7			34.3	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	27	1839	1	0	1626
Future Vol, veh/h	0	27	1839	1	0	1626
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	75	75	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	36	1999	1	0	1767

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1000	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	183	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	183	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	183	-
HCM Lane V/C Ratio	-	-	0.197	-
HCM Control Delay (s)	-	-	29.4	-
HCM Lane LOS	-	-	D	-
HCM 95th %tile Q(veh)	-	-	0.7	-

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	23	645	60	50	558
Future Vol, veh/h	32	23	645	60	50	558
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	67	67	92	92	90	90
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	48	34	701	65	56	620

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1095	735	0	0	767	0
Stage 1	735	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	230	406	-	-	850	-
Stage 1	428	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	406	-	-	849	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.1	0	1.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	260	849	-
HCM Lane V/C Ratio	-	-	0.316	0.065	-
HCM Control Delay (s)	-	-	25.1	9.5	0.3
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	61	51	1	55	0	0
Future Vol, veh/h	61	51	1	55	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	65	65	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	81	68	2	85	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	150	0	205	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1444	-	788	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1443	-	786	941
Mov Cap-2 Maneuver	-	-	-	-	786	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1443	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	8	0	42	14	1
Future Vol, veh/h	52	8	0	42	14	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	84	84	69	69
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	63	10	0	50	20	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	120	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1518	-	880	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1515	-	878	996
Mov Cap-2 Maneuver	-	-	-	-	878	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	978	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	885	-	-	1515	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1615	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1615	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1615	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	450	40	1085	510	90	1035
Future Volume (vph)	450	40	1085	510	90	1035
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1515	1805	3610
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1515	1805	3610
Peak-hour factor, PHF	0.95	0.95	0.94	0.94	0.88	0.88
Adj. Flow (vph)	474	42	1154	543	102	1176
RTOR Reduction (vph)	0	28	0	205	0	0
Lane Group Flow (vph)	474	14	1154	338	102	1176
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	21.1	29.5	32.5	53.6	8.4	46.9
Effective Green, g (s)	21.1	29.5	32.5	53.6	8.4	46.9
Actuated g/C Ratio	0.25	0.34	0.38	0.62	0.10	0.55
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	838	596	1279	1049	176	1968
v/s Ratio Prot	c0.14	0.00	c0.34	0.08	0.06	c0.33
v/s Ratio Perm		0.01		0.14		
v/c Ratio	0.57	0.02	0.90	0.32	0.58	0.60
Uniform Delay, d1	28.4	18.7	25.3	7.6	37.1	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.31	1.15
Incremental Delay, d2	1.1	0.0	9.2	0.2	3.9	1.0
Delay (s)	29.5	18.7	34.5	7.9	52.5	16.1
Level of Service	C	B	C	A	D	B
Approach Delay (s)	28.6		26.0			19.0
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	13	53	6	28	141	24	1093	8	55	1066	94
Future Volume (vph)	109	13	53	6	28	141	24	1093	8	55	1066	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1674		1728	3451		1711	3380	
Flt Permitted		0.62			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1111			1653		1728	3451		1711	3380	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.98	0.98	0.98	0.86	0.86	0.86
Adj. Flow (vph)	130	15	63	7	31	155	24	1115	8	64	1240	109
RTOR Reduction (vph)	0	20	0	0	121	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	188	0	0	72	0	24	1122	0	64	1344	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		18.7			18.7		3.6	41.1		8.2	45.7	
Effective Green, g (s)		18.7			18.7		3.6	41.1		8.2	45.7	
Actuated g/C Ratio		0.22			0.22		0.04	0.48		0.10	0.53	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		241			359		72	1649		163	1796	
v/s Ratio Prot							0.01	0.33		c0.04	c0.40	
v/s Ratio Perm		c0.17			0.04							
v/c Ratio		0.78			0.20		0.33	0.68		0.39	0.75	
Uniform Delay, d1		31.7			27.5		40.0	17.4		36.6	15.7	
Progression Factor		1.00			1.00		1.32	0.61		1.00	1.00	
Incremental Delay, d2		15.9			0.6		2.1	0.9		2.1	2.9	
Delay (s)		47.7			28.1		55.0	11.5		38.7	18.6	
Level of Service		D			C		D	B		D	B	
Approach Delay (s)		47.7			28.1			12.4			19.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	32	1563	6	0	1464
Future Vol, veh/h	0	32	1563	6	0	1464
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	69	69	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	46	1681	6	0	1683

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	844	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	237	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	237	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	237	-
HCM Lane V/C Ratio	-	-	0.196	-
HCM Control Delay (s)	-	-	23.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.7	-

Intersection						
Int Delay, s/veh	2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	25	534	66	52	461
Future Vol, veh/h	29	25	534	66	52	461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	56	56	82	82	87	87
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	52	45	651	80	60	530

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1023	691	0	0	731	0
Stage 1	691	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	253	431	-	-	877	-
Stage 1	451	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	228	431	-	-	877	-
Mov Cap-2 Maneuver	228	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	582	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	292	877	-
HCM Lane V/C Ratio	-	-	0.33	0.068	-
HCM Control Delay (s)	-	-	23.3	9.4	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.2	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	71	1	53	0	0
Future Vol, veh/h	47	71	1	53	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	61	92	1	69	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	153	0	178	107
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1440	-	816	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1440	-	815	953
Mov Cap-2 Maneuver	-	-	-	-	815	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	956	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1440	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	39	8	0	38	18	1
Future Vol, veh/h	39	8	0	38	18	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	75	75	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	46	10	0	51	26	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	56	0	102	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1562	-	901	1023
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1562	-	901	1023
Mov Cap-2 Maneuver	-	-	-	-	901	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1562	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1635	-	1026	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	1026	1090
Mov Cap-2 Maneuver	-	-	-	-	1026	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	1028	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1635	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	426	106	825	636	145	845
Future Volume (vph)	426	106	825	636	145	845
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3352	1706	3288	1471	1736	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3352	1706	3288	1471	1736	3471
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.84	0.84
Adj. Flow (vph)	546	136	917	707	173	1006
RTOR Reduction (vph)	0	70	0	296	0	0
Lane Group Flow (vph)	546	66	917	411	173	1006
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	23.6	41.6	26.4	50.0	18.0	50.4
Effective Green, g (s)	23.6	41.6	26.4	50.0	18.0	50.4
Actuated g/C Ratio	0.27	0.48	0.31	0.58	0.21	0.59
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	919	944	1009	957	363	2034
v/s Ratio Prot	c0.16	0.01	c0.28	0.12	0.10	c0.29
v/s Ratio Perm		0.02		0.16		
v/c Ratio	0.59	0.07	0.91	0.43	0.48	0.49
Uniform Delay, d1	27.0	11.9	28.6	10.0	29.9	10.4
Progression Factor	1.00	1.00	1.00	1.00	0.75	0.59
Incremental Delay, d2	1.2	0.0	11.9	0.4	1.1	0.7
Delay (s)	28.3	11.9	40.5	10.5	23.5	6.9
Level of Service	C	B	D	B	C	A
Approach Delay (s)	25.0		27.4			9.3
Approach LOS	C		C			A

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	34	45	8	35	180	32	882	17	76	937	106
Future Volume (vph)	93	34	45	8	35	180	32	882	17	76	937	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.89		1.00	1.00		1.00	0.98	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1673		1662	3314		1694	3336	
Flt Permitted		0.55			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		982			1652		1662	3314		1694	3336	
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	113	41	55	9	40	205	35	959	18	78	966	109
RTOR Reduction (vph)	0	16	0	0	158	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	193	0	0	96	0	35	976	0	78	1068	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		19.9			19.9		5.6	39.2		8.9	42.5	
Effective Green, g (s)		19.9			19.9		5.6	39.2		8.9	42.5	
Actuated g/C Ratio		0.23			0.23		0.07	0.46		0.10	0.49	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		227			382		108	1510		175	1648	
v/s Ratio Prot							0.02	0.29		c0.05	c0.32	
v/s Ratio Perm		c0.20			0.06							
v/c Ratio		0.85			0.25		0.32	0.65		0.45	0.65	
Uniform Delay, d1		31.6			27.0		38.4	18.1		36.2	16.2	
Progression Factor		1.00			1.00		0.38	1.65		1.00	1.00	
Incremental Delay, d2		25.3			0.7		1.3	0.7		2.5	2.0	
Delay (s)		56.9			27.7		16.0	30.5		38.7	18.2	
Level of Service		E			C		B	C		D	B	
Approach Delay (s)		56.9			27.7			30.0			19.6	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1460	3	0	1239
Future Vol, veh/h	0	1	1460	3	0	1239
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	25	25	91	91	89	89
Heavy Vehicles, %	0	0	4	4	4	4
Mvmt Flow	0	4	1604	3	0	1392

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	805	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	253	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	253	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	253	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	19.5	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection						
Int Delay, s/veh	4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	58	27	748	33	29	474
Future Vol, veh/h	58	27	748	33	29	474
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	71	71	80	80	80	80
Heavy Vehicles, %	4	4	3	3	3	3
Mvmt Flow	82	38	935	41	36	593

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1271	962	0	0	982	0
Stage 1	962	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Critical Hdwy	6.51	6.46	-	-	4.145	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	6.46	-	-	-	-	-
Follow-up Hdwy	3.688	3.338	-	-	2.2285	-
Pot Cap-1 Maneuver	175	290	-	-	696	-
Stage 1	321	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	160	288	-	-	692	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	319	-	-	-	-	-
Stage 2	603	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	53.9	0	0.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	186	692	-
HCM Lane V/C Ratio	-	-	0.644	0.052	-
HCM Control Delay (s)	-	-	53.9	10.5	0.2
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	3.7	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	22	1	85	0	0
Future Vol, veh/h	40	22	1	85	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	67	67	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	48	27	1	127	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	76	0	192	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1510	-	801	1007
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1509	-	799	1006
Mov Cap-2 Maneuver	-	-	-	-	799	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	901	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1509	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	3.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	6	7	55	21	3
Future Vol, veh/h	31	6	7	55	21	3
Conflicting Peds, #/hr	0	3	3	0	1	23
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	75	75	34	34
Heavy Vehicles, %	7	7	4	4	0	0
Mvmt Flow	45	9	9	73	62	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	57	0	145	76
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1535	-	852	991
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1531	-	843	969
Mov Cap-2 Maneuver	-	-	-	-	843	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1531	-
HCM Lane V/C Ratio	0.082	-	-	0.006	-
HCM Control Delay (s)	9.6	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

301: Prop. Garage Driveway & Ledgewood Drive
2025 Build Weekday AM Peak

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	3	0	76	10	0
Future Vol, veh/h	37	3	0	76	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	40	3	0	83	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	43	0	125	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1553	-	875	1034
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1553	-	875	1034
Mov Cap-2 Maneuver	-	-	-	-	875	-
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	875	-	-	1553	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	501	43	1140	552	99	975
Future Volume (vph)	501	43	1140	552	99	975
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1494	1787	3574
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1494	1787	3574
Peak-hour factor, PHF	0.92	0.92	0.93	0.93	0.95	0.95
Adj. Flow (vph)	545	47	1226	594	104	1026
RTOR Reduction (vph)	0	31	0	169	0	0
Lane Group Flow (vph)	545	16	1226	425	104	1026
Confl. Peds. (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	33.4	47.7	63.1	96.5	14.3	83.4
Effective Green, g (s)	33.4	47.7	63.1	96.5	14.3	83.4
Actuated g/C Ratio	0.24	0.34	0.45	0.69	0.10	0.60
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	821	597	1537	1101	183	2144
v/s Ratio Prot	c0.16	0.00	c0.36	0.09	0.06	c0.29
v/s Ratio Perm		0.01		0.19		
v/c Ratio	0.66	0.03	0.80	0.39	0.57	0.48
Uniform Delay, d1	47.7	30.3	32.5	8.9	59.4	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	3.2	0.3	4.9	0.8
Delay (s)	50.0	30.3	35.6	9.2	64.3	16.4
Level of Service	D	C	D	A	E	B
Approach Delay (s)	48.4		27.0			20.8
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	19	41	3	29	105	27	1149	7	64	1030	79
Future Volume (vph)	174	19	41	3	29	105	27	1149	7	64	1030	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1685		1728	3452		1728	3418	
Flt Permitted		0.60			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1109			1674		1728	3452		1728	3418	
Peak-hour factor, PHF	0.72	0.72	0.72	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	242	26	57	4	41	148	29	1249	8	67	1084	83
RTOR Reduction (vph)	0	8	0	0	101	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	317	0	0	92	0	29	1256	0	67	1163	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		34.6			34.6		5.6	48.5		8.9	51.8	
Effective Green, g (s)		34.6			34.6		5.6	48.5		8.9	51.8	
Actuated g/C Ratio		0.31			0.31		0.05	0.44		0.08	0.47	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		348			526		87	1522		139	1609	
v/s Ratio Prot							0.02	c0.36		c0.04	c0.34	
v/s Ratio Perm		c0.29			0.05							
v/c Ratio		0.91			0.17		0.33	0.83		0.48	0.72	
Uniform Delay, d1		36.2			27.3		50.4	27.0		48.3	23.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.6			0.3		3.1	4.3		3.6	2.8	
Delay (s)		63.9			27.7		53.5	31.3		51.9	26.2	
Level of Service		E			C		D	C		D	C	
Approach Delay (s)		63.9			27.7			31.8			27.6	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	24	1668	1	0	1476
Future Vol, veh/h	0	24	1668	1	0	1476
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	75	75	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	32	1813	1	0	1604

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	907	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	214	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	214	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	214	-
HCM Lane V/C Ratio	-	-	0.15	-
HCM Control Delay (s)	-	-	24.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection						
Int Delay, s/veh	1.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	23	584	67	51	506
Future Vol, veh/h	37	23	584	67	51	506
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	67	67	92	92	90	90
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	55	34	635	73	57	562

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1012	673	0	0	709	0
Stage 1	673	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	257	442	-	-	894	-
Stage 1	460	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	233	442	-	-	893	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	285	893	-
HCM Lane V/C Ratio	-	-	0.314	0.063	-
HCM Control Delay (s)	-	-	23.3	9.3	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	55	1	60	0	0
Future Vol, veh/h	63	55	1	60	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	65	65	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	84	73	2	92	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	158	0	218	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1434	-	775	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1433	-	773	934
Mov Cap-2 Maneuver	-	-	-	-	773	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	932	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1433	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	7	0	37	18	1
Future Vol, veh/h	47	7	0	37	18	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	84	84	69	69
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	57	9	0	44	26	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	68	0	108	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1527	-	894	1006
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	892	1004
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	897	-	-	1524	-
HCM Lane V/C Ratio	0.031	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	9	0	55	6	0
Future Vol, veh/h	54	9	0	55	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	59	10	0	60	7	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	69	0	124	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1526	-	876	1006
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1526	-	876	1006
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	876	-	-	1526	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	411	42	983	466	87	938
Future Volume (vph)	411	42	983	466	87	938
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1515	1805	3610
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1515	1805	3610
Peak-hour factor, PHF	0.95	0.95	0.94	0.94	0.88	0.88
Adj. Flow (vph)	433	44	1046	496	99	1066
RTOR Reduction (vph)	0	30	0	186	0	0
Lane Group Flow (vph)	433	14	1046	310	99	1066
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	19.8	28.1	33.9	53.7	8.3	48.2
Effective Green, g (s)	19.8	28.1	33.9	53.7	8.3	48.2
Actuated g/C Ratio	0.23	0.33	0.39	0.62	0.10	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	786	568	1334	1051	174	2023
v/s Ratio Prot	c0.13	0.00	c0.31	0.07	0.05	c0.30
v/s Ratio Perm		0.01		0.14		
v/c Ratio	0.55	0.03	0.78	0.29	0.57	0.53
Uniform Delay, d1	29.2	19.7	22.8	7.4	37.1	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.31	1.14
Incremental Delay, d2	1.0	0.0	3.3	0.2	4.1	0.8
Delay (s)	30.2	19.7	26.1	7.6	52.6	14.2
Level of Service	C	B	C	A	D	B
Approach Delay (s)	29.2		20.2			17.5
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	12	48	6	26	128	22	996	7	50	971	85
Future Volume (vph)	99	12	48	6	26	128	22	996	7	50	971	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1676		1728	3452		1711	3380	
Flt Permitted		0.63			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1145			1653		1728	3452		1711	3380	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.98	0.98	0.98	0.86	0.86	0.86
Adj. Flow (vph)	118	14	57	7	29	141	22	1016	7	58	1129	99
RTOR Reduction (vph)	0	20	0	0	112	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	169	0	0	65	0	22	1022	0	58	1223	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.4			17.4		3.5	42.6		8.0	47.1	
Effective Green, g (s)		17.4			17.4		3.5	42.6		8.0	47.1	
Actuated g/C Ratio		0.20			0.20		0.04	0.50		0.09	0.55	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		231			334		70	1709		159	1851	
v/s Ratio Prot							0.01	0.30		c0.03	c0.36	
v/s Ratio Perm		c0.15			0.04							
v/c Ratio		0.73			0.19		0.31	0.60		0.36	0.66	
Uniform Delay, d1		32.1			28.5		40.1	15.6		36.6	13.8	
Progression Factor		1.00			1.00		1.32	0.69		1.00	1.00	
Incremental Delay, d2		12.0			0.6		2.5	0.6		1.9	1.9	
Delay (s)		44.1			29.1		55.5	11.3		38.6	15.7	
Level of Service		D			C		E	B		D	B	
Approach Delay (s)		44.1			29.1			12.2			16.7	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	29	1420	6	0	1330
Future Vol, veh/h	0	29	1420	6	0	1330
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	69	69	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	42	1527	6	0	1529

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	767	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	269	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	269	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	269	-
HCM Lane V/C Ratio	-	-	0.156	-
HCM Control Delay (s)	-	-	20.8	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection						
Int Delay, s/veh	2.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	26	484	69	52	417
Future Vol, veh/h	36	26	484	69	52	417
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	56	56	82	82	87	87
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	64	46	590	84	60	479

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	944	632	0	0	674	0
Stage 1	632	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	282	467	-	-	921	-
Stage 1	483	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	257	467	-	-	921	-
Mov Cap-2 Maneuver	257	-	-	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	317	921	-
HCM Lane V/C Ratio	-	-	0.349	0.065	-
HCM Control Delay (s)	-	-	22.3	9.2	0.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	71	1	62	0	0
Future Vol, veh/h	50	71	1	62	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	65	92	1	81	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	194	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1435	-	799	948
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	798	948
Mov Cap-2 Maneuver	-	-	-	-	798	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1435	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	7	0	34	23	1
Future Vol, veh/h	35	7	0	34	23	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	75	75	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	42	8	0	45	33	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	91	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1570	-	914	1029
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1570	-	914	1029
Mov Cap-2 Maneuver	-	-	-	-	914	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	918	-	-	1570	-
HCM Lane V/C Ratio	0.037	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	42	8	0	57	7	0
Future Vol, veh/h	42	8	0	57	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	46	9	0	62	8	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	113	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1563	-	888	1023
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1563	-	888	1023
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	966	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	888	-	-	1563	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	471	116	910	700	160	933
Future Volume (vph)	471	116	910	700	160	933
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3352	1706	3288	1471	1736	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3352	1706	3288	1471	1736	3471
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.84	0.84
Adj. Flow (vph)	604	149	1011	778	190	1111
RTOR Reduction (vph)	0	72	0	343	0	0
Lane Group Flow (vph)	604	77	1011	435	190	1111
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	24.4	44.3	23.7	48.1	19.9	49.6
Effective Green, g (s)	24.4	44.3	23.7	48.1	19.9	49.6
Actuated g/C Ratio	0.28	0.52	0.28	0.56	0.23	0.58
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	951	997	906	925	401	2001
v/s Ratio Prot	c0.18	0.02	c0.31	0.13	0.11	c0.32
v/s Ratio Perm		0.03		0.16		
v/c Ratio	0.64	0.08	1.12	0.47	0.47	0.56
Uniform Delay, d1	26.9	10.5	31.1	11.3	28.5	11.3
Progression Factor	1.00	1.00	1.00	1.00	0.76	0.74
Incremental Delay, d2	1.6	0.0	67.0	0.5	1.0	0.9
Delay (s)	28.5	10.6	98.2	11.9	22.7	9.3
Level of Service	C	B	F	B	C	A
Approach Delay (s)	24.9		60.6			11.3
Approach LOS	C		E			B

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	50	9	39	199	23	984	19	83	1034	117
Future Volume (vph)	103	37	50	9	39	199	23	984	19	83	1034	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.89		1.00	1.00		1.00	0.98	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1673		1662	3314		1694	3336	
Flt Permitted		0.54			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		955			1651		1662	3314		1694	3336	
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	126	45	61	10	44	226	25	1070	21	86	1066	121
RTOR Reduction (vph)	0	16	0	0	169	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	216	0	0	111	0	25	1090	0	86	1180	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		21.7			21.7		3.6	37.1		9.2	42.7	
Effective Green, g (s)		21.7			21.7		3.6	37.1		9.2	42.7	
Actuated g/C Ratio		0.25			0.25		0.04	0.43		0.11	0.50	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		240			416		69	1429		181	1656	
v/s Ratio Prot							0.02	c0.33		c0.05	c0.35	
v/s Ratio Perm		c0.23			0.07							
v/c Ratio		0.90			0.27		0.36	0.76		0.48	0.71	
Uniform Delay, d1		31.1			25.8		40.1	20.7		36.1	16.9	
Progression Factor		1.00			1.00		0.37	1.54		1.00	1.00	
Incremental Delay, d2		33.5			0.7		1.0	0.7		2.7	2.6	
Delay (s)		64.7			26.5		15.8	32.6		38.8	19.5	
Level of Service		E			C		B	C		D	B	
Approach Delay (s)		64.7			26.5			32.3			20.8	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1609	4	0	1367
Future Vol, veh/h	0	1	1609	4	0	1367
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	25	25	91	91	89	89
Heavy Vehicles, %	0	0	4	4	4	4
Mvmt Flow	0	4	1768	4	0	1536

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	887	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	221	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	221	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	221	-
HCM Lane V/C Ratio	-	-	0.018	-
HCM Control Delay (s)	-	-	21.6	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	30	825	35	33	524
Future Vol, veh/h	63	30	825	35	33	524
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	71	71	80	80	80	80
Heavy Vehicles, %	4	4	3	3	3	3
Mvmt Flow	89	42	1031	44	41	655

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1403	1059	0	0	1081	0
Stage 1	1059	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Critical Hdwy	6.51	6.46	-	-	4.145	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	6.46	-	-	-	-	-
Follow-up Hdwy	3.688	3.338	-	-	2.2285	-
Pot Cap-1 Maneuver	146	253	-	-	638	-
Stage 1	285	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	130	252	-	-	634	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	95.1	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	154	634	-
HCM Lane V/C Ratio	-	-	0.851	0.065	-
HCM Control Delay (s)	-	-	95.1	11.1	0.3
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	5.7	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	44	24	1	93	0	0
Future Vol, veh/h	44	24	1	93	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	67	67	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	53	29	1	139	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	210	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	141	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1501	-	783	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	891	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1500	-	781	999
Mov Cap-2 Maneuver	-	-	-	-	781	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1500	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	6	8	61	23	4
Future Vol, veh/h	35	6	8	61	23	4
Conflicting Peds, #/hr	0	3	3	0	1	23
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	75	75	34	34
Heavy Vehicles, %	7	7	4	4	0	0
Mvmt Flow	51	9	11	81	68	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	63	0	163	82
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1527	-	832	983
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	925	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1523	-	822	961
Mov Cap-2 Maneuver	-	-	-	-	822	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	840	-	-	1523	-
HCM Lane V/C Ratio	0.095	-	-	0.007	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	3	0	84	10	0
Future Vol, veh/h	41	3	0	84	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	4	4	0	0
Mvmt Flow	45	3	0	91	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	48	0	138	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1546	-	860	1028
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1546	-	860	1028
Mov Cap-2 Maneuver	-	-	-	-	860	-
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	860	-	-	1546	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	552	47	1260	610	108	1077
Future Volume (vph)	552	47	1260	610	108	1077
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1495	1787	3574
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1495	1787	3574
Peak-hour factor, PHF	0.92	0.92	0.93	0.93	0.95	0.95
Adj. Flow (vph)	600	51	1355	656	114	1134
RTOR Reduction (vph)	0	32	0	172	0	0
Lane Group Flow (vph)	600	19	1355	484	114	1134
Confl. Peds. (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	36.5	51.6	59.2	95.7	15.1	80.3
Effective Green, g (s)	36.5	51.6	59.2	95.7	15.1	80.3
Actuated g/C Ratio	0.26	0.37	0.43	0.69	0.11	0.58
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	897	645	1442	1093	194	2064
v/s Ratio Prot	c0.18	0.00	c0.40	0.12	0.06	c0.32
v/s Ratio Perm		0.01		0.21		
v/c Ratio	0.67	0.03	0.94	0.44	0.59	0.55
Uniform Delay, d1	45.8	27.8	38.2	9.7	59.0	18.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.0	12.1	0.4	5.3	1.1
Delay (s)	47.9	27.8	50.3	10.1	64.3	19.2
Level of Service	D	C	D	B	E	B
Approach Delay (s)	46.4		37.2			23.3
Approach LOS	D		D			C

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	21	45	4	32	116	30	1269	8	71	1136	87
Future Volume (vph)	193	21	45	4	32	116	30	1269	8	71	1136	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1685		1728	3452		1728	3418	
Flt Permitted		0.59			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1087			1669		1728	3452		1728	3418	
Peak-hour factor, PHF	0.72	0.72	0.72	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	268	29	62	6	45	163	33	1379	9	75	1196	92
RTOR Reduction (vph)	0	7	0	0	107	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	353	0	0	107	0	33	1387	0	75	1284	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		37.6			37.6		5.8	45.1		9.3	48.6	
Effective Green, g (s)		37.6			37.6		5.8	45.1		9.3	48.6	
Actuated g/C Ratio		0.34			0.34		0.05	0.41		0.08	0.44	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		371			570		91	1415		146	1510	
v/s Ratio Prot							0.02	c0.40		c0.04	c0.38	
v/s Ratio Perm		c0.32			0.06							
v/c Ratio		0.95			0.19		0.36	0.98		0.51	0.85	
Uniform Delay, d1		35.3			25.5		50.3	32.0		48.2	27.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		34.2			0.3		3.3	19.5		4.0	6.2	
Delay (s)		69.5			25.8		53.7	51.5		52.2	33.6	
Level of Service		E			C		D	D		D	C	
Approach Delay (s)		69.5			25.8			51.5			34.7	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	27	1843	1	0	1629
Future Vol, veh/h	0	27	1843	1	0	1629
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	75	75	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	36	2003	1	0	1771

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1002	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	182	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	182	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.6	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	182	-
HCM Lane V/C Ratio	-	-	0.198	-
HCM Control Delay (s)	-	-	29.6	-
HCM Lane LOS	-	-	D	-
HCM 95th %tile Q(veh)	-	-	0.7	-

Intersection						
Int Delay, s/veh	2.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	26	645	72	55	558
Future Vol, veh/h	40	26	645	72	55	558
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	67	67	92	92	90	90
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	60	39	701	78	61	620

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1111	741	0	0	780	0
Stage 1	741	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	225	403	-	-	841	-
Stage 1	425	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	200	403	-	-	840	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.5	0	1.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	250	840	-
HCM Lane V/C Ratio	-	-	0.394	0.073	-
HCM Control Delay (s)	-	-	28.5	9.6	0.3
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	59	1	66	0	0
Future Vol, veh/h	70	59	1	66	0	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	65	65	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	93	79	2	102	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	173	0	240	134
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1416	-	753	920
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1415	-	751	919
Mov Cap-2 Maneuver	-	-	-	-	751	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	922	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1415	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	8	0	42	19	1
Future Vol, veh/h	52	8	0	42	19	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	84	84	69	69
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	63	10	0	50	28	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	120	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1518	-	880	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1515	-	878	996
Mov Cap-2 Maneuver	-	-	-	-	878	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	978	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	883	-	-	1515	-
HCM Lane V/C Ratio	0.033	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	9	0	61	6	0
Future Vol, veh/h	60	9	0	61	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	0	0
Mvmt Flow	65	10	0	66	7	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	136	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.13	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1518	-	862	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1518	-	862	998
Mov Cap-2 Maneuver	-	-	-	-	862	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	862	-	-	1518	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	454	46	1085	514	96	1035
Future Volume (vph)	454	46	1085	514	96	1035
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	14	11	11	12	12
Grade (%)	-4%		4%			0%
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3418	1740	3386	1515	1805	3610
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3418	1740	3386	1515	1805	3610
Peak-hour factor, PHF	0.95	0.95	0.94	0.94	0.88	0.88
Adj. Flow (vph)	478	48	1154	547	109	1176
RTOR Reduction (vph)	0	31	0	207	0	0
Lane Group Flow (vph)	478	17	1154	340	109	1176
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Actuated Green, G (s)	21.2	29.8	32.2	53.4	8.6	46.8
Effective Green, g (s)	21.2	29.8	32.2	53.4	8.6	46.8
Actuated g/C Ratio	0.25	0.35	0.37	0.62	0.10	0.54
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	842	602	1267	1046	180	1964
v/s Ratio Prot	c0.14	0.00	c0.34	0.08	0.06	c0.33
v/s Ratio Perm		0.01		0.14		
v/c Ratio	0.57	0.03	0.91	0.32	0.61	0.60
Uniform Delay, d1	28.4	18.5	25.5	7.7	37.1	13.3
Progression Factor	1.00	1.00	1.00	1.00	1.31	1.14
Incremental Delay, d2	1.1	0.0	10.1	0.2	4.7	1.0
Delay (s)	29.5	18.6	35.7	8.0	53.2	16.1
Level of Service	C	B	D	A	D	B
Approach Delay (s)	28.5		26.8			19.3
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	13	53	6	28	141	24	1099	8	55	1072	94
Future Volume (vph)	109	13	53	6	28	141	24	1099	8	55	1072	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1674		1728	3451		1711	3380	
Flt Permitted		0.62			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1111			1653		1728	3451		1711	3380	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.98	0.98	0.98	0.86	0.86	0.86
Adj. Flow (vph)	130	15	63	7	31	155	24	1121	8	64	1247	109
RTOR Reduction (vph)	0	20	0	0	121	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	188	0	0	72	0	24	1128	0	64	1351	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		18.7			18.7		3.6	41.1		8.2	45.7	
Effective Green, g (s)		18.7			18.7		3.6	41.1		8.2	45.7	
Actuated g/C Ratio		0.22			0.22		0.04	0.48		0.10	0.53	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		241			359		72	1649		163	1796	
v/s Ratio Prot							0.01	0.33		c0.04	c0.40	
v/s Ratio Perm		c0.17			0.04							
v/c Ratio		0.78			0.20		0.33	0.68		0.39	0.75	
Uniform Delay, d1		31.7			27.5		40.0	17.4		36.6	15.7	
Progression Factor		1.00			1.00		1.30	0.62		1.00	1.00	
Incremental Delay, d2		15.9			0.6		2.1	0.9		2.1	3.0	
Delay (s)		47.7			28.1		54.0	11.6		38.7	18.7	
Level of Service		D			C		D	B		D	B	
Approach Delay (s)		47.7			28.1			12.5			19.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	32	1567	6	0	1468
Future Vol, veh/h	0	32	1567	6	0	1468
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	5	-	4	-	-	4
Peak Hour Factor	69	69	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	0	46	1685	6	0	1687

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	846	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.6	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	236	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	236	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	236	-
HCM Lane V/C Ratio	-	-	0.197	-
HCM Control Delay (s)	-	-	23.9	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.7	-

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	29	534	76	57	461
Future Vol, veh/h	39	29	534	76	57	461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	2	-	-	-4
Peak Hour Factor	56	56	82	82	87	87
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	70	52	651	93	66	530

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1042	698	0	0	744	0
Stage 1	698	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Critical Hdwy	6.45	6.4	-	-	4.115	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	-	-	2.2095	-
Pot Cap-1 Maneuver	247	427	-	-	867	-
Stage 1	447	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	220	427	-	-	867	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.8	0	1.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	277	867	-
HCM Lane V/C Ratio	-	-	0.438	0.076	-
HCM Control Delay (s)	-	-	27.8	9.5	0.2
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	2.1	0.2	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	78	1	67	0	0
Future Vol, veh/h	55	78	1	67	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	101	1	87	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	172	0	211	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1417	-	782	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1417	-	781	935
Mov Cap-2 Maneuver	-	-	-	-	781	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1417	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	6	8	61	23	4
Future Vol, veh/h	35	6	8	61	23	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	75	75	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	42	7	11	81	33	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	149	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1571	-	848	1029
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	926	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1571	-	842	1029
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	865	-	-	1571	-
HCM Lane V/C Ratio	0.045	-	-	0.007	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	8	0	84	7	0
Future Vol, veh/h	41	8	0	84	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	45	9	0	91	8	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	54	0	141	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1564	-	857	1024
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1564	-	857	1024
Mov Cap-2 Maneuver	-	-	-	-	857	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

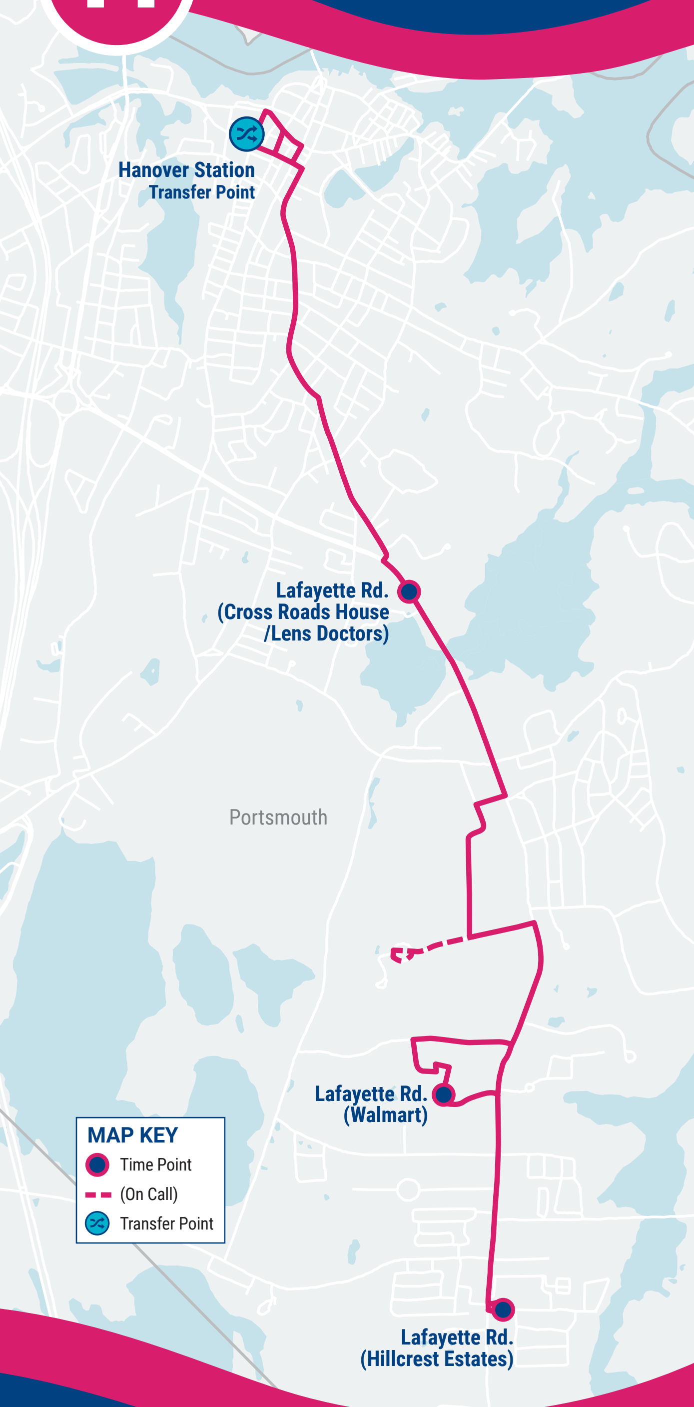
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1564	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX F
COAST Bus Schedule & Map

Route 41 Map

Portsmouth • Lafayette Road

41



Ride Information

COAST BUS FARES

Base Cash Fare **$1.50**

All passengers ages 5 and up are required to pay this fare each time they board a COAST bus.

Half-Fare **$ 0.75**

Passengers 65 and older, or passengers with a disability are entitled to pay half the cash fare. Proof of eligibility is required by showing a Medicare card, photo ID with birth date, COAST ADA Paratransit Card, or COAST Half-Fare Card. Please contact COAST to apply for a Half-Fare Card.

Multi-Ride Tickets and Passes

*Available at **www.coastbus.org** or call 603-743-5777, TTY 711.*

Unlimited Monthly Pass **$ 52**

Unlimited rides on COAST Routes for the month.

YOUR RIGHTS

COAST adheres to all Federal regulations regarding Civil Rights. If you need to request an ADA Reasonable Modification/ Accommodation, or if you believe you have been discriminated against or would like to file a complaint under the ADA or Title VI, please contact COAST's Civil Rights Officer at 603-516-0788, TTY 711 or email CivilRights@coastbus.org.

NO SERVICE DAYS

COAST does not operate on the following holidays:

- New Year's Day
- Martin Luther King Jr./ Civil Rights Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Eve Day
- Christmas Day

COAST

42 Sumner Drive • Dover, NH 03820

603-743-5777 • TTY 711 • **www.coastbus.org**

This brochure is available in alternative formats upon request.

Bus Schedule & Map 41

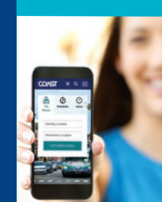
COAST

Effective 09.17.22

ROUTE 41

Portsmouth • Lafayette Road

Find all of the full COAST schedules online at **coastbus.org**



MAP OUT
YOUR GAME PLAN

Planning your trip has never been easier!

www.coastbus.org

COAST SYSTEM MAP

COAST

OUTBOUND • INBOUND

Route 41 Portsmouth • Lafayette Road

How to Read the Schedule

Printed bus schedules only show the timepoints ● (major bus stops where the bus will hold until the scheduled departure time). In between those timepoints are many other stops that you can use. For a full listing of bus stops, visit **www.coastbus.org**, or use the Passio GO! App.

The times shown represent the number of minutes after the hour that the bus will depart from that stop. Last stop times are arrivals. Any exceptions will be noted.

OUTBOUND (M-Sat)	Service On Every Hour		
Hanover Station - Lafayette Rd. (Hillcrest Estates)	First Bus	Minutes Past Hour	Last Bus
● Hanover Station	6:00am	:00	8:00pm
● Lafayette Rd. (Cross Roads House)	6:10am	:10	8:10pm
● Lafayette Rd. (Walmart)	6:20am	:20	8:20pm
● Lafayette Rd. (Hillcrest Estates)	6:29am	:29	8:29pm

INBOUND (M-Sat)	Service On Every Hour		
Lafayette Rd. (Hillcrest Estates) - Hanover Station	First Bus	Minutes Past Hour	Last Bus
● Lafayette Rd. (Hillcrest Estates)	6:30am	:30	8:30pm
● Lafayette Rd. (Lens Doctors)	6:38am	:38	8:38pm
● Hanover Station	6:49am	:49	8:49pm

MAP IT!

For a full listing of bus stops, visit
www.coastbus.org
or use the Passio GO! App.

Passio GO! App
Download the Passio GO! App for real-time information at the Google Play or App store.

Making Connections

Please tell your driver if you are trying to make a connection to another Route.

TRANSFER POINTS

Hanover Station	13 14 40 41 42 43 44
Dover Transportation Center	1 12 13 33 M-F 33 SAT 34
Dover NHDOT Park & Ride (Exit 9)	1 14
Rochester City Hall	6 12 14

14 33 SAT Temporarily suspended part of route due to driver shortage.

Hanover Station, Portsmouth

APPENDIX G

US Census Journey-to-Work Data

Table 3. Residence MCD/County to Workplace MCD/County Commuting Flows for the United States and Puerto Ric

For more information on sampling and estimation methods, confidentiality protection, and sampling and nonsampling errors, see
Universe: Workers 16 years and over.

Commuting flows are sorted by residence state, residence county, and residence minor civil division.

Residence		Place of Work		Commuting Flow	TO / FROM						
State Name	**Minor Civil Division Name**	**State Name**	**Minor Civil Division Name**	**Workers in Commuting Flow**	I-95 NB via Route 1 Bypass	I-95 SB via NH 33	Spaulding Tpke via Route 1 Bypass	South via Route 1	Portsmouth Center via Lafayette Rd	West via Route 33	
New Hampshire	Portsmouth city	New Hampshire	Portsmouth city	6,310	315.5		315.5	1893	3470.5	315.5	
New Hampshire	Portsmouth city	New Hampshire	Dover city	643			643				
New Hampshire	Portsmouth city	New Hampshire	Durham town	470			376			117.5	
New Hampshire	Portsmouth city	New Hampshire	Exeter town	437		327.75				109.25	
New Hampshire	Portsmouth city	Maine	Kittery town	379	151.6				227.4		
New Hampshire	Portsmouth city	New Hampshire	Newington town	360			324			36	
New Hampshire	Portsmouth city	New Hampshire	Hampton town	354		106.2		247.8			
New Hampshire	Portsmouth city	Massachusetts	Boston city	164		82		82			
New Hampshire	Portsmouth city	New Hampshire	North Hampton town	162		48.6		113.4			
New Hampshire	Portsmouth city	New Hampshire	Salem town	159		159					
New Hampshire	Portsmouth city	Maine	York town	142	71				71		
New Hampshire	Portsmouth city	New Hampshire	New Castle town	134					134		
New Hampshire	Portsmouth city	New Hampshire	Manchester city	129		51.6	38.7			38.7	
New Hampshire	Portsmouth city	New Hampshire	Somersworth city	125			125				
New Hampshire	Portsmouth city	New Hampshire	Rye town	123				123			
New Hampshire	Portsmouth city	New Hampshire	Stratham town	123				92.25		30.75	
New Hampshire	Portsmouth city	New Hampshire	Greenland town	112				84		28	
New Hampshire	Portsmouth city	New Hampshire	Londonderry town	92		92					
New Hampshire	Portsmouth city	New Hampshire	Concord city	89			89				
New Hampshire	Portsmouth city	Massachusetts	Newburyport city	86		43		43			
New Hampshire	Portsmouth city	New Hampshire	Seabrook town	85		42.5		42.5			
New Hampshire	Portsmouth city	New Hampshire	Rochester city	80			80				
New Hampshire	Portsmouth city	Massachusetts	Peabody city	78		39		39			
New Hampshire	Portsmouth city	New Hampshire	Brentwood town	77		57.75				19.25	
New Hampshire	Portsmouth city	New Hampshire	Raymond town	75		37.5				37.5	
New Hampshire	Portsmouth city	Maine	North Berwick town	72	36		36				
New Hampshire	Portsmouth city	New Hampshire	Bedford town	69		69					
New Hampshire	Portsmouth city	New Hampshire	Barrington town	56			56				
New Hampshire	Portsmouth city	New Hampshire	Hampton Falls town	53		26.5		26.5			
New Hampshire	Portsmouth city	New Hampshire	Plymouth town	51		45.9	5.1				
New Hampshire	Portsmouth city	Massachusetts	North Andover town	49		36.75		12.25			
New Hampshire	Portsmouth city	New Hampshire	Wolfeboro town	49			49				
New Hampshire	Portsmouth city	Maine	Eliot town	48	24				24		
New Hampshire	Portsmouth city	Massachusetts	Amesbury Town city	48		24		24			
New Hampshire	Portsmouth city	Massachusetts	Quincy city	43		21.5		21.5			
New Hampshire	Portsmouth city	Massachusetts	Andover town	41		20.5		20.5			
New Hampshire	Portsmouth city	Massachusetts	Methuen Town city	40		20		20			
New Hampshire	Portsmouth city	Massachusetts	Stoneham town	39		19.5		19.5			
New Hampshire	Portsmouth city	New Hampshire	Plaistow town	39		39					
New Hampshire	Portsmouth city	New Hampshire	Nashua city	38		38					
New Hampshire	Portsmouth city	Massachusetts	Burlington town	37		18.5		18.5			
New Hampshire	Portsmouth city	New Hampshire	Hooksett town	37		33.3	3.7				
New Hampshire	Portsmouth city	New Hampshire	Rollinsford town	37			37				
New Hampshire	Portsmouth city	New Hampshire	Newmarket town	33						33	
New Hampshire	Portsmouth city	Massachusetts	Haverhill city	32		16		16			
New Hampshire	Portsmouth city	Maine	South Portland city	25	25						
New Hampshire	Portsmouth city	Massachusetts	Groveland town	25		12.5		12.5			
New Hampshire	Portsmouth city	Massachusetts	Cambridge city	25		12.5		12.5			
New Hampshire	Portsmouth city	Massachusetts	Chelmsford town	24		12		12			
New Hampshire	Portsmouth city	Maine	South Berwick town	23	17.25		5.75				
New Hampshire	Portsmouth city	New Hampshire	Hampstead town	22		22					
New Hampshire	Portsmouth city	Maine	Portland city	21	21						
New Hampshire	Portsmouth city	Massachusetts	Boxborough town	21		10.5		10.5			
New Hampshire	Portsmouth city	Massachusetts	Billerica town	20		10		10			
			TOTAL	12,105	661	1,595	2,184	2,996	3,927	765	0
					5%	**15%**	**20%**	**25%**	**30%**	**5%**	

APPENDIX H

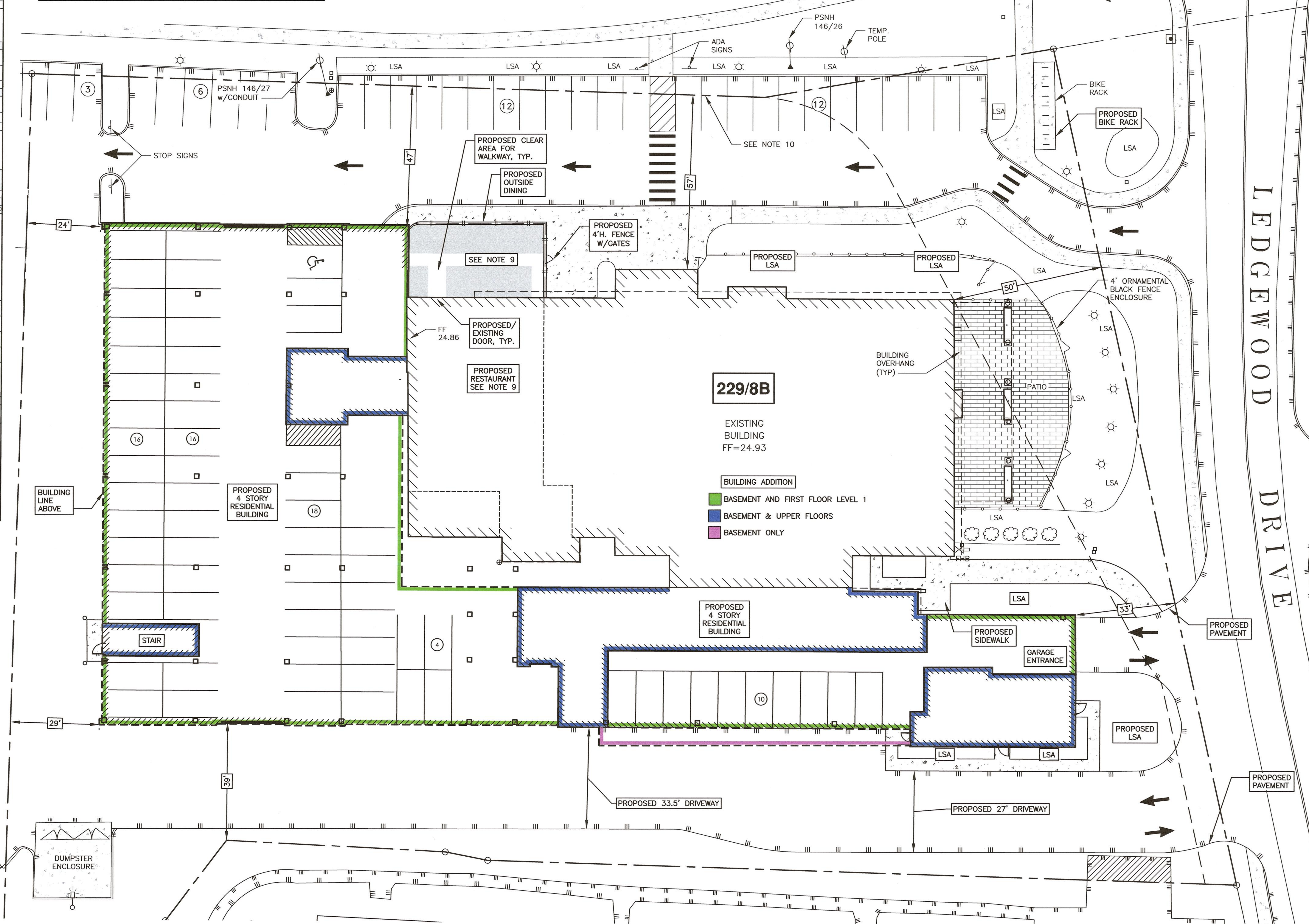
Site Development Plan

ZONING TABLE

	Additions	proposed
Zone	G1 allowed	
Height	5 stories or 60 ft per Density Bonus 10.5B72.30: G1 apartments: 4 stories or 50 ft (+ density bonus 1 story or 10') 10.5B.22.20, at streets <60' row: 35' max <25' setback 45' max <50' setback. 60' max >50' setback.	35'/3 stories at street fronts 45'/4 stories beyond 60'/5 stories at center
Penthouses	10' above allowed building height	<10'
Roof appurtenance	Roof decks, roof gardens, and related structures and appurtenances shall not be counted in the building height limits.	<10'
Façade Types	forecourt, recessed entry, dooryard, step, porch	recessed entry
Building Types	Dwelling units	Workforce Housing: 4 stories Podium parking at street level and one level below grade
Setbacks (ft) *		
Front (principle)	70'-90' from cl of Lafayette Rd	setback is within public way
Front (secondary)	min 10' & max 30' from Lot Line at Ledgewood	19'
Side	Minimum side setback: 15 ft. Where a development site includes a more than one building type, the minimum building setback to interior lot lines shall be 0 feet	40'
Rear	N/A Minimum rear setback 20 ft (& 25 ROW easement)	24'
Front lot line buildout residential	50%	85%
Front lot line buildout commercial/mixed-use	75%	85%
Frontage, Lafayette	100 ft min	337.4'
Lot area (sf)	NR	
area per dwelling	Workforce Housing units for rent: min 10% or 2 units, min. 800 sf or average unit size (larger of two)	1,363
Coverage, maximum	50%	82%
Footprint, max	NR for apartment buildings	
Offstreet parking	For developments located on public transit 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 shall be reduced by 20%.	170
ground floor area per use, max	NR	parking
Open space, minimum	20%	15%
permitted uses (G1)	multifamily, restaurant	multifamily
building length, max (ft)	200	236 200
façade modulation length, max (ft)	A) Symmetrical and vertically articulated bays >6' & <50' wide, minimum 3. B) Buildings greater than one hundred (100) feet in width shall read as a series of smaller buildings with varied architectural design and façade glazing patterns; or include a change in vertical plane of the façade of at least four (4) feet (in depth or projection) for at least one (1) bay in width for every one hundred (100) feet of total façade width. This change in plane applies to the entire height of the façade.	modulations < 100 ft
entrance spacing, max (ft)		entries facing street fronts
floor height above sidewalk, max	36"	8"
ground floor height, min		12'
second floor height, min		11'
glazing, shopfront, min	20%	Streetfront Glazing at lobby entrances 100%. Sides & rear: podium parking at first floor, some open and some screening
glazing, other	NR	
roof types(pitch)	ALL (flat roofs must have "parapet wall that acts as a structural expression of the building façade and its materials)	Flat & Sloped
Parking, off-street;	1 bicycle space for each 5 dwellings units or portion thereof. Off-site parking : Less than 500 sq. ft. 0.5 spaces per unit 500-700 sq. ft. 1.0 space per unit Over 750 sq. ft. 1.3 space per unit 10.1112.312 In addition to the off-street parking spaces provided in accordance with Sec. 10.1112.311, any dwelling or group of dwelling on a lot containing more than 4 dwelling units shall provide one visitor parking space for every 5 dwelling units or portion thereof.	170
Units density	24 units per building. 36 units exception for workforce housing Conditional Use Permit under the provisions for Density Bonuses in Section 10.5B72&10.5B72	36 units per building * 2 buildings = 72 units

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	43567
CONCRETE/SIDEWALK	2,956
PAVEMENT	31,848
PATIO	2,178
CURB	245
TOTAL	80794
LOT SIZE	98,124
% LOT COVERAGE	82.3%



PORTSMOUTH APPROVAL CONDITIONS NOTES:

1) ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.
2) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
3) 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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.
2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538
3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005
4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC
5) PARCEL IS LOCATED IN THE GATEWAY CORRIDOR (G1) DISTRICT.
6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10
7) THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED BUILDING ADDITION ON TAX MAP 229 LOT 8B.
8) DESIGN BASED ON ARCHITECTURAL PLAN BY ARCOVE ARCHITECTS DATED 8/22/23.
9) CONVERSION OF TUSCAN MARKETPLACE TO RESTAURANT (NORTHEASTERN THAI, LLC) APPROVED UNDER PERMIT: LU-22-254

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	9/5/23
0	ISSUED FOR COMMENT	8/31/23

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 738 LICENSED LAND SURVEYOR

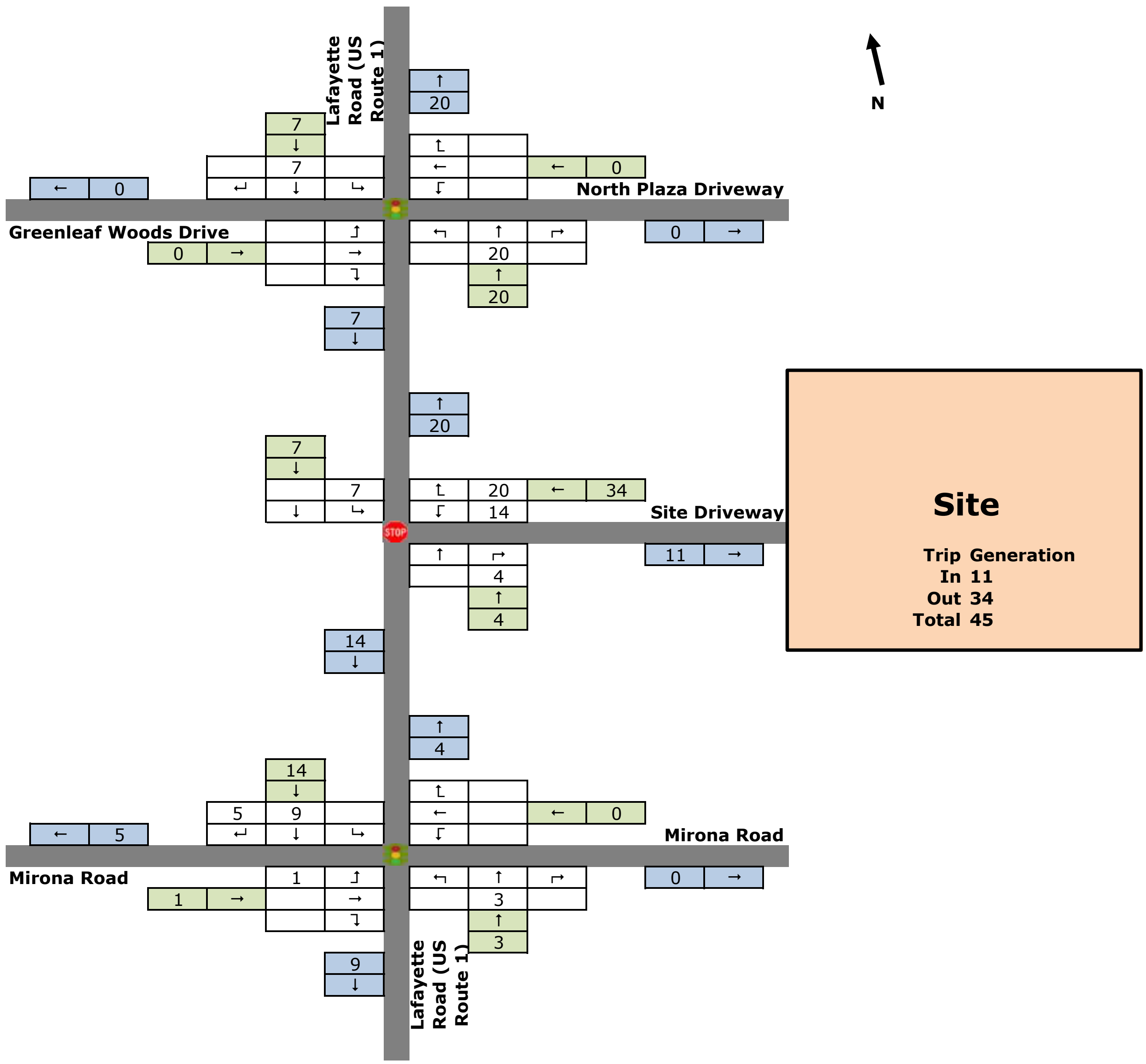
SCALE: 1"=20' JULY 2023

SITE PLAN C3

FB 259 PG 10 1397.04

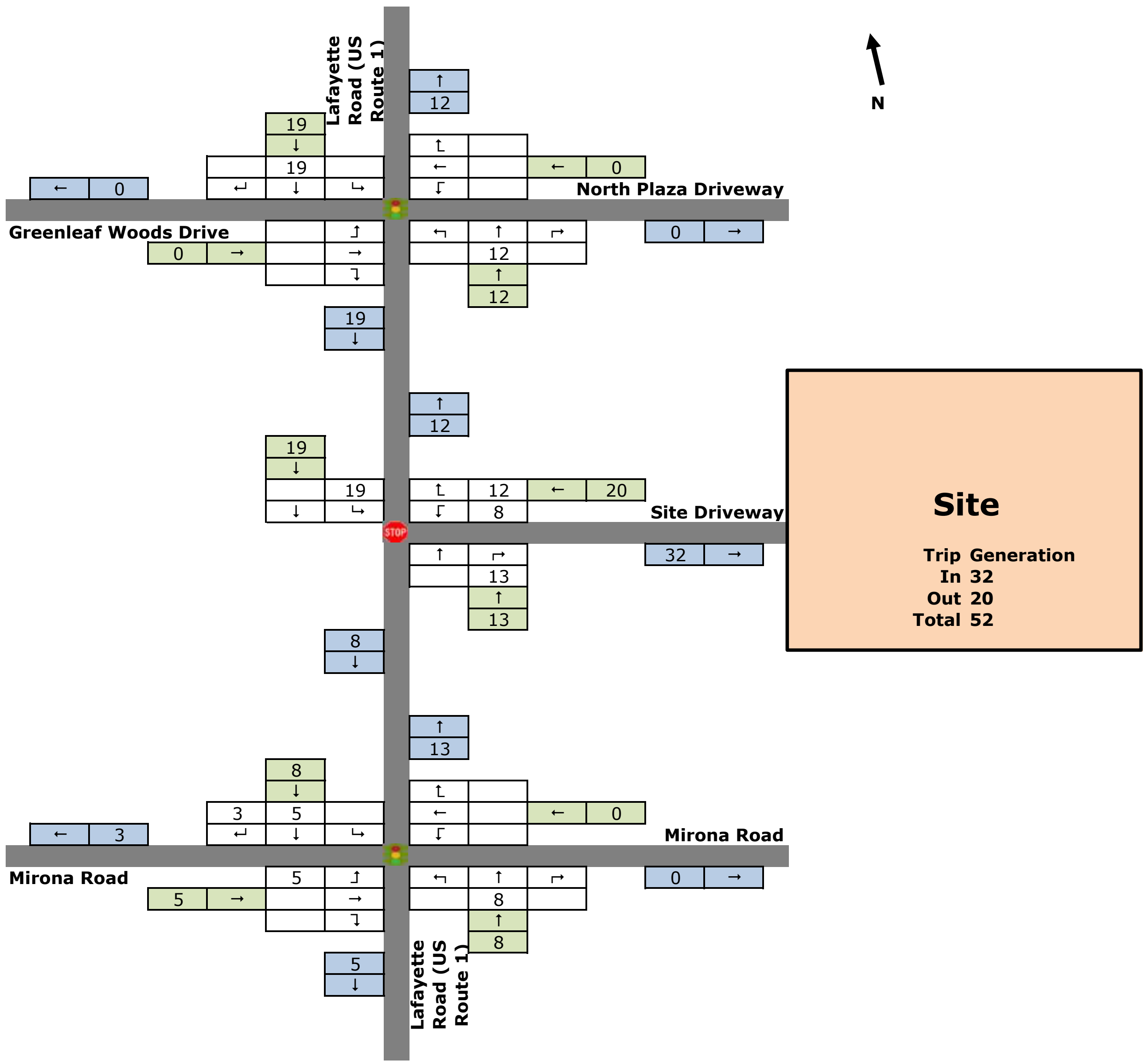
APPENDIX I

Background Development Traffic Volumes



Site Generated Traffic Volumes
Weekday AM Peak
815 Lafayette Road Development

Figure 9



Site Generated Traffic Volumes
Weekday PM Peak
815 Lafayette Road Development

Figure 10

APPENDIX J

Collision History Summary

Intersection Collision History Summary

Intersection: US Route 1 at North Shopping Plaza

COLLISION TYPE

	2020	2021	2022	2023	Total	Percent
Angle	0	1	0	0	**1**	**100.0%**
TOTAL	**0**	**1**	**0**	**0**	**1**	**100%**

SEVERITY

	2020	2021	2022	2023	Total	Percent
Property Damage Only (PDO)	0	1	0	0	**1**	**100.0%**
TOTAL	**0**	**1**	**0**	**0**	**1**	**100%**

Day & Time

	2020	2021	2022	2023	Total	Percent
Weekday Off-Peak	0	1	0	0	**1**	**100.0%**
TOTAL	**0**	**1**	**0**	**0**	**1**	**100%**

Intersection Collision History Summary

Intersection: US Route 1 Bypass at Lafayette Road

COLLISION TYPE

	2020	2021	2022	2023	Total	Percent
Angle	0	0	1	0	**1**	**7.1%**
Fixed Object	0	0	0	2	**2**	**14.3%**
Rear-End	2	2	4	2	**10**	**71.4%**
Sideswipe, Same Direction	0	1	0	0	**1**	**7.1%**
TOTAL	**2**	**3**	**5**	**4**	**14**	**100%**

SEVERITY

	2020	2021	2022	2023	Total	Percent
Personal Injury	0	0	1	1	**2**	**14.3%**
Property Damage Only (PDO)	2	3	4	3	**12**	**85.7%**
TOTAL	**2**	**3**	**5**	**4**	**14**	**100%**

Day & Time

	2020	2021	2022	2023	Total	Percent
Weekday 6-9 A.M.	0	1	0	0	**1**	**7.1%**
Weekday 3-6 P.M.	1	1	0	0	**2**	**14.3%**
Weekday Off-Peak	1	1	3	2	**7**	**50.0%**
Weekend Off-Peak	0	0	2	2	**4**	**28.6%**
TOTAL	**2**	**3**	**5**	**4**	**14**	**100%**

Intersection Collision History Summary

Intersection: Lafayette Road at Ledgewood Drive

COLLISION TYPE

	2020	2021	2022	2023	Total	Percent
Angle	1	0	0	0	**1**	**25.0%**
Rear-End	0	1	1	0	**2**	**50.0%**
Sideswipe, Same Direction	1	0	0	0	**1**	**25.0%**
TOTAL	**2**	**1**	**1**	**0**	**4**	**100%**

SEVERITY

	2020	2021	2022	2023	Total	Percent
Personal Injury	0	1	0	0	**1**	**25.0%**
Property Damage Only (PDO)	2	0	1	0	**3**	**75.0%**
TOTAL	**2**	**1**	**1**	**0**	**4**	**100%**

Day & Time

	2020	2021	2022	2023	Total	Percent
Weekday 3-6 P.M.	1	1	1	0	**3**	**75.0%**
Weekend Off-Peak	1	0	0	0	**1**	**25.0%**
TOTAL	**2**	**1**	**1**	**0**	**4**	**100%**

Intersection Collision History Summary

Intersection: US Route 1 Bypass at Greenleaf Avenue

COLLISION TYPE

	2020	2021	2022	2023	Total	Percent
Angle	0	1	0	1	**2**	**25.0%**
Fixed Object	1	0	0	1	**2**	**25.0%**
Rear-End	1	1	0	0	**2**	**25.0%**
Sideswipe, Same Direction	0	1	0	1	**2**	**25.0%**
TOTAL	**2**	**3**	**0**	**3**	**8**	**100%**

SEVERITY

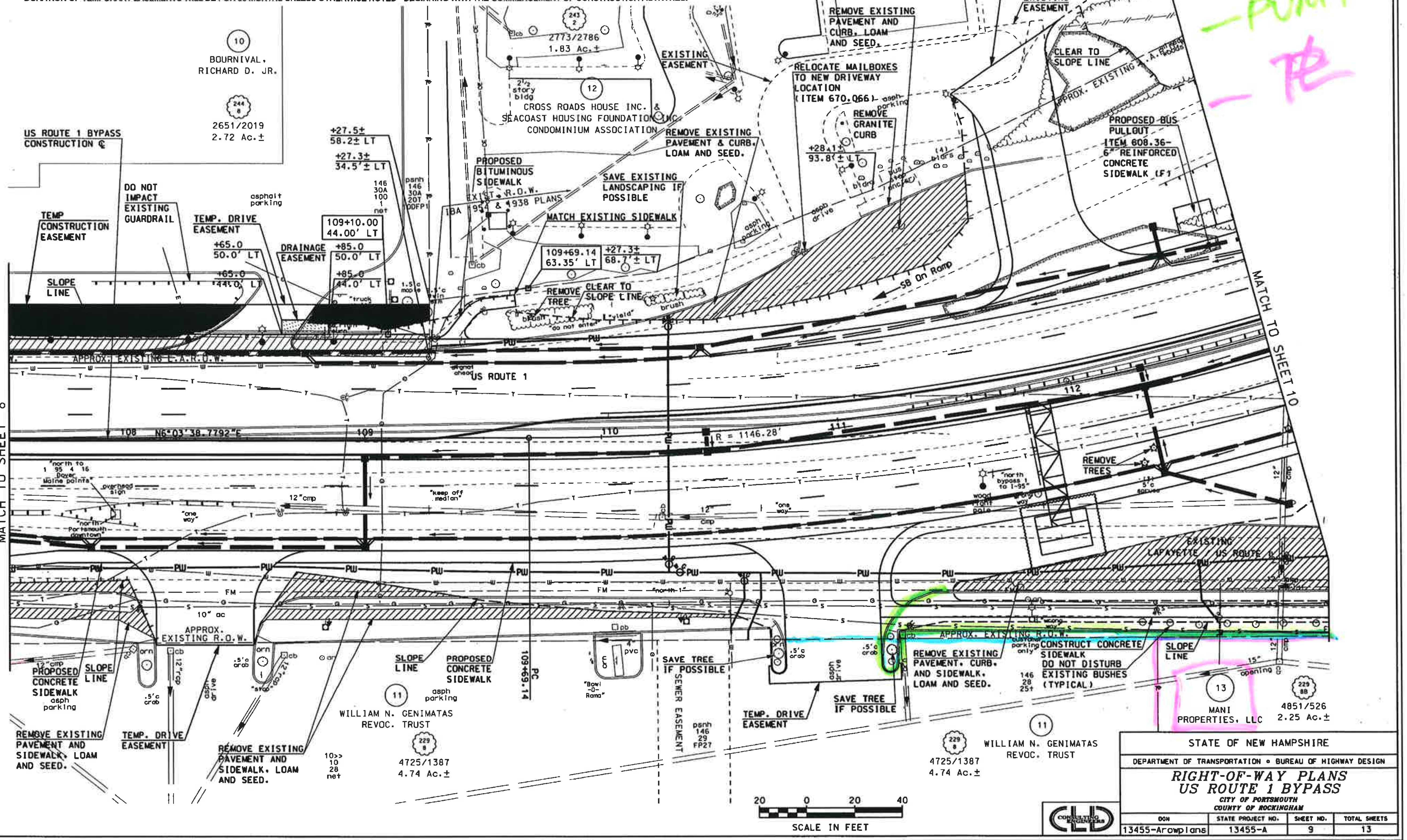
	2020	2021	2022	2023	Total	Percent
Personal Injury	1	0	0	0	**1**	**12.5%**
Property Damage Only (PDO)	1	3	0	3	**7**	**87.5%**
TOTAL	**2**	**3**	**0**	**3**	**8**	**100%**

Day & Time

	2020	2021	2022	2023	Total	Percent
Weekday 3-6 P.M.	1	1	0	0	**2**	**25.0%**
Weekday Off-Peak	1	2	0	3	**6**	**75.0%**
TOTAL	**2**	**3**	**0**	**3**	**8**	**100%**

PAR. NO.	PROPERTY OWNER	TOTAL AREA OF PARCEL	AREA OF TAKE	REMAINDER LEFT	REMAINDER RIGHT	EASEMENTS PERMANENT		EASEMENTS TEMPORARY			C.A.R.O.W. POINTS OF ACCESS		REV. NO.
		AC	AC	AC	AC	SF	TYPE	SF	DESCRIPTION	EXPIRES (DURATION)	LT	RT	
10	BOURNIVAL, RICHARD D. JR.						SEE SHEET 8						
11	WILLIAM N. GENIMATAS REVOC. TRUST	4.74	0.02	-	4.72			1,050	DRIVE	JULY [illegible] 36 MONTHS			1
12	CROSS ROADS HOUSE INC. & SEACOAST HOUSING FOUNDATION INC.	1.83	-	1.83	-			1,875	DRIVE	JULY [illegible] 36 MONTHS			3
13	MANI PROPERTIES, LLC	2.25	-	-	2.25								

* DURATION OF TEMPORARY EASEMENTS WILL BE FOR 36 MONTHS UNLESS OTHERWISE NOTED - BEGINNING WITH THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.



STATE OF NEW HAMPSHIRE

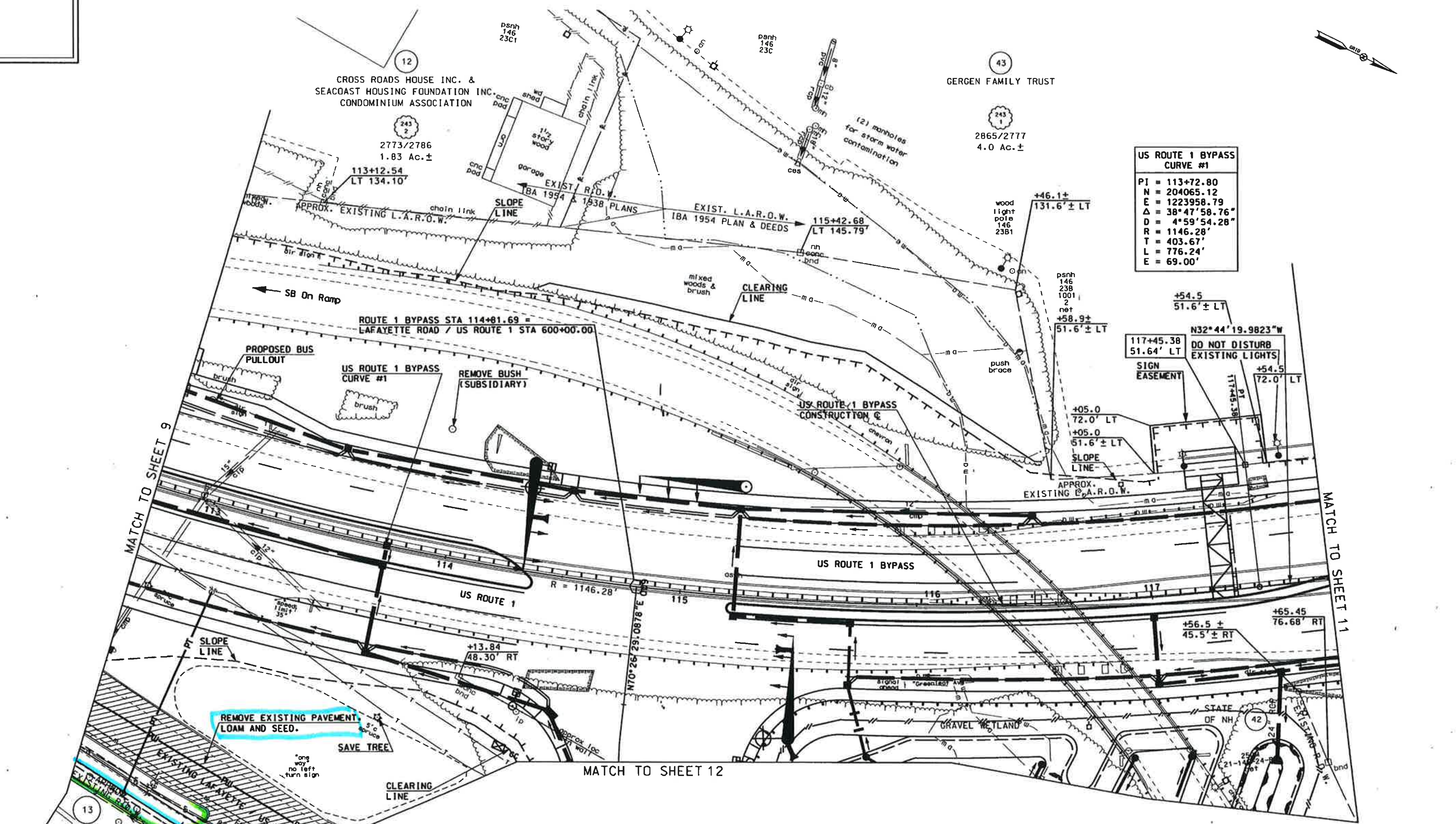
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

RIGHT-OF-WAY PLANS
US ROUTE 1 BYPASS
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13455-Arowplans	13455-A	9	13

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED		DATE
NEW DESIGN	HJC	DATE 7/27/2011
SHEET CHECKED	KO	DATE 7/27/2011
AS BUILT DETAILS		DATE



PAR. NO.	PROPERTY OWNER	TOTAL AREA OF PARCEL	AREA OF TAKE	REMAINDER LEFT	REMAINDER RIGHT	EASEMENTS PERMANENT		EASEMENTS TEMPORARY			C.A.R.O.W. POINTS OF ACCESS		
		AC	AC	AC	AC	SF	TYPE	SF	DESCRIPTION	EXPIRES (DURATION)	LT	RT	REV. NO.
12	CROSS ROADS HOUSE INC. &						SEE SHEET 9						
	SEACOAST HOUSING FOUNDATION INC.												
13	MANI PROPERTIES, LLC						SEE SHEET 9						
42	STATE OF NH	0.48	-	-	0.48	200	DRAINAGE						
						6,800	SLOPE						
43	GERGEN FAMILY TRUST	4.00	-	4.00	-	975	SIGN	50	SLOPE	JULY 2024 36 MONTHS			

* DURATION OF TEMPORARY EASEMENTS WILL BE FOR 36 MONTHS UNLESS OTHERWISE NOTED - BEGINNING WITH THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

RIGHT-OF-WAY PLANS
US ROUTE 1 BYPASS

CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM

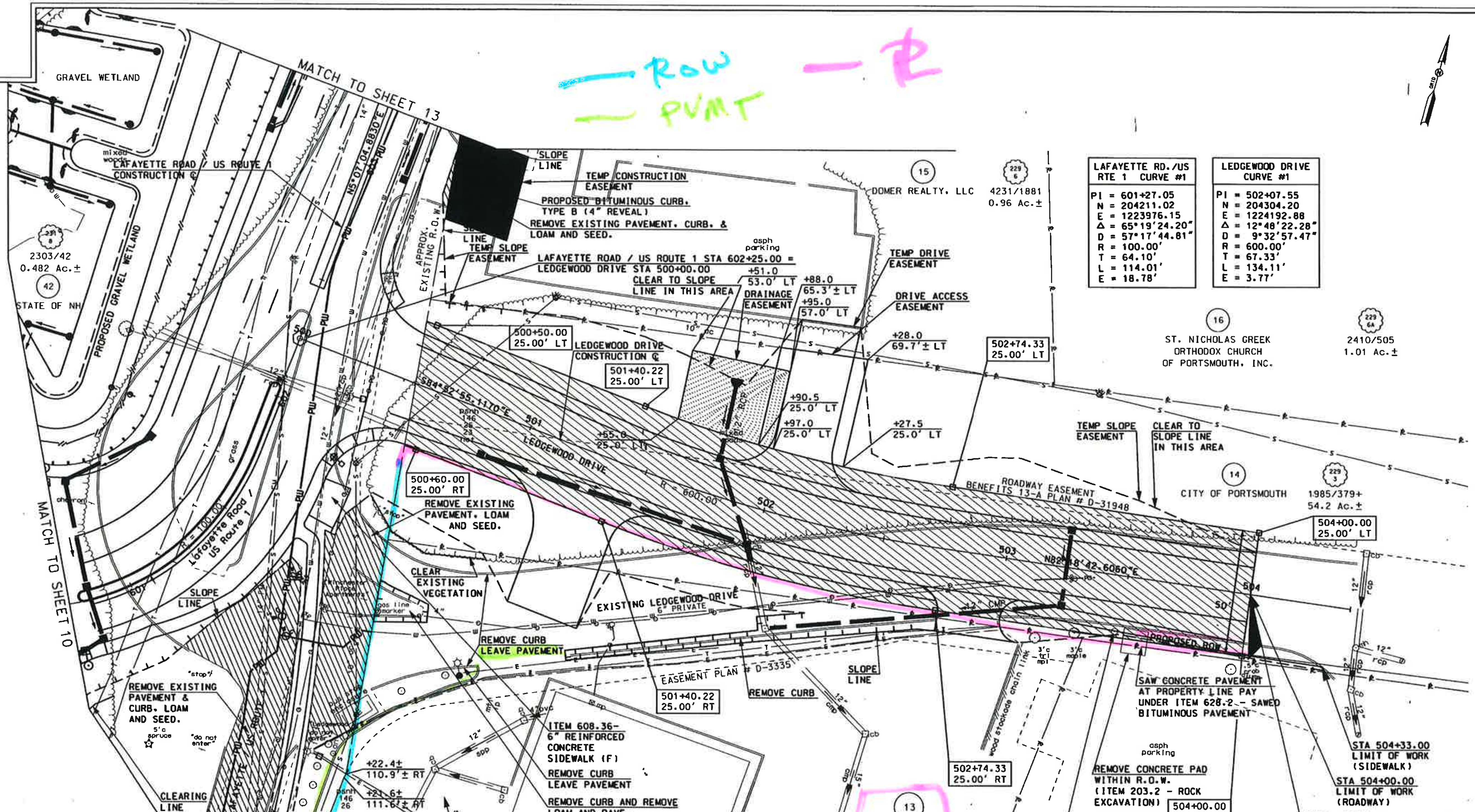
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13455-Arowplans	13455-A	10	13

REVISIONS AFTER PROPOSAL

DATE	STATION	DESCRIPTION

NUMBER	DATE	STATION

SDR PROCESSED — DATE
NEW DESIGN HJC DATE 7/27/2011
SHEET CHECKED KO DATE 7/27/2011
AS BUILT DETAILS — DATE



REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	DATE	7/27/2011
NEW DESIGN	HJC	DATE 7/27/2011
SHEET CHECKED	KO	DATE
AS BUILT DETAILS		DATE

PAR. NO.	PROPERTY OWNER	TOTAL AREA OF PARCEL	AREA OF TAKE	REMAINDER		EASEMENTS					C.A.R.O.W. POINTS OF ACCESS		
				LEFT	RIGHT	PERMANENT		TEMPORARY					
		AC	AC	AC	AC	SF	TYPE	SF	DESCRIPTION	EXPIRES (DURATION)	LT	RT	REV. NO.
13	MANI PROPERTIES, LLC						SEE SHEET 9						
13 A	RPL PROPERTIES, LLC	15.20	-	-	15.20								
14	CITY OF PORTSMOUTH	54.20	0.4	53.80	-	1,525	DRIVE ACCESS	4,500	SLOPE	JULY [illegible] 36 MONTHS			1
						1,225	DRAINAGE						
15	DOMER REALTY, LLC	0.96	-	0.96	-			750	SLOPE	JULY [illegible] 36 MONTHS			1
								300	DRIVE	JULY [illegible] 36 MONTHS			
								975	CONSTRUCTION	JULY [illegible] 36 MONTHS			
16	ST. NICHOLAS GREEK ORTHODOX CHURCH OF PORTSMOUTH, INC.	1.01	-	1.01	-								
42	STATE OF NH						SEE SHEET 10						

* DURATION OF TEMPORARY EASEMENTS WILL BE FOR 36 MONTHS UNLESS OTHERWISE NOTED - BEGINNING WITH THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

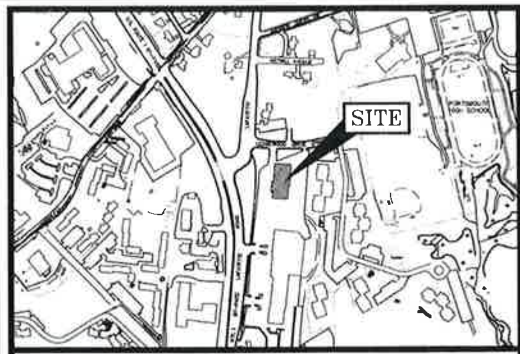
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

RIGHT-OF-WAY PLANS
US ROUTE 1 BYPASS
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM

CLD CONSULTING ENGINEERS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13455-Arowplans	13455-A	12	13



LEGEND:

EXISTING	PROPOSED	
FM	FM	FORCE MAIN
S	S	SEWER LINE
G	G	GAS LINE
D	D	STORM DRAIN
SPP	SPP	SMOOTH PLASTIC PIPE
W	W	WATER LINE
UE	UE	UNDERGROUND ELECTRIC
UU	UU	UNDERGROUND UTILITIES
		OVERHEAD ELECTRIC/WIRES
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		WOODS / TREE LINE
		UTILITY POLE
		WATER SHUT OFF/CURB STOP
		GAS SHUT OFF
GV	GV	GATE VALVE
		HYDRANT
GMWE	GMWE	METER (GAS, WATER, ELECTRIC)
		CATCH BASIN
		TELEPHONE MANHOLE
		SEWER MANHOLE
		DRAIN MANHOLE
W	W	WELL
A-1		EDGE OF WETLAND FLAGGING
		SWAMP/ MARSH
AC		ASBESTOS CEMENT PIPE
CI	CI	CAST IRON PIPE
CMP	CMP	CORRUGATED METAL PIPE
CMU	CMU	CONCRETE MASONRY UNIT
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
VC	VC	VITRIFIED CLAY PIPE
EL	EL	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
VGC/SGC	VGC/SGC	VERTICAL/SLOPED GRANITE CURB
CCB	CCB	CAPE COD BERM
℄	℄	CENTERLINE
IR/CAP FND		IRON ROD/CAP FOUND
NHHB		NHDOT BOUND FOUND
		POLE/ LIGHT

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S15°17'27"W	14.20'
L2	S48°43'16"E	33.26'

EASEMENT LENGTH TABLE

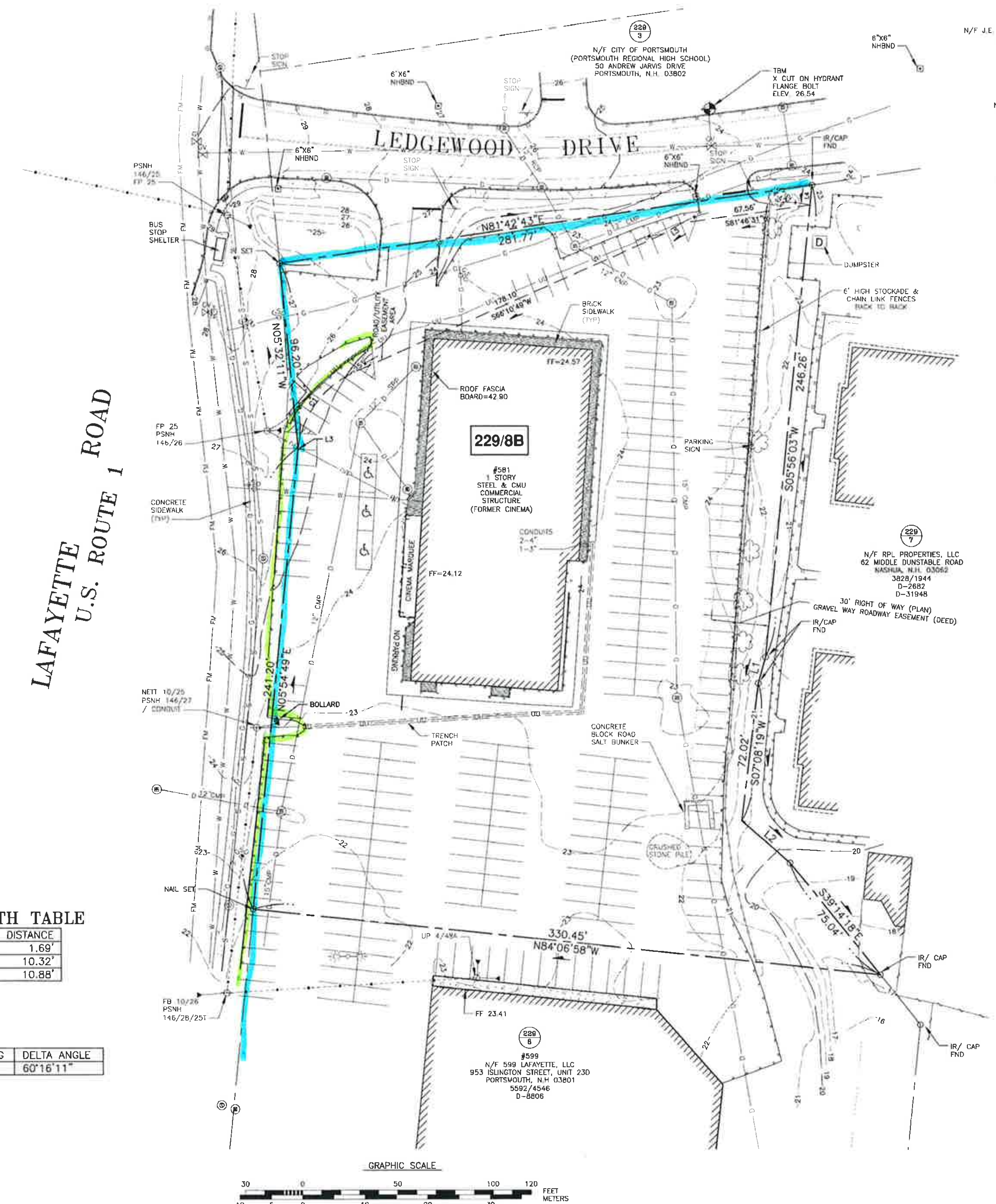
LINE	BEARING	DISTANCE
L3	N05°54'49"E	1.69'
L4	S05°56'03"W	10.32'
L5	S58°58'49"W	10.88'

EASEMENT CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	50.00'	52.60'	50.20'	S36°02'43"W	60°16'11"

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



ABUTTERS ON WEST SIDE OF LAFAYETTE ROAD

243/1
N/F J.E. SHOLDAR, T.F. GERGEN JR, N.J. CZIKE,
R.E. GERGEN & J.M. GERGEN
155 GREENLEAF AVENUE
PORTSMOUTH, N.H 03801
5495/1585

243/2A
N/F CROSS ROADS HOUSE, INC.
600 LAFAYETTE ROAD
PORTSMOUTH, N.H 03801
2773/2910

243/2B
N/F OPERATION BLESSING, INC.
P.O. BOX 4069
PORTSMOUTH, N.H 03802
3767/1721

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road, Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
OMJ REALTY, LLC
63 MAIN STREET
PO BOX 1195
SALEM, N.H. 03079
5669/0667

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY (GW) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:	43,560 S.F.	
FRONTAGE:	200 FT.	
DEPTH:	100 FT.	
SETBACKS:	FRONT:	30 FT.
SIDE:	30 FT.	
REAR:	50 FT.	
MAXIMUM STRUCTURE HEIGHT:		40 FT.
MAXIMUM ROOF APPURTENANCE HEIGHT:		10 FT.
MAXIMUM BUILDING COVERAGE:		30%
MINIMUM OPEN SPACE:		20%

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 229 LOT 8B.

8) EASEMENTS & RESTRICTIONS:
A) ROAD/UTILITY EASEMENT AREA: SEE C-3316 AND RCRD 2110/428 AND 2184/184. THIS EASEMENT WAS PARTIALLY TERMINATED ON 11/9/15: SEE RCRD 5669/0645.

B) 30' RIGHT OF WAY: SEE D-8806 AND 5446/2589.

C) MUTUAL PARKING AND ACCESS RIGHTS FOR LOTS 1-3 ON PLAN D-8806 ARE OF RECORD. RCRD 2343/128 AND 5446/2588.

— ROW

— PVMT

SITE REDEVELOPMENT
TUSCAN KITCHEN
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	REVISED NOTES 2 AND 8	12/21/15
2	ADDED HANDICAP PARKING	8/26/15
1	ADDED EXISTING FORCE MAIN	7/30/15
0	ISSUED FOR COMMENT	7/20/15

REVISIONS

SCALE: 1" = 30' JULY 2015

EXISTING CONDITIONS PLAN

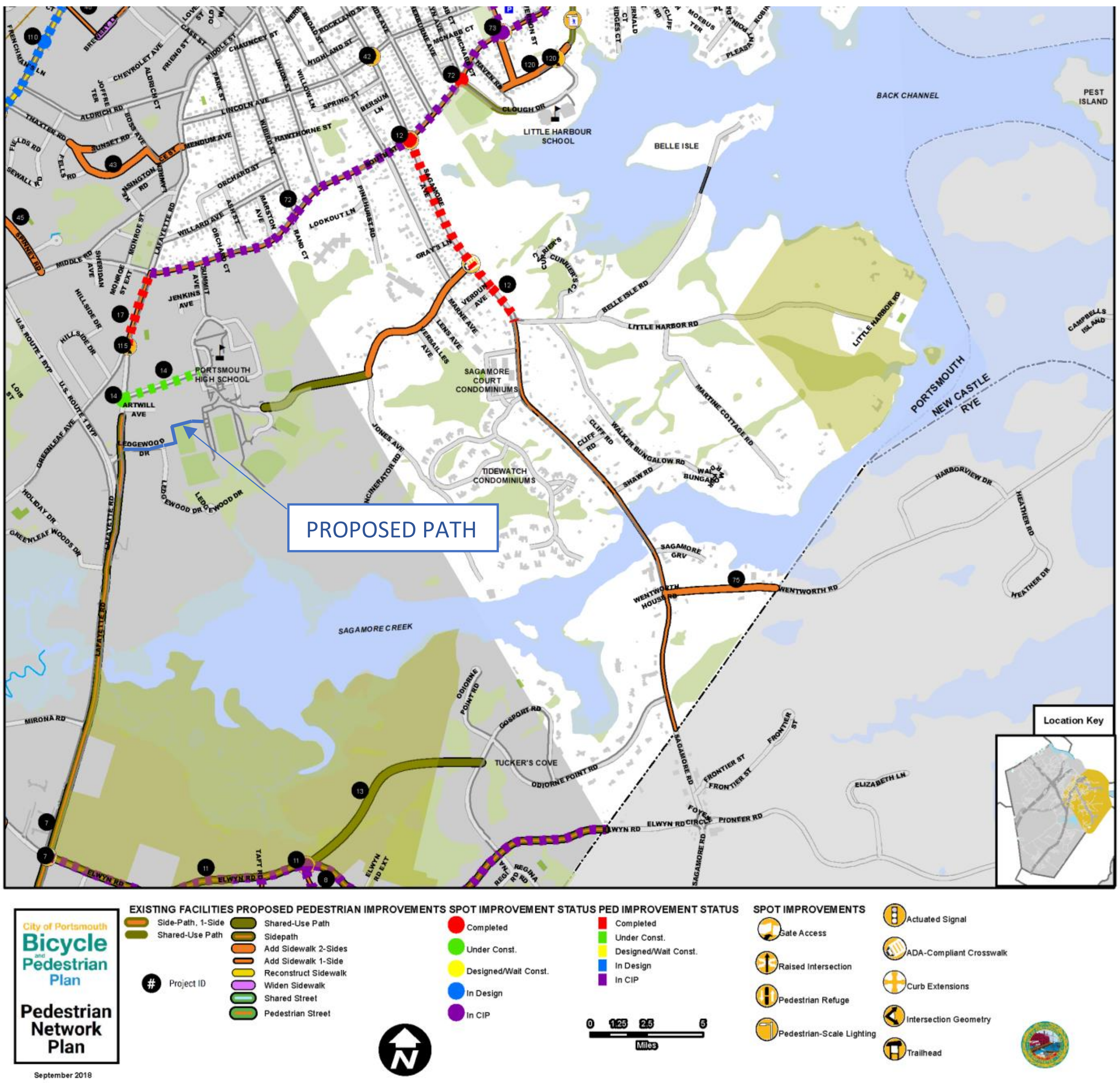
C1

FB 259, PG 10 1397.02

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

Bicycle & Pedestrian Network Plan



DRAINAGE ANALYSIS

COMMERCIAL DEVELOPMENT

581 LAFAYETTE ROAD
PORTSMOUTH, NH

PREPARED FOR
ATLAS COMMONS, LLC

20 NOVEMBER 2023

STATE OF NEW HAMPSHIRE
JOHN
R.
CHAGNON
No. 7651
LICENSED
PROFESSIONAL ENGINEER

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jchagnon@haleyward.com
(Ambit Job Number 5010156.1397.03)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the Commercial Development at the property known as 581 Lafayette Road in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 229 as Lot 8B. The total size of the associated drainage area is 188,901± square-feet (4.337 acres). The total size of the lot is 98,125± square-feet (2.253 acres). The total redevelopment area of the project is 66,540± square-feet (1.528 acres).

The development will provide for a new commercial building with associated parking and utilities. The development has the potential to increase stormwater pollutants to City infrastructure, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in pollutants from the site as a result of this project.

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University), with a 15% increase to comply with local ordinance.

The proposed development includes a Contech Jellyfish® Filter in order to treat stormwater from the site, in compliance with local ordinance.

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 229 as Lot 8B. Bounding the site to the north is Ledgewood Drive. Bounding the site to the east is apartments. Bounding the site to the South is commercial development. Bounding the site to the west is Lafayette Road (Route 1). A vicinity map is included in the Appendix to this report.

The proposed development will include a residential building addition with utilities and associated parking. This report includes information about the existing site and the proposed additions necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, subcatchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. These values have been used in this analysis, with a 15% addition to comply with local ordinances. The unadjusted table is appended to this report.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.20 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year, 25-year, and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Haley Ward and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of two soil types:

Soil Symbol	Soil Name and Slopes
699	Urban Land
799	Urban land – Canton complex, 3 to 15 percent slopes

Urban Land does not have any recorded geological features, including depth to bedrock or depth to water table. The Hydraulic Soil Grade is assumed to be type A.

The physical characteristics of the site not containing buildings consist of gently sloped (0-15%) grades that generally slope from the northwest of the lot to the southeast. Elevations on the site range from 17 to 27 feet above sea level. The existing site is developed with commercial buildings and associated parking.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0270F (effective date January 29, 2021), the proposed development is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as nine subcatchment basins (E1a, E1b, E1c, E2a, E2b, E2c, E2d, E3, and O1) based on localized topography and discharge location. Subcatchments E1a, E1b, and E1c contain the west half of the lot, and flow to the southwest corner through an existing drainage network to discharge point DP1. Subcatchments E2a, E2b, E2c, and E2d flow through an existing drainage network to the southeast corner of the property to discharge point DP2. Subcatchment E3 represents overland flow in the southeast corner of the lot to discharge point DP2. Subcatchment O1 represents off-site flow that ultimately flows to DP2 through the existing drainage network.

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	To Design Point
E1a	20,120	5.0	77	1.77	3.20	DP1
E1b	27,062	5.0	92	3.34	5.23	DP1
E1c	4,032	5.0	98	0.53	0.80	DP1
E2a	8,301	5.0	64	0.45	0.97	DP2
E2b	16,660	5.0	91	2.02	3.20	DP2
E2c	16,042	5.0	93	2.01	3.12	DP2
E2d	7,341	5.0	95	0.94	1.45	DP2
E3	9,577	5.0	57	0.35	0.89	DP2
O1	79,768	27.6	65	2.53	5.43	DP2

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as nine subcatchment basins, (P1a, P1b, P1c, P2a, P2b, P2c, P2d, P3, O1). All subcatchments occupy approximately the same location as their existing counterparts and drain to the same drainage points. This is intentional and will be a function of the roof design for the additions.

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	To Design Point
P1a	20,120	5.0	77	1.77	3.20	DP1
P1b	26,173	5.0	94	3.31	5.13	DP1
P1c	4,594	5.0	98	0.60	0.92	DP1
P2a	8,300	5.0	57	0.30	0.77	DP2
P2b	16,660	5.0	92	2.05	3.22	DP2
P2c	15,044	5.0	98	1.97	3.00	DP2
P2d	8,407	5.0	98	1.10	1.67	DP2
P3	9,835	5.0	71	0.71	1.38	DP2
O1	79,768	27.6	65	2.53	5.43	DP2

The overall impervious coverage of the subcatchment areas analyzed in this report **increases** from 2.768 acres (63.9%) in the pre-development condition to 2.861 acres (66.0%) in the post-development condition. The City of Portsmouth specifies that 30% of existing impervious cover in addition to 100% of additional proposed impervious cover is treated in a Redevelopment project. These conditions are exceeded by treating 77,475 sf of impervious surface with a Contech Jellyfish filter.

(100%)(4,012 sf impervious)+(30%)(81,351 sf impervious) = 28,417 sf required treatment

Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for the design point. The comparison shows increased flows between the existing and proposed conditions due to the increase in impervious surfaces on the site.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q50 (CFS)		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Description**
DP1	3.29	3.37	5.63	5.68	9.24	9.24	Drainage System 1
DP2	3.50	3.83	6.59	6.96	11.76	12.18	Drainage System 2

Note that all post-development peak discharges are either equivalent or greater than the existing peak discharges.

OFFSITE INFRASTRUCTURE CAPACITY

Due to the change of impervious surfaces in the proposed plan, the impacts to the local infrastructure receptors were considered. The receiving catch basin has a 12” diameter and was likely designed for a 10-year storm event with a less stringent design storm. The current design standards would have one of the receiving catch basins (CB1 in the plan set) overflow in the 10-year storm event. However, due to the minimal increase in flow in the proposed design, it is anticipated that the receiving catch basin will not experience significant additional inundation. As a result, it is anticipated that the proposed design will have minimal impact on City infrastructure.

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is moderate due to the presence of existing impervious surfaces. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to “The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.” Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Catch basin filter baskets
- Stabilized construction entrance at access point to the site (FODS)
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by surfacing the access drives and walkways as shown on the plans.

CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the Contech Jellyfish filter, the post-development runoff is treated sufficiently. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

REFERENCES

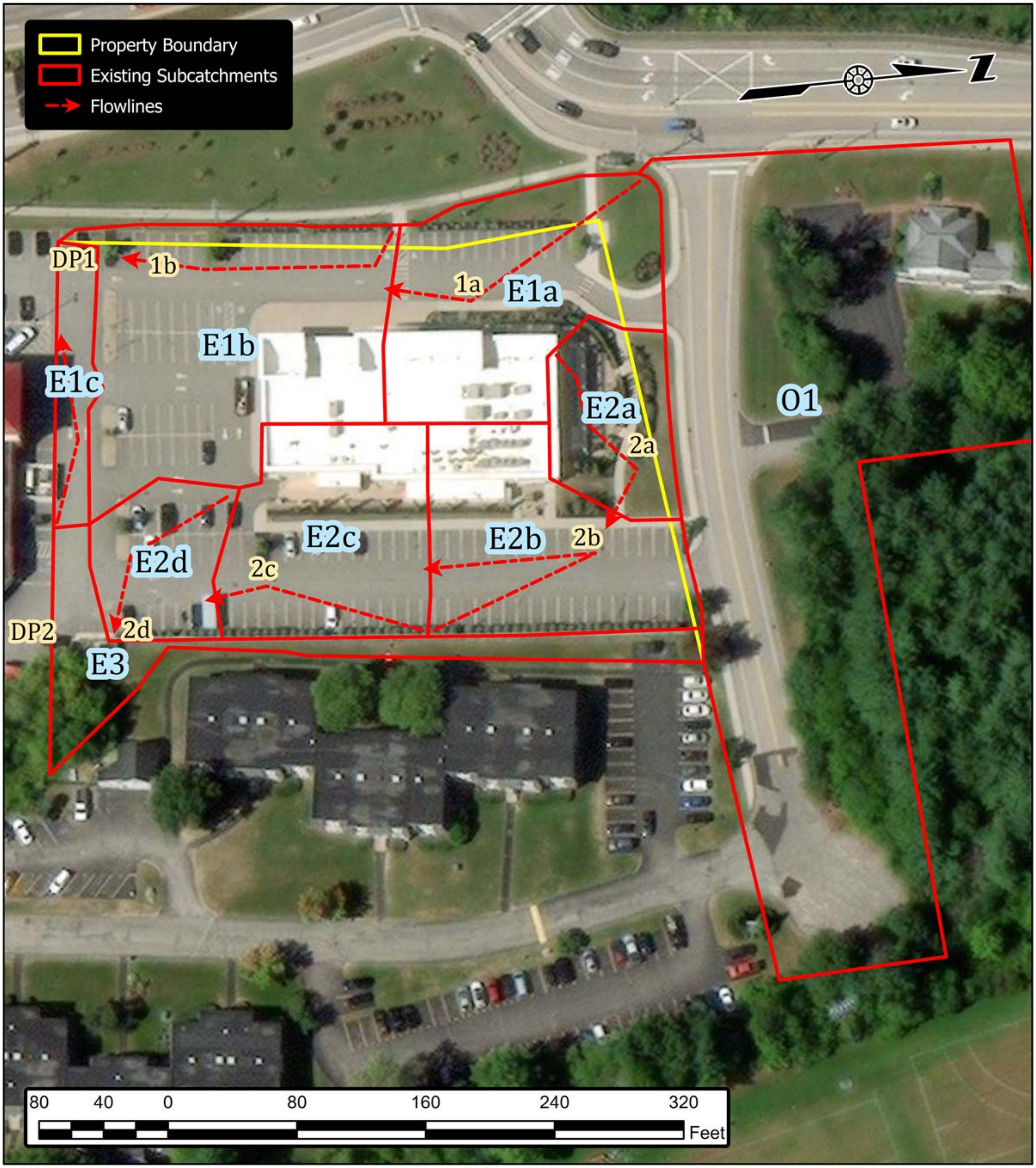
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.
3. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.20* copyright 2022.

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

Existing Subcatchments

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, NH

JOB NUMBER: 5010156.1397.04
SCALE: 1" = 80'
SUBMITTED: 11-20-2023

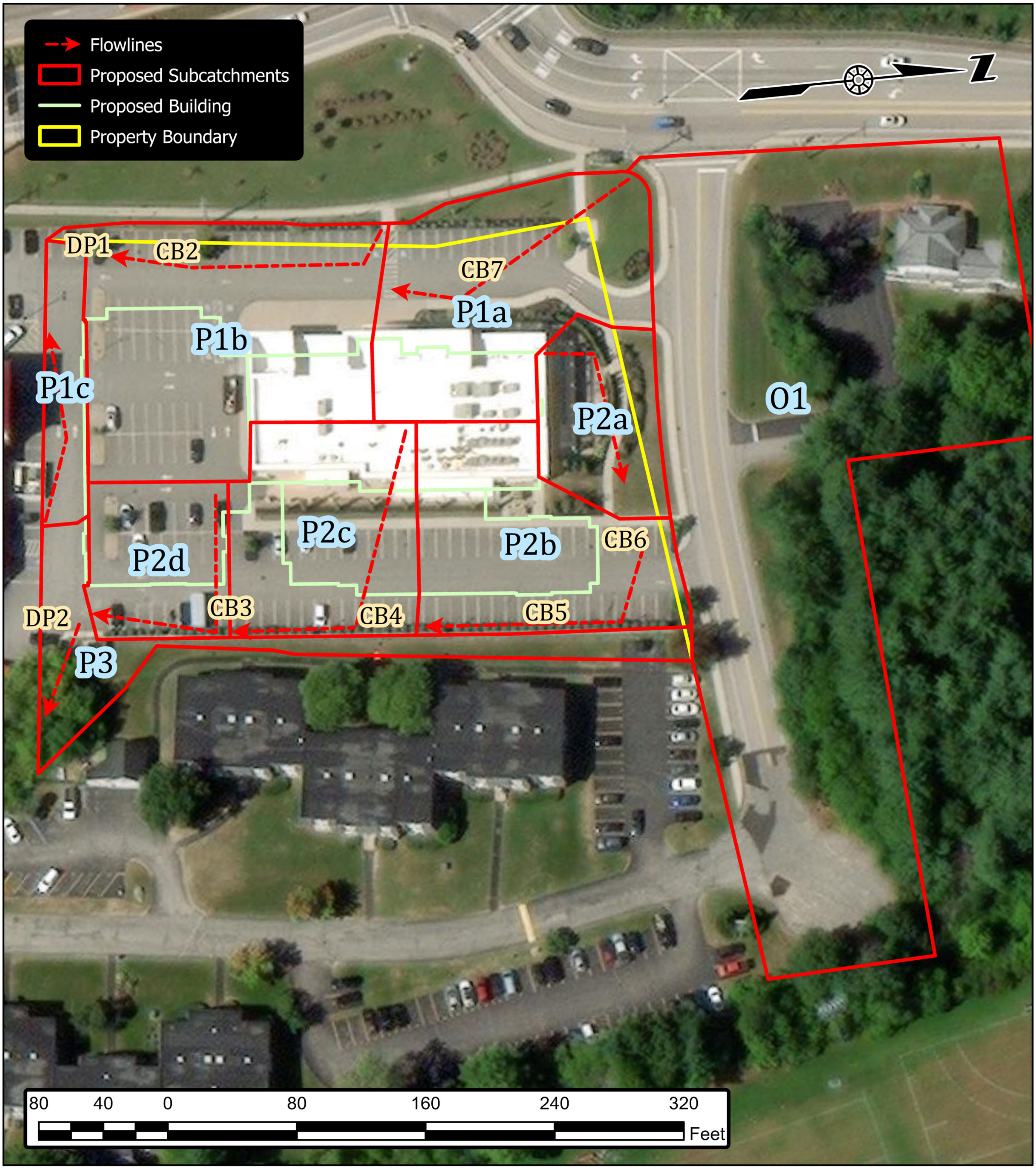


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

Proposed Subcatchments

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, NH

JOB NUMBER: 5010156.1397.04
SCALE: 1" = 80'
SUBMITTED: 11-20-2023



APPENDIX A

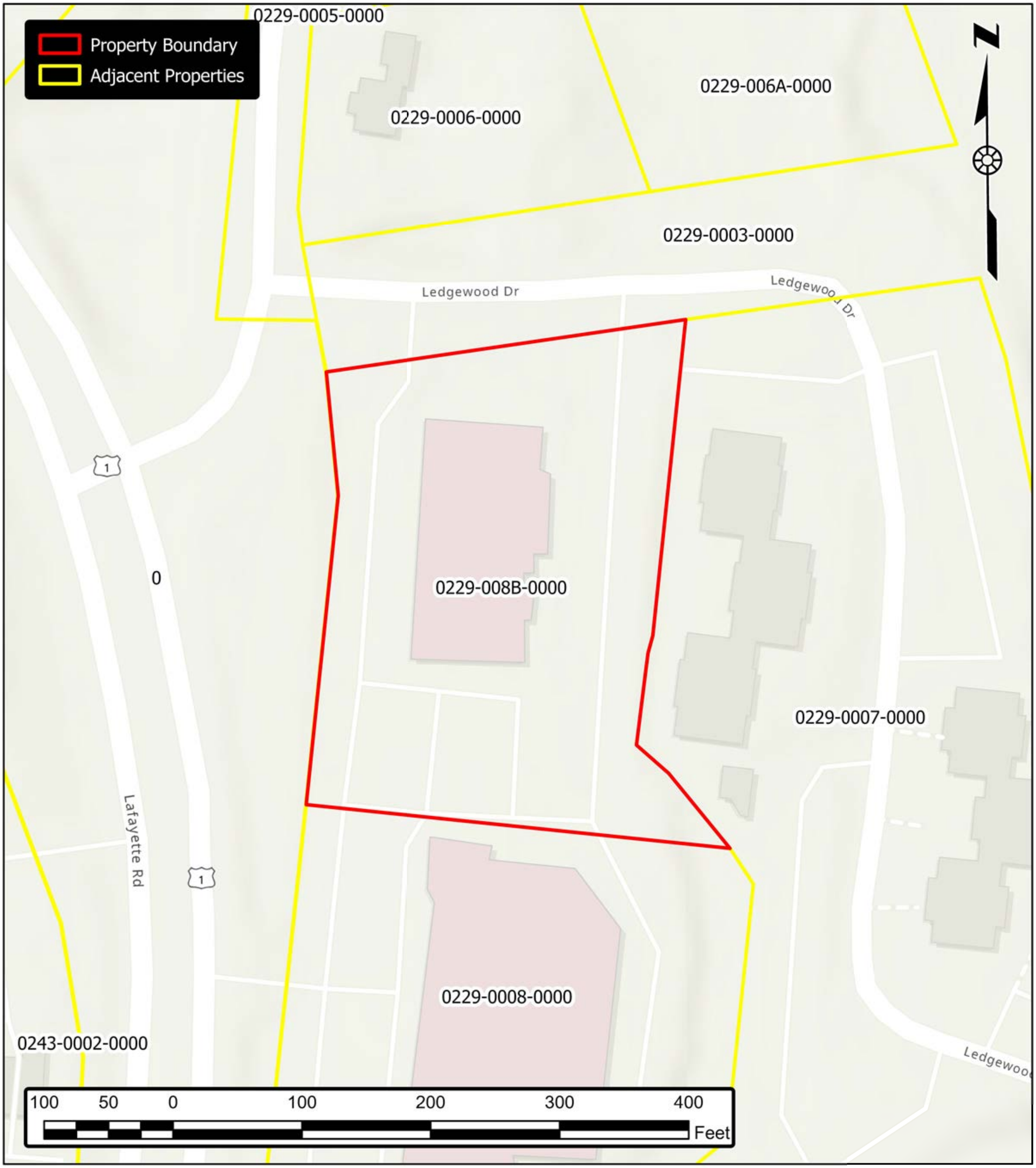
VICINITY (TAX) MAP

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

Tax Map

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, NH

JOB NUMBER: 5010156.1397.04
SCALE: 1" = 100'
SUBMITTED: 09-19-2023



APPENDIX B

TABLES, CHARTS, ETC.

AMBIT ENGINEERING, INC.
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Aerial Orthography

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, NH

JOB NUMBER: 5010156.1397.04
SCALE: 1" = 60'
SUBMITTED: 09-19-2023

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	43.057 degrees North
Longitude	70.769 degrees West
Elevation	0 feet
Date/Time	Tue Sep 19 2023 09:52:18 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

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	1yr	0.77	1.06	1.26	1.74	2.20	2.99	3.17	1yr	2.65	3.05	3.60	4.39	5.06	1yr
2yr	0.34	0.52	0.64	0.87	1.07	1.27	2yr	0.92	1.24	1.48	1.96	2.51	3.44	3.71	2yr	3.04	3.57	4.10	4.85	5.65	2yr
5yr	0.40	0.62	0.77	1.05	1.34	1.62	5yr	1.15	1.59	1.88	2.53	3.25	4.36	4.97	5yr	3.85	4.78	5.40	6.39	7.17	5yr
10yr	0.47	0.72	0.89	1.25	1.61	1.98	10yr	1.39	1.93	2.28	3.11	3.95	5.36	6.21	10yr	4.74	5.97	6.82	7.85	8.77	10yr
25yr	0.58	0.88	1.09	1.56	2.05	2.57	25yr	1.77	2.52	2.95	4.07	5.15	7.80	8.34	25yr	6.90	8.02	9.13	10.35	11.42	25yr
50yr	0.67	1.02	1.27	1.83	2.47	3.13	50yr	2.13	3.06	3.60	5.00	6.31	9.76	10.44	50yr	8.64	10.04	11.41	12.73	13.97	50yr
100yr	0.79	1.20	1.50	2.16	2.97	3.82	100yr	2.56	3.73	4.37	6.15	7.75	12.21	13.07	100yr	10.81	12.57	14.24	15.70	17.09	100yr
200yr	0.93	1.39	1.76	2.55	3.56	4.66	200yr	3.07	4.56	5.34	7.58	9.52	15.32	16.38	200yr	13.56	15.75	17.81	19.34	20.91	200yr
500yr	1.15	1.71	2.20	3.20	4.54	6.05	500yr	3.92	5.92	6.93	10.02	12.53	20.69	22.08	500yr	18.31	21.23	23.93	25.48	27.32	500yr

AMBIT ENGINEERING, INC.
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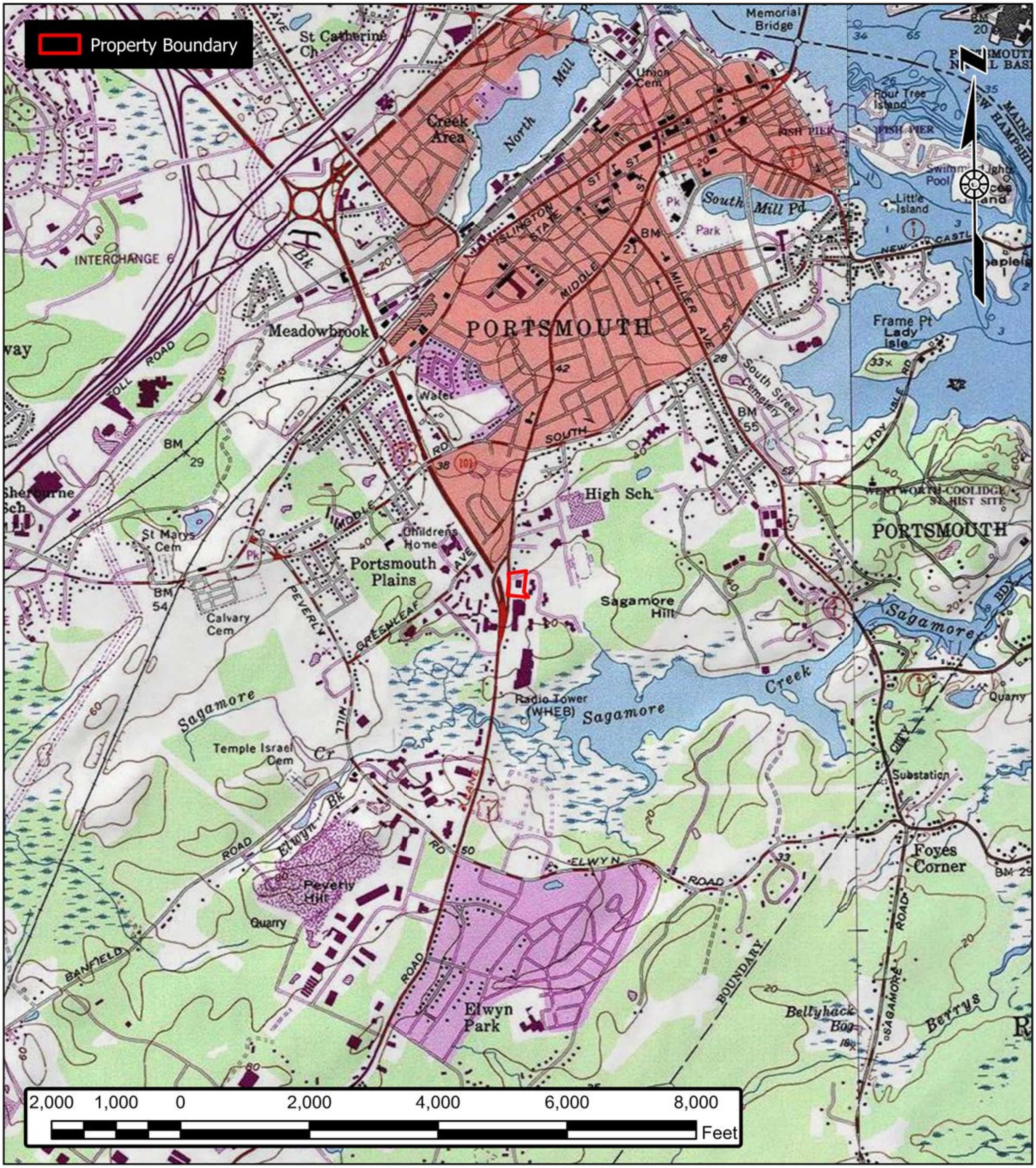
USGS Map

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, NH

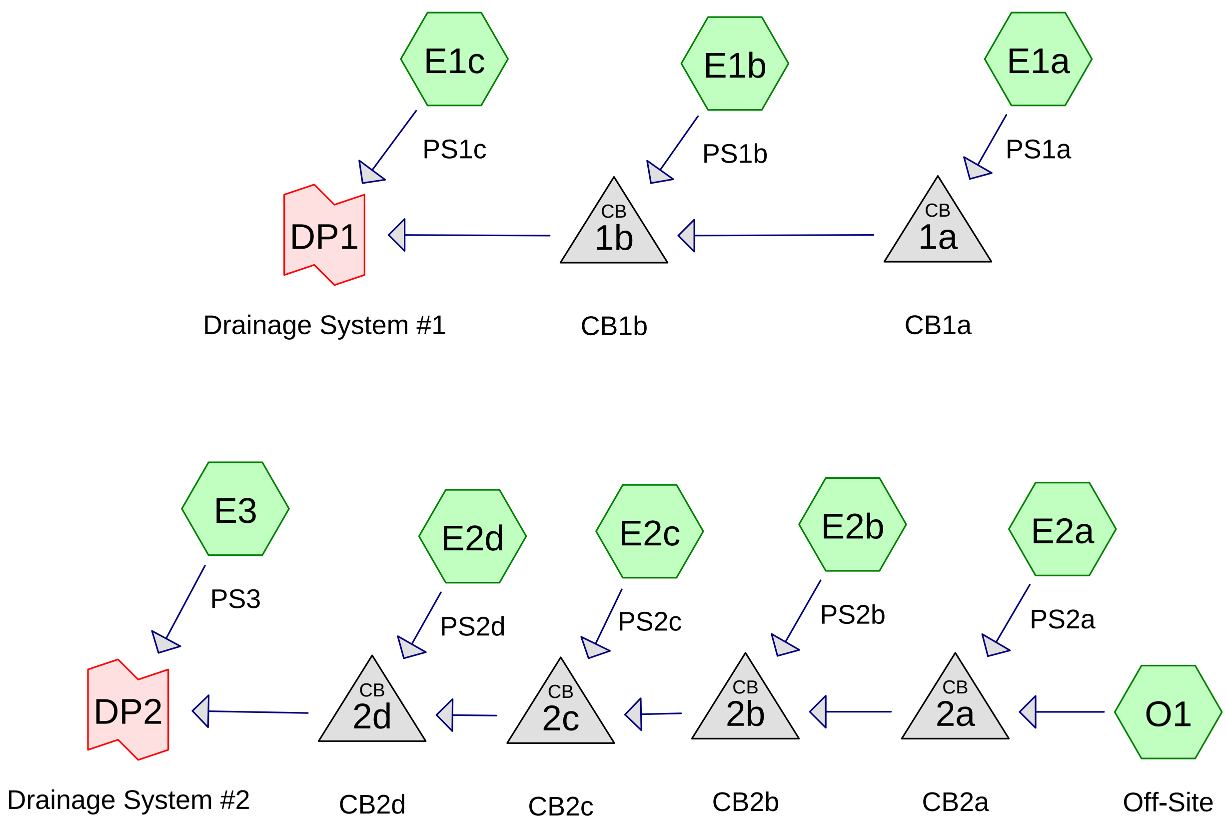
JOB NUMBER: 5010156.1397.04
SCALE: 1" = 2,000'
SUBMITTED: 09-19-2023

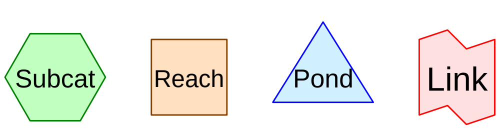


APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS





Routing Diagram for Existing Conditions 2015-09-24
Prepared by Haley Ward, Printed 11/17/2023
HydroCAD® 10.20-3g s/n 00801 © 2023 HydroCAD Software Solutions LLC

Project Notes

Defined 5 rainfall events from extreme_precip_tables_output IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.70	2
2	10-yr	Type III 24-hr		Default	24.00	1	5.62	2
3	25-yr	Type III 24-hr		Default	24.00	1	7.13	2
4	50-yr	Type III 24-hr		Default	24.00	1	8.53	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
46,242	39	>75% Grass cover, Good, HSG A (E1a, E1b, E1c, E2a, E2b, E2c, E2d, E3, O1)
102,162	98	Paved parking, HSG A (E1a, E1b, E1c, E2a, E2b, E2c, E2d, E3, O1)
15,994	98	Roofs, HSG A (E1a, E1b, E2a, E2b, E2c)
2,453	98	Unconnected roofs, HSG A (O1)
22,052	36	Woods, Fair, HSG A (O1)
188,903	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
188,903	HSG A	E1a, E1b, E1c, E2a, E2b, E2c, E2d, E3, O1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
188,903		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
46,242	0	0	0	0	46,242	>75% Grass cover, Good	
102,162	0	0	0	0	102,162	Paved parking	
15,994	0	0	0	0	15,994	Roofs	
2,453	0	0	0	0	2,453	Unconnected roofs	
22,052	0	0	0	0	22,052	Woods, Fair	
188,903	**0**	**0**	**0**	**0**	**188,903**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	O1	0.00	0.00	110.0	0.0050	0.015	0.0	12.0	0.0	
2	1a	20.49	17.94	203.0	0.0126	0.025	0.0	12.0	0.0	
3	1b	17.69	14.69	200.0	0.0150	0.025	0.0	15.0	0.0	
4	2a	18.94	18.94	54.0	0.0000	0.025	0.0	12.0	0.0	
5	2b	18.34	17.78	200.0	0.0028	0.025	0.0	15.0	0.0	
6	2c	17.80	12.18	375.0	0.0150	0.025	0.0	15.0	0.0	
7	2d	17.29	16.79	100.0	0.0050	0.025	0.0	15.0	0.0	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1a: PS1a Runoff Area=20,120 sf 65.08% Impervious Runoff Depth=1.58"
Tc=5.0 min CN=77 Runoff=0.88 cfs 2,650 cf

Subcatchment E1b: PS1b Runoff Area=27,062 sf 89.28% Impervious Runoff Depth=2.83"
Tc=5.0 min CN=92 Runoff=2.07 cfs 6,379 cf

Subcatchment E1c: PS1c Runoff Area=4,032 sf 99.58% Impervious Runoff Depth=3.47"
Tc=5.0 min CN=98 Runoff=0.35 cfs 1,165 cf

Subcatchment E2a: PS2a Runoff Area=8,301 sf 41.78% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=64 Runoff=0.16 cfs 559 cf

Subcatchment E2b: PS2b Runoff Area=16,660 sf 87.98% Impervious Runoff Depth=2.73"
Tc=5.0 min CN=91 Runoff=1.24 cfs 3,792 cf

Subcatchment E2c: PS2c Runoff Area=16,042 sf 92.13% Impervious Runoff Depth=2.93"
Tc=5.0 min CN=93 Runoff=1.26 cfs 3,915 cf

Subcatchment E2d: PS2d Runoff Area=7,341 sf 95.70% Impervious Runoff Depth=3.14"
Tc=5.0 min CN=95 Runoff=0.60 cfs 1,918 cf

Subcatchment E3: PS3 Runoff Area=9,577 sf 29.98% Impervious Runoff Depth=0.49"
Tc=5.0 min CN=57 Runoff=0.08 cfs 394 cf

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=0.86"
Flow Length=584' Tc=27.6 min CN=65 Runoff=0.93 cfs 5,712 cf

Pond 1a: CB1a Peak Elev=21.09' Inflow=0.88 cfs 2,650 cf
12.0" Round Culvert n=0.025 L=203.0' S=0.0126 '/' Outflow=0.88 cfs 2,650 cf

Pond 1b: CB1b Peak Elev=18.74' Inflow=2.94 cfs 9,029 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0150 '/' Outflow=2.94 cfs 9,029 cf

Pond 2a: CB2a Peak Elev=19.94' Inflow=1.00 cfs 6,271 cf
12.0" Round Culvert n=0.025 L=54.0' S=0.0000 '/' Outflow=1.00 cfs 6,271 cf

Pond 2b: CB2b Peak Elev=19.43' Inflow=1.58 cfs 10,063 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0028 '/' Outflow=1.58 cfs 10,063 cf

Pond 2c: CB2c Peak Elev=18.82' Inflow=2.83 cfs 13,977 cf
15.0" Round Culvert n=0.025 L=375.0' S=0.0150 '/' Outflow=2.83 cfs 13,977 cf

Pond 2d: CB2d Peak Elev=19.27' Inflow=3.43 cfs 15,896 cf
15.0" Round Culvert n=0.025 L=100.0' S=0.0050 '/' Outflow=3.43 cfs 15,896 cf

Link DP1: Drainage System #1 Inflow=3.29 cfs 10,194 cf
Primary=3.29 cfs 10,194 cf

Link DP2: Drainage System #2

Inflow=3.50 cfs 16,289 cf
Primary=3.50 cfs 16,289 cf

Total Runoff Area = 188,903 sf Runoff Volume = 26,483 cf Average Runoff Depth = 1.68"
36.15% Pervious = 68,294 sf 63.85% Impervious = 120,609 sf

Summary for Subcatchment E1a: PS1a

Runoff = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf, Depth= 1.58"
Routed to Pond 1a : CB1a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
4,566	98	Roofs, HSG A
7,025	39	>75% Grass cover, Good, HSG A
8,529	98	Paved parking, HSG A
20,120	77	Weighted Average
7,025		34.92% Pervious Area
13,095		65.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1b: PS1b

Runoff = 2.07 cfs @ 12.07 hrs, Volume= 6,379 cf, Depth= 2.83"
Routed to Pond 1b : CB1b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,319	98	Roofs, HSG A
20,842	98	Paved parking, HSG A
27,062	92	Weighted Average
2,901		10.72% Pervious Area
24,161		89.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1c: PS1c

Runoff = 0.35 cfs @ 12.07 hrs, Volume= 1,165 cf, Depth= 3.47"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
17	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,032	98	Weighted Average
17		0.42% Pervious Area
4,015		99.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2a: PS2a

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 559 cf, Depth= 0.81"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
56	98	Roofs, HSG A
4,833	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
8,301	64	Weighted Average
4,833		58.22% Pervious Area
3,468		41.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2b: PS2b

Runoff = 1.24 cfs @ 12.07 hrs, Volume= 3,792 cf, Depth= 2.73"
Routed to Pond 2b : CB2b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
3,630	98	Roofs, HSG A
2,003	39	>75% Grass cover, Good, HSG A
11,027	98	Paved parking, HSG A
16,660	91	Weighted Average
2,003		12.02% Pervious Area
14,657		87.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2c: PS2c

Runoff = 1.26 cfs @ 12.07 hrs, Volume= 3,915 cf, Depth= 2.93"
Routed to Pond 2c : CB2c

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
4,423	98	Roofs, HSG A
1,262	39	>75% Grass cover, Good, HSG A
10,357	98	Paved parking, HSG A
16,042	93	Weighted Average
1,262		7.87% Pervious Area
14,780		92.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2d: PS2d

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 1,918 cf, Depth= 3.14"
Routed to Pond 2d : CB2d

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
316	39	>75% Grass cover, Good, HSG A
7,025	98	Paved parking, HSG A
7,341	95	Weighted Average
316		4.30% Pervious Area
7,025		95.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E3: PS3

Runoff = 0.08 cfs @ 12.11 hrs, Volume= 394 cf, Depth= 0.49"
Routed to Link DP2 : Drainage System #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
6,706	39	>75% Grass cover, Good, HSG A
2,871	98	Paved parking, HSG A
9,577	57	Weighted Average
6,706		70.02% Pervious Area
2,871		29.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment O1: Off-Site

Runoff = 0.93 cfs @ 12.45 hrs, Volume= 5,712 cf, Depth= 0.86"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Pond 1a: CB1a

[57] Hint: Peaked at 21.09' (Flood elevation advised)

Inflow Area = 20,120 sf, 65.08% Impervious, Inflow Depth = 1.58" for 2-yr event
Inflow = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf
Outflow = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf
Routed to Pond 1b : CB1b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.09' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	20.49'	**12.0" Round CMP_Round 12"** L= 203.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.49' / 17.94' S= 0.0126 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.88 cfs @ 12.08 hrs HW=21.09' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 0.88 cfs @ 2.53 fps)

Summary for Pond 1b: CB1b

[57] Hint: Peaked at 18.74' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 OUTLET by 0.80'

Inflow Area =	47,182 sf, 78.96% Impervious,	Inflow Depth = 2.30" for 2-yr event	
Inflow =	2.94 cfs @ 12.07 hrs,	Volume=	9,029 cf
Outflow =	2.94 cfs @ 12.07 hrs,	Volume=	9,029 cf, Atten= 0%, Lag= 0.0 min
Primary =	2.94 cfs @ 12.07 hrs,	Volume=	9,029 cf

Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.74' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.69'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.69' / 14.69' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.94 cfs @ 12.07 hrs HW=18.74' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 2.94 cfs @ 3.62 fps)

Summary for Pond 2a: CB2a

[57] Hint: Peaked at 19.94' (Flood elevation advised)

Inflow Area =	88,069 sf, 45.42% Impervious,	Inflow Depth = 0.85" for 2-yr event	
Inflow =	1.00 cfs @ 12.42 hrs,	Volume=	6,271 cf
Outflow =	1.00 cfs @ 12.42 hrs,	Volume=	6,271 cf, Atten= 0%, Lag= 0.0 min
Primary =	1.00 cfs @ 12.42 hrs,	Volume=	6,271 cf

Routed to Pond 2b : CB2b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.94' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.94'	**12.0" Round CMP_Round 12"** L= 54.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 18.94' / 18.94' S= 0.0000 '/' Cc= 0.900
n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.42 hrs HW=19.93' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 1.00 cfs @ 1.58 fps)

Summary for Pond 2b: CB2b

[57] Hint: Peaked at 19.43' (Flood elevation advised)
[79] Warning: Submerged Pond 2a Primary device # 1 by 0.49'

Inflow Area =	104,729 sf,	52.19% Impervious,	Inflow Depth = 1.15"	for 2-yr event
Inflow =	1.58 cfs @	12.08 hrs, Volume=	10,063 cf	
Outflow =	1.58 cfs @	12.08 hrs, Volume=	10,063 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.58 cfs @	12.08 hrs, Volume=	10,063 cf	

Routed to Pond 2c : CB2c

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.43' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.34'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.34' / 17.78' S= 0.0028 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=1.58 cfs @ 12.08 hrs HW=19.43' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 1.58 cfs @ 1.85 fps)

Summary for Pond 2c: CB2c

[57] Hint: Peaked at 18.82' (Flood elevation advised)
[79] Warning: Submerged Pond 2b Primary device # 1 INLET by 0.48'

Inflow Area =	120,771 sf,	57.50% Impervious,	Inflow Depth = 1.39"	for 2-yr event
Inflow =	2.83 cfs @	12.08 hrs, Volume=	13,977 cf	
Outflow =	2.83 cfs @	12.08 hrs, Volume=	13,977 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.83 cfs @	12.08 hrs, Volume=	13,977 cf	

Routed to Pond 2d : CB2d

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.82' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.80'	**15.0" Round CMP_Round 15"** L= 375.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.80' / 12.18' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.83 cfs @ 12.08 hrs HW=18.82' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 2.83 cfs @ 3.60 fps)

Summary for Pond 2d: CB2d

[57] Hint: Peaked at 19.27' (Flood elevation advised)
[81] Warning: Exceeded Pond 2c by 0.45' @ 12.07 hrs

Inflow Area = 128,112 sf, 59.69% Impervious, Inflow Depth = 1.49" for 2-yr event
Inflow = 3.43 cfs @ 12.07 hrs, Volume= 15,896 cf
Outflow = 3.43 cfs @ 12.07 hrs, Volume= 15,896 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.07 hrs, Volume= 15,896 cf
Routed to Link DP2 : Drainage System #2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.27' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.29'	**15.0" Round CMP_Round 15"** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.29' / 16.79' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=3.42 cfs @ 12.07 hrs HW=19.26' (Free Discharge)
1=CMP_Round 15" (Barrel Controls 3.42 cfs @ 2.79 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 51,214 sf, 80.59% Impervious, Inflow Depth = 2.39" for 2-yr event
Inflow = 3.29 cfs @ 12.07 hrs, Volume= 10,194 cf
Primary = 3.29 cfs @ 12.07 hrs, Volume= 10,194 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2

Inflow Area = 137,689 sf, 57.62% Impervious, Inflow Depth = 1.42" for 2-yr event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 16,289 cf
Primary = 3.50 cfs @ 12.08 hrs, Volume= 16,289 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1a: PS1a Runoff Area=20,120 sf 65.08% Impervious Runoff Depth=3.15"
Tc=5.0 min CN=77 Runoff=1.77 cfs 5,281 cf

Subcatchment E1b: PS1b Runoff Area=27,062 sf 89.28% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=92 Runoff=3.34 cfs 10,591 cf

Subcatchment E1c: PS1c Runoff Area=4,032 sf 99.58% Impervious Runoff Depth=5.38"
Tc=5.0 min CN=98 Runoff=0.53 cfs 1,808 cf

Subcatchment E2a: PS2a Runoff Area=8,301 sf 41.78% Impervious Runoff Depth=2.00"
Tc=5.0 min CN=64 Runoff=0.45 cfs 1,381 cf

Subcatchment E2b: PS2b Runoff Area=16,660 sf 87.98% Impervious Runoff Depth=4.59"
Tc=5.0 min CN=91 Runoff=2.02 cfs 6,367 cf

Subcatchment E2c: PS2c Runoff Area=16,042 sf 92.13% Impervious Runoff Depth=4.81"
Tc=5.0 min CN=93 Runoff=2.01 cfs 6,427 cf

Subcatchment E2d: PS2d Runoff Area=7,341 sf 95.70% Impervious Runoff Depth=5.03"
Tc=5.0 min CN=95 Runoff=0.94 cfs 3,080 cf

Subcatchment E3: PS3 Runoff Area=9,577 sf 29.98% Impervious Runoff Depth=1.45"
Tc=5.0 min CN=57 Runoff=0.35 cfs 1,157 cf

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=2.08"
Flow Length=584' Tc=27.6 min CN=65 Runoff=2.53 cfs 13,820 cf

Pond 1a: CB1a Peak Elev=21.43' Inflow=1.77 cfs 5,281 cf
12.0" Round Culvert n=0.025 L=203.0' S=0.0126 '/' Outflow=1.77 cfs 5,281 cf

Pond 1b: CB1b Peak Elev=20.98' Inflow=5.10 cfs 15,872 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0150 '/' Outflow=5.10 cfs 15,872 cf

Pond 2a: CB2a Peak Elev=21.35' Inflow=2.69 cfs 15,201 cf
12.0" Round Culvert n=0.025 L=54.0' S=0.0000 '/' Outflow=2.69 cfs 15,201 cf

Pond 2b: CB2b Peak Elev=21.17' Inflow=3.32 cfs 21,567 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0028 '/' Outflow=3.32 cfs 21,567 cf

Pond 2c: CB2c Peak Elev=23.28' Inflow=5.31 cfs 27,995 cf
15.0" Round Culvert n=0.025 L=375.0' S=0.0150 '/' Outflow=5.31 cfs 27,995 cf

Pond 2d: CB2d Peak Elev=22.12' Inflow=6.25 cfs 31,074 cf
15.0" Round Culvert n=0.025 L=100.0' S=0.0050 '/' Outflow=6.25 cfs 31,074 cf

Link DP1: Drainage System #1 Inflow=5.63 cfs 17,680 cf
Primary=5.63 cfs 17,680 cf

Link DP2: Drainage System #2

Inflow=6.59 cfs 32,232 cf
Primary=6.59 cfs 32,232 cf

Total Runoff Area = 188,903 sf Runoff Volume = 49,912 cf Average Runoff Depth = 3.17"
36.15% Pervious = 68,294 sf 63.85% Impervious = 120,609 sf

Summary for Subcatchment E1a: PS1a

Runoff = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf, Depth= 3.15"
Routed to Pond 1a : CB1a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
4,566	98	Roofs, HSG A
7,025	39	>75% Grass cover, Good, HSG A
8,529	98	Paved parking, HSG A
20,120	77	Weighted Average
7,025		34.92% Pervious Area
13,095		65.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1b: PS1b

Runoff = 3.34 cfs @ 12.07 hrs, Volume= 10,591 cf, Depth= 4.70"
Routed to Pond 1b : CB1b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,319	98	Roofs, HSG A
20,842	98	Paved parking, HSG A
27,062	92	Weighted Average
2,901		10.72% Pervious Area
24,161		89.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1c: PS1c

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 1,808 cf, Depth= 5.38"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
17	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,032	98	Weighted Average
17		0.42% Pervious Area
4,015		99.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2a: PS2a

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 1,381 cf, Depth= 2.00"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
56	98	Roofs, HSG A
4,833	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
8,301	64	Weighted Average
4,833		58.22% Pervious Area
3,468		41.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2b: PS2b

Runoff = 2.02 cfs @ 12.07 hrs, Volume= 6,367 cf, Depth= 4.59"
Routed to Pond 2b : CB2b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
3,630	98	Roofs, HSG A
2,003	39	>75% Grass cover, Good, HSG A
11,027	98	Paved parking, HSG A
16,660	91	Weighted Average
2,003		12.02% Pervious Area
14,657		87.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2c: PS2c

Runoff = 2.01 cfs @ 12.07 hrs, Volume= 6,427 cf, Depth= 4.81"
Routed to Pond 2c : CB2c

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
4,423	98	Roofs, HSG A
1,262	39	>75% Grass cover, Good, HSG A
10,357	98	Paved parking, HSG A
16,042	93	Weighted Average
1,262		7.87% Pervious Area
14,780		92.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2d: PS2d

Runoff = 0.94 cfs @ 12.07 hrs, Volume= 3,080 cf, Depth= 5.03"
Routed to Pond 2d : CB2d

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
316	39	>75% Grass cover, Good, HSG A
7,025	98	Paved parking, HSG A
7,341	95	Weighted Average
316		4.30% Pervious Area
7,025		95.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E3: PS3

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,157 cf, Depth= 1.45"
Routed to Link DP2 : Drainage System #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
6,706	39	>75% Grass cover, Good, HSG A
2,871	98	Paved parking, HSG A
9,577	57	Weighted Average
6,706		70.02% Pervious Area
2,871		29.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 116% of capacity of segment #3

Runoff = 2.53 cfs @ 12.42 hrs, Volume= 13,820 cf, Depth= 2.08"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Pond 1a: CB1a

[57] Hint: Peaked at 21.43' (Flood elevation advised)

Inflow Area = 20,120 sf, 65.08% Impervious, Inflow Depth = 3.15" for 10-yr event
Inflow = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf
Outflow = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf
Routed to Pond 1b : CB1b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.43' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	20.49'	**12.0" Round CMP_Round 12"** L= 203.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.49' / 17.94' S= 0.0126 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=1.76 cfs @ 12.07 hrs HW=21.43' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 1.76 cfs @ 2.98 fps)

Summary for Pond 1b: CB1b

[57] Hint: Peaked at 20.98' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 INLET by 0.48'

Inflow Area = 47,182 sf, 78.96% Impervious, Inflow Depth = 4.04" for 10-yr event
Inflow = 5.10 cfs @ 12.07 hrs, Volume= 15,872 cf
Outflow = 5.10 cfs @ 12.07 hrs, Volume= 15,872 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.10 cfs @ 12.07 hrs, Volume= 15,872 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.98' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.69'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.69' / 14.69' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=5.10 cfs @ 12.07 hrs HW=20.96' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 5.10 cfs @ 4.15 fps)

Summary for Pond 2a: CB2a

[57] Hint: Peaked at 21.35' (Flood elevation advised)

Inflow Area = 88,069 sf, 45.42% Impervious, Inflow Depth = 2.07" for 10-yr event
Inflow = 2.69 cfs @ 12.39 hrs, Volume= 15,201 cf
Outflow = 2.69 cfs @ 12.39 hrs, Volume= 15,201 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.69 cfs @ 12.39 hrs, Volume= 15,201 cf
Routed to Pond 2b : CB2b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 21.35' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.94'	**12.0" Round CMP_Round 12"** L= 54.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.94' / 18.94' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=2.69 cfs @ 12.39 hrs HW=21.35' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 2.69 cfs @ 3.42 fps)

Summary for Pond 2b: CB2b

[57] Hint: Peaked at 21.17' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 1.00' @ 12.07 hrs

Inflow Area = 104,729 sf, 52.19% Impervious, Inflow Depth = 2.47" for 10-yr event
Inflow = 3.32 cfs @ 12.09 hrs, Volume= 21,567 cf
Outflow = 3.32 cfs @ 12.09 hrs, Volume= 21,567 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.32 cfs @ 12.09 hrs, Volume= 21,567 cf
Routed to Pond 2c : CB2c

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.17' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.34'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.34' / 17.78' S= 0.0028 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=3.32 cfs @ 12.09 hrs HW=21.16' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 3.32 cfs @ 2.71 fps)

Summary for Pond 2c: CB2c

[57] Hint: Peaked at 23.28' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 2.11' @ 12.08 hrs

Inflow Area = 120,771 sf, 57.50% Impervious, Inflow Depth = 2.78" for 10-yr event
Inflow = 5.31 cfs @ 12.08 hrs, Volume= 27,995 cf
Outflow = 5.31 cfs @ 12.08 hrs, Volume= 27,995 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.31 cfs @ 12.08 hrs, Volume= 27,995 cf
Routed to Pond 2d : CB2d

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 23.28' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.80'	**15.0" Round CMP_Round 15"** L= 375.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 17.80' / 12.18' S= 0.0150 '/' Cc= 0.900
n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=5.31 cfs @ 12.08 hrs HW=23.26' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 5.31 cfs @ 4.32 fps)

Summary for Pond 2d: CB2d

[57] Hint: Peaked at 22.12' (Flood elevation advised)
[81] Warning: Exceeded Pond 2c by 1.36' @ 12.02 hrs

Inflow Area =	128,112 sf,	59.69% Impervious,	Inflow Depth = 2.91"	for 10-yr event	
Inflow =	6.25 cfs @	12.08 hrs, Volume=	31,074 cf		
Outflow =	6.25 cfs @	12.08 hrs, Volume=	31,074 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	6.25 cfs @	12.08 hrs, Volume=	31,074 cf		

Routed to Link DP2 : Drainage System #2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 22.12' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.29'	**15.0" Round CMP_Round 15"** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.29' / 16.79' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=6.24 cfs @ 12.08 hrs HW=22.10' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 6.24 cfs @ 5.08 fps)

Summary for Link DP1: Drainage System #1

Inflow Area =	51,214 sf,	80.59% Impervious,	Inflow Depth = 4.14"	for 10-yr event	
Inflow =	5.63 cfs @	12.07 hrs, Volume=	17,680 cf		
Primary =	5.63 cfs @	12.07 hrs, Volume=	17,680 cf,	Atten= 0%,	Lag= 0.0 min

Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2

Inflow Area =	137,689 sf,	57.62% Impervious,	Inflow Depth = 2.81"	for 10-yr event	
Inflow =	6.59 cfs @	12.08 hrs, Volume=	32,232 cf		
Primary =	6.59 cfs @	12.08 hrs, Volume=	32,232 cf,	Atten= 0%,	Lag= 0.0 min

Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1a: PS1a Runoff Area=20,120 sf 65.08% Impervious Runoff Depth=4.48"
Tc=5.0 min CN=77 Runoff=2.51 cfs 7,516 cf

Subcatchment E1b: PS1b Runoff Area=27,062 sf 89.28% Impervious Runoff Depth=6.18"
Tc=5.0 min CN=92 Runoff=4.32 cfs 13,944 cf

Subcatchment E1c: PS1c Runoff Area=4,032 sf 99.58% Impervious Runoff Depth=6.89"
Tc=5.0 min CN=98 Runoff=0.67 cfs 2,315 cf

Subcatchment E2a: PS2a Runoff Area=8,301 sf 41.78% Impervious Runoff Depth=3.10"
Tc=5.0 min CN=64 Runoff=0.71 cfs 2,145 cf

Subcatchment E2b: PS2b Runoff Area=16,660 sf 87.98% Impervious Runoff Depth=6.07"
Tc=5.0 min CN=91 Runoff=2.63 cfs 8,423 cf

Subcatchment E2c: PS2c Runoff Area=16,042 sf 92.13% Impervious Runoff Depth=6.30"
Tc=5.0 min CN=93 Runoff=2.59 cfs 8,422 cf

Subcatchment E2d: PS2d Runoff Area=7,341 sf 95.70% Impervious Runoff Depth=6.54"
Tc=5.0 min CN=95 Runoff=1.20 cfs 3,998 cf

Subcatchment E3: PS3 Runoff Area=9,577 sf 29.98% Impervious Runoff Depth=2.40"
Tc=5.0 min CN=57 Runoff=0.61 cfs 1,916 cf

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=3.20"
Flow Length=584' Tc=27.6 min CN=65 Runoff=3.99 cfs 21,294 cf

Pond 1a: CB1a Peak Elev=22.91' Inflow=2.51 cfs 7,516 cf
12.0" Round Culvert n=0.025 L=203.0' S=0.0126 '/' Outflow=2.51 cfs 7,516 cf

Pond 1b: CB1b Peak Elev=24.96' Inflow=6.83 cfs 21,460 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0150 '/' Outflow=6.83 cfs 21,460 cf

Pond 2a: CB2a Peak Elev=23.45' Inflow=4.23 cfs 23,439 cf
12.0" Round Culvert n=0.025 L=54.0' S=0.0000 '/' Outflow=4.23 cfs 23,439 cf

Pond 2b: CB2b Peak Elev=23.96' Inflow=5.05 cfs 31,862 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0028 '/' Outflow=5.05 cfs 31,862 cf

Pond 2c: CB2c Peak Elev=32.62' Inflow=7.42 cfs 40,284 cf
15.0" Round Culvert n=0.025 L=375.0' S=0.0150 '/' Outflow=7.42 cfs 40,284 cf

Pond 2d: CB2d Peak Elev=25.78' Inflow=8.61 cfs 44,282 cf
15.0" Round Culvert n=0.025 L=100.0' S=0.0050 '/' Outflow=8.61 cfs 44,282 cf

Link DP1: Drainage System #1 Inflow=7.50 cfs 23,776 cf
Primary=7.50 cfs 23,776 cf

Link DP2: Drainage System #2

Inflow=9.22 cfs 46,197 cf
Primary=9.22 cfs 46,197 cf

Total Runoff Area = 188,903 sf Runoff Volume = 69,973 cf Average Runoff Depth = 4.44"
36.15% Pervious = 68,294 sf 63.85% Impervious = 120,609 sf

Summary for Subcatchment E1a: PS1a

Runoff = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf, Depth= 4.48"
Routed to Pond 1a : CB1a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
4,566	98	Roofs, HSG A
7,025	39	>75% Grass cover, Good, HSG A
8,529	98	Paved parking, HSG A
20,120	77	Weighted Average
7,025		34.92% Pervious Area
13,095		65.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1b: PS1b

Runoff = 4.32 cfs @ 12.07 hrs, Volume= 13,944 cf, Depth= 6.18"
Routed to Pond 1b : CB1b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,319	98	Roofs, HSG A
20,842	98	Paved parking, HSG A
27,062	92	Weighted Average
2,901		10.72% Pervious Area
24,161		89.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1c: PS1c

Runoff = 0.67 cfs @ 12.07 hrs, Volume= 2,315 cf, Depth= 6.89"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
17	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,032	98	Weighted Average
17		0.42% Pervious Area
4,015		99.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2a: PS2a

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 2,145 cf, Depth= 3.10"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
56	98	Roofs, HSG A
4,833	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
8,301	64	Weighted Average
4,833		58.22% Pervious Area
3,468		41.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2b: PS2b

Runoff = 2.63 cfs @ 12.07 hrs, Volume= 8,423 cf, Depth= 6.07"
Routed to Pond 2b : CB2b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
3,630	98	Roofs, HSG A
2,003	39	>75% Grass cover, Good, HSG A
11,027	98	Paved parking, HSG A
16,660	91	Weighted Average
2,003		12.02% Pervious Area
14,657		87.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2c: PS2c

Runoff = 2.59 cfs @ 12.07 hrs, Volume= 8,422 cf, Depth= 6.30"
Routed to Pond 2c : CB2c

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
4,423	98	Roofs, HSG A
1,262	39	>75% Grass cover, Good, HSG A
10,357	98	Paved parking, HSG A
16,042	93	Weighted Average
1,262		7.87% Pervious Area
14,780		92.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2d: PS2d

Runoff = 1.20 cfs @ 12.07 hrs, Volume= 3,998 cf, Depth= 6.54"
Routed to Pond 2d : CB2d

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
316	39	>75% Grass cover, Good, HSG A
7,025	98	Paved parking, HSG A
7,341	95	Weighted Average
316		4.30% Pervious Area
7,025		95.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E3: PS3

Runoff = 0.61 cfs @ 12.08 hrs, Volume= 1,916 cf, Depth= 2.40"
Routed to Link DP2 : Drainage System #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
6,706	39	>75% Grass cover, Good, HSG A
2,871	98	Paved parking, HSG A
9,577	57	Weighted Average
6,706		70.02% Pervious Area
2,871		29.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 183% of capacity of segment #3

Runoff = 3.99 cfs @ 12.39 hrs, Volume= 21,294 cf, Depth= 3.20"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Pond 1a: CB1a

[57] Hint: Peaked at 22.91' (Flood elevation advised)

Inflow Area = 20,120 sf, 65.08% Impervious, Inflow Depth = 4.48" for 25-yr event
Inflow = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf
Outflow = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf
Routed to Pond 1b : CB1b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 22.91' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	20.49'	**12.0" Round CMP_Round 12"** L= 203.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.49' / 17.94' S= 0.0126 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=2.50 cfs @ 12.07 hrs HW=22.89' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 2.50 cfs @ 3.19 fps)

Summary for Pond 1b: CB1b

[57] Hint: Peaked at 24.96' (Flood elevation advised)
[81] Warning: Exceeded Pond 1a by 2.06' @ 12.07 hrs

Inflow Area = 47,182 sf, 78.96% Impervious, Inflow Depth = 5.46" for 25-yr event
Inflow = 6.83 cfs @ 12.07 hrs, Volume= 21,460 cf
Outflow = 6.83 cfs @ 12.07 hrs, Volume= 21,460 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.83 cfs @ 12.07 hrs, Volume= 21,460 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 24.96' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.69'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.69' / 14.69' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=6.82 cfs @ 12.07 hrs HW=24.94' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 6.82 cfs @ 5.56 fps)

Summary for Pond 2a: CB2a

[57] Hint: Peaked at 23.45' (Flood elevation advised)

Inflow Area = 88,069 sf, 45.42% Impervious, Inflow Depth = 3.19" for 25-yr event
Inflow = 4.23 cfs @ 12.39 hrs, Volume= 23,439 cf
Outflow = 4.23 cfs @ 12.39 hrs, Volume= 23,439 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.23 cfs @ 12.39 hrs, Volume= 23,439 cf
Routed to Pond 2b : CB2b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 23.45' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.94'	**12.0" Round CMP_Round 12"** L= 54.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.94' / 18.94' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=4.23 cfs @ 12.39 hrs HW=23.44' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 4.23 cfs @ 5.39 fps)

Summary for Pond 2b: CB2b

[57] Hint: Peaked at 23.96' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 2.66' @ 12.08 hrs

Inflow Area = 104,729 sf, 52.19% Impervious, Inflow Depth = 3.65" for 25-yr event
Inflow = 5.05 cfs @ 12.36 hrs, Volume= 31,862 cf
Outflow = 5.05 cfs @ 12.36 hrs, Volume= 31,862 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.05 cfs @ 12.36 hrs, Volume= 31,862 cf
Routed to Pond 2c : CB2c

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 23.96' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.34'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.34' / 17.78' S= 0.0028 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=5.05 cfs @ 12.36 hrs HW=23.96' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 5.05 cfs @ 4.11 fps)

Summary for Pond 2c: CB2c

[57] Hint: Peaked at 32.62' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 9.04' @ 12.08 hrs

Inflow Area = 120,771 sf, 57.50% Impervious, Inflow Depth = 4.00" for 25-yr event
Inflow = 7.42 cfs @ 12.08 hrs, Volume= 40,284 cf
Outflow = 7.42 cfs @ 12.08 hrs, Volume= 40,284 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.42 cfs @ 12.08 hrs, Volume= 40,284 cf
Routed to Pond 2d : CB2d

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 32.62' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.80'	**15.0" Round CMP_Round 15"** L= 375.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 17.80' / 12.18' S= 0.0150 '/' Cc= 0.900
n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=7.41 cfs @ 12.08 hrs HW=32.60' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 7.41 cfs @ 6.04 fps)

Summary for Pond 2d: CB2d

[57] Hint: Peaked at 25.78' (Flood elevation advised)
[81] Warning: Exceeded Pond 2c by 1.35' @ 11.98 hrs

Inflow Area = 128,112 sf, 59.69% Impervious, Inflow Depth = 4.15" for 25-yr event
Inflow = 8.61 cfs @ 12.08 hrs, Volume= 44,282 cf
Outflow = 8.61 cfs @ 12.08 hrs, Volume= 44,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.61 cfs @ 12.08 hrs, Volume= 44,282 cf
Routed to Link DP2 : Drainage System #2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 25.78' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.29'	**15.0" Round CMP_Round 15"** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.29' / 16.79' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=8.60 cfs @ 12.08 hrs HW=25.76' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 8.60 cfs @ 7.01 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 51,214 sf, 80.59% Impervious, Inflow Depth = 5.57" for 25-yr event
Inflow = 7.50 cfs @ 12.07 hrs, Volume= 23,776 cf
Primary = 7.50 cfs @ 12.07 hrs, Volume= 23,776 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2

Inflow Area = 137,689 sf, 57.62% Impervious, Inflow Depth = 4.03" for 25-yr event
Inflow = 9.22 cfs @ 12.08 hrs, Volume= 46,197 cf
Primary = 9.22 cfs @ 12.08 hrs, Volume= 46,197 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1a: PS1a Runoff Area=20,120 sf 65.08% Impervious Runoff Depth=5.76"
Tc=5.0 min CN=77 Runoff=3.20 cfs 9,662 cf

Subcatchment E1b: PS1b Runoff Area=27,062 sf 89.28% Impervious Runoff Depth=7.57"
Tc=5.0 min CN=92 Runoff=5.23 cfs 17,068 cf

Subcatchment E1c: PS1c Runoff Area=4,032 sf 99.58% Impervious Runoff Depth=8.29"
Tc=5.0 min CN=98 Runoff=0.80 cfs 2,785 cf

Subcatchment E2a: PS2a Runoff Area=8,301 sf 41.78% Impervious Runoff Depth=4.21"
Tc=5.0 min CN=64 Runoff=0.97 cfs 2,911 cf

Subcatchment E2b: PS2b Runoff Area=16,660 sf 87.98% Impervious Runoff Depth=7.45"
Tc=5.0 min CN=91 Runoff=3.20 cfs 10,340 cf

Subcatchment E2c: PS2c Runoff Area=16,042 sf 92.13% Impervious Runoff Depth=7.69"
Tc=5.0 min CN=93 Runoff=3.12 cfs 10,279 cf

Subcatchment E2d: PS2d Runoff Area=7,341 sf 95.70% Impervious Runoff Depth=7.93"
Tc=5.0 min CN=95 Runoff=1.45 cfs 4,851 cf

Subcatchment E3: PS3 Runoff Area=9,577 sf 29.98% Impervious Runoff Depth=3.38"
Tc=5.0 min CN=57 Runoff=0.89 cfs 2,701 cf

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=4.33"
Flow Length=584' Tc=27.6 min CN=65 Runoff=5.43 cfs 28,763 cf

Pond 1a: CB1a Peak Elev=25.41' Inflow=3.20 cfs 9,662 cf
12.0" Round Culvert n=0.025 L=203.0' S=0.0126 '/' Outflow=3.20 cfs 9,662 cf

Pond 1b: CB1b Peak Elev=29.69' Inflow=8.43 cfs 26,730 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0150 '/' Outflow=8.43 cfs 26,730 cf

Pond 2a: CB2a Peak Elev=26.44' Inflow=5.76 cfs 31,674 cf
12.0" Round Culvert n=0.025 L=54.0' S=0.0000 '/' Outflow=5.76 cfs 31,674 cf

Pond 2b: CB2b Peak Elev=27.87' Inflow=6.76 cfs 42,014 cf
15.0" Round Culvert n=0.025 L=200.0' S=0.0028 '/' Outflow=6.76 cfs 42,014 cf

Pond 2c: CB2c Peak Elev=44.52' Inflow=9.44 cfs 52,293 cf
15.0" Round Culvert n=0.025 L=375.0' S=0.0150 '/' Outflow=9.44 cfs 52,293 cf

Pond 2d: CB2d Peak Elev=30.39' Inflow=10.88 cfs 57,144 cf
15.0" Round Culvert n=0.025 L=100.0' S=0.0050 '/' Outflow=10.88 cfs 57,144 cf

Link DP1: Drainage System #1 Inflow=9.24 cfs 29,516 cf
Primary=9.24 cfs 29,516 cf

Link DP2: Drainage System #2

Inflow=11.76 cfs 59,845 cf
Primary=11.76 cfs 59,845 cf

Total Runoff Area = 188,903 sf Runoff Volume = 89,361 cf Average Runoff Depth = 5.68"
36.15% Pervious = 68,294 sf 63.85% Impervious = 120,609 sf

Summary for Subcatchment E1a: PS1a

Runoff = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf, Depth= 5.76"
Routed to Pond 1a : CB1a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
4,566	98	Roofs, HSG A
7,025	39	>75% Grass cover, Good, HSG A
8,529	98	Paved parking, HSG A
20,120	77	Weighted Average
7,025		34.92% Pervious Area
13,095		65.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1b: PS1b

Runoff = 5.23 cfs @ 12.07 hrs, Volume= 17,068 cf, Depth= 7.57"
Routed to Pond 1b : CB1b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,319	98	Roofs, HSG A
20,842	98	Paved parking, HSG A
27,062	92	Weighted Average
2,901		10.72% Pervious Area
24,161		89.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E1c: PS1c

Runoff = 0.80 cfs @ 12.07 hrs, Volume= 2,785 cf, Depth= 8.29"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
17	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,032	98	Weighted Average
17		0.42% Pervious Area
4,015		99.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2a: PS2a

Runoff = 0.97 cfs @ 12.08 hrs, Volume= 2,911 cf, Depth= 4.21"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
56	98	Roofs, HSG A
4,833	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
8,301	64	Weighted Average
4,833		58.22% Pervious Area
3,468		41.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2b: PS2b

Runoff = 3.20 cfs @ 12.07 hrs, Volume= 10,340 cf, Depth= 7.45"
Routed to Pond 2b : CB2b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
3,630	98	Roofs, HSG A
2,003	39	>75% Grass cover, Good, HSG A
11,027	98	Paved parking, HSG A
16,660	91	Weighted Average
2,003		12.02% Pervious Area
14,657		87.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2c: PS2c

Runoff = 3.12 cfs @ 12.07 hrs, Volume= 10,279 cf, Depth= 7.69"
Routed to Pond 2c : CB2c

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
4,423	98	Roofs, HSG A
1,262	39	>75% Grass cover, Good, HSG A
10,357	98	Paved parking, HSG A
16,042	93	Weighted Average
1,262		7.87% Pervious Area
14,780		92.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E2d: PS2d

Runoff = 1.45 cfs @ 12.07 hrs, Volume= 4,851 cf, Depth= 7.93"
Routed to Pond 2d : CB2d

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
316	39	>75% Grass cover, Good, HSG A
7,025	98	Paved parking, HSG A
7,341	95	Weighted Average
316		4.30% Pervious Area
7,025		95.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment E3: PS3

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 2,701 cf, Depth= 3.38"
Routed to Link DP2 : Drainage System #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
6,706	39	>75% Grass cover, Good, HSG A
2,871	98	Paved parking, HSG A
9,577	57	Weighted Average
6,706		70.02% Pervious Area
2,871		29.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 249% of capacity of segment #3

Runoff = 5.43 cfs @ 12.39 hrs, Volume= 28,763 cf, Depth= 4.33"
Routed to Pond 2a : CB2a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Pond 1a: CB1a

[57] Hint: Peaked at 25.41' (Flood elevation advised)

Inflow Area = 20,120 sf, 65.08% Impervious, Inflow Depth = 5.76" for 50-yr event
Inflow = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf
Outflow = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf
Routed to Pond 1b : CB1b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 25.41' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	20.49'	**12.0" Round CMP_Round 12"** L= 203.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.49' / 17.94' S= 0.0126 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=3.19 cfs @ 12.07 hrs HW=25.38' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 3.19 cfs @ 4.07 fps)

Summary for Pond 1b: CB1b

[57] Hint: Peaked at 29.69' (Flood elevation advised)
[81] Warning: Exceeded Pond 1a by 4.29' @ 12.07 hrs

Inflow Area = 47,182 sf, 78.96% Impervious, Inflow Depth = 6.80" for 50-yr event
Inflow = 8.43 cfs @ 12.07 hrs, Volume= 26,730 cf
Outflow = 8.43 cfs @ 12.07 hrs, Volume= 26,730 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.43 cfs @ 12.07 hrs, Volume= 26,730 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 29.69' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.69'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.69' / 14.69' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=8.42 cfs @ 12.07 hrs HW=29.66' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 8.42 cfs @ 6.87 fps)

Summary for Pond 2a: CB2a

[57] Hint: Peaked at 26.44' (Flood elevation advised)

Inflow Area = 88,069 sf, 45.42% Impervious, Inflow Depth = 4.32" for 50-yr event
Inflow = 5.76 cfs @ 12.37 hrs, Volume= 31,674 cf
Outflow = 5.76 cfs @ 12.37 hrs, Volume= 31,674 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.76 cfs @ 12.37 hrs, Volume= 31,674 cf
Routed to Pond 2b : CB2b

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 26.44' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.94'	**12.0" Round CMP_Round 12"** L= 54.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.94' / 18.94' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=5.76 cfs @ 12.37 hrs HW=26.44' (Free Discharge)
└─**1=CMP_Round 12"** (Barrel Controls 5.76 cfs @ 7.34 fps)

Summary for Pond 2b: CB2b

[57] Hint: Peaked at 27.87' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 4.90' @ 12.08 hrs

Inflow Area = 104,729 sf, 52.19% Impervious, Inflow Depth = 4.81" for 50-yr event
Inflow = 6.76 cfs @ 12.36 hrs, Volume= 42,014 cf
Outflow = 6.76 cfs @ 12.36 hrs, Volume= 42,014 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.76 cfs @ 12.36 hrs, Volume= 42,014 cf
Routed to Pond 2c : CB2c

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 27.87' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.34'	**15.0" Round CMP_Round 15"** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.34' / 17.78' S= 0.0028 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=6.76 cfs @ 12.36 hrs HW=27.86' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 6.76 cfs @ 5.51 fps)

Summary for Pond 2c: CB2c

[57] Hint: Peaked at 44.52' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 17.71' @ 12.08 hrs

Inflow Area = 120,771 sf, 57.50% Impervious, Inflow Depth = 5.20" for 50-yr event
Inflow = 9.44 cfs @ 12.08 hrs, Volume= 52,293 cf
Outflow = 9.44 cfs @ 12.08 hrs, Volume= 52,293 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.44 cfs @ 12.08 hrs, Volume= 52,293 cf
Routed to Pond 2d : CB2d

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 44.52' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.80'	**15.0" Round CMP_Round 15"** L= 375.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 17.80' / 12.18' S= 0.0150 '/' Cc= 0.900
n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=9.44 cfs @ 12.08 hrs HW=44.50' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 9.44 cfs @ 7.69 fps)

Summary for Pond 2d: CB2d

[57] Hint: Peaked at 30.39' (Flood elevation advised)
[81] Warning: Exceeded Pond 2c by 1.30' @ 11.94 hrs

Inflow Area = 128,112 sf, 59.69% Impervious, Inflow Depth = 5.35" for 50-yr event
Inflow = 10.88 cfs @ 12.08 hrs, Volume= 57,144 cf
Outflow = 10.88 cfs @ 12.08 hrs, Volume= 57,144 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.88 cfs @ 12.08 hrs, Volume= 57,144 cf
Routed to Link DP2 : Drainage System #2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 30.39' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.29'	**15.0" Round CMP_Round 15"** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.29' / 16.79' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=10.87 cfs @ 12.08 hrs HW=30.36' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 10.87 cfs @ 8.85 fps)

Summary for Link DP1: Drainage System #1

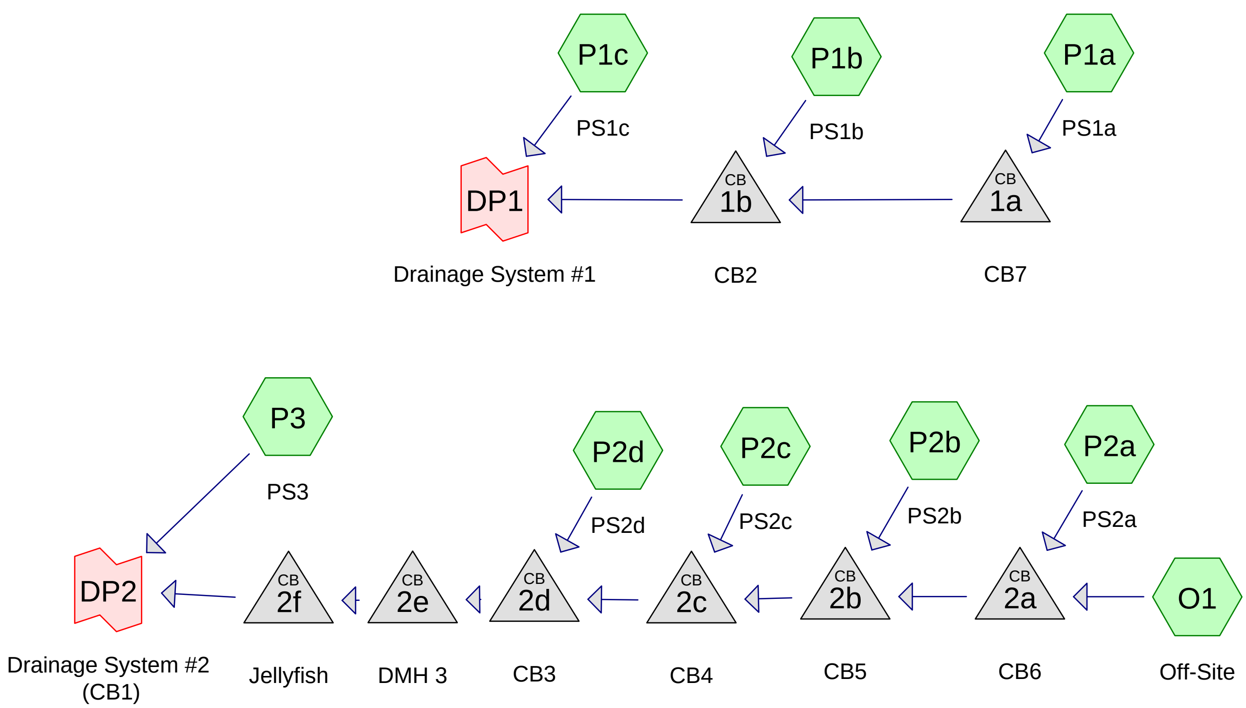
Inflow Area = 51,214 sf, 80.59% Impervious, Inflow Depth = 6.92" for 50-yr event
Inflow = 9.24 cfs @ 12.07 hrs, Volume= 29,516 cf
Primary = 9.24 cfs @ 12.07 hrs, Volume= 29,516 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

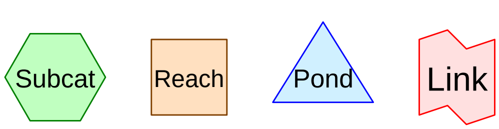
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2

Inflow Area = 137,689 sf, 57.62% Impervious, Inflow Depth = 5.22" for 50-yr event
Inflow = 11.76 cfs @ 12.08 hrs, Volume= 59,845 cf
Primary = 11.76 cfs @ 12.08 hrs, Volume= 59,845 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs





Routing Diagram for Proposed Conditions 2023-09-19
Prepared by Haley Ward, Printed 11/17/2023
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Project Notes

Defined 5 rainfall events from extreme_precip_tables_output IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.70	2
2	10-yr	Type III 24-hr		Default	24.00	1	5.62	2
3	25-yr	Type III 24-hr		Default	24.00	1	7.13	2
4	50-yr	Type III 24-hr		Default	24.00	1	8.53	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
42,228	39	>75% Grass cover, Good, HSG A (O1, P1a, P1b, P1c, P2a, P2b, P3)
78,614	98	Paved parking, HSG A (O1, P1a, P1b, P1c, P2a, P2b, P2c, P2d, P3)
43,554	98	Roofs, HSG A (P1a, P1b, P2a, P2b, P2c, P2d)
2,453	98	Unconnected roofs, HSG A (O1)
22,052	36	Woods, Fair, HSG A (O1)
188,901	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
188,901	HSG A	O1, P1a, P1b, P1c, P2a, P2b, P2c, P2d, P3
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
188,901		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
42,228	0	0	0	0	42,228	>75% Grass cover, Good	
78,614	0	0	0	0	78,614	Paved parking	
43,554	0	0	0	0	43,554	Roofs	
2,453	0	0	0	0	2,453	Unconnected roofs	
22,052	0	0	0	0	22,052	Woods, Fair	
188,901	**0**	**0**	**0**	**0**	**188,901**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	O1	0.00	0.00	110.0	0.0050	0.015	0.0	12.0	0.0	
2	1a	21.06	18.00	183.0	0.0167	0.013	0.0	12.0	0.0	
3	1b	17.95	17.81	90.0	0.0016	0.013	0.0	15.0	0.0	
4	2a	18.09	18.02	58.0	0.0012	0.013	0.0	18.0	0.0	
5	2b	18.02	17.90	96.0	0.0013	0.013	0.0	18.0	0.0	
6	2c	17.90	17.80	81.0	0.0012	0.013	0.0	18.0	0.0	
7	2d	17.70	17.69	7.0	0.0014	0.013	0.0	18.0	0.0	
8	2e	17.44	17.41	36.0	0.0008	0.013	0.0	24.0	0.0	
9	2f	17.31	17.29	22.0	0.0009	0.013	0.0	24.0	0.0	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=0.86"
Flow Length=584' Tc=27.6 min CN=65 Runoff=0.93 cfs 5,712 cf

Subcatchment P1a: PS1a Runoff Area=20,120 sf 64.85% Impervious Runoff Depth=1.58"
Tc=5.0 min CN=77 Runoff=0.88 cfs 2,650 cf

Subcatchment P1b: PS1b Runoff Area=26,173 sf 92.50% Impervious Runoff Depth=3.03"
Tc=5.0 min CN=94 Runoff=2.10 cfs 6,610 cf

Subcatchment P1c: PS1c Runoff Area=4,594 sf 99.65% Impervious Runoff Depth=3.47"
Tc=5.0 min CN=98 Runoff=0.39 cfs 1,327 cf

Subcatchment P2a: PS2a Runoff Area=8,300 sf 30.05% Impervious Runoff Depth=0.49"
Tc=5.0 min CN=57 Runoff=0.07 cfs 341 cf

Subcatchment P2b: PS2b Runoff Area=16,660 sf 89.99% Impervious Runoff Depth=2.83"
Tc=5.0 min CN=92 Runoff=1.27 cfs 3,927 cf

Subcatchment P2c: PS2c Runoff Area=15,044 sf 100.00% Impervious Runoff Depth=3.47"
Tc=5.0 min CN=98 Runoff=1.29 cfs 4,345 cf

Subcatchment P2d: PS2d Runoff Area=8,407 sf 100.00% Impervious Runoff Depth=3.47"
Tc=5.0 min CN=98 Runoff=0.72 cfs 2,428 cf

Subcatchment P3: PS3 Runoff Area=9,835 sf 54.01% Impervious Runoff Depth=1.19"
Tc=5.0 min CN=71 Runoff=0.31 cfs 978 cf

Pond 1a: CB7 Peak Elev=21.54' Inflow=0.88 cfs 2,650 cf
12.0" Round Culvert n=0.013 L=183.0' S=0.0167 '/' Outflow=0.88 cfs 2,650 cf

Pond 1b: CB2 Peak Elev=19.19' Inflow=2.97 cfs 9,261 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0016 '/' Outflow=2.97 cfs 9,261 cf

Pond 2a: CB6 Peak Elev=18.70' Inflow=0.97 cfs 6,053 cf
18.0" Round Culvert n=0.013 L=58.0' S=0.0012 '/' Outflow=0.97 cfs 6,053 cf

Pond 2b: CB5 Peak Elev=18.81' Inflow=1.52 cfs 9,980 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0013 '/' Outflow=1.52 cfs 9,980 cf

Pond 2c: CB4 Peak Elev=18.98' Inflow=2.80 cfs 14,325 cf
18.0" Round Culvert n=0.013 L=81.0' S=0.0012 '/' Outflow=2.80 cfs 14,325 cf

Pond 2d: CB3 Peak Elev=18.83' Inflow=3.52 cfs 16,753 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0014 '/' Outflow=3.52 cfs 16,753 cf

Pond 2e: DMH 3 Peak Elev=18.50' Inflow=3.52 cfs 16,753 cf
24.0" Round Culvert n=0.013 L=36.0' S=0.0008 '/' Outflow=3.52 cfs 16,753 cf

Pond 2f: Jellyfish Peak Elev=18.35' Inflow=3.52 cfs 16,753 cf
24.0" Round Culvert n=0.013 L=22.0' S=0.0009 '/' Outflow=3.52 cfs 16,753 cf

Link DP1: Drainage System #1 Inflow=3.37 cfs 10,588 cf
Primary=3.37 cfs 10,588 cf

Link DP2: Drainage System #2 (CB1) Inflow=3.83 cfs 17,731 cf
Primary=3.83 cfs 17,731 cf

Total Runoff Area = 188,901 sf Runoff Volume = 28,318 cf Average Runoff Depth = 1.80"
34.03% Pervious = 64,280 sf 65.97% Impervious = 124,621 sf

Summary for Subcatchment O1: Off-Site

Runoff = 0.93 cfs @ 12.45 hrs, Volume= 5,712 cf, Depth= 0.86"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Subcatchment P1a: PS1a

Runoff = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf, Depth= 1.58"
Routed to Pond 1a : CB7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
8,481	98	Paved parking, HSG A
4,566	98	Roofs, HSG A
7,073	39	>75% Grass cover, Good, HSG A
20,120	77	Weighted Average
7,073		35.15% Pervious Area
13,047		64.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1b: PS1b

Runoff = 2.10 cfs @ 12.07 hrs, Volume= 6,610 cf, Depth= 3.03"
Routed to Pond 1b : CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
10,744	98	Paved parking, HSG A
13,465	98	Roofs, HSG A
1,964	39	>75% Grass cover, Good, HSG A
26,173	94	Weighted Average
1,964		7.50% Pervious Area
24,209		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1c: PS1c

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 1,327 cf, Depth= 3.47"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
4,578	98	Paved parking, HSG A
16	39	>75% Grass cover, Good, HSG A
4,594	98	Weighted Average
16		0.35% Pervious Area
4,578		99.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2a: PS2a

Runoff = 0.07 cfs @ 12.11 hrs, Volume= 341 cf, Depth= 0.49"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,465	98	Paved parking, HSG A
29	98	Roofs, HSG A
5,806	39	>75% Grass cover, Good, HSG A
8,300	57	Weighted Average
5,806		69.95% Pervious Area
2,494		30.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2b: PS2b

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 3,927 cf, Depth= 2.83"
Routed to Pond 2b : CB5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG A
8,836	98	Roofs, HSG A
1,667	39	>75% Grass cover, Good, HSG A
16,660	92	Weighted Average
1,667		10.01% Pervious Area
14,993		89.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2c: PS2c

Runoff = 1.29 cfs @ 12.07 hrs, Volume= 4,345 cf, Depth= 3.47"
Routed to Pond 2c : CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
3,896	98	Paved parking, HSG A
11,148	98	Roofs, HSG A
15,044	98	Weighted Average
15,044		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2d: PS2d

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 2,428 cf, Depth= 3.47"
Routed to Pond 2d : CB3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,897	98	Paved parking, HSG A
5,510	98	Roofs, HSG A
8,407	98	Weighted Average
8,407		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P3: PS3

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 978 cf, Depth= 1.19"
Routed to Link DP2 : Drainage System #2 (CB1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
5,312	98	Paved parking, HSG A
4,523	39	>75% Grass cover, Good, HSG A
9,835	71	Weighted Average
4,523		45.99% Pervious Area
5,312		54.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond 1a: CB7

[57] Hint: Peaked at 21.54' (Flood elevation advised)

Inflow Area = 20,120 sf, 64.85% Impervious, Inflow Depth = 1.58" for 2-yr event
Inflow = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf
Outflow = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.08 hrs, Volume= 2,650 cf
Routed to Pond 1b : CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	21.06'	**12.0" Round CMP_Round 12"** L= 183.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.06' / 18.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.88 cfs @ 12.08 hrs HW=21.54' (Free Discharge)
└—**1=CMP_Round 12"** (Inlet Controls 0.88 cfs @ 2.36 fps)

Summary for Pond 1b: CB2

[57] Hint: Peaked at 19.19' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 OUTLET by 1.19'

Inflow Area = 46,293 sf, 80.48% Impervious, Inflow Depth = 2.40" for 2-yr event
Inflow = 2.97 cfs @ 12.07 hrs, Volume= 9,261 cf
Outflow = 2.97 cfs @ 12.07 hrs, Volume= 9,261 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.97 cfs @ 12.07 hrs, Volume= 9,261 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.19' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.95'	**15.0" Round CMP_Round 15"** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.95' / 17.81' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=2.97 cfs @ 12.07 hrs HW=19.19' (Free Discharge)
└—**1=CMP_Round 15"** (Barrel Controls 2.97 cfs @ 3.04 fps)

Summary for Pond 2a: CB6

[57] Hint: Peaked at 18.70' (Flood elevation advised)

Inflow Area = 88,068 sf, 44.32% Impervious, Inflow Depth = 0.82" for 2-yr event
Inflow = 0.97 cfs @ 12.44 hrs, Volume= 6,053 cf
Outflow = 0.97 cfs @ 12.44 hrs, Volume= 6,053 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.44 hrs, Volume= 6,053 cf
Routed to Pond 2b : CB5

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.70' @ 12.44 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.09'	**18.0" Round Culvert**

L= 58.0' CMP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 18.09' / 18.02' S= 0.0012 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=0.97 cfs @ 12.44 hrs HW=18.70' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.97 cfs @ 2.11 fps)

Summary for Pond 2b: CB5

[57] Hint: Peaked at 18.81' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 0.41' @ 12.06 hrs

Inflow Area =	104,728 sf,	51.59% Impervious,	Inflow Depth = 1.14"	for 2-yr event	
Inflow =	1.52 cfs @	12.08 hrs,	Volume=	9,980 cf	
Outflow =	1.52 cfs @	12.08 hrs,	Volume=	9,980 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.52 cfs @	12.08 hrs,	Volume=	9,980 cf	

Routed to Pond 2c : CB4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.81' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.02'	**18.0" Round Culvert** L= 96.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.02' / 17.90' S= 0.0013 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=1.52 cfs @ 12.08 hrs HW=18.81' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.52 cfs @ 2.35 fps)

Summary for Pond 2c: CB4

[57] Hint: Peaked at 18.98' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 0.18' @ 12.07 hrs

Inflow Area =	119,772 sf,	57.67% Impervious,	Inflow Depth = 1.44"	for 2-yr event	
Inflow =	2.80 cfs @	12.08 hrs,	Volume=	14,325 cf	
Outflow =	2.80 cfs @	12.08 hrs,	Volume=	14,325 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.80 cfs @	12.08 hrs,	Volume=	14,325 cf	

Routed to Pond 2d : CB3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.98' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.90'	**18.0" Round Culvert** L= 81.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.90' / 17.80' S= 0.0012 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=2.80 cfs @ 12.08 hrs HW=18.98' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.80 cfs @ 2.87 fps)

Summary for Pond 2d: CB3

[57] Hint: Peaked at 18.83' (Flood elevation advised)
[79] Warning: Submerged Pond 2c Primary device # 1 INLET by 0.93'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 1.57" for 2-yr event
Inflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Outflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Routed to Pond 2e : DMH 3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.83' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**18.0" Round Culvert** L= 7.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.70' / 17.69' S= 0.0014 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=3.52 cfs @ 12.07 hrs HW=18.83' (Free Discharge)
1=Culvert (Barrel Controls 3.52 cfs @ 3.41 fps)

Summary for Pond 2e: DMH 3

[57] Hint: Peaked at 18.50' (Flood elevation advised)
[79] Warning: Submerged Pond 2d Primary device # 1 INLET by 0.80'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 1.57" for 2-yr event
Inflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Outflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Routed to Pond 2f : Jellyfish

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.50' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.44'	**24.0" Round Culvert** L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.44' / 17.41' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=3.52 cfs @ 12.07 hrs HW=18.50' (Free Discharge)
1=Culvert (Barrel Controls 3.52 cfs @ 3.03 fps)

Summary for Pond 2f: Jellyfish

[57] Hint: Peaked at 18.35' (Flood elevation advised)
[79] Warning: Submerged Pond 2e Primary device # 1 INLET by 0.91'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 1.57" for 2-yr event
Inflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Outflow = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.52 cfs @ 12.07 hrs, Volume= 16,753 cf
Routed to Link DP2 : Drainage System #2 (CB1)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.35' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.31'	**24.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.31' / 17.29' S= 0.0009 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=3.52 cfs @ 12.07 hrs HW=18.35' (Free Discharge)
└─**1=Culvert** (Barrel Controls 3.52 cfs @ 3.12 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 50,887 sf, 82.21% Impervious, Inflow Depth = 2.50" for 2-yr event
Inflow = 3.37 cfs @ 12.07 hrs, Volume= 10,588 cf
Primary = 3.37 cfs @ 12.07 hrs, Volume= 10,588 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2 (CB1)

Inflow Area = 138,014 sf, 59.98% Impervious, Inflow Depth = 1.54" for 2-yr event
Inflow = 3.83 cfs @ 12.07 hrs, Volume= 17,731 cf
Primary = 3.83 cfs @ 12.07 hrs, Volume= 17,731 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=2.08"
Flow Length=584' Tc=27.6 min CN=65 Runoff=2.53 cfs 13,820 cf

Subcatchment P1a: PS1a Runoff Area=20,120 sf 64.85% Impervious Runoff Depth=3.15"
Tc=5.0 min CN=77 Runoff=1.77 cfs 5,281 cf

Subcatchment P1b: PS1b Runoff Area=26,173 sf 92.50% Impervious Runoff Depth=4.92"
Tc=5.0 min CN=94 Runoff=3.31 cfs 10,732 cf

Subcatchment P1c: PS1c Runoff Area=4,594 sf 99.65% Impervious Runoff Depth=5.38"
Tc=5.0 min CN=98 Runoff=0.60 cfs 2,061 cf

Subcatchment P2a: PS2a Runoff Area=8,300 sf 30.05% Impervious Runoff Depth=1.45"
Tc=5.0 min CN=57 Runoff=0.30 cfs 1,003 cf

Subcatchment P2b: PS2b Runoff Area=16,660 sf 89.99% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=92 Runoff=2.05 cfs 6,520 cf

Subcatchment P2c: PS2c Runoff Area=15,044 sf 100.00% Impervious Runoff Depth=5.38"
Tc=5.0 min CN=98 Runoff=1.97 cfs 6,748 cf

Subcatchment P2d: PS2d Runoff Area=8,407 sf 100.00% Impervious Runoff Depth=5.38"
Tc=5.0 min CN=98 Runoff=1.10 cfs 3,771 cf

Subcatchment P3: PS3 Runoff Area=9,835 sf 54.01% Impervious Runoff Depth=2.60"
Tc=5.0 min CN=71 Runoff=0.71 cfs 2,127 cf

Pond 1a: CB7 Peak Elev=21.79' Inflow=1.77 cfs 5,281 cf
12.0" Round Culvert n=0.013 L=183.0' S=0.0167 '/' Outflow=1.77 cfs 5,281 cf

Pond 1b: CB2 Peak Elev=20.02' Inflow=5.08 cfs 16,013 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0016 '/' Outflow=5.08 cfs 16,013 cf

Pond 2a: CB6 Peak Elev=19.12' Inflow=2.65 cfs 14,823 cf
18.0" Round Culvert n=0.013 L=58.0' S=0.0012 '/' Outflow=2.65 cfs 14,823 cf

Pond 2b: CB5 Peak Elev=19.21' Inflow=3.27 cfs 21,343 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0013 '/' Outflow=3.27 cfs 21,343 cf

Pond 2c: CB4 Peak Elev=19.47' Inflow=5.16 cfs 28,090 cf
18.0" Round Culvert n=0.013 L=81.0' S=0.0012 '/' Outflow=5.16 cfs 28,090 cf

Pond 2d: CB3 Peak Elev=19.32' Inflow=6.25 cfs 31,861 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0014 '/' Outflow=6.25 cfs 31,861 cf

Pond 2e: DMH 3 Peak Elev=18.88' Inflow=6.25 cfs 31,861 cf
24.0" Round Culvert n=0.013 L=36.0' S=0.0008 '/' Outflow=6.25 cfs 31,861 cf

Pond 2f: Jellyfish Peak Elev=18.72' Inflow=6.25 cfs 31,861 cf
24.0" Round Culvert n=0.013 L=22.0' S=0.0009 '/' Outflow=6.25 cfs 31,861 cf

Link DP1: Drainage System #1 Inflow=5.68 cfs 18,073 cf
Primary=5.68 cfs 18,073 cf

Link DP2: Drainage System #2 (CB1) Inflow=6.96 cfs 33,989 cf
Primary=6.96 cfs 33,989 cf

Total Runoff Area = 188,901 sf Runoff Volume = 52,062 cf Average Runoff Depth = 3.31"
34.03% Pervious = 64,280 sf 65.97% Impervious = 124,621 sf

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 116% of capacity of segment #3

Runoff = 2.53 cfs @ 12.42 hrs, Volume= 13,820 cf, Depth= 2.08"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Subcatchment P1a: PS1a

Runoff = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf, Depth= 3.15"
Routed to Pond 1a : CB7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
8,481	98	Paved parking, HSG A
4,566	98	Roofs, HSG A
7,073	39	>75% Grass cover, Good, HSG A
20,120	77	Weighted Average
7,073		35.15% Pervious Area
13,047		64.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1b: PS1b

Runoff = 3.31 cfs @ 12.07 hrs, Volume= 10,732 cf, Depth= 4.92"
Routed to Pond 1b : CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
10,744	98	Paved parking, HSG A
13,465	98	Roofs, HSG A
1,964	39	>75% Grass cover, Good, HSG A
26,173	94	Weighted Average
1,964		7.50% Pervious Area
24,209		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1c: PS1c

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 2,061 cf, Depth= 5.38"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
4,578	98	Paved parking, HSG A
16	39	>75% Grass cover, Good, HSG A
4,594	98	Weighted Average
16		0.35% Pervious Area
4,578		99.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2a: PS2a

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 1,003 cf, Depth= 1.45"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
2,465	98	Paved parking, HSG A
29	98	Roofs, HSG A
5,806	39	>75% Grass cover, Good, HSG A
8,300	57	Weighted Average
5,806		69.95% Pervious Area
2,494		30.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2b: PS2b

Runoff = 2.05 cfs @ 12.07 hrs, Volume= 6,520 cf, Depth= 4.70"
Routed to Pond 2b : CB5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG A
8,836	98	Roofs, HSG A
1,667	39	>75% Grass cover, Good, HSG A
16,660	92	Weighted Average
1,667		10.01% Pervious Area
14,993		89.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2c: PS2c

Runoff = 1.97 cfs @ 12.07 hrs, Volume= 6,748 cf, Depth= 5.38"
Routed to Pond 2c : CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
3,896	98	Paved parking, HSG A
11,148	98	Roofs, HSG A
15,044	98	Weighted Average
15,044		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2d: PS2d

Runoff = 1.10 cfs @ 12.07 hrs, Volume= 3,771 cf, Depth= 5.38"
Routed to Pond 2d : CB3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
2,897	98	Paved parking, HSG A
5,510	98	Roofs, HSG A
8,407	98	Weighted Average
8,407		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P3: PS3

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 2,127 cf, Depth= 2.60"
Routed to Link DP2 : Drainage System #2 (CB1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.62"

Area (sf)	CN	Description
5,312	98	Paved parking, HSG A
4,523	39	>75% Grass cover, Good, HSG A
9,835	71	Weighted Average
4,523		45.99% Pervious Area
5,312		54.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond 1a: CB7

[57] Hint: Peaked at 21.79' (Flood elevation advised)

Inflow Area = 20,120 sf, 64.85% Impervious, Inflow Depth = 3.15" for 10-yr event
Inflow = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf
Outflow = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.07 hrs, Volume= 5,281 cf
Routed to Pond 1b : CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.79' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	21.06'	**12.0" Round CMP_Round 12"** L= 183.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.06' / 18.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.76 cfs @ 12.07 hrs HW=21.78' (Free Discharge)
└─**1=CMP_Round 12"** (Inlet Controls 1.76 cfs @ 2.90 fps)

Summary for Pond 1b: CB2

[57] Hint: Peaked at 20.02' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 OUTLET by 2.02'

Inflow Area = 46,293 sf, 80.48% Impervious, Inflow Depth = 4.15" for 10-yr event
Inflow = 5.08 cfs @ 12.07 hrs, Volume= 16,013 cf
Outflow = 5.08 cfs @ 12.07 hrs, Volume= 16,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.08 cfs @ 12.07 hrs, Volume= 16,013 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.02' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.95'	**15.0" Round CMP_Round 15"** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.95' / 17.81' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=5.07 cfs @ 12.07 hrs HW=20.01' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 5.07 cfs @ 4.13 fps)

Summary for Pond 2a: CB6

[57] Hint: Peaked at 19.12' (Flood elevation advised)

Inflow Area = 88,068 sf, 44.32% Impervious, Inflow Depth = 2.02" for 10-yr event
Inflow = 2.65 cfs @ 12.40 hrs, Volume= 14,823 cf
Outflow = 2.65 cfs @ 12.40 hrs, Volume= 14,823 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.65 cfs @ 12.40 hrs, Volume= 14,823 cf
Routed to Pond 2b : CB5

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.12' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.09'	**18.0" Round Culvert**

L= 58.0' CMP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 18.09' / 18.02' S= 0.0012 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=2.65 cfs @ 12.40 hrs HW=19.12' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.65 cfs @ 2.88 fps)

Summary for Pond 2b: CB5

[57] Hint: Peaked at 19.21' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 0.44' @ 12.06 hrs

Inflow Area = 104,728 sf, 51.59% Impervious, Inflow Depth = 2.45" for 10-yr event
Inflow = 3.27 cfs @ 12.36 hrs, Volume= 21,343 cf
Outflow = 3.27 cfs @ 12.36 hrs, Volume= 21,343 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.27 cfs @ 12.36 hrs, Volume= 21,343 cf
Routed to Pond 2c : CB4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.21' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.02'	**18.0" Round Culvert** L= 96.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.02' / 17.90' S= 0.0013 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=3.27 cfs @ 12.36 hrs HW=19.21' (Free Discharge)
└─**1=Culvert** (Barrel Controls 3.27 cfs @ 2.98 fps)

Summary for Pond 2c: CB4

[57] Hint: Peaked at 19.47' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 0.28' @ 12.07 hrs

Inflow Area = 119,772 sf, 57.67% Impervious, Inflow Depth = 2.81" for 10-yr event
Inflow = 5.16 cfs @ 12.08 hrs, Volume= 28,090 cf
Outflow = 5.16 cfs @ 12.08 hrs, Volume= 28,090 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.16 cfs @ 12.08 hrs, Volume= 28,090 cf
Routed to Pond 2d : CB3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.47' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.90'	**18.0" Round Culvert** L= 81.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.90' / 17.80' S= 0.0012 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=5.15 cfs @ 12.08 hrs HW=19.47' (Free Discharge)
└─**1=Culvert** (Barrel Controls 5.15 cfs @ 3.46 fps)

Summary for Pond 2d: CB3

[57] Hint: Peaked at 19.32' (Flood elevation advised)
[79] Warning: Submerged Pond 2c Primary device # 1 INLET by 1.42'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 2.98" for 10-yr event
Inflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Outflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Routed to Pond 2e : DMH 3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.32' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**18.0" Round Culvert** L= 7.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.70' / 17.69' S= 0.0014 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=6.24 cfs @ 12.08 hrs HW=19.32' (Free Discharge)
└─**1=Culvert** (Barrel Controls 6.24 cfs @ 4.08 fps)

Summary for Pond 2e: DMH 3

[57] Hint: Peaked at 18.88' (Flood elevation advised)
[79] Warning: Submerged Pond 2d Primary device # 1 INLET by 1.18'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 2.98" for 10-yr event
Inflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Outflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Routed to Pond 2f : Jellyfish

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.88' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.44'	**24.0" Round Culvert** L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.44' / 17.41' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=6.24 cfs @ 12.08 hrs HW=18.88' (Free Discharge)
└─**1=Culvert** (Barrel Controls 6.24 cfs @ 3.61 fps)

Summary for Pond 2f: Jellyfish

[57] Hint: Peaked at 18.72' (Flood elevation advised)
[79] Warning: Submerged Pond 2e Primary device # 1 INLET by 1.28'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 2.98" for 10-yr event
Inflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Outflow = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.25 cfs @ 12.08 hrs, Volume= 31,861 cf
Routed to Link DP2 : Drainage System #2 (CB1)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.72' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.31'	**24.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.31' / 17.29' S= 0.0009 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=6.24 cfs @ 12.08 hrs HW=18.72' (Free Discharge)
└─**1=Culvert** (Barrel Controls 6.24 cfs @ 3.69 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 50,887 sf, 82.21% Impervious, Inflow Depth = 4.26" for 10-yr event
Inflow = 5.68 cfs @ 12.07 hrs, Volume= 18,073 cf
Primary = 5.68 cfs @ 12.07 hrs, Volume= 18,073 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2 (CB1)

Inflow Area = 138,014 sf, 59.98% Impervious, Inflow Depth = 2.96" for 10-yr event
Inflow = 6.96 cfs @ 12.08 hrs, Volume= 33,989 cf
Primary = 6.96 cfs @ 12.08 hrs, Volume= 33,989 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=3.20"
Flow Length=584' Tc=27.6 min CN=65 Runoff=3.99 cfs 21,294 cf

Subcatchment P1a: PS1a Runoff Area=20,120 sf 64.85% Impervious Runoff Depth=4.48"
Tc=5.0 min CN=77 Runoff=2.51 cfs 7,516 cf

Subcatchment P1b: PS1b Runoff Area=26,173 sf 92.50% Impervious Runoff Depth=6.42"
Tc=5.0 min CN=94 Runoff=4.26 cfs 13,997 cf

Subcatchment P1c: PS1c Runoff Area=4,594 sf 99.65% Impervious Runoff Depth=6.89"
Tc=5.0 min CN=98 Runoff=0.76 cfs 2,638 cf

Subcatchment P2a: PS2a Runoff Area=8,300 sf 30.05% Impervious Runoff Depth=2.40"
Tc=5.0 min CN=57 Runoff=0.53 cfs 1,660 cf

Subcatchment P2b: PS2b Runoff Area=16,660 sf 89.99% Impervious Runoff Depth=6.18"
Tc=5.0 min CN=92 Runoff=2.66 cfs 8,584 cf

Subcatchment P2c: PS2c Runoff Area=15,044 sf 100.00% Impervious Runoff Depth=6.89"
Tc=5.0 min CN=98 Runoff=2.50 cfs 8,639 cf

Subcatchment P2d: PS2d Runoff Area=8,407 sf 100.00% Impervious Runoff Depth=6.89"
Tc=5.0 min CN=98 Runoff=1.40 cfs 4,828 cf

Subcatchment P3: PS3 Runoff Area=9,835 sf 54.01% Impervious Runoff Depth=3.83"
Tc=5.0 min CN=71 Runoff=1.05 cfs 3,142 cf

Pond 1a: CB7 Peak Elev=21.99' Inflow=2.51 cfs 7,516 cf
12.0" Round Culvert n=0.013 L=183.0' S=0.0167 '/' Outflow=2.51 cfs 7,516 cf

Pond 1b: CB2 Peak Elev=20.76' Inflow=6.76 cfs 21,513 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0016 '/' Outflow=6.76 cfs 21,513 cf

Pond 2a: CB6 Peak Elev=19.43' Inflow=4.19 cfs 22,954 cf
18.0" Round Culvert n=0.013 L=58.0' S=0.0012 '/' Outflow=4.19 cfs 22,954 cf

Pond 2b: CB5 Peak Elev=19.58' Inflow=5.00 cfs 31,539 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0013 '/' Outflow=5.00 cfs 31,539 cf

Pond 2c: CB4 Peak Elev=20.06' Inflow=7.18 cfs 40,177 cf
18.0" Round Culvert n=0.013 L=81.0' S=0.0012 '/' Outflow=7.18 cfs 40,177 cf

Pond 2d: CB3 Peak Elev=19.78' Inflow=8.57 cfs 45,005 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0014 '/' Outflow=8.57 cfs 45,005 cf

Pond 2e: DMH 3 Peak Elev=19.17' Inflow=8.57 cfs 45,005 cf
24.0" Round Culvert n=0.013 L=36.0' S=0.0008 '/' Outflow=8.57 cfs 45,005 cf

Pond 2f: Jellyfish Peak Elev=19.01' Inflow=8.57 cfs 45,005 cf
24.0" Round Culvert n=0.013 L=22.0' S=0.0009 '/' Outflow=8.57 cfs 45,005 cf

Link DP1: Drainage System #1 Inflow=7.53 cfs 24,151 cf
Primary=7.53 cfs 24,151 cf

Link DP2: Drainage System #2 (CB1) Inflow=9.62 cfs 48,147 cf
Primary=9.62 cfs 48,147 cf

Total Runoff Area = 188,901 sf Runoff Volume = 72,298 cf Average Runoff Depth = 4.59"
34.03% Pervious = 64,280 sf 65.97% Impervious = 124,621 sf

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 183% of capacity of segment #3

Runoff = 3.99 cfs @ 12.39 hrs, Volume= 21,294 cf, Depth= 3.20"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Subcatchment P1a: PS1a

Runoff = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf, Depth= 4.48"
Routed to Pond 1a : CB7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
8,481	98	Paved parking, HSG A
4,566	98	Roofs, HSG A
7,073	39	>75% Grass cover, Good, HSG A
20,120	77	Weighted Average
7,073		35.15% Pervious Area
13,047		64.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1b: PS1b

Runoff = 4.26 cfs @ 12.07 hrs, Volume= 13,997 cf, Depth= 6.42"
Routed to Pond 1b : CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
10,744	98	Paved parking, HSG A
13,465	98	Roofs, HSG A
1,964	39	>75% Grass cover, Good, HSG A
26,173	94	Weighted Average
1,964		7.50% Pervious Area
24,209		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1c: PS1c

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 2,638 cf, Depth= 6.89"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
4,578	98	Paved parking, HSG A
16	39	>75% Grass cover, Good, HSG A
4,594	98	Weighted Average
16		0.35% Pervious Area
4,578		99.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2a: PS2a

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 1,660 cf, Depth= 2.40"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
2,465	98	Paved parking, HSG A
29	98	Roofs, HSG A
5,806	39	>75% Grass cover, Good, HSG A
8,300	57	Weighted Average
5,806		69.95% Pervious Area
2,494		30.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2b: PS2b

Runoff = 2.66 cfs @ 12.07 hrs, Volume= 8,584 cf, Depth= 6.18"
Routed to Pond 2b : CB5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG A
8,836	98	Roofs, HSG A
1,667	39	>75% Grass cover, Good, HSG A
16,660	92	Weighted Average
1,667		10.01% Pervious Area
14,993		89.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2c: PS2c

Runoff = 2.50 cfs @ 12.07 hrs, Volume= 8,639 cf, Depth= 6.89"
Routed to Pond 2c : CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
3,896	98	Paved parking, HSG A
11,148	98	Roofs, HSG A
15,044	98	Weighted Average
15,044		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2d: PS2d

Runoff = 1.40 cfs @ 12.07 hrs, Volume= 4,828 cf, Depth= 6.89"
Routed to Pond 2d : CB3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
2,897	98	Paved parking, HSG A
5,510	98	Roofs, HSG A
8,407	98	Weighted Average
8,407		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P3: PS3

Runoff = 1.05 cfs @ 12.08 hrs, Volume= 3,142 cf, Depth= 3.83"
Routed to Link DP2 : Drainage System #2 (CB1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=7.13"

Area (sf)	CN	Description
5,312	98	Paved parking, HSG A
4,523	39	>75% Grass cover, Good, HSG A
9,835	71	Weighted Average
4,523		45.99% Pervious Area
5,312		54.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond 1a: CB7

[57] Hint: Peaked at 21.99' (Flood elevation advised)

Inflow Area = 20,120 sf, 64.85% Impervious, Inflow Depth = 4.48" for 25-yr event
Inflow = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf
Outflow = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.07 hrs, Volume= 7,516 cf
Routed to Pond 1b : CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.99' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	21.06'	**12.0" Round CMP_Round 12"** L= 183.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.06' / 18.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.50 cfs @ 12.07 hrs HW=21.99' (Free Discharge)
↑—**1=CMP_Round 12"** (Inlet Controls 2.50 cfs @ 3.28 fps)

Summary for Pond 1b: CB2

[57] Hint: Peaked at 20.76' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 OUTLET by 2.76'

Inflow Area = 46,293 sf, 80.48% Impervious, Inflow Depth = 5.58" for 25-yr event
Inflow = 6.76 cfs @ 12.07 hrs, Volume= 21,513 cf
Outflow = 6.76 cfs @ 12.07 hrs, Volume= 21,513 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.76 cfs @ 12.07 hrs, Volume= 21,513 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.76' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.95'	**15.0" Round CMP_Round 15"** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.95' / 17.81' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=6.76 cfs @ 12.07 hrs HW=20.75' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 6.76 cfs @ 5.51 fps)

Summary for Pond 2a: CB6

[57] Hint: Peaked at 19.43' (Flood elevation advised)

Inflow Area = 88,068 sf, 44.32% Impervious, Inflow Depth = 3.13" for 25-yr event
Inflow = 4.19 cfs @ 12.39 hrs, Volume= 22,954 cf
Outflow = 4.19 cfs @ 12.39 hrs, Volume= 22,954 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.19 cfs @ 12.39 hrs, Volume= 22,954 cf
Routed to Pond 2b : CB5

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.43' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.09'	**18.0" Round Culvert**

L= 58.0' CMP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 18.09' / 18.02' S= 0.0012 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=4.19 cfs @ 12.39 hrs HW=19.43' (Free Discharge)
└—**1=Culvert** (Barrel Controls 4.19 cfs @ 3.32 fps)

Summary for Pond 2b: CB5

[57] Hint: Peaked at 19.58' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 0.53' @ 12.07 hrs

Inflow Area = 104,728 sf, 51.59% Impervious, Inflow Depth = 3.61" for 25-yr event
Inflow = 5.00 cfs @ 12.36 hrs, Volume= 31,539 cf
Outflow = 5.00 cfs @ 12.36 hrs, Volume= 31,539 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.00 cfs @ 12.36 hrs, Volume= 31,539 cf
Routed to Pond 2c : CB4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.58' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.02'	**18.0" Round Culvert** L= 96.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.02' / 17.90' S= 0.0013 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=5.00 cfs @ 12.36 hrs HW=19.58' (Free Discharge)
└—**1=Culvert** (Barrel Controls 5.00 cfs @ 3.39 fps)

Summary for Pond 2c: CB4

[57] Hint: Peaked at 20.06' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 0.56' @ 12.07 hrs

Inflow Area = 119,772 sf, 57.67% Impervious, Inflow Depth = 4.03" for 25-yr event
Inflow = 7.18 cfs @ 12.08 hrs, Volume= 40,177 cf
Outflow = 7.18 cfs @ 12.08 hrs, Volume= 40,177 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.18 cfs @ 12.08 hrs, Volume= 40,177 cf
Routed to Pond 2d : CB3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.06' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.90'	**18.0" Round Culvert** L= 81.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.90' / 17.80' S= 0.0012 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=7.17 cfs @ 12.08 hrs HW=20.06' (Free Discharge)
└—**1=Culvert** (Barrel Controls 7.17 cfs @ 4.06 fps)

Summary for Pond 2d: CB3

[57] Hint: Peaked at 19.78' (Flood elevation advised)
[79] Warning: Submerged Pond 2c Primary device # 1 INLET by 1.88'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 4.21" for 25-yr event
Inflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Outflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Routed to Pond 2e : DMH 3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.78' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**18.0" Round Culvert** L= 7.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.70' / 17.69' S= 0.0014 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=8.56 cfs @ 12.08 hrs HW=19.78' (Free Discharge)
└─**1=Culvert** (Barrel Controls 8.56 cfs @ 4.84 fps)

Summary for Pond 2e: DMH 3

[57] Hint: Peaked at 19.17' (Flood elevation advised)
[79] Warning: Submerged Pond 2d Primary device # 1 INLET by 1.46'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 4.21" for 25-yr event
Inflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Outflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Routed to Pond 2f : Jellyfish

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.17' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.44'	**24.0" Round Culvert** L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.44' / 17.41' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=8.56 cfs @ 12.08 hrs HW=19.16' (Free Discharge)
└─**1=Culvert** (Barrel Controls 8.56 cfs @ 3.98 fps)

Summary for Pond 2f: Jellyfish

[57] Hint: Peaked at 19.01' (Flood elevation advised)
[79] Warning: Submerged Pond 2e Primary device # 1 INLET by 1.57'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 4.21" for 25-yr event
Inflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Outflow = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.57 cfs @ 12.08 hrs, Volume= 45,005 cf
Routed to Link DP2 : Drainage System #2 (CB1)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.01' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.31'	**24.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.31' / 17.29' S= 0.0009 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=8.56 cfs @ 12.08 hrs HW=19.00' (Free Discharge)
└─**1=Culvert** (Barrel Controls 8.56 cfs @ 4.06 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 50,887 sf, 82.21% Impervious, Inflow Depth = 5.70" for 25-yr event
Inflow = 7.53 cfs @ 12.07 hrs, Volume= 24,151 cf
Primary = 7.53 cfs @ 12.07 hrs, Volume= 24,151 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2 (CB1)

Inflow Area = 138,014 sf, 59.98% Impervious, Inflow Depth = 4.19" for 25-yr event
Inflow = 9.62 cfs @ 12.08 hrs, Volume= 48,147 cf
Primary = 9.62 cfs @ 12.08 hrs, Volume= 48,147 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment O1: Off-Site Runoff Area=79,768 sf 45.80% Impervious Runoff Depth=4.33"
Flow Length=584' Tc=27.6 min CN=65 Runoff=5.43 cfs 28,763 cf

Subcatchment P1a: PS1a Runoff Area=20,120 sf 64.85% Impervious Runoff Depth=5.76"
Tc=5.0 min CN=77 Runoff=3.20 cfs 9,662 cf

Subcatchment P1b: PS1b Runoff Area=26,173 sf 92.50% Impervious Runoff Depth=7.81"
Tc=5.0 min CN=94 Runoff=5.13 cfs 17,032 cf

Subcatchment P1c: PS1c Runoff Area=4,594 sf 99.65% Impervious Runoff Depth=8.29"
Tc=5.0 min CN=98 Runoff=0.92 cfs 3,174 cf

Subcatchment P2a: PS2a Runoff Area=8,300 sf 30.05% Impervious Runoff Depth=3.38"
Tc=5.0 min CN=57 Runoff=0.77 cfs 2,341 cf

Subcatchment P2b: PS2b Runoff Area=16,660 sf 89.99% Impervious Runoff Depth=7.57"
Tc=5.0 min CN=92 Runoff=3.22 cfs 10,508 cf

Subcatchment P2c: PS2c Runoff Area=15,044 sf 100.00% Impervious Runoff Depth=8.29"
Tc=5.0 min CN=98 Runoff=3.00 cfs 10,393 cf

Subcatchment P2d: PS2d Runoff Area=8,407 sf 100.00% Impervious Runoff Depth=8.29"
Tc=5.0 min CN=98 Runoff=1.67 cfs 5,808 cf

Subcatchment P3: PS3 Runoff Area=9,835 sf 54.01% Impervious Runoff Depth=5.04"
Tc=5.0 min CN=71 Runoff=1.38 cfs 4,133 cf

Pond 1a: CB7 Peak Elev=22.28' Inflow=3.20 cfs 9,662 cf
12.0" Round Culvert n=0.013 L=183.0' S=0.0167 '/' Outflow=3.20 cfs 9,662 cf

Pond 1b: CB2 Peak Elev=21.63' Inflow=8.33 cfs 26,694 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0016 '/' Outflow=8.33 cfs 26,694 cf

Pond 2a: CB6 Peak Elev=19.74' Inflow=5.71 cfs 31,104 cf
18.0" Round Culvert n=0.013 L=58.0' S=0.0012 '/' Outflow=5.71 cfs 31,104 cf

Pond 2b: CB5 Peak Elev=20.13' Inflow=6.71 cfs 41,611 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0013 '/' Outflow=6.71 cfs 41,611 cf

Pond 2c: CB4 Peak Elev=20.54' Inflow=9.13 cfs 52,004 cf
18.0" Round Culvert n=0.013 L=81.0' S=0.0012 '/' Outflow=9.13 cfs 52,004 cf

Pond 2d: CB3 Peak Elev=20.13' Inflow=10.79 cfs 57,812 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0014 '/' Outflow=10.79 cfs 57,812 cf

Pond 2e: DMH 3 Peak Elev=19.43' Inflow=10.79 cfs 57,812 cf
24.0" Round Culvert n=0.013 L=36.0' S=0.0008 '/' Outflow=10.79 cfs 57,812 cf

Pond 2f: Jellyfish Peak Elev=19.27' Inflow=10.79 cfs 57,812 cf
24.0" Round Culvert n=0.013 L=22.0' S=0.0009 '/' Outflow=10.79 cfs 57,812 cf

Link DP1: Drainage System #1 Inflow=9.24 cfs 29,868 cf
Primary=9.24 cfs 29,868 cf

Link DP2: Drainage System #2 (CB1) Inflow=12.18 cfs 61,945 cf
Primary=12.18 cfs 61,945 cf

Total Runoff Area = 188,901 sf Runoff Volume = 91,813 cf Average Runoff Depth = 5.83"
34.03% Pervious = 64,280 sf 65.97% Impervious = 124,621 sf

Summary for Subcatchment O1: Off-Site

[47] Hint: Peak is 249% of capacity of segment #3

Runoff = 5.43 cfs @ 12.39 hrs, Volume= 28,763 cf, Depth= 4.33"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,453	98	Unconnected roofs, HSG A
34,084	98	Paved parking, HSG A
22,052	36	Woods, Fair, HSG A
21,179	39	>75% Grass cover, Good, HSG A
79,768	65	Weighted Average
43,231		54.20% Pervious Area
36,537		45.80% Impervious Area
2,453		6.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.3	374	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0050	2.78	2.18	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
27.6	584	Total			

Summary for Subcatchment P1a: PS1a

Runoff = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf, Depth= 5.76"
Routed to Pond 1a : CB7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
8,481	98	Paved parking, HSG A
4,566	98	Roofs, HSG A
7,073	39	>75% Grass cover, Good, HSG A
20,120	77	Weighted Average
7,073		35.15% Pervious Area
13,047		64.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1b: PS1b

Runoff = 5.13 cfs @ 12.07 hrs, Volume= 17,032 cf, Depth= 7.81"
Routed to Pond 1b : CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
10,744	98	Paved parking, HSG A
13,465	98	Roofs, HSG A
1,964	39	>75% Grass cover, Good, HSG A
26,173	94	Weighted Average
1,964		7.50% Pervious Area
24,209		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P1c: PS1c

Runoff = 0.92 cfs @ 12.07 hrs, Volume= 3,174 cf, Depth= 8.29"
Routed to Link DP1 : Drainage System #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
4,578	98	Paved parking, HSG A
16	39	>75% Grass cover, Good, HSG A
4,594	98	Weighted Average
16		0.35% Pervious Area
4,578		99.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2a: PS2a

Runoff = 0.77 cfs @ 12.08 hrs, Volume= 2,341 cf, Depth= 3.38"
Routed to Pond 2a : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,465	98	Paved parking, HSG A
29	98	Roofs, HSG A
5,806	39	>75% Grass cover, Good, HSG A
8,300	57	Weighted Average
5,806		69.95% Pervious Area
2,494		30.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2b: PS2b

Runoff = 3.22 cfs @ 12.07 hrs, Volume= 10,508 cf, Depth= 7.57"
Routed to Pond 2b : CB5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG A
8,836	98	Roofs, HSG A
1,667	39	>75% Grass cover, Good, HSG A
16,660	92	Weighted Average
1,667		10.01% Pervious Area
14,993		89.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2c: PS2c

Runoff = 3.00 cfs @ 12.07 hrs, Volume= 10,393 cf, Depth= 8.29"
Routed to Pond 2c : CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
3,896	98	Paved parking, HSG A
11,148	98	Roofs, HSG A
15,044	98	Weighted Average
15,044		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P2d: PS2d

Runoff = 1.67 cfs @ 12.07 hrs, Volume= 5,808 cf, Depth= 8.29"
Routed to Pond 2d : CB3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,897	98	Paved parking, HSG A
5,510	98	Roofs, HSG A
8,407	98	Weighted Average
8,407		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment P3: PS3

Runoff = 1.38 cfs @ 12.07 hrs, Volume= 4,133 cf, Depth= 5.04"
Routed to Link DP2 : Drainage System #2 (CB1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
5,312	98	Paved parking, HSG A
4,523	39	>75% Grass cover, Good, HSG A
9,835	71	Weighted Average
4,523		45.99% Pervious Area
5,312		54.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond 1a: CB7

[57] Hint: Peaked at 22.28' (Flood elevation advised)

Inflow Area = 20,120 sf, 64.85% Impervious, Inflow Depth = 5.76" for 50-yr event
Inflow = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf
Outflow = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.20 cfs @ 12.07 hrs, Volume= 9,662 cf
Routed to Pond 1b : CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 22.28' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	21.06'	**12.0" Round CMP_Round 12"** L= 183.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.06' / 18.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=3.19 cfs @ 12.07 hrs HW=22.27' (Free Discharge)
└─**1=CMP_Round 12"** (Inlet Controls 3.19 cfs @ 4.07 fps)

Summary for Pond 1b: CB2

[57] Hint: Peaked at 21.63' (Flood elevation advised)
[79] Warning: Submerged Pond 1a Primary device # 1 INLET by 0.57'

Inflow Area = 46,293 sf, 80.48% Impervious, Inflow Depth = 6.92" for 50-yr event
Inflow = 8.33 cfs @ 12.07 hrs, Volume= 26,694 cf
Outflow = 8.33 cfs @ 12.07 hrs, Volume= 26,694 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.33 cfs @ 12.07 hrs, Volume= 26,694 cf
Routed to Link DP1 : Drainage System #1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 21.63' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.95'	**15.0" Round CMP_Round 15"** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.95' / 17.81' S= 0.0016 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf

Primary OutFlow Max=8.32 cfs @ 12.07 hrs HW=21.63' (Free Discharge)
└─**1=CMP_Round 15"** (Barrel Controls 8.32 cfs @ 6.78 fps)

Summary for Pond 2a: CB6

[57] Hint: Peaked at 19.74' (Flood elevation advised)

Inflow Area = 88,068 sf, 44.32% Impervious, Inflow Depth = 4.24" for 50-yr event
Inflow = 5.71 cfs @ 12.37 hrs, Volume= 31,104 cf
Outflow = 5.71 cfs @ 12.37 hrs, Volume= 31,104 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.71 cfs @ 12.37 hrs, Volume= 31,104 cf
Routed to Pond 2b : CB5

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.74' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.09'	**18.0" Round Culvert**

L= 58.0' CMP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 18.09' / 18.02' S= 0.0012 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=5.71 cfs @ 12.37 hrs HW=19.74' (Free Discharge)
└─**1=Culvert** (Barrel Controls 5.71 cfs @ 3.66 fps)

Summary for Pond 2b: CB5

[57] Hint: Peaked at 20.13' (Flood elevation advised)
[81] Warning: Exceeded Pond 2a by 0.70' @ 12.08 hrs

Inflow Area = 104,728 sf, 51.59% Impervious, Inflow Depth = 4.77" for 50-yr event
Inflow = 6.71 cfs @ 12.36 hrs, Volume= 41,611 cf
Outflow = 6.71 cfs @ 12.36 hrs, Volume= 41,611 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.71 cfs @ 12.36 hrs, Volume= 41,611 cf
Routed to Pond 2c : CB4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.13' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.02'	**18.0" Round Culvert** L= 96.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.02' / 17.90' S= 0.0013 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=6.71 cfs @ 12.36 hrs HW=20.13' (Free Discharge)
└─**1=Culvert** (Barrel Controls 6.71 cfs @ 3.80 fps)

Summary for Pond 2c: CB4

[57] Hint: Peaked at 20.54' (Flood elevation advised)
[81] Warning: Exceeded Pond 2b by 0.67' @ 12.06 hrs

Inflow Area = 119,772 sf, 57.67% Impervious, Inflow Depth = 5.21" for 50-yr event
Inflow = 9.13 cfs @ 12.08 hrs, Volume= 52,004 cf
Outflow = 9.13 cfs @ 12.08 hrs, Volume= 52,004 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.13 cfs @ 12.08 hrs, Volume= 52,004 cf
Routed to Pond 2d : CB3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.90'	**18.0" Round Culvert** L= 81.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.90' / 17.80' S= 0.0012 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=9.13 cfs @ 12.08 hrs HW=20.54' (Free Discharge)
└─**1=Culvert** (Barrel Controls 9.13 cfs @ 5.17 fps)

Summary for Pond 2d: CB3

[57] Hint: Peaked at 20.13' (Flood elevation advised)
[79] Warning: Submerged Pond 2c Primary device # 1 INLET by 2.23'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 5.41" for 50-yr event
Inflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Outflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Routed to Pond 2e : DMH 3

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.13' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**18.0" Round Culvert** L= 7.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.70' / 17.69' S= 0.0014 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf

Primary OutFlow Max=10.78 cfs @ 12.08 hrs HW=20.13' (Free Discharge)
1=Culvert (Barrel Controls 10.78 cfs @ 6.10 fps)

Summary for Pond 2e: DMH 3

[57] Hint: Peaked at 19.43' (Flood elevation advised)
[79] Warning: Submerged Pond 2d Primary device # 1 INLET by 1.73'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 5.41" for 50-yr event
Inflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Outflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Routed to Pond 2f : Jellyfish

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.43' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.44'	**24.0" Round Culvert** L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.44' / 17.41' S= 0.0008 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=10.78 cfs @ 12.08 hrs HW=19.43' (Free Discharge)
1=Culvert (Barrel Controls 10.78 cfs @ 4.29 fps)

Summary for Pond 2f: Jellyfish

[57] Hint: Peaked at 19.27' (Flood elevation advised)
[79] Warning: Submerged Pond 2e Primary device # 1 INLET by 1.83'

Inflow Area = 128,179 sf, 60.44% Impervious, Inflow Depth = 5.41" for 50-yr event
Inflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Outflow = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.79 cfs @ 12.08 hrs, Volume= 57,812 cf
Routed to Link DP2 : Drainage System #2 (CB1)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.27' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	17.31'	**24.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.31' / 17.29' S= 0.0009 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf

Primary OutFlow Max=10.78 cfs @ 12.08 hrs HW=19.26' (Free Discharge)
1=Culvert (Barrel Controls 10.78 cfs @ 4.37 fps)

Summary for Link DP1: Drainage System #1

Inflow Area = 50,887 sf, 82.21% Impervious, Inflow Depth = 7.04" for 50-yr event
Inflow = 9.24 cfs @ 12.07 hrs, Volume= 29,868 cf
Primary = 9.24 cfs @ 12.07 hrs, Volume= 29,868 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Drainage System #2 (CB1)

Inflow Area = 138,014 sf, 59.98% Impervious, Inflow Depth = 5.39" for 50-yr event
Inflow = 12.18 cfs @ 12.08 hrs, Volume= 61,945 cf
Primary = 12.18 cfs @ 12.08 hrs, Volume= 61,945 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

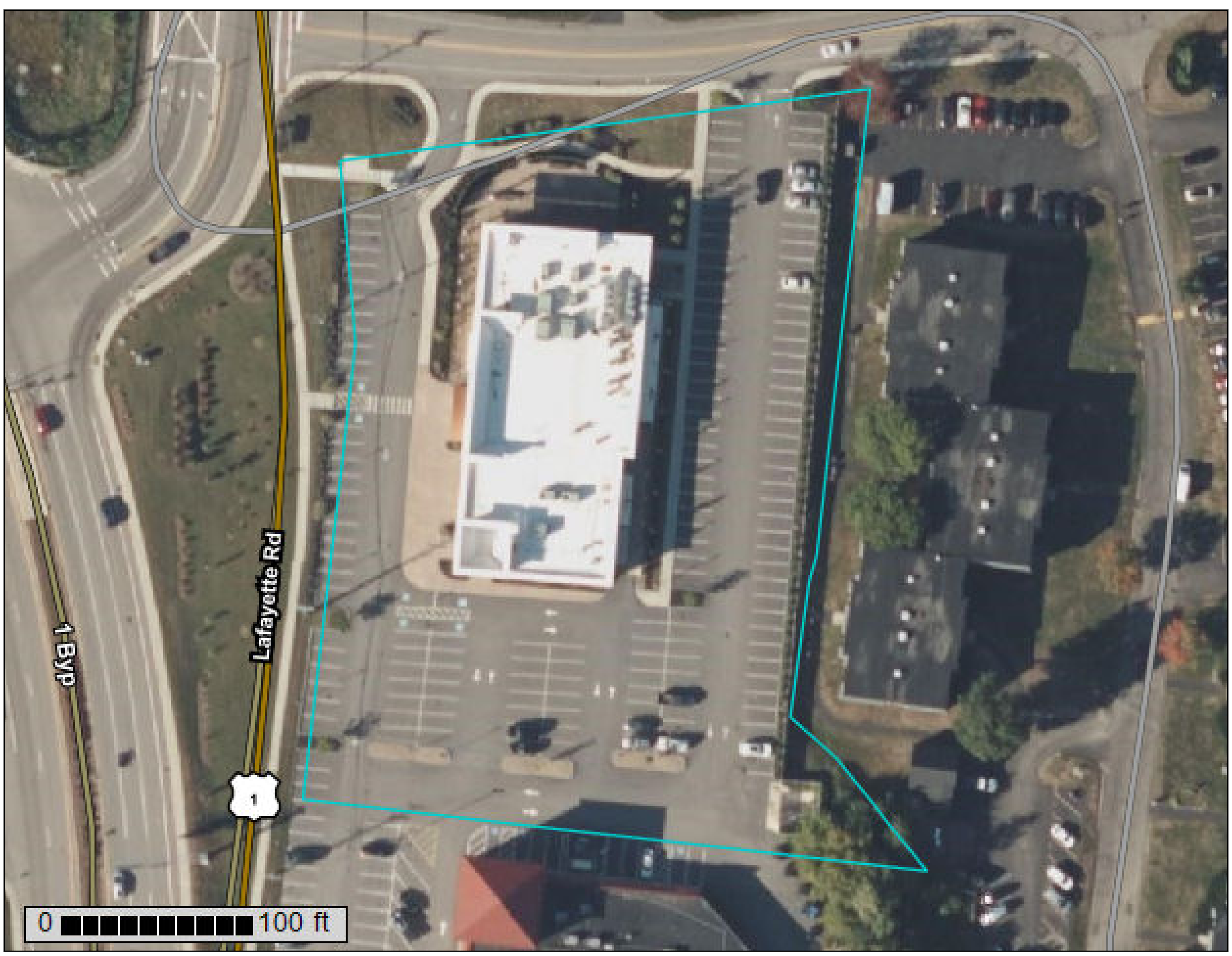
NRCS

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

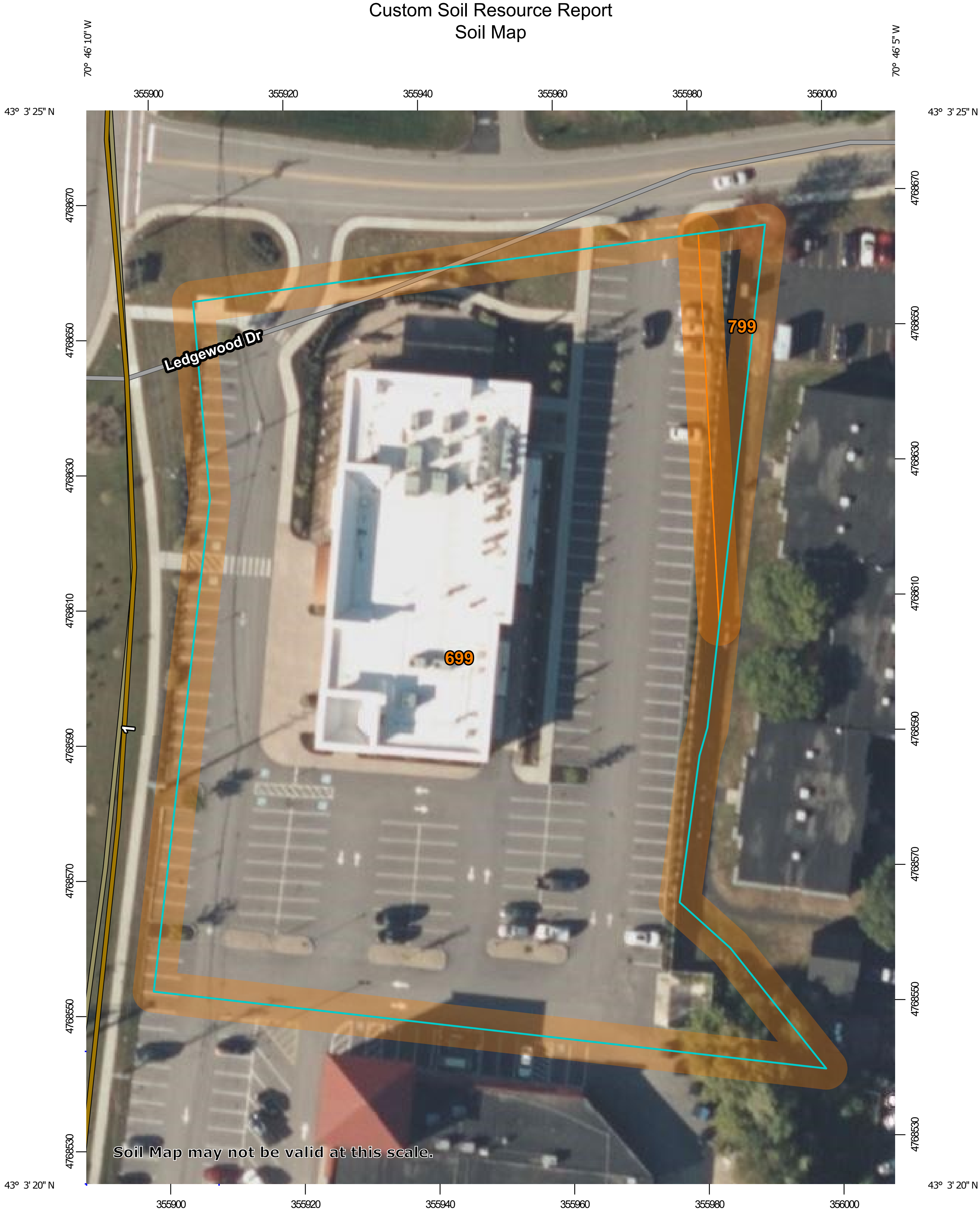
Custom Soil Resource Report for

Rockingham County, New Hampshire



November 2, 2023

Custom Soil Resource Report
Soil Map



Map Scale: 1:774 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 35, 70, 140, 210

N

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
699	Urban land	2.2	96.8%
799	Urban land-Canton complex, 3 to 15 percent slopes	0.1	3.2%
Totals for Area of Interest		**2.3**	**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

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

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

APPENDIX E

FEMA FIRM MAP

National Flood Hazard Layer FIRMette

FEMA

70°46'27"W 43°3'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

70°45'50"W 43°3'11"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/19/2023 at 10:24 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX F

INSPECTION & LONG TERM

MAINTENANCE PLAN

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

INSPECTION & LONG-TERM MAINTENANCE PLAN
FOR
COMMERCIAL DEVELOPMENT

581 LAFAYETTE ROAD
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide the Atlas Commons, LLC (herein referred to as “owner”) with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the proposed Jellyfish® filter and associated drainage structures (collectively referred to as the “Stormwater Management System”). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system’s maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the Portsmouth DPW.

Inspection & Maintenance Checklist/Log

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

Stormwater Management System Components

The Stormwater Management System is designed to mitigate the quality of site-generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMPs

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project may include but are not limited to:

- Dust control
- Sediment barriers
- Stabilized construction entrance
- Catch basin basket

Structural BMPs

Structural BMPs are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to:

- Closed Drainage System
- Contech Jellyfish® Filter

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMP's that may be found on this project.

1. **Closed Drainage System:** Monitor accumulation of debris in drainage structures monthly or after significant rain events. Remove sediments when they accumulate within the outlet pipe. During construction, maintain inlet protection until all areas have been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.
2. **Contech Jellyfish® Filter:** Refer to Manufacturer's instructions for procedure on maintenance of the unit.

Pollution Prevention

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

Spill Procedures

Any discharge of waste oil or other pollutant shall be reported immediately to the New Hampshire Department of Environmental Services (NHDES). The Contractor/Owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the stormwater system and may be required by NHDES to remediate incidents that may impact groundwater quality. If the property ownership is transferred, the new owner will be informed of the legal responsibilities associated with operation of the stormwater system, as indicated above.

Sanitary Facilities

Sanitary facilities shall be provided during all phases of construction.

Material Storage

No on site trash facility is provided until homes are constructed. The contractors are required to remove trash from the site. Hazardous material storage is prohibited.

Material Disposal

All waste material, trash, sediment, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Removed sediments shall be if necessary dewatered prior to disposal.

CATCH BASIN BASKET CONSTRUCTION MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Check for damage to basket -Remove sediment from basket	Within 24 hours of rainfall, Daily during extended rainfall	*-Repair basket as necessary to prevent particles from reaching drainage system, or to prevent flooding.* *-Empty basket after every storm, or if clogged.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Outlet Control Structures *-Drain Manholes* *-Catch Basins*	Every other Month	*Check for erosion or short-circuiting* *Check for sediment accumulation* *Check for floatable contaminants*
-Drainage Pipes	1 time per 2 years	*Check for sediment accumulation/clogging, or soiled runoff.* *Check for erosion at outlets.*

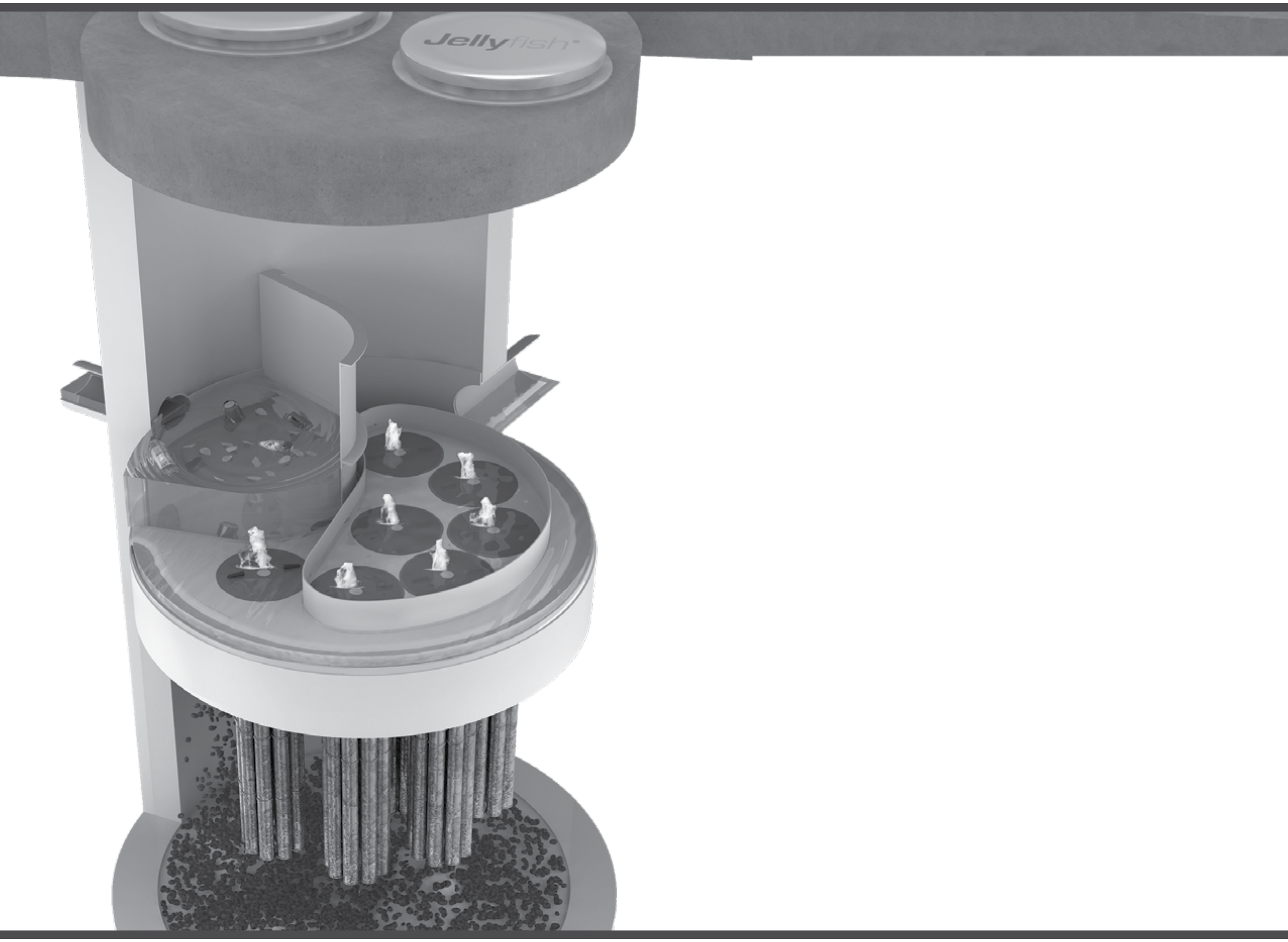
MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

STABILIZED CONSTRUCTION ENTRANCE CONSTRUCTION MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
ENTRANCE SURFACE *-Check for sediment accumulation/clogging of stone* *-Check Vegetative filter strips*	After heavy rains, as necessary	*-Top dress pad with new stone.* *-Replace stone completely if completely clogged.* *-Maintain vigorous stand of vegetation.*
WASHING FACILITIES (if applicable) *-Monitor Sediment Accumulation*	As often as necessary	*-Remove Sediments from traps.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

Jellyfish® Filter Maintenance Guide



Jellyfish®

JELLYFISH® FILTER
INSPECTION & MAINTENANCE GUIDE

Jellyfish units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the Jellyfish filter to be successful, it is imperative that all other components be properly maintained. The maintenance and repair of upstream facilities should be carried out prior to Jellyfish maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

TABLE OF CONTENTS

1.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

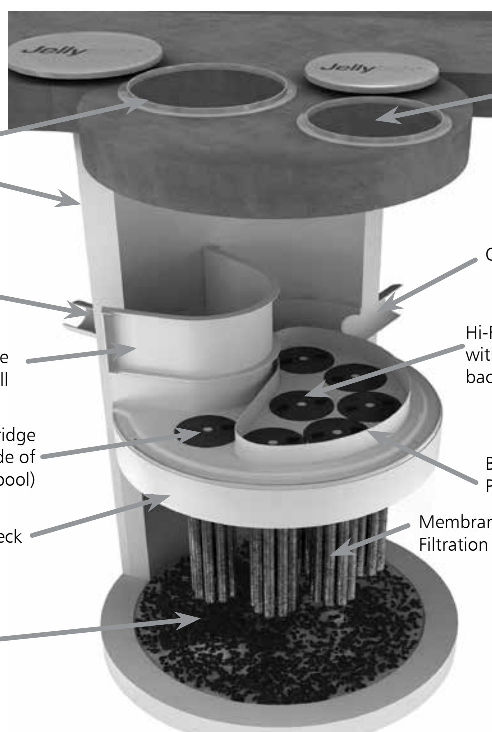
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed



Note: Separator Skirt not shown

2.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

3.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

3.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

3.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

4.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

5.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

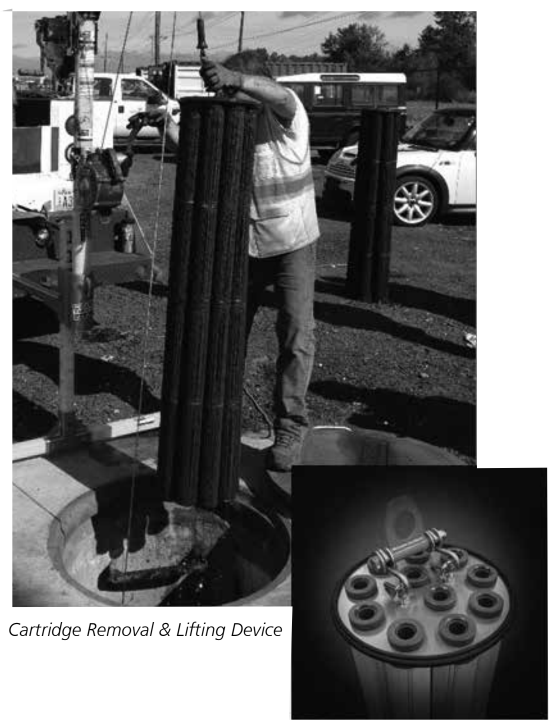
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

5.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. ***Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs***.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

5.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.



Cartridge Removal & Lifting Device

2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. ***Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane***.

4. Collected rinse water is typically removed by vacuum hose.
5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

5.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.

Vacuuming Sump Through MAW

3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.

Vacuuming Sump Through MAW

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

5.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. ***Caution: Do not force the cartridge downward; damage may occur.***
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

5.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

5.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

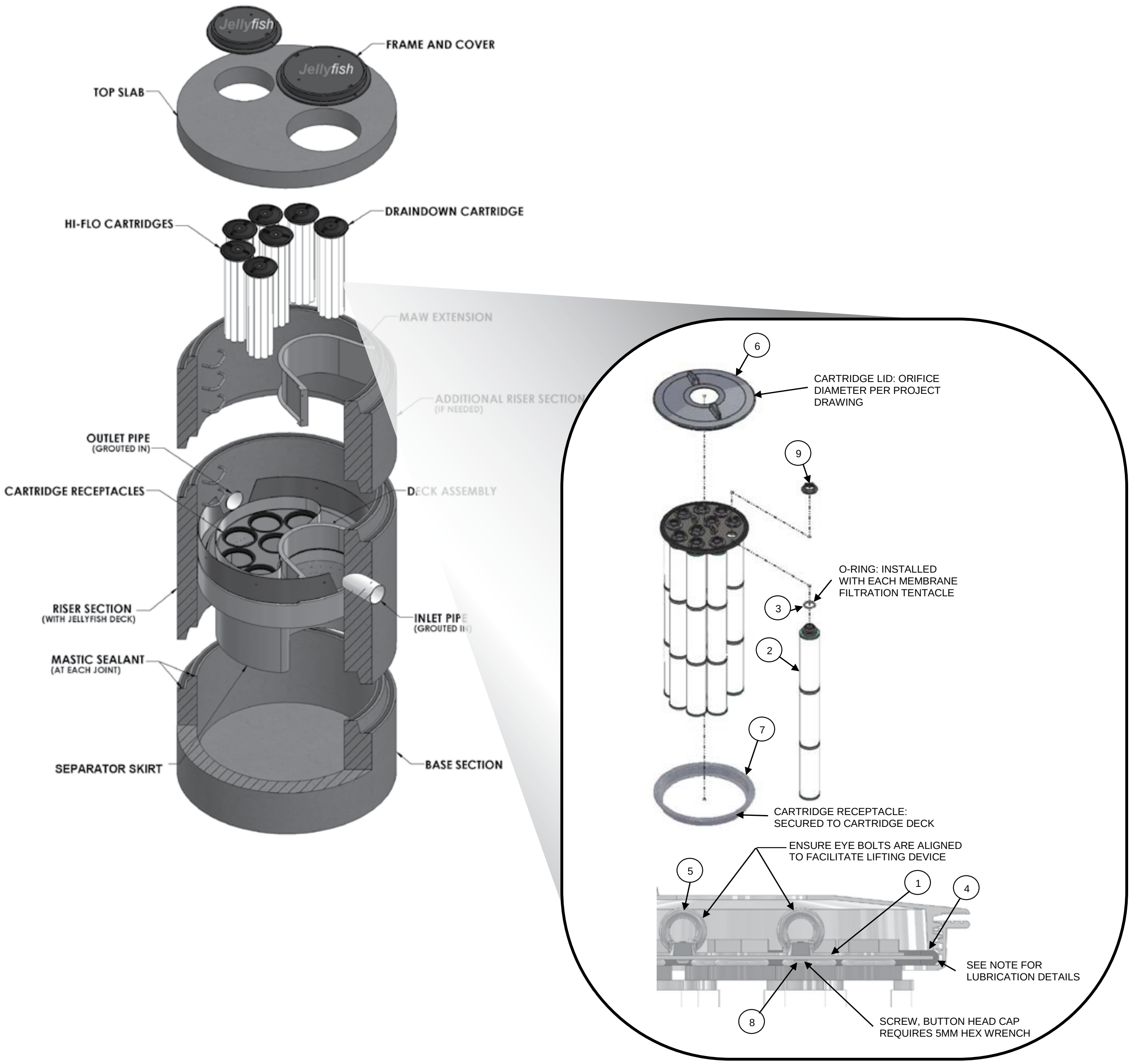


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lide (ITem 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner:				Jellyfish Model No:		
Location:				GPS Coordinates:		
Land Use:	Commercial:		Industrial:		Service Station:	
	Roadway/Highway:		Airport:		Residential:	

Date/Time:						
Inspector:						
Maintenance Contractor:						
Visible Oil Present: (Y/N)						
Oil Quantity Removed:						
Floatable Debris Present: (Y/N)						
Floatable Debris Removed: (Y/N)						
Water Depth in Backwash Pool						
Draindown Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Draindown Cartridges: (Y/N)						
Hi-Flo Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Hi-Flo Cartridges: (Y/N)						
Sediment Depth Measured: (Y/N)						
Sediment Depth (inches or mm):						
Sediment Removed: (Y/N)						
Cartridge Lids intact: (Y/N)						
Observed Damage:						
Comments:						

Jellyfish®

CONTECH®
ENGINEERED SOLUTIONS

800.338.1122
www.ContechES.com

Support

- Drawings and specifications are available at www.conteches.com/jellyfish.
- Site-specific design support is available from Contech Engineered Solutions.
- Find a Certified Maintenance Provider at www.conteches.com/ccmp

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, wastewater treatment and earth stabilization products. For information on other Contech segment offerings, visit ContechES.com or call 800.338.1122

CONTECH ENGINEERED SOLUTIONS

Jellyfish Design Calculation

CONTECH Stormwater Solutions Inc. Engineer	JBS
Date Prepared:	**11/20/2023**

Site Information

Project Name	**581 Lafayette Road**	
Project State	**NH**	
Project City	**Portsmouth**	
Total Drainage Area, Ad	**2.94**	ac
Post Development Impervious Area, Ai	**1.77**	ac
Pervious Area, Ap	**1.18**	ac
% Impervious	**60%**	
Runoff Coefficient, Rc	**0.59**	
Upstream pretreatment credit	**0%**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50.0**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**283,494**	ft^3
Event Mean Concentration of Pollutant, EMC	**45**	mg/l
Annual Mass Load, M total	**796**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing

Mass removed by pretreatment system	**0**	lbs
Mass load to filters after pretreatment	**796**	lbs
Mass to be Captured by System	**637**	lbs
Water Quality Flow	**0.82**	cfs

Method to Use **FLOW BASED**

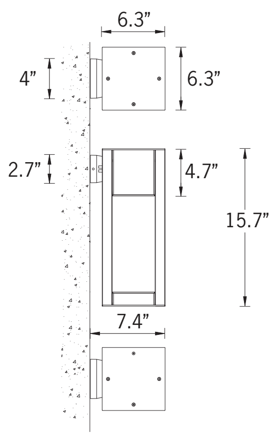
Summary			
Flow	Required Size	**JFPD0806-5-1**	54
	Treatment Flow Rate provided:	0.98	cfs

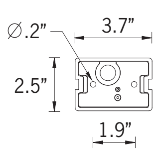
UVA-30001

Vancouver 24 Surface

LIGMAN LIGHTING USA

8w COB 331 Lumens
IP65 • Suitable For Wet Locations
IK08 • Impact Resistant
Weight 13.6 lbs





Mounting Detail

Construction

Aluminum
Less than 0.1% copper content – Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength , clean detailed product lines and excellent heat dissipation.

Pre paint
8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

Memory Retentive -Silicon Gasket
Provided with special injection molded “fit for purpose” long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

Thermal management
LM6 Aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman used in conjunction with the driver, controls thermals below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life and ensuring less than 10% lumen depreciation at 50,000 hours.

Surge Suppression
Standard 10kv surge suppressor provided with all fixtures.

BUG Rating
Contact Factory

Finishing
All Ligman products go through an extensive finishing process that includes fettling to improve paint adherence.

Paint
UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

Inspired by Nature Finishes
The Inspired by nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, and even marble or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it’s almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

The Coating Process
After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products of any sort. There are over 300 combinations of designs currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

Added Benefits
- Resistance to salt-acid room, accelerated aging
- Boiling water, lime and condensed water resistant
- Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
- Super durable (UV resistant)
- TGIC free (non-toxic)

Hardware
Provided Hardware is Marine grade 316 Stainless steel.

Anti Seize Screw Holes
Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

Crystal Clear Low Iron Glass Lens
Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

Optics & LED
Precise optic design provides exceptional light control and precise distribution of light.
LED CRI > 80

Lumen - Maintenance Life
L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

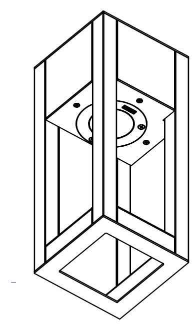
Contemporary urban lighting furniture. Open-sided, three lattice pattern options or your bespoke design.

A stylish Dark Sky Compliant square high performance wall mounted luminaire with downward light distribution using LED lamps. This light column offers optimal visual comfort through glare control by utilizing a controlled optics designed by Ligman. These luminaires have a square design providing a unique wide light distribution, offering an architecturally appealing shadow pattern on the mounted surface. The internal sides of the supporting pillars are accented by light from the LED.

Color temperature 2700K, 3000K, 3500K and 4000K. The minimalistic shape provides distinctive lighting effects by night and decorative urban effect during the day. Suitable for pedestrian areas, precincts, building surrounds, shopping centers, squares and parks. The Vancouver comes standard with a unique waterproof internal driver housing compartment that is situated at the top of the pole to stop water and dust from entering the electrical components. This fixture is supplied completely wired with powercord and waterproof gland from the driver enclosure to the base of the column to ensure quick trouble-free installation.

Custom heights are available, please specify in options. Designed to complement the Vancouver Light Column and bollard.

Additional Options (Consult Factory For Pricing)



OB
Open Bottom

UVA-30001
Vancouver 24 Surface

LIGMAN LIGHTING USA

PROJECT		DATE	

QUANTITY		TYPE		NOTE	

ORDERING EXAMPLE || UVA - 30001 - 8w - W30 - 02 - 120/277v - Options

UVA-30001

LAMP	LED COLOR	FINISH COLOR	VOLTAGE
8w COB	W27 - 2700K	01 - BLACK RAL 9011	120/277v
331 Lumens	W30 - 3000K	02 - DARK GREY RAL 7043	Other - Specify
	W35 - 3500K	03 - WHITE RAL 9003	
	W40 - 4000K	04 - METALLIC SILVER RAL 9006	
		05 - MATTE SILVER RAL 9006	
		06 - LIGMAN BRONZE	
		07 - CUSTOM RAL	

ADDITIONAL OPTIONS

NAT - Natatorium Rated
F - Frosted Lens
OB - Open Bottom
HGT - Custom Height [Specify]

INSPIRED BY NATURE FINISHES

SW01 - OAK FINISH
SW02 - WALNUT FINISH
SW03- PINE FINISH
DF - DOUGLAS FIR FINISH
CW - CHERRY WOOD FINISH
NW - NATIONAL WALNUT FINISH
SU01 - CONCRETE FINISH
SU02 - SOFTSCAPE FINISH
SU03 - STONE FINISH
SU04 - CORTEN FINISH

THERE IS AN ADDITIONAL COST FOR THESE FINISHES

More Custom Finishes Available Upon Request

Consult factory for pricing and lead times

Oak, Cherry, Beech, Carbon
Walnut, Chestnut, Bamboo, Galvanized
Pine, Mahogany, Birch, Steel

Example: Inspired by Nature Finish

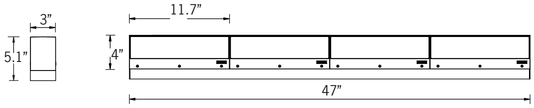
Intertek

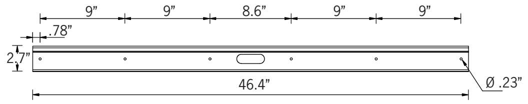
UGN-30081

Gini 1 Downlight

LIGMAN LIGHTING USA

72w LED 4984 Lumens
IP65 • Suitable For Wet Locations
IK07 • Impact Resistant
Weight 30.6 lbs





Mounting Detail

Construction

Aluminum
Less than 0.1% copper content – Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength , clean detailed product lines and excellent heat dissipation.

Pre paint
8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

Memory Retentive -Silicon Gasket
Provided with special injection molded "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

Thermal management
LM6 Aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman used in conjunction with the driver, controls thermals below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life and ensuring less than 10% lumen depreciation at 50,000 hours.

Surge Suppression
Standard 10kv surge suppressor provided with all fixtures.

BUG Rating
B2 - U1 - G1

Finishing
All Ligman products go through an extensive finishing process that includes fettling to improve paint adherence.

Paint
UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can ithstand harsh environments. Rated for use in natatoriums.

Inspired by Nature Finishes
The Inspired by nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, and even marble or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

The Coating Process
After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products of any sort. There are over 300 combinations of designs currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

Added Benefits
• Resistance to salt-acid room, accelerated aging
• Boiling water, lime and condensed water resistant
• Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
• Super durable (UV resistant)
• TGIC free (non-toxic)

Hardware
Provided Hardware is Marine grade 316 Stainless steel.

Anti Seize Screw Holes
Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

Crystal Clear Low Iron Glass Lens
Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

Optics & LED
Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

Lumen - Maintenance Life
L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

Slimline, surface wall-fixtures with up-down-light distribution. Clean, unique, minimalistic and flexible, the perfect tool for surface wall grazing. Frosted lens standard.

A range of modular top quality decorative linear surface mount luminaires. This small profile decorative wall sconce with upward, downward or up/down light distributions is available in 4 sizes, namely 12", 23" 35" and 47" standard lengths. (Contact factory for longer runs)

This luminaire has a unique feature where the extruded aluminum mounting bracket is secured onto the wall and the luminaire are then attached to the mounting bracket.

This modular feature allows for extended lengths of extruded mounting bracket to be installed onto the wall and then multiple luminaires can be attached end-on-end to provide a continuous row of luminaires with even light distribution.
The Gini has been designed with integral drivers and lightly frosted low glare tempered glass lenses. A single gang in wall junction box, horizontally mounted is to be provided by contractor to facilitate ease of installation.

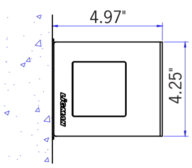
This IP65 luminaire can be used for indoor, as well as outdoor applications. Ideally suited to illuminate wall surfaces and light accents.

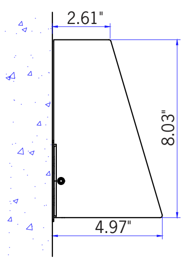
To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15˚ allowable to permit leveling).

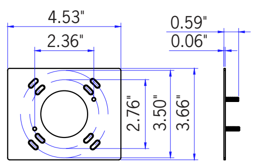
ULEW-30001

Leeds 1 Small Surface Wedge Downlight

5.5w LED 570 Lumens
IP65 • Suitable For Wet Locations
IK07 • Impact Resistant
Weight 5 lbs

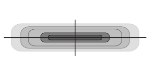




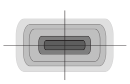


Mounting Detail

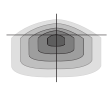
Ligman's micro Variable Optical System provides the ability to interchange, mix & rotate optics to provide specific light distributions for optimized spacing and uniformity.



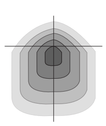
Type I



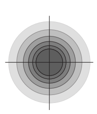
Type II



Type III



Type IV



Type V

Construction

Aluminum
Less than 0.1% copper content – Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength , clean detailed product lines and excellent heat dissipation.

Pre paint
8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

Memory Retentive -Silicon Gasket
Provided with special injection molded "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

Thermal management
LM6 Aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman used in conjunction with the driver, controls thermals below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life and ensuring less than 10% lumen depreciation at 50,000 hours.

Surge Suppression
Standard 10kv surge suppressor provided with all fixtures.

BUG Rating
Contact Factory

Finishing
All Ligman products go through an extensive finishing process that includes fettling to improve paint adherence.

Paint
UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

Inspired by Nature Finishes
The Inspired by nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, and even marble or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

The Coating Process
After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products of any sort. There are over 300 combinations of designs currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

Added Benefits
• Resistance to salt-acid room, accelerated aging
• Boiling water, lime and condensed water resistant
• Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
• Super durable (UV resistant)
• TGIC free (non-toxic)

Hardware
Provided Hardware is Marine grade 316 Stainless steel.

Anti Seize Screw Holes
Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

Crystal Clear Low Iron Glass Lens
Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

Optics & LED
Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

Lumen - Maintenance Life
L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

Clean, beautiful, surface wall fixtures with class leading performance. Minimalist form, yet the most powerful and flexible lighting tool of its type, offering packages up to 2,400 lumens and microVos technology.

A range of small, square and rectangular, ADA compliant wall mounted luminaires with options of upward or downward light distributions. Ideally suited to illuminate the wall and surfaces in front of wall and for light accents on vertical surfaces using high efficiency LED's. The Leeds is suitable for indoor and outdoor applications and provides a clean, visually appealing solution for small, unob-trusive wall mounted luminaires.

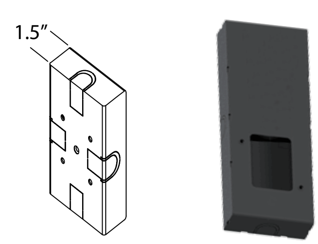
This luminaire is available in 3 different sizes and in combinations of down, up or up/down light distributions.

This fixture utilizes microVos technology, meaning the ability to do Type I,II,III,IV & V distributions as well as hybrid distributions to suit the designer's requirements.

Using the microVos optics allows for very wide spacing to mounting height ratios, while still providing perfect uniformity and code compliant light levels.

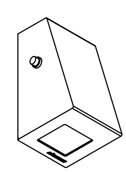
To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15˚ allowable to permit leveling).

Additional Options (Consult Factory For Pricing)



SCDT
Surface Conduit Decorative Trim

NOTE: This decorative trim does not function as a junction box. Wire connections should be made inside the luminaire

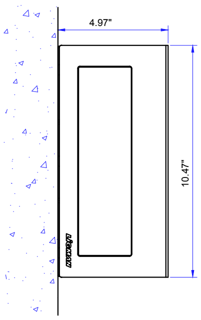


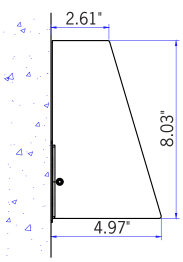
BPC
Button Photocell

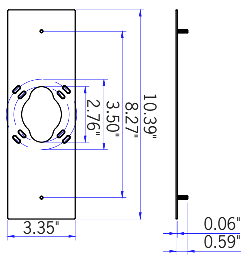
ULEW-30021

Leeds 3 Large Surface Wedge Downlight

20w LED 2422 Lumens • 28w LED 3200 Lumens
IP65 • Suitable For Wet Locations
IK07 • Impact Resistant
Weight 18 lbs







Mounting Detail

microVos TECHNOLOGY

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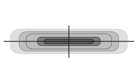
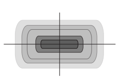
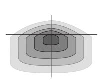


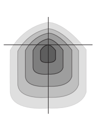
Type I



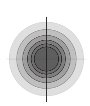
Type II



Type III

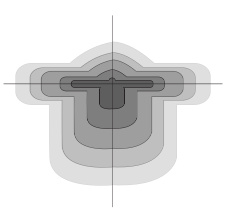


Type IV



Type V

The variable optic system allows for the designer to create hybrid distributions for precise lighting requirements.



HYBRID
TYPE I & TYPE IV

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Surge Suppression
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BUG Rating
B1 - U0 - G0

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Hardware
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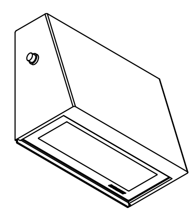
Additional Options (Consult Factory For Pricing)



BPC
Button Photocell

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

20 December, 2023

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Response to Comments for Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Stith and TAC Members:

On behalf of Atlas Common, LLC (Owner) we are pleased to submit the attached plan set for **Site Plan Review** for the above-mentioned project and request that we be placed on the agenda for your **January 2, 2024,** Meeting. The project consists of the addition of residential units (including 20% Workforce) at 581 Lafayette Road with two new building additions with the associated and required site improvements. The site is currently developed with two restaurants. The re-development will include creating an additional car park below first floor building level.

The project is located at 581 Lafayette Road and are two proposed additions to an existing building. The building was renovated when the site was changed from a Cinema to the Tuscan Restaurant – Tuscan Marketplace in 2016. The site is at the corner of Lafayette Road and Ledgewood Drive, and is known as Tax Map 229, Lot 8B. The lot is a 98,124 square foot parcel with frontage on both streets. The existing conditions plan shows the current site features. The Tuscan Market moved to downtown Portsmouth, and that portion of the site was re-purposed to a restaurant with golf simulators, known as Tour. The Tuscan Marketplace closed, but recently the space was converted to another restaurant with some outside seating.

The property is located in the Gateway Neighborhood Mixed-Use District - G1. The purpose of the district is to support the goals of the cities Master Plan and Housing Policy. The aim of the policy is to encourage walkable, mixed-use development, and continued economic vitality in the cities primary gateway areas. The district seeks to ensure that new developments complement and enhance the surroundings and provide housing stock that is suitable for changing demographics and accommodate the housing needs of the city's current and future workforce. This plan works towards that standard by adding to the existing structure and creating 72 new dwelling units. The proposed uses; being restaurant use and dwelling units (multi-family residential) are both allowed uses in the district.

The project proposes additions that are set back 33 feet from Ledgewood Drive, 47 feet from Lafayette Road, 24 feet from the southerly abutting property line, and 39 feet from the easterly abutting property line. The proposed building additions maintain the ability for the free flow of traffic around the proposed additions, as required by deed restrictions and easements on the property. First floor parking spaces are accessed from driveways to the parking areas at first floor level, as shown on the site plan. Underground parking is accessed from a driveway ramp on the north side of the proposed structure off Ledgewood Drive. The property has deeded agreements with the abutting properties along Lafayette Road, wherein shared parking is a deeded right among the properties.

The submitted site plan shows the impervious surface calculations for the proposed development. When the site was redeveloped to the Tuscan Marketplace, the impervious surface coverage (increase) was allowed under a Variance, up to coverage which allowed a reduced open space to 16.2%. this plan proposes redevelopment with 16.7% open space. The building height is intended to comply with section 10.5 B 22.10 as allowed under the section. Regarding the special setback requirements on Lafayette Road, the project is in a location where there is a significant open space in front of the subject parcel. This open space was created when the Lafayette Road, Route 1 Bypass intersection was restructured around 2011. That relocation of the intersection created this large open space area in front of the lot, which in effect meets this special set back requirements inherent in the section regarding properties on Lafayette Road.

The presence of the car park in front of the building is as it has been for many years, when this property was used as a cinema, and additionally when it was repurposed into Tuscan Marketplace. A variance for front of building parking was granted. The proposal has gone to the Portsmouth Planning Board for Conceptual Review. During the review it was noted that some of the parking spaces in front of the building are partially located off the lot in the state highway right of way. Those spaces existed when the work was done to relocate the intersection, and they existed when the property was redeveloped into the Tuscan Marketplace and allowed to stay.

The existing drainage consists of some roof drain connections as well as some parking lot connections to the drainage network, which flow off-site. The property drainage is divided into two watersheds, one that flows to the south along the front of the adjacent mall and the other flows to the south along the back of the adjacent mall. The intent of this design is to maintain those flow directions and re-purpose the drainage in accordance with the proposed site addition roof drains that will replace some catch basins to direct the water in this manner. Additional treatment of the runoff is provided with the introduction of a Jellyfish filter.

It is our understanding that this development would most likely fall under Section 10.05 B 42.20, Mixed-Use Development, and the development standards of that section. The process for development in the Gateway Neighborhood Mixed-Use District requires application to the Planning Board for a Conditional Use Permit where development deviates from the strict standards, and proof that the development proposed meets, and is consistent with, the Portsmouth Master Plan. In the density section of the ordinance this development would be allowed up to 24 units per structure. This project proposes a Conditional Use Permit for a density bonus as allowed in section 10.5 B 72 for two buildings with 36 units in each building. This increased housing density is allowed with an incentive. In order to be eligible for the bonus incentive the development shall include workforce housing. The intent of this development is to provide 20% of the dwelling units, or 15 units, as workforce units, as defined by the Portsmouth Ordinance. We believe that under section 10.5 B 74.30 the Planning Board is authorized to grant modifications to the standards of the section since, and as a result of, the developer providing workforce housing. We believe that the modifications to the strict ordinance interpretations are consistent with the purpose and intent set forth in the Gateway Neighborhood Mixed-Use District section. We therefore request open space to be allowed at 16.7%, which is allowed with the consent of the Planning Board in the approval process. We believe this minor variation does not compromise the intent of the ordinance as the 20% Workforce Housing is important to the community.

The project was reviewed at the November 8, 2023, TAC Meeting where the following comments, with response in **bold text**, were generated:

1. During review, staff found multiple errors and inconsistencies in the plans including but not limited to: plan sheets referenced in the checklist but not provided in the plan set (C102, C104, and photometric plan), floor plans referencing a 6-bedroom apartment, and inconsistencies in project presented in the cover letter and the plans provided. Please update and cleanup plans to present a clear and consistent proposal. **Plans and the submission have been updated. The Green Building Statement has been added, the photometric plan is still in process.**

2. Please provide a memo that outlines all of the requested modifications with Section references from Section 10.5B70. **We believe that the plan set addresses the requirements of the ordinance in this regard.**

3. Please provide an easement plan and open space plan to show how the project meets the density and bonus incentives. **The plan set includes Plans C7 – Open Space Plan, C8 Community Space Plan, and C9 Public Realm Plan. The design conforms to the Section requirements with the exception of the open space requirement, which the Planning Board will be asked to waive. The reduction is in keeping with a previously granted Variance for the site.**

4. The increase to 5 stories and 60 feet requires a second incentive under 10.5B72.30, which will require public realm improvements in addition to the workforce housing requirement. See Section 10.5B73.20 for Public Realm requirements. **See Sheet C9, Public Realm Plan.**

5. Sewer shown as 6” at a slope of 0.004 ft/ft. That is below minimum allowable slope. Please address. **The sewer pipe size has been revised to an 8-inch pipe.**

6. Upon further review, grease trap and sewer should not be installed under the building in the parking garage. There is not enough overhead height for cleaning, maintenance, or repairs. **The grease trap is now an exterior installation.**

7. Move jellyfish filter downstream of CB1. **The Jellyfish is located as far downstream as possible.**

8. Support columns are in parking spaces making multiple spaces unusable. **The support columns have been adjusted.**

9. State size of existing domestic water service. **The team is still researching this issue.**

10. Residents will utilize the green space abutting Lafayette Road. Landscaping maintenance of that area may be required. **The team will review landscaping records and report to the TAC Committee.**

11. Include list of previously received comments with responses or noted changes to the plans. **The previous comments are addressed herein.**

The development plan is summarized as follows and as shown on the Proposed Site Plans:

- Cover Sheet – Shows the Development Team, Zoning, Location, and Utility contacts.
- Sheet C1 – Existing Conditions Plan: The plan shows current site conditions.
- Sheet C2 – Demolition Plan: The plan shows required site demolition.
- Sheet C3 –Site Plan: This sheet shows the location of the proposed building additions, outdoor seating area, and associated site improvements.
- Sheet L1 and L2 – This plan shows the added site landscaping.
- Sheet C4 – Parking Plan: The plan shows the underground car park.
- Sheet C5 – Utility Plan: The plan shows proposed utility connections.
- Sheet C6 – Grading, Drainage, Erosion Control Plan: The plan shows the proposed drainage connections for the site.
- Sheet C7 – Open Space Plan - The plan shows proposed site open space.
- Sheet C8 – Community Space Plan - The plan shows proposed Community Space locations and types.
- Sheet C9 – Public Realm Plan: The plan shows proposed public realm off-site improvements.
- Sheet T1 & T2 – Turning Plans: The plans show fire truck and delivery truck turning movements.
- Sheets D1 to D5 – These sheets show the site construction details, including erosion control.
- Floor Plans - Elevations - Renderings - These are the Architectural site designs.

We look forward to TAC review of this submission and the Committees feedback on the proposed design. We hereby request that the project move forward to the Planning Board.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward
Submitted Online

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

2 January, 2024

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Response to Comments for Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Stith and TAC Members:

On behalf of Atlas Common, LLC (Owner) we submit this Response to Comments from the December 29, 2023, email for the above-mentioned project. The project consists of the addition of residential units (including 20% of the Units as Workforce Housing) at 581 Lafayette Road with two new building additions with the associated and required site improvements. The site is currently developed with two restaurants. The re-development will include creating an additional car park below first floor building level. The email comments are repeated below, with response in **bold text**:

1. Please reach out to the Trees & Greenery Committee for proposed trees within the City's ROW. **The Development Team will apply to the Trees and Greenery Committee for permission to place the proposed trees in the City Ledgewood Drive ROW.**
2. Irrigation details needed as part of the landscape plan. **Typically, detailed irrigation plans are prepared after site approval is obtained. Can this be done after Planning Board approval, prior to the issuance of a Building Permit, as a condition?**
3. Landscape plan does not include the 3rd landscaped island, as seen in site plan. **The revised (See Comment 4) *island* will be added to the Landscape Plan and some plantings detailed.**
4. All landscaped islands must be at least 9' wide. **The landscape *island* has been re-sized.**
5. Prior to Planning Board submission, information will need to be provided in accordance with 10.5B74.10 (covenant, details, etc.). **The information required by 10.5B74.10, including legal documents, will be refined in consultation with the Planning Department and prepared for presentation to the Planning Board along with the Conditional Use Permit application as a part of the Planning Board submission.**
6. Please provide a photometric plan. **A lighting plan will be added to the plan set.**

7. Please confirm that open space is the only modification being requested. **We believe that the other requirements of the Zoning have been met; we look for Planning Department concurrence.**
8. Please clean up inconsistency in open space between zoning table and cover letter. **The Cover Letter will be revised to match the plan Zoning Table prior to Planning Board submission.**
9. Visitor Parking requirement is 14.4 spaces not 14.04. **The calculation will be corrected. The resulting total goes from 80.61 to 80.99 spaces.**
10. Parking calculations need to be updated to reflect each use added together in whole numbers as this will alter the final total. **The calculations have been corrected and the resulting tables attached herewith.**
11. Please confirm open space plan meeting zoning 10.515.20. Calculation can include walks and terraces but cannot include space that is less than 5 ft in width. **When open space less than 5 feet wide is deducted, but walkways which will be porous are added, the proposed open space increases to 17.2 %.**
12. The landscape plan does not show the landscape island at the SW corner of the building. **See response Number 4.**
13. Are the proposed outdoor dining patios open to the public? **Yes, they are restaurants open to the public.** If not, they cannot be included in community space. If yes, will there be signage to let the public know they can access it? **The restaurants are listed in all media as public.**
14. Please provide documentation for the High School consenting to the offsite work. **This is ongoing with the School Department. We request this requirement be a TAC Condition of Approval and the project is advanced to the Planning Board with the Conditional Use Application for a decision on this incentive.**
15. Offsite work will require approval from the Trees and Greenery Committee. **The Development Team will apply to the Trees and Greenery Committee for permission to remove trees as needed on city property at the High School to construct the path.**
16. Please provide easement information on community space and public realm plans. **The required easement plans and documents will be prepared for the Conditional Use Permit application as a part of the Planning Board submission. Planning Department review of the proposed area(s) is requested.**
17. Floor plans are still incorrect. There are missing labels and missing square footage numbers for some units. Are the missing square footage labels indicative of information that is missing from parking calculations? **The floor plans have been updated and are attached.**
18. Irrigation details needed as part of the landscape plan. **See response to Comment Number 2.**
19. All landscaped islands must be at least 9’ wide. **See response to Comment Number 4.**
20. Show detail for sewer service under building. Is it buried, hung from the wall, how is it mounted, etc. **The pipe will be attached to the wall. Details will be provided.**
21. Gravity sewer should have manhole or cleanout at bend. **Cleanout and bend details will be provided.**
22. Show detail on proposed pump station. **The Grease Trap and Pump Station detail have been added a Sheet D6.**

We look forward to TAC review of this submission and the Committees feedback on the proposed design. We hereby request that the project move forward to the Planning Board.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

6 February, 2024

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Response to Comments for Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Stith and TAC Members:

On behalf of Atlas Common, LLC (Owner) we submit this Response to Comments from the February 5, 2024, email for the above-mentioned project. The project consists of the addition of residential units (including 20% of the Units as Workforce Housing) at 581 Lafayette Road with two new building additions with the associated and required site improvements. The site is currently developed with two restaurants. The re-development will include creating an additional car park below first floor building level. The email comments are repeated below, with response in **bold text**:

1. Staff will require a document of support from the Superintendent to use the high school land for public realm improvements. **This will be provided prior to the Planning Board submission.**
2. Staff would like the project to be completed by the applicant rather than a monetary contribution. **Understood**.
3. Please connect the trail to existing infrastructure. **See Updated Public Realm Plans C9 and C10.**
4. Please correct plan callouts to be fully visible (See C7 lower right corner) **The label is "Proposed Pavement" which is shown on other plans and not a part of this plan.**
5. Space identified as "wide sidewalk: does not qualify as a wide sidewalk. **Understood**.
6. Community space needs to meet the definition of community space. **Understood**. **The plan has been revised to delineate conforming definitions.**
7. Is the courtyard space open to the public? **The Courtyard is an Outdoor Dining Café which will be open to the public by deed.**
8. Landscape plan and community space plan have different sidewalk designs. **The landscape plan will have a minor update to the current sidewalk.**
9. Please confirm that the ADA parking spaces in the covered parking meet the minimum width for ADA. **(Lower Level?)** Support columns look like they may inhibit access. **This is addressed in the submission.**

10. Please assign tandem parking spaces to units and confirm they conform to Section 10.1114.33. **The tandem spaces will be assigned to the units during the final building permit plan process. In the meantime, we added Note 10 on Sheet C3 and Note 5 on Sheet C4 to delineate this requirement.**
11. Please include all levels of parking (interior and exterior) in parking plan. **We created a C13 Parking Plan which will be added to the plan set.**
12. Please include designated ADA spaces in parking calculation table. **This is addressed in the submission.**
13. See Site Plan Regulation 7.6.5 (1): In the maintenance plan for stormwater devices, remove "if required". An annual inspection and maintenance report is required. Please submit to the Department of Public Works. (only if DPW hasn't already added this comment). **This will be updated in the Planning Board submission – see attached.**
14. Please move the proposed transformer from its current location in the landscaped island – this will interfere with the infiltration of stormwater into the landscaped island. **The transformer has been relocated into the adjacent parking space, maintaining the open space. See Sheet C5.**
15. According to 10.5A44.41 in the Zoning Ordinance: you must provide 1 landscaped island for every 10 parking spaces (A). A landscaped island must be at least 325 s.f. in area (C) and be at least 9-ft wide (Site Plan Regulation 6.6-3). Please demonstrate your compliance with these requirements. **There is no change to this existing parking, other than the reduction mentioned above.**
16. "No Right-Hand Turn" signs should be added to the detail sheet, and locations of signs shown on plan. **See Sheet C3 and Detail Z.**
17. Provide summary of accessible parking spaces required and provided. **This is addressed in the submission.**
18. Show how new buildings sewer will connect to the proposed sewer service. **See Attached photos.**
19. What is the proposed water demand and proposed flows to the sewer from the new development? **See Note 4 on Sheet C5.**
20. Provide profile of sewer service. **See Attached photos. This would be detailed in the building plumbing plans.**
21. How will the sewer service be protected from cars and pedestrians? **There would be bollards and shields – see Note on Sheet C4.**
22. Non buried sewer service subject to environmental conditions. May require expansion joints. **Pipe type and grout selection should address this issue**.
23. SDR 35 pipe may not be suitable for non buried applications. **See Attached photos.**
24. Need details on pipe hangers, cleanouts, and connections. **See Attached photos, this would be detailed in the building plumbing plans.**
25. What is the proposed flow rate of the pump station? **See Sheet D6.**
26. What are the float elevations in the proposed pump station? **See Sheet D6.**
27. Details on proposed pump station show 1 ½" discharge pipe and utility plan shows 2". Confirm size and pipe materials. **See Sheet D6 – 2 inches.**
28. Sheet C4 shows sewer service size as 6" and utility plan shows 8". Correct. **Plans updated to 8 inches.**

Sewer Connection Photographs:

We look forward to TAC review of this submission and the Committees feedback on the proposed design. We hereby request that the project move forward to the Planning Board.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

INSPECTION & LONG-TERM MAINTENANCE PLAN
FOR
COMMERCIAL DEVELOPMENT

581 LAFAYETTE ROAD
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide the Atlas Commons, LLC (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the proposed Jellyfish® filter and associated drainage structures (collectively referred to as the "Stormwater Management System"). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

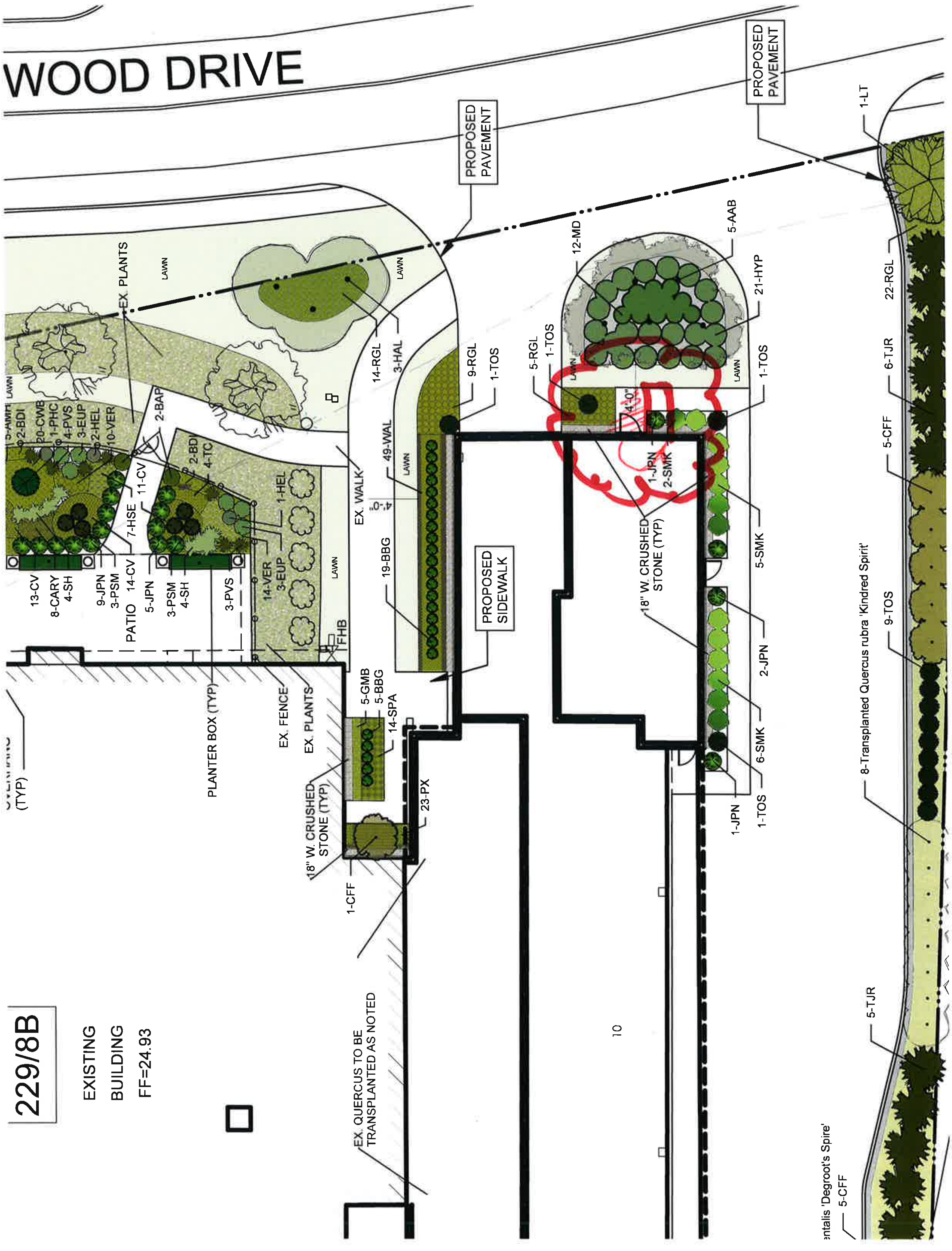
The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the Portsmouth DPW~~, if required.~~

Inspection & Maintenance Checklist/Log

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.



WOOD DRIVE
PROPOSED PAVEMENT
PROPOSED PAVEMENT
EX. PLANTS
LAWN
14-RGL
3-HAL
9-RGL
1-TOS
5-RGL
1-TOS
12-MD
5-AAB
21-HYP
1-TOS
1-LT
22-RGL
6-TJR
5-CFF
9-TOS
8-Transplanted Quercus rubra 'Kindred Spirit'
5-TJR
5-CFF
entalis 'Degroot's Spire'
4'-0"
1-JPN
2-SMK
18" W. CRUSHED STONE (TYP)
5-SMK
2-JPN
6-SMK
1-JPN
1-TOS
49-WAL
19-BBG
4'-0"
EX. WALK
PROPOSED SIDEWALK
5-GMB
5-BBG
14-SPA
23-PX
18" W. CRUSHED STONE (TYP)
1-CFF
EX. QUERCUS TO BE TRANSPLANTED AS NOTED
EX. FENCE
EX. PLANTS
PLANTER BOX (TYP)
(TYP)
2-BAP
5-AMH
2-BDI
20-CWB
1-PHC
4-PVS
3-EUP
2-HEL
10-VER
2-BDI
4-TC
11-CV
7-HSE
1-HEL
14-VER
3-EUP
13-CV
8-CARY
4-SH
9-JPN
3-PSM
PATIO
14-CV
5-JPN
3-PSM
4-SH
3-PVS
FHB
229/8B
EXISTING
BUILDING
FF=24.93
10

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

5 March, 2024

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Response to Comments for Site Plan Approval at 581 Lafayette Road; Mixed Use Development; Tax Map 229 Lot 8B

Dear Mr. Stith and TAC Members:

On behalf of Atlas Common, LLC (Owner) we submit this Response to Comments from the March 1, 2024, email for the above-mentioned project. The project consists of the addition of residential units (including 20% of the Units as Workforce Housing) at 581 Lafayette Road with two new building additions with the associated and required site improvements. The site is currently developed with two restaurants. The re-development will include creating an additional car park below first floor building level. The email comments are repeated below, with response in **bold text**:

1. Provide a list of previous comments and responses. **The previous Response to Comments letters have been uploaded to the online application.**
2. Support column shown on the sidewalk on Sheet C4 Level 1 Parking Plan. **Plan revised and sidewalk relocated.**
3. SDR 35 pipe material not appropriate for non-buried applications. **Plan Sheet C4 revised indicates Schedule 40 pipe type.**
4. Provide details on pipe hangers and cleanouts. **See detail BB on Sheet D6 for pipe shelf proposal.**
5. Verify bollards will protect sewer. **See detail on pipe shelf proposal.**
6. Provide sewer profile. **The final sewer pipe design is interior to the basement and will be detailed for the Building Permit application. The parking spaces have been pulled a foot away from the wall to allow a concrete shelf that will support the sewer pipe. We submit for the meeting a profile with elevations and references to the floor elevation.**
7. All piping leaving pump station must be gasketed pipe. No glued joints. Detail Y Sheet D6. **Detail Y on Sheet D6 has been revised.**
8. Catch basins should not be used as in-line stormwater structures. Install drain manholes and connect catch basins to the drain manholes. **Design alternative layout attached showing the addition of 3 (three) Drain Manholes. Also, a catch basin**

has been relocated and a trench drain at the garage ramp entrance has been added.

9. Show how vehicles in the angled parking spaces of basement level parking will exit. **Turning movement will be to pull forward to the building jog and then turn to the left, then back up and pull out.**

10. Handicap spaces require signs, so possibly reverse tandem spaces to place HP space against wall with sign. **Completed.** But this doesn't appear possible with space 55 on the first floor. **Building alignment has been adjusted to allow this change at that location.**

11. Delivery truck turning plan Sheet T2 appears to be different than current building plan, columns for overhang could be in the way. **Turning Movement Plan updated. The vehicle was shifted to align with the final building.**

12. Doors for enclosed bike parking should be sliders, rather than hinged, for easier access. **Sliders are shown; confirming fire rating in the final building design.**

13. Are vertical bike racks attached to a wall? **Yes.** No detail provided. **See Detail on Landscape Plan L3.**

14. A landscape license with adequate insurance will be required for maintenance on City property. **Agreed – area noted on Easement Plan DRAFT.**

15. Provide recordable easement plan. **Easement Plan DRAFT provided in plan set. Final easement documents and recordable plans to be provided after Planning Board approval.**

16. Include green building statement. **Updated Green Building Statement included.**

17. In addition to the modification of the community space, one will be required for the setback from Lafayette Rd. as the addition on the side is closer than 70 feet (Section 10.5B22.40). **The centerline of Lafayette Road is more than 90 feet from the lot property line (see attached exhibit). We will request a Waiver from the Ordinance provision for the Planning Board.**

We look forward to TAC review of this submission and the Committees feedback on the proposed design. We hereby request that the project move forward to the Planning Board.

Sincerely,

John Chagnon, PE; Ambit Engineering – Haley Ward

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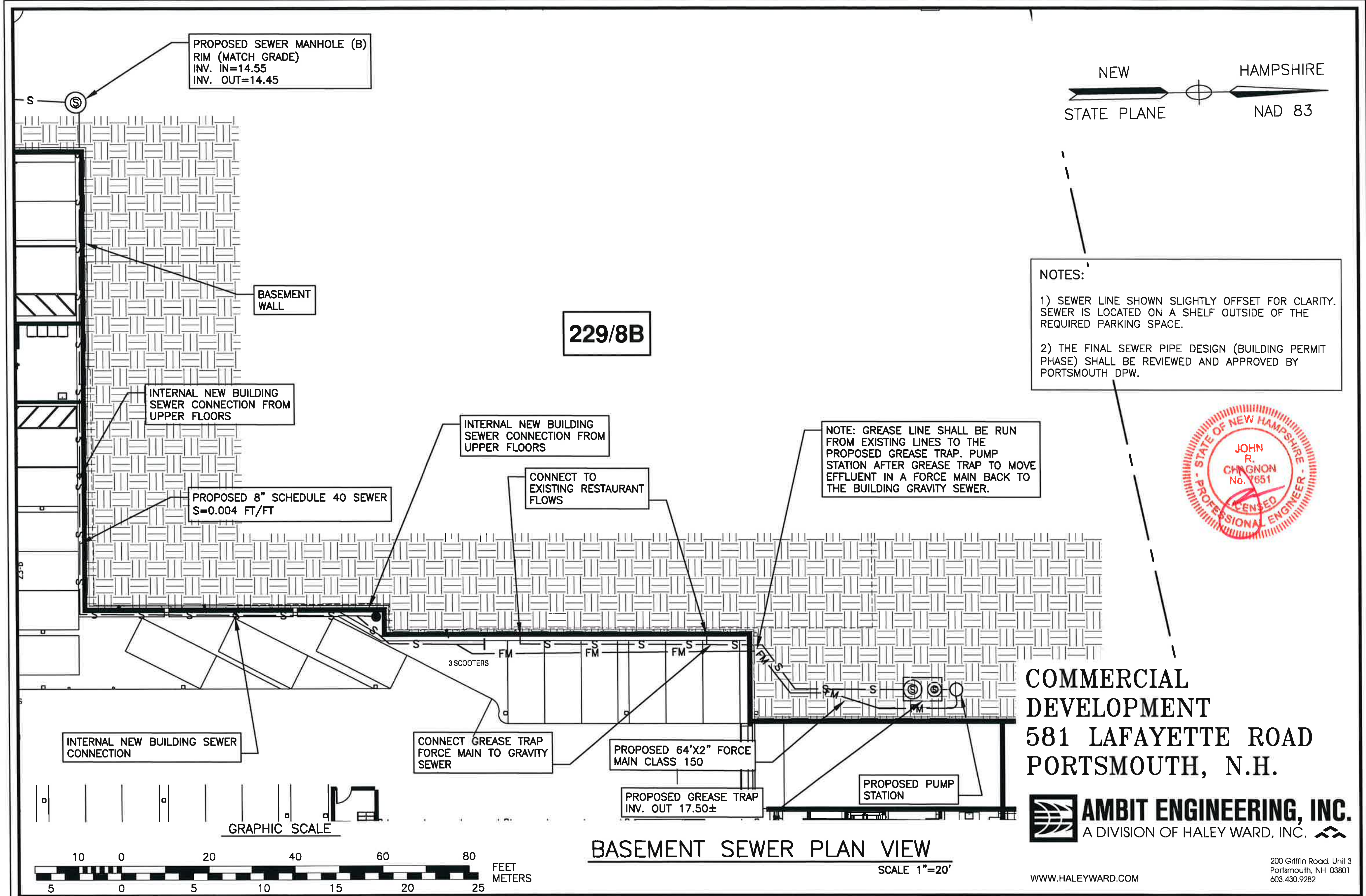

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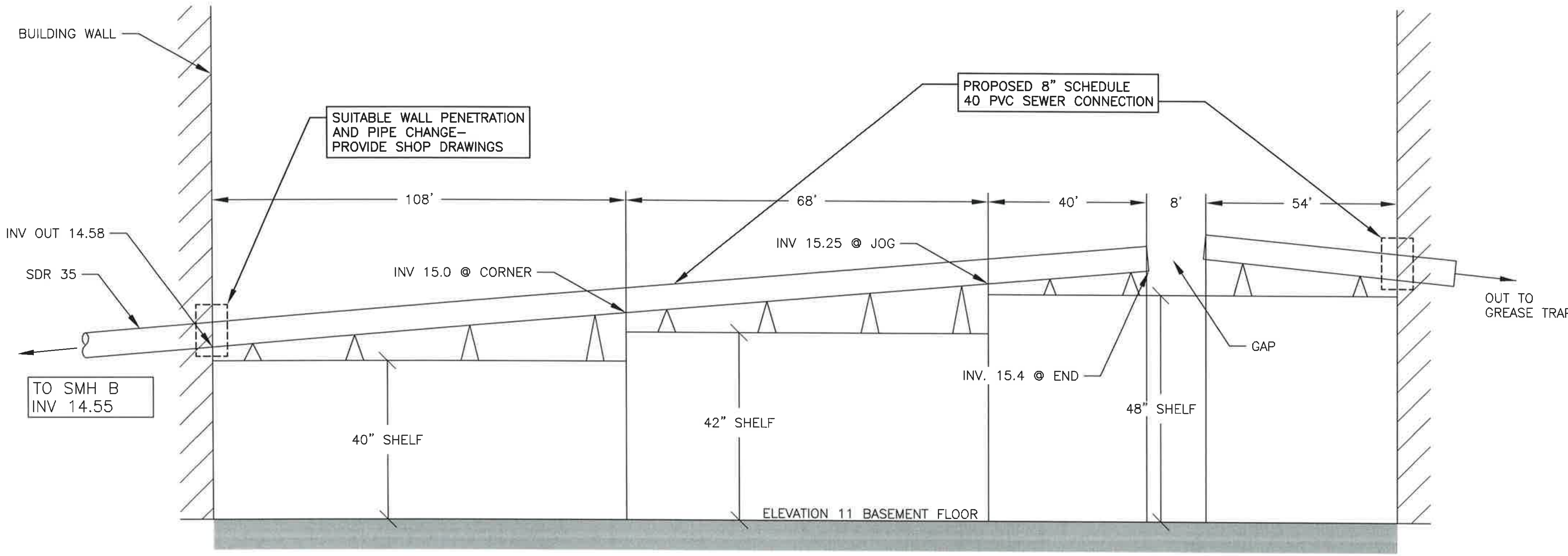


BASEMENT SEWER PROFILE

NTS

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

WWW.HALEYWARD.COM

200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

MIXED USE DEVELOPMENT

581 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
SITE PERMIT PLANS
SUPPLEMENTAL SUBMISSION

OWNER:

ATLAS COMMONS, LLC
3 PLEASANT STREET
SUITE #400
PORTSMOUTH, NH 03801

LAND SURVEYOR & CIVIL ENGINEER:

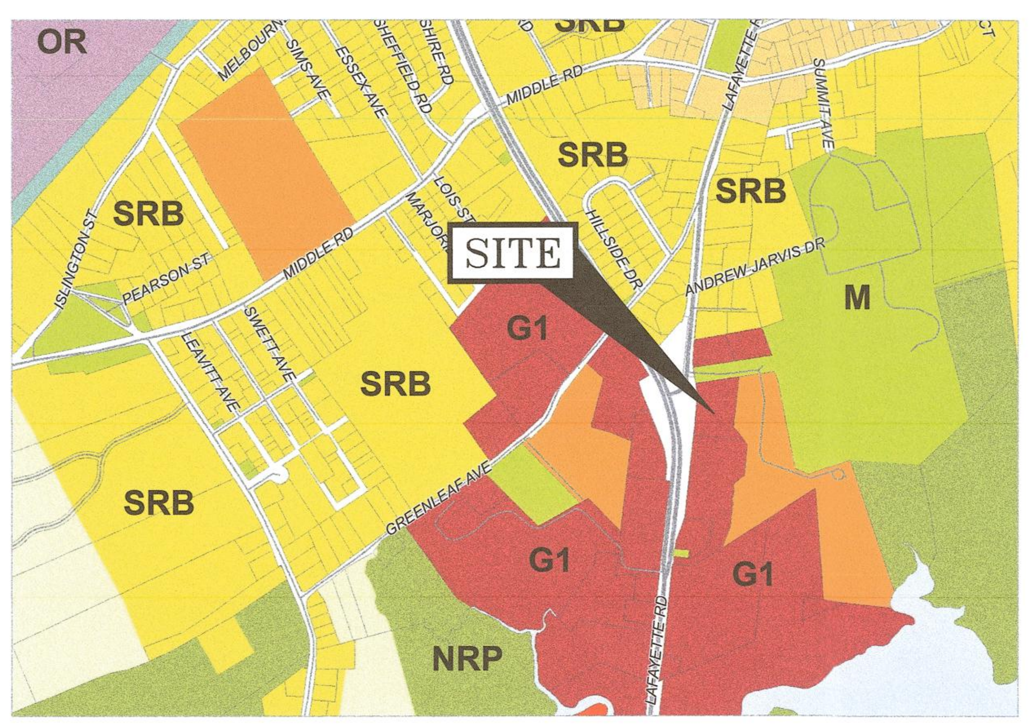
HALEY WARD, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
Tel. (603) 430-9282
Fax (603) 436-2315

ARCHITECT:

ARCOVE ARCHITECTS
3 CONGRESS STREET, SUITE 1
PORTSMOUTH, NH 03801
TEL. (603) 988-0042

LANDSCAPE ARCHITECT:

TERRA FIRMA LANDSCAPE
ARCHITECTURE
163A COURT STREET
PORTSMOUTH, NH 03801
TEL. (603) 430-8388



Residential Districts

R	Rural
SRA	Single Residence A
SRB	Single Residence B
GRA	General Residence A
GRB	General Residence B
GRC	General Residence C
GA/MH	Garden Apartment/Mobile Home

Mixed Residential Districts

MRO	Mixed Residential Office
MRB	Mixed Residential Business
G1	Gateway Corridor
G2	Gateway Center

Business Districts

GB	General Business
B	Business
WB	Waterfront Business

Industrial Districts

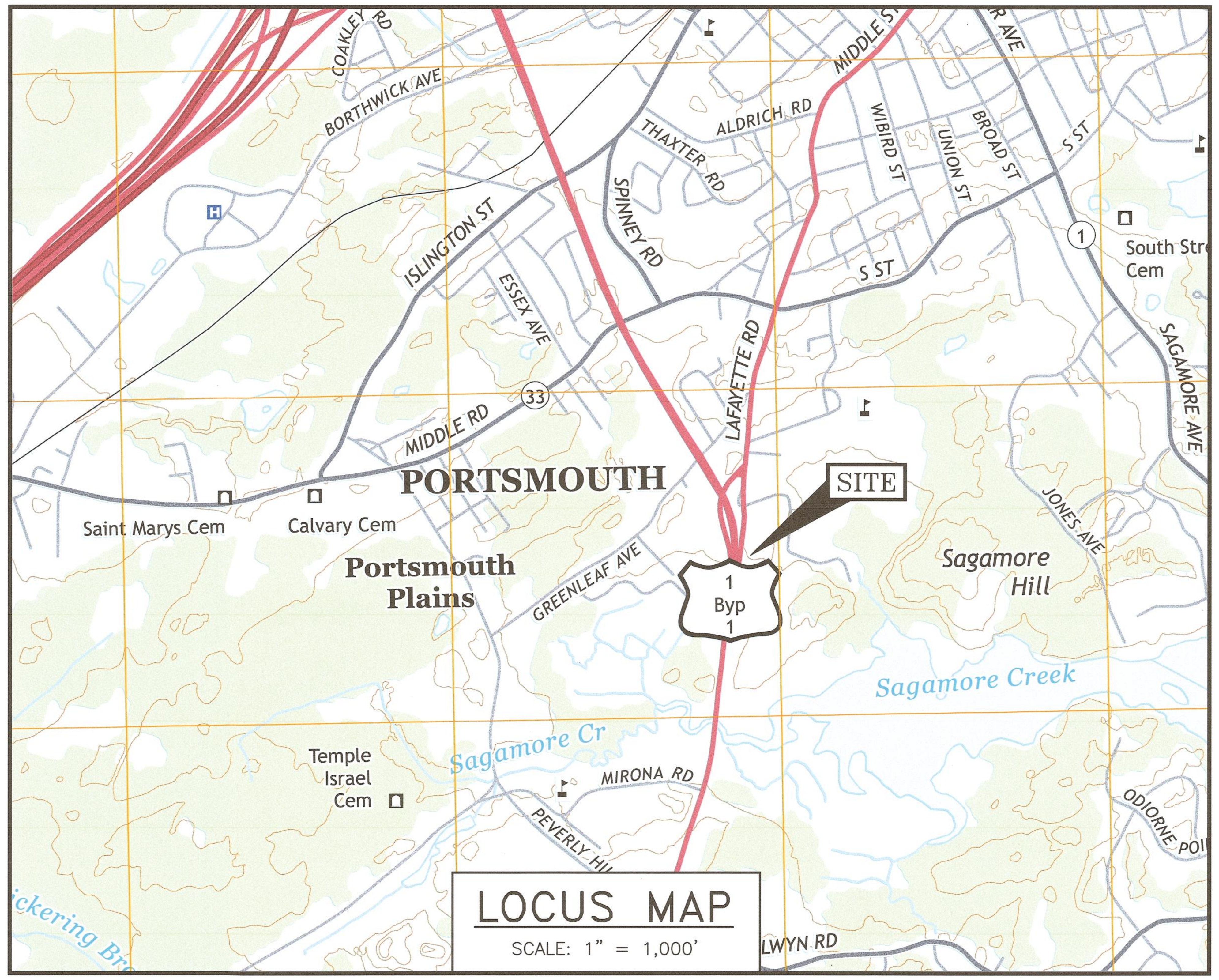
OR	Office Research
I	Industrial
WI	Waterfront Industrial

Airport Districts

AIR	Airport
AI	Airport Industrial
PI	Pease Industrial
ABC	Airport Business Commercial

Other Districts

M	Municipal
NRP	Natural Resource Protection
TC	Transportation Corridor



LOCUS MAP
SCALE: 1" = 1,000'

PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT: TO BE SUMBITTED
PORTSMOUTH SITE PLAN APPROVAL: PENDING
CITY COUNCIL APPROVAL: PENDING

LEGEND:

EXISTING	PROPOSED	
		PROPERTY LINE
		SETBACK
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	G	GAS LINE
D	D	STORM DRAIN
W	W	WATER LINE
WS	WS	WATER SERVICE
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
WSO GSO	WSO GSO	SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
	SMH	SEWER MANHOLE
	DMH	DRAIN MANHOLE
	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

DIG SAFE
ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

INDEX OF SHEETS

UTILITY CONTACTS

ELECTRIC:
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436-7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

NATURAL GAS:
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294-5144
ATTN: DAVE BEAULIEU

CABLE:
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679-5695 (X1037)
ATTN: MIKE COLLINS

SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427-1530
ATTN: JIM TOW

COMMUNICATIONS:
FAIRPOINT COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427-5525

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

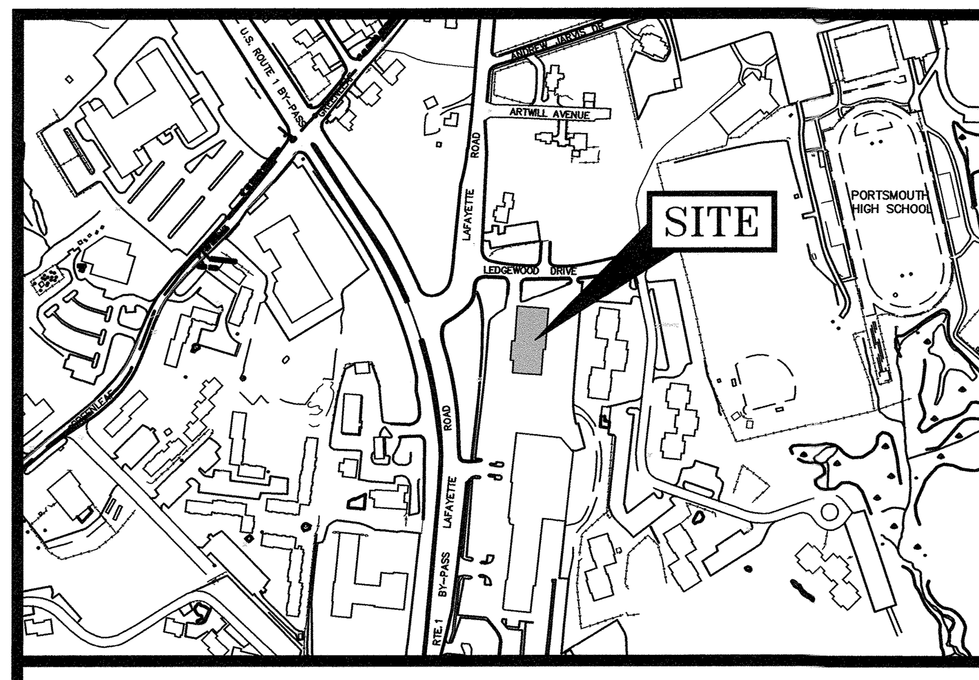
CHAIRMAN _______________ DATE _______________

SITE PLANS
MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PLAN SET SUBMITTAL DATE: 1 MAY 2024

5010156 1397.04



LEGEND

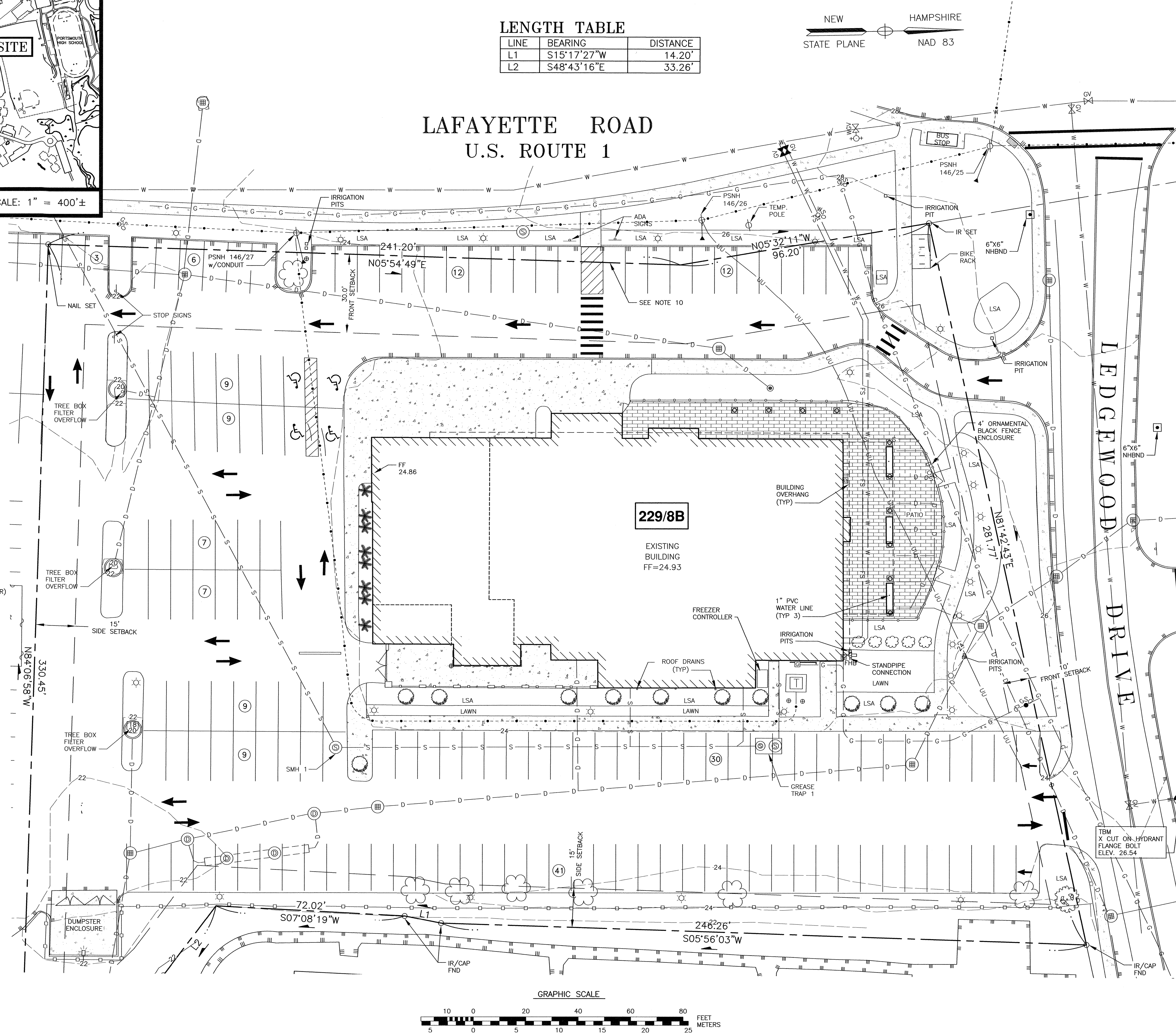
EXISTING	DESCRIPTION
124/21	MAP 124 / LOT 21
N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
	BOUNDARY LINE
	SETBACK LINE
RR SPK FND	RAILROAD SPIKE FOUND
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
DH FND	DRILL HOLE FOUND
BND w/ DH	BOUND w/ DRILL HOLE
FM	FORCE MAIN
S	SEWER LINE
G	GAS LINE
D	STORM DRAIN
W	POTABLE WATER LINE
	UNDERGROUND ELECTRIC
	OVERHEAD WIRES
100	CONTOUR LINE
97x3	SPOT ELEVATION
	EDGE OF PAVEMENT
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY) (w/ LIGHT)
	LIGHT POLE
WSO GSO SSO	SHUTOFF/CURB STOP (WATER, GAS, SEWER)
GV	GATE VALVE
HYD.	HYDRANT
CB	CATCH BASIN
T	TELEPHONE MANHOLE
S	SEWER MANHOLE
D	DRAIN MANHOLE
FF	FINISHED FLOOR
INV.	INVERT
TBM	TEMPORARY BENCHMARK
TYP.	TYPICAL

PROJECT ABUTTERS:

TM/LOT	NAME
229/3	CITY OF PORTSMOUTH
229/7	RPL PROPERTIES, LLC
229/8	599 LAFAYETTE, LLC
231/8	STATE OF NEW HAMPSHIRE
243/1	155 GREENLEAF, LLC
243/2	OPERATION BLESSING
229/6	DOMER REALTY, LLC
229/6A	ST. NICHOLAS GREEK ORTHODOX CHURCH

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S15°17'27"W	14.20'
L2	S48°43'16"E	33.26'



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NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270F, EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY (GW) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 229 LOT 8B.

8) EASEMENTS & RESTRICTIONS:
A) ROAD/UTILITY EASEMENT AREA: SEE C-3316 AND RCRD 2110/428 AND 2184/184. THIS EASEMENT WAS PARTIALLY TERMINATED ON 11/9/15: SEE RCRD 5669/0645.
B) 30' RIGHT OF WAY: SEE D-8806 AND 5446/2589.
C) MUTUAL PARKING AND ACCESS RIGHTS FOR LOTS 1-3 ON PLAN D-8806 ARE OF RECORD. RCRD 2343/128 AND 5446/2588.

9) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

10) THE 2011 NHDOT LAFAYETTE ROAD PROJECT IDENTIFIED THIS ENCROACHMENT.

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ABUTTERS	3/24/24
2	CONTOURS, NOTE 6	1/24/24
1	ISSUED FOR APPROVAL	9/5/23
0	ISSUED FOR COMMENT	7/5/23

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

SCALE: 1"=20'   JULY 2023

EXISTING CONDITIONS PLAN

C1

FB 259 PG 10

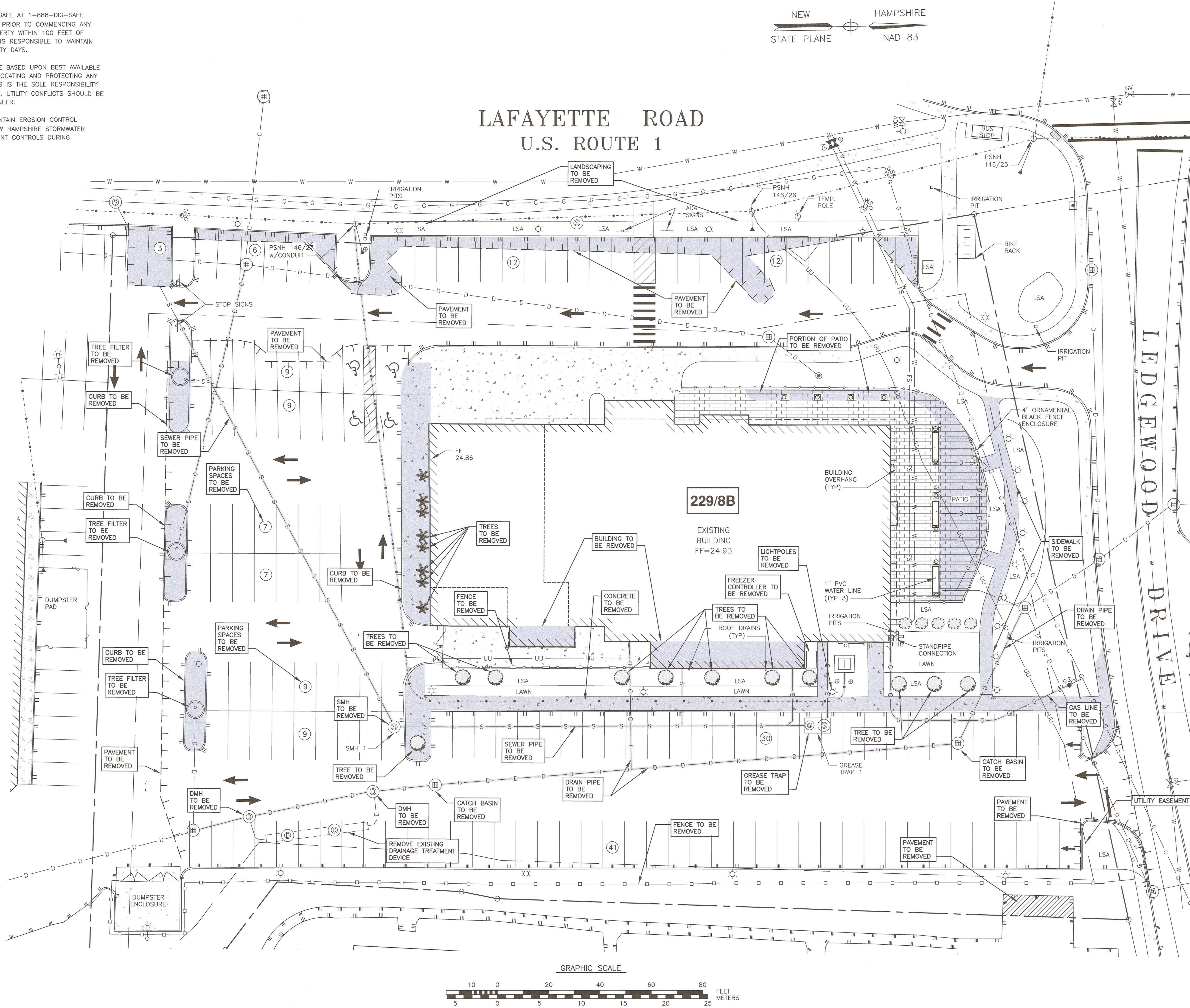
1397.04

GENERAL NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).



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200 Griffin Road, Unit 3
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603.430.9282

WWW.HALEYWARD.COM

DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN 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 WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

J) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

K) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	PAVEMENT ENCROACHMENT REMOVAL	5/1/24
2	BUILDING & SIDEWALK DEMO	2/21/24
1	ISSUED FOR APPROVAL	9/5/23
0	ISSUED FOR COMMENT	7/5/23

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7651 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20' JULY 2023

DEMOLITION PLAN

C2

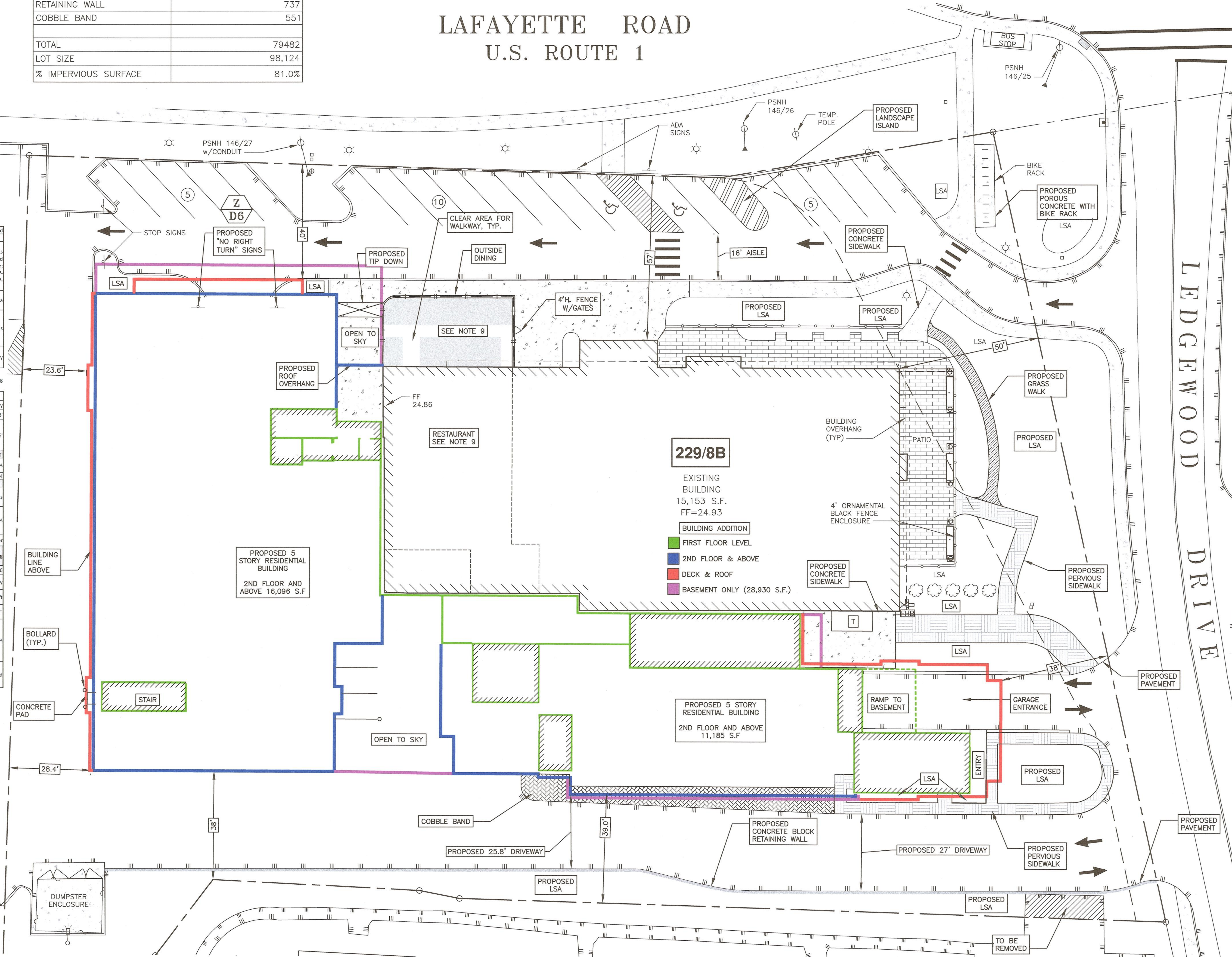
FB 259 PG 10 1397.04

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	42434
SIDEWALK	4,604
PAVEMENT	30,890
CURB	266
RETAINING WALL	737
COBBLE BAND	551
TOTAL	79482
LOT SIZE	98,124
% IMPERVIOUS SURFACE	81.0%

WAIVER REQUESTS:
SECTION 10.5B22.40 – SPECIAL SETBACK FROM LAFAYETTE ROAD
SECTION 10.5B34.80 MIXED USE BUILDING: MAXIMUM DWELLING UNITS PER BUILDING
SECTION – 10.5B41.80 – COMMUNITY SPACE COVERAGE
SECTION 10.5B34.80 MIXED USE BUILDING: MAXIMUM BUILDING FOOTPRINT

NEW HAMPSHIRE STATE PLANE NAD 83



GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

ZONING TABLE

	allowed	proposed
Zone	G1	
Height	**5 stories or 60 ft** per Density Bonus 10.5B72.30: 4 stories or 50 ft (+ density bonus 1 story or 10') 10.5B.22.20, at streets <60' row: 35' max <25' setback 45' max <50' setback. 60' max >50' setback.	<35'/3 stories at street fronts <45'/4 stories beyond <60'/5 stories at center: **Building A: 56'-9 13/16" +/-** **Building B: 57'-8 1/16" +/-**
Penthouses	10' above allowed building height	n/a
Roof appurtenance	<10' above allowed height. Roof decks, roof gardens, and related structures and appurtenances shall not be counted in the building height limits.	<10' elevator & stair overruns
Façade Types	forecourt, recessed entry, dooryard, step, porch	recessed entry
Building Types	A Mixed-Use Building	A Mixed-Use Building
Setbacks (ft) *		
Front (principle)	70'-90' from cl of Lafayette Rd	Waiver for setback within public way
Front (secondary)	min 0' & max 50' from Lot Line at Ledgewood	38'
Side	Minimum side setback: 15 ft.	23.6'
Rear	20 ft min,	38.0'
Front lot line buildout commercial/mixed-use	75%	83.0%
Frontage, Lafayette	100 ft min	337.4
Lot area (sf)	NR	
lot area per dwelling unit	Workforce Housing incentive, 36 per acre = 81 units	72 units
Building Coverage, maximum	60%	43.0%
Footprint, max	24,000 sf	**Waiver**
ground floor area per use, max	NR	parking
Open space, minimum	20%	20.6
permitted uses (G1)	multifamily, restaurant	multifamily
façade modulation length, max (ft)	100'	modulations < 100 ft
floor height above sidewalk, max	24"	8"
glazing, shopfront, min	50% ground floor	glazed and open > 50%
roof types(pitch)	ALL (flat roofs must have "parapet wall that acts as a structural expression of the building façade and its materials)	Flat & Sloped

PORTSMOUTH APPROVAL CONDITIONS NOTES:

1) ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

2) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

3) 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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED BUILDING ADDITION ON TAX MAP 229 LOT 8B.

8) DESIGN BASED ON ARCHITECTURAL PLAN BY ARCOVE ARCHITECTS DATED 5/1/24.

9) CONVERSION OF TUSCAN MARKETPLACE TO RESTAURANT (NORTHEASTERN THAI, LLC) APPROVED UNDER PERMIT: LU-22-254

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
8	REMOVE PARKING ENCROACHMENT	5/1/24
7	DRIVE RAMP	3/5/24
6	BUILDING REVISION, PARKING LAYOUT	2/21/24
5	SIGNAGE	2/6/24
4	TABLES & PARKING	1/24/24
3	LANDSCAPE AREA, IMPERVIOUS TABLE	1/2/24
2	IMPERVIOUS SURFACE TABLE	12/19/23
1	ISSUED FOR APPROVAL	11/20/23
0	ISSUED FOR COMMENT	8/31/23

REVISIONS

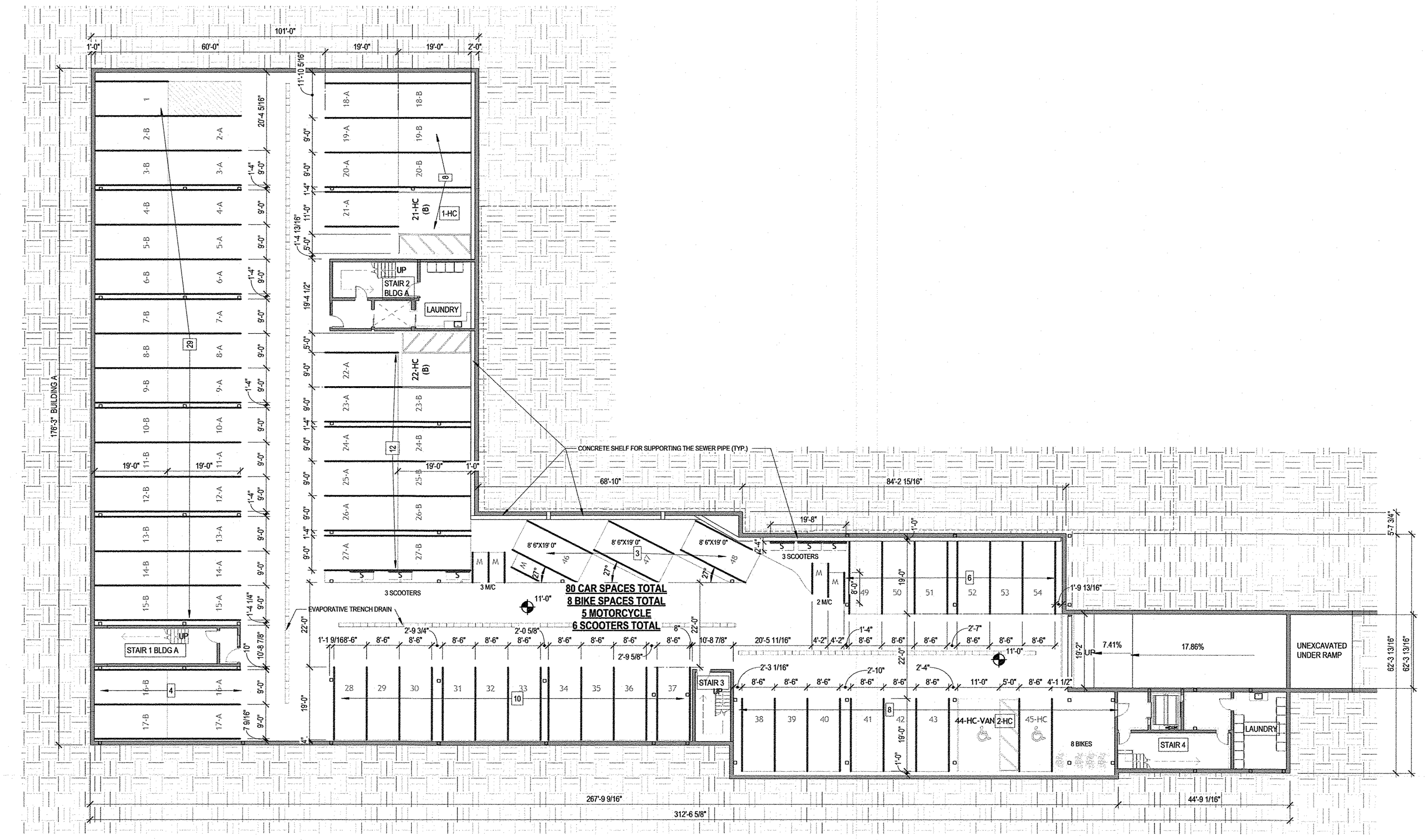
STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 8651 LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR

SCALE: 1"=20' JULY 2023

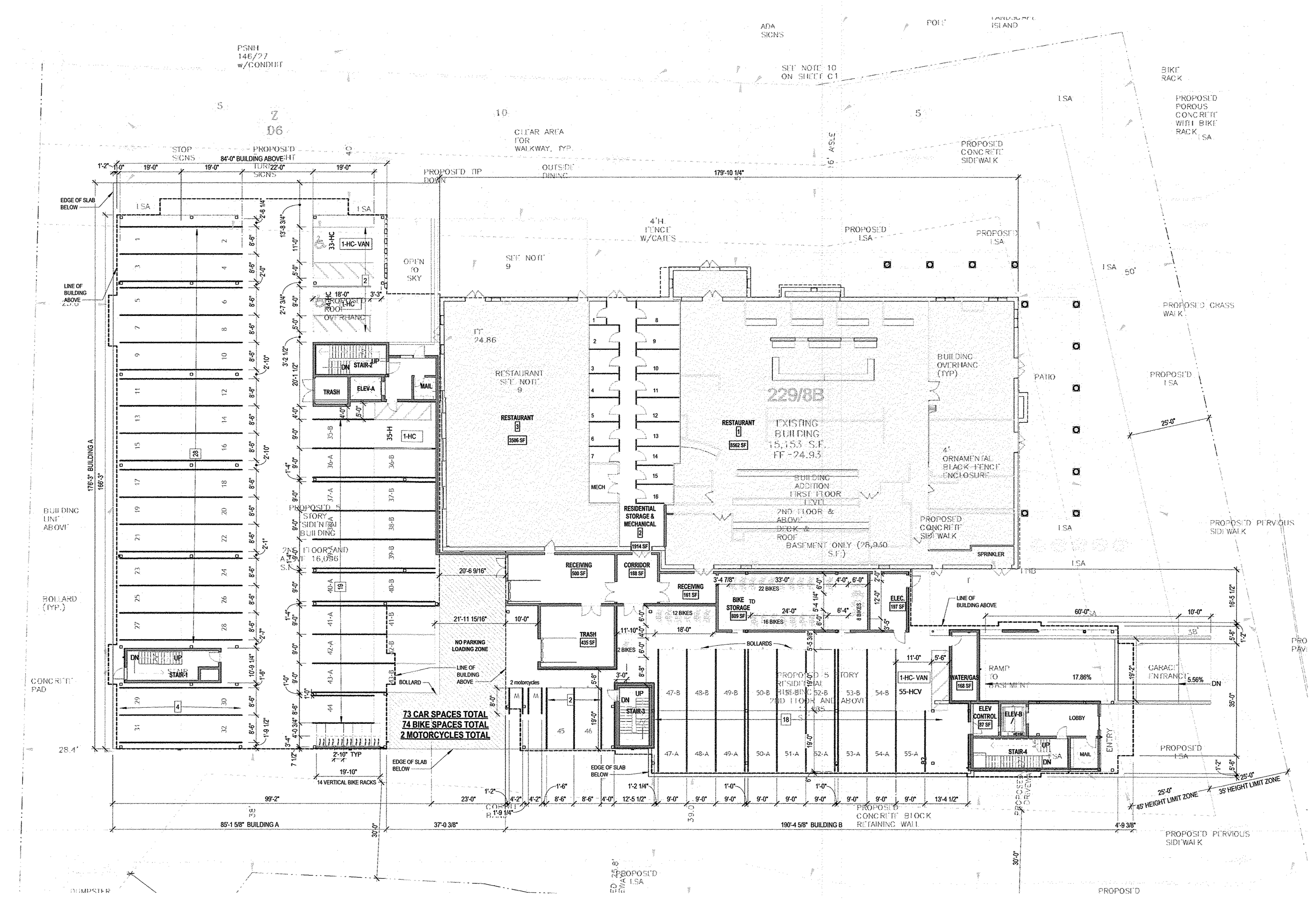
SITE PLAN C3

FB 259 PG 10 1397.04



BASEMENT– 80 TOTAL SPACES NTS

PARKING ASSIGNMENT:
BASEMENT PARKING WILL BE ASSIGNED TO 54 RESIDENTIAL UNITS (26 STACKED/28 SINGLE).



LEVEL 1– 73 TOTAL SPACES NTS

PARKING ASSIGNMENT:
LEVEL 1 STACKED PARKING WILL BE ASSIGNED TO RESIDENTIAL UNITS– 3 STACKED, AND COMMERCIAL UNITS (EMPLOYEE & VALET) 15 STACKED.
SINGLE SPACES ARE NOT ASSIGNED.

20 OUTDOOR SPACES ARE NOT ASSIGNED.

GRAPHIC SCALE
40 30 20 10 0 50 100 150 FEET
10 5 0 10 20 30 40 50 METERS

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NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PURPOSE OF THIS PLAN IS TO SHOW PARKING IN GENERAL FOR THE PROPOSED SITE DEVELOPMENT ON ASSESSOR'S MAP 229 LOT 8B IN THE CITY OF PORTSMOUTH.

4) TANDEM SPACES SHALL BE ASSIGNED TO PARTICULAR UNITS TO CONFORM TO SECTION 10.1114.33

5) IF THE NHDOT REQUIRES THE PARKING ENCROACHMENT ON ROUTE 1 TO BE ELIMINATED AND THE PARKING NEEDS TO BE REVISED THEN THE ALTERNATIVE PARKING LAYOUT WILL BE CONSTRUCTED.

6) PARKING TALLY:
ASSIGNED SPACES RESIDENTIAL: 86
COMMERCIAL & NON–ASSIGNED SPACES: 87
TOTAL SPACES: 173

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
8	PARKING LAYOUTS	5/1/24
7	PARKING LAYOUTS	3/27/24
6	PARKING LAYOUTS	3/5/24
5	COMBINE PARKING PLANS, ALTERNATIVE	2/21/24
4	SEWER SIZE, NOTE 4	2/6/24
3	PARKING TABLES, PARKING LAYOUT	1/24/24
2	PARKING TABLES	12/19/23

REVISIONS

SCALE: NTS JULY 2023

PARKING PLAN

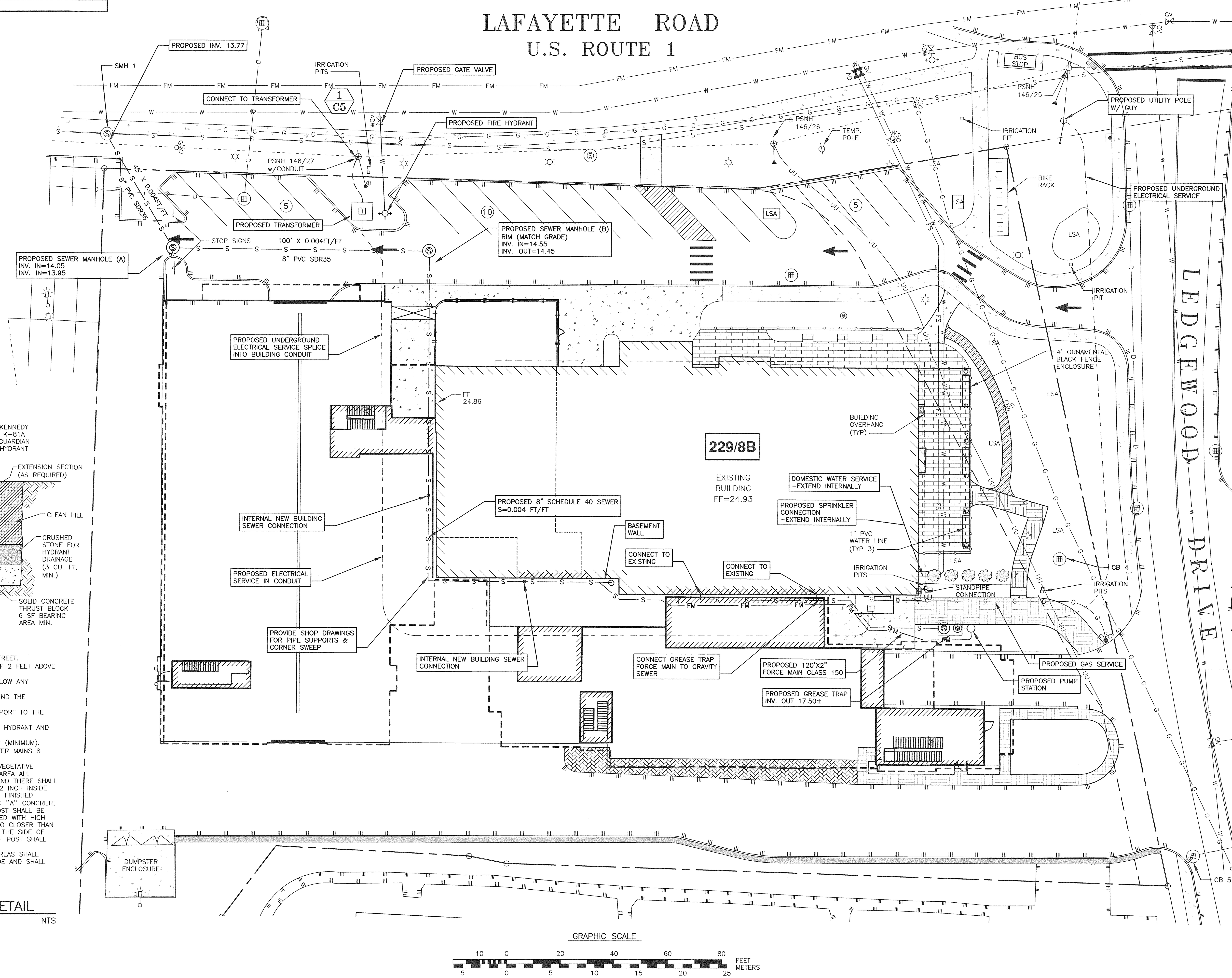
C4

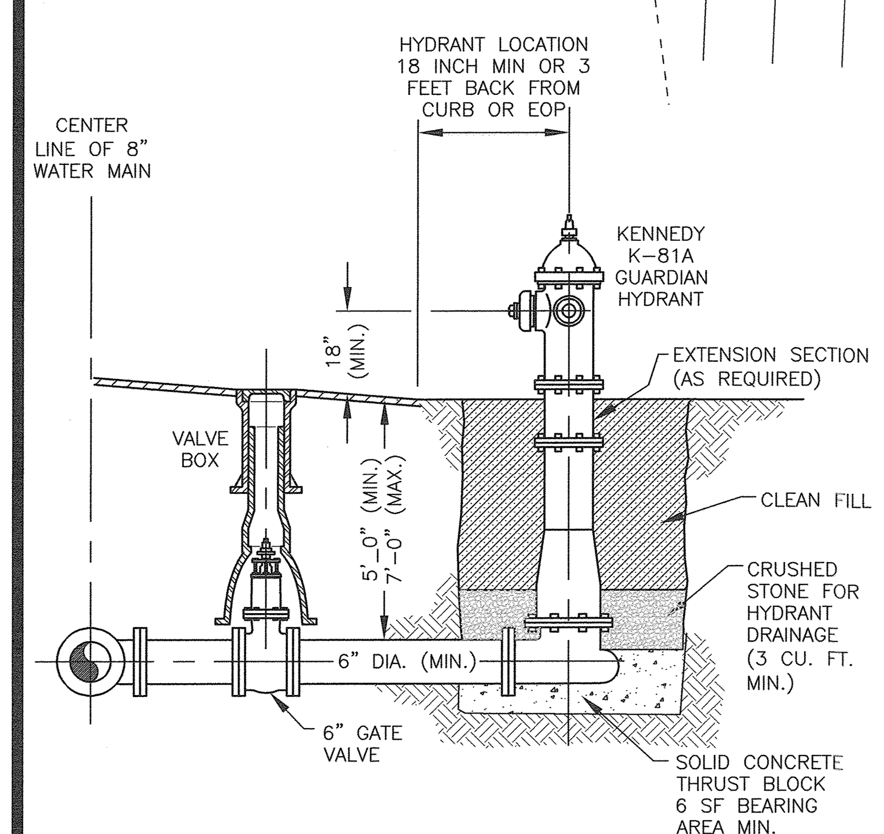
FB 259 PG 10

1397.04

EXISITNG SEWER STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE	INVERT	DIRECTION
SMH 1	EX	22.56	8" CI	13.26	IN
			8" CI	13.21	OUT
GREASE TRAP 1	EX	23.63		17.58	OUT
GREASE TRAP 1	EX	23.63		17.23	OUT





NOTES:
1) THE PUMPER OUTLET NOZZLE SHALL FACE THE STREET.
2) CENTERLINE OF NOZZLES SHALL BE A MINIMUM OF 2 FEET ABOVE FINISHED GRADE OF STREET.
3) AREA AROUND HYDRANT SHALL BE GRADED TO ALLOW ANY SURFACE WATER TO DRAIN AWAY FROM HYDRANT.
4) HYDRANT SHALL BE FIRMLY SUPPORTED ALL AROUND THE STANDPIPE.
5) EARTH FILL SHALL BE TAMPED TO GIVE FIRM SUPPORT TO THE HYDRANT BARREL.
6) A GATE VALVE SHALL BE INSTALLED BETWEEN THE HYDRANT AND THE MAIN ON THE LATERAL.
7) HYDRANT LATERALS SHALL BE 6" INSIDE DIAMETER (MINIMUM).
8) HYDRANT LATERALS SHALL BE CONNECTED TO WATER MAINS 8 INCHES IN DIAMETER OR LARGER.
9) INSTALLATION OF HYDRANTS IN AREAS OF HEAVY VEGETATIVE GROWTH SHALL HAVE A 10 FOOT RADIUS CLEAR AREA ALL AROUND THE OPERATING NUT OF THE HYDRANT AND THERE SHALL ALSO BE AN INDICATOR POST FABRICATED FROM 2 INCH INSIDE DIAMETER GALVANIZED STEEL PIPE, 7 FEET ABOVE FINISHED GRADE, AND SET 2 FEET BELOW GRADE IN CLASS "A" CONCRETE CONCRETE 6 INCHES ALL AROUND POST. THIS POST SHALL BE COATED WITH ZINC CHROMATE PRIMER AND PAINTED WITH HIGH VISIBILITY RED. THE INDICATOR POST SHALL BE NO CLOSER THAN 3 FEET FROM THE OPERATING NUT, AND SET ON THE SIDE OF THE HYDRANT FACING ONCOMING TRAFFIC. TOP OF POST SHALL BE THREADED AND CAPPED.
10) INSTALLATION OF HYDRANTS IN HEAVY GROWTH AREAS SHALL HAVE GATE BOXES RAISED 6 INCHES ABOVE GRADE AND SHALL BE PAINTED ORANGE FOR HIGH VISIBILITY.

1 / C5 FIRE HYDRANT DETAIL
NTS

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NOTES:

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3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) SEWER FLOW CALCULATION
EXISTING RESTAURANTS(S)
225 SEATS X 10 GPD/SEAT = 2,250 GPD

PROPOSED RESIDENCES
106 BEDROOMS X 80 GPD/BEDROOM = 8,480 GPD

TOTAL FLOW = 10,730 GPD

5) FINAL SEWER PIPE DESIGN (BUILDING PERMIT PHASE) SHALL BE REVIEWED AND APPROVED BY PORTSMOUTH DPW.

6) FIRE HYDRANT WILL BE PRIVATE AND SUBJECT TO CITY OF PORTSMOUTH DPW REGULATIONS AND MAINTENANCE.

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
7	PARKING, TRANSFORMER, HYDRANT	5/1/24
6	NOTE 5, HYDRANT	3/27/24
5	BUILDING & SEWER	3/5/24
4	TRANSFORMER, NOTE 4	2/6/24
3	FORCE MAIN	1/24/24
2	GREASE TRAP	12/19/23
1	ISSUED FOR APPROVAL	11/20/23
0	ISSUED FOR COMMENT	5/8/23

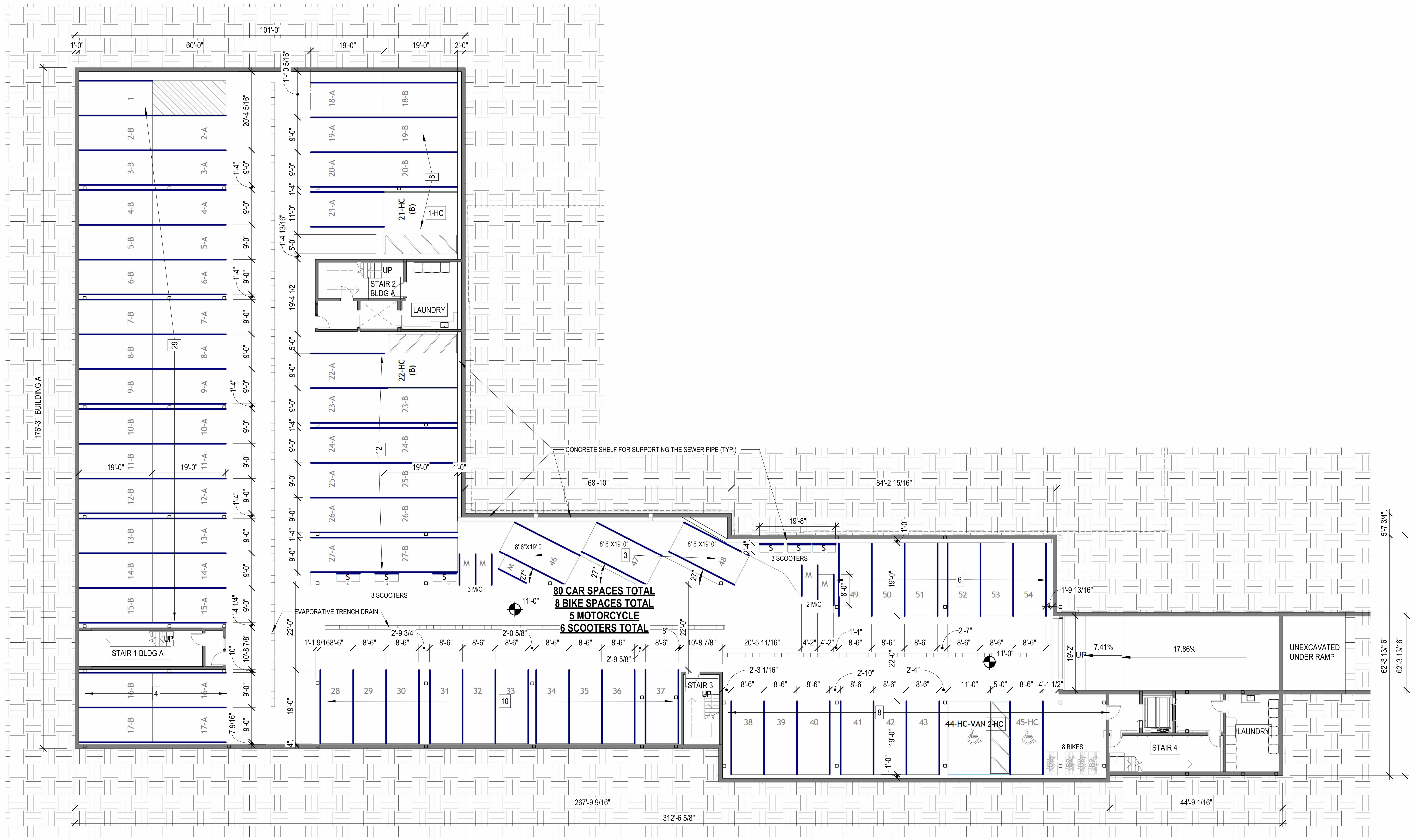
REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20'   FEBRUARY 2023

UTILITY PLAN   C5

FB 259 PG 10   1397.04



1 BASEMENT OVERALL PLAN - PB
1/16" = 1'-0"

ARCOVE ARCHITECTS
3 CONGRESS ST., SUITE1
PORTSMOUTH NH 03801
603.988.0042
www.ARCove.com

581 Lafayette Road Apartments

581 LAFAYETTE RD
PORTSMOUTH, NH, 03801

PROJECT NO: 1013

OWNER
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
603.427.0725

CIVIL ENGINEERING
AMBIT ENGINEERING; A DIVISION OF HALEY WARD
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, NH 03801
603.430.9282
https://www.ambitengineering.com/

LICENSED ARCHITECT TRACY S. KOZAK No. 2662 STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

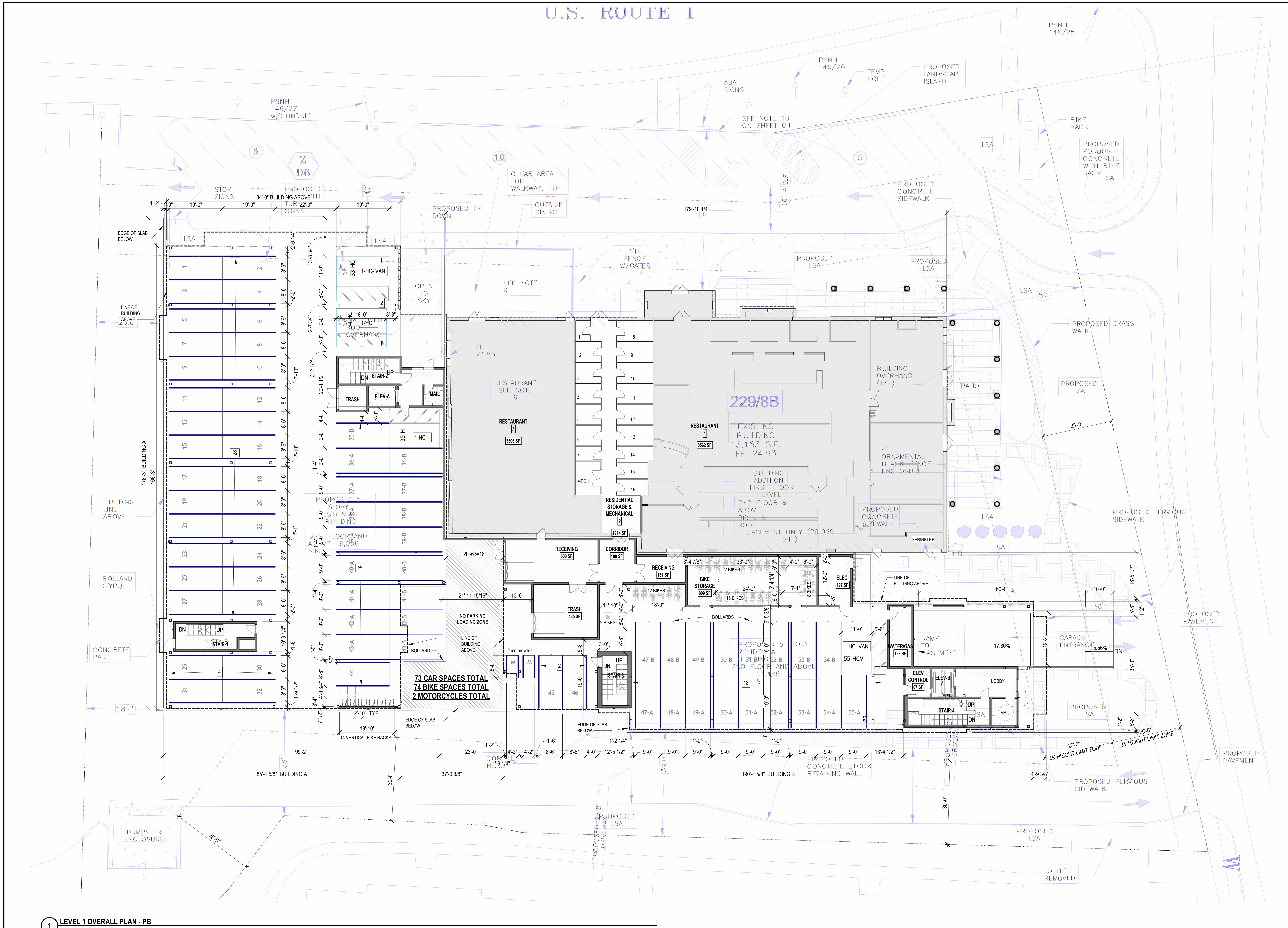
REVISIONS

NO.	DATE	DESCRIPTION

BASEMENT DIMENSIONED PARKING PLAN

SCALE: 1/16" = 1'-0"
DATE: 4/30/2024
DRAWN: HA
CHECKED: TK

PB1.00



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603.430.9282
https://www.ambitengineering.com/

LICENSED ARCHITECT TRACY S. KOZAK No. 2662 STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

LEVEL 1 DIMENSIONED PARKING PLAN

SCALE: 1/16" = 1'-0"

DATE: 4/30/2024
DRAWN: HA
CHECKED: TK

PB1.01

MIXED USE DEVELOPMENT

581 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
SITE PERMIT PLANS

OWNER:

ATLAS COMMONS, LLC
3 PLEASANT STREET
SUITE #400
PORTSMOUTH, NH 03801

LAND SURVEYOR & CIVIL ENGINEER:

HALEY WARD, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
Tel. (603) 430-9282
Fax (603) 436-2315

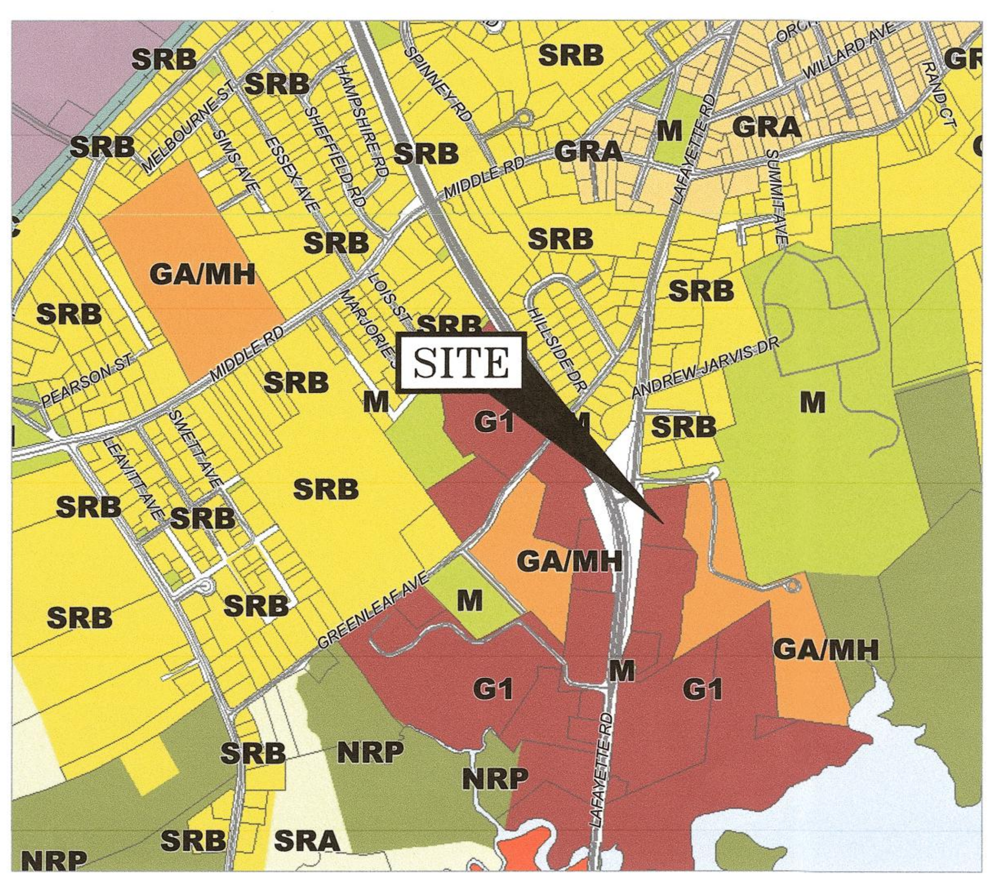
ARCHITECT:

ARCOVE ARCHITECTS
3 CONGRESS STREET, SUITE 1
PORTSMOUTH, NH 03801
TEL. (603) 988-0042

LANDSCAPE ARCHITECT:

TERRA FIRMA LANDSCAPE ARCHITECTURE
163A COURT STREET
PORTSMOUTH, NH 03801
TEL. (603) 430-8388

PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT: TO BE SUMBITTED
PORTSMOUTH SITE PLAN APPROVAL: PENDING
CITY COUNCIL APPROVAL: PENDING



Residential Districts
- R Rural
- SRA Single Residence A
- SRB Single Residence B
- GRA General Residence A
- GRB General Residence B
- GRC General Residence C
- GA/MH Garden Apartment/Mobile Hom

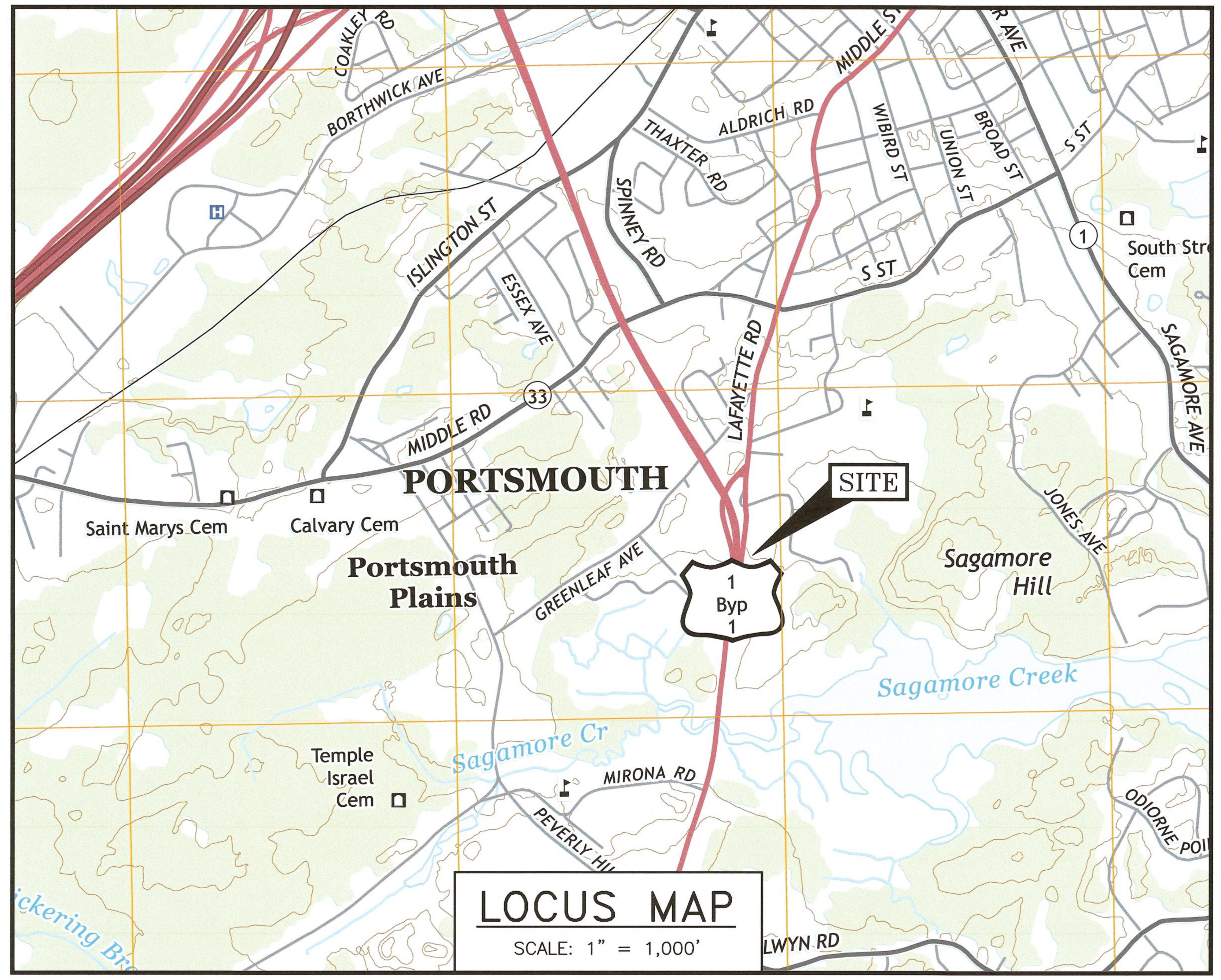
Mixed Residential Districts
- MRO Mixed Residential Office
- MRB Mixed Residential Business
- G1 Gateway Cooridor
- G2 Gateway Center

Business Districts
- GB General Business
- B Business
- WB Waterfront Business

Industrial Districts
- OR Office Research
- I Industrial
- WI Waterfront Industrial

Airport Districts
- AIR Airport
- AI Airport Industrial
- PI Pease Industrial
- ABC Airport Business Commercial

Other Districts
- M Municipal
- NRP Natural Resource Protection
- TC Transportation Corridor



LOCUS MAP
SCALE: 1" = 1,000'

DIG SAFE
ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

LEGEND:

EXISTING	PROPOSED	
		PROPERTY LINE
		SETBACK
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	G	GAS LINE
D	D	STORM DRAIN
W	W	WATER LINE
WS	WS	WATER SERVICE
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
WSO GSO	WSO GSO	SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
	SMH	SEWER MANHOLE
	DMH	DRAIN MANHOLE
	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

INDEX OF SHEETS

UTILITY CONTACTS

ELECTRIC:
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436-7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

NATURAL GAS:
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294-5144
ATTN: DAVE BEAULIEU

CABLE:
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679-5695 (X1037)
ATTN: MIKE COLLINS

SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427-1530
ATTN: JIM TOW

COMMUNICATIONS:
FAIRPOINT COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427-5525

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

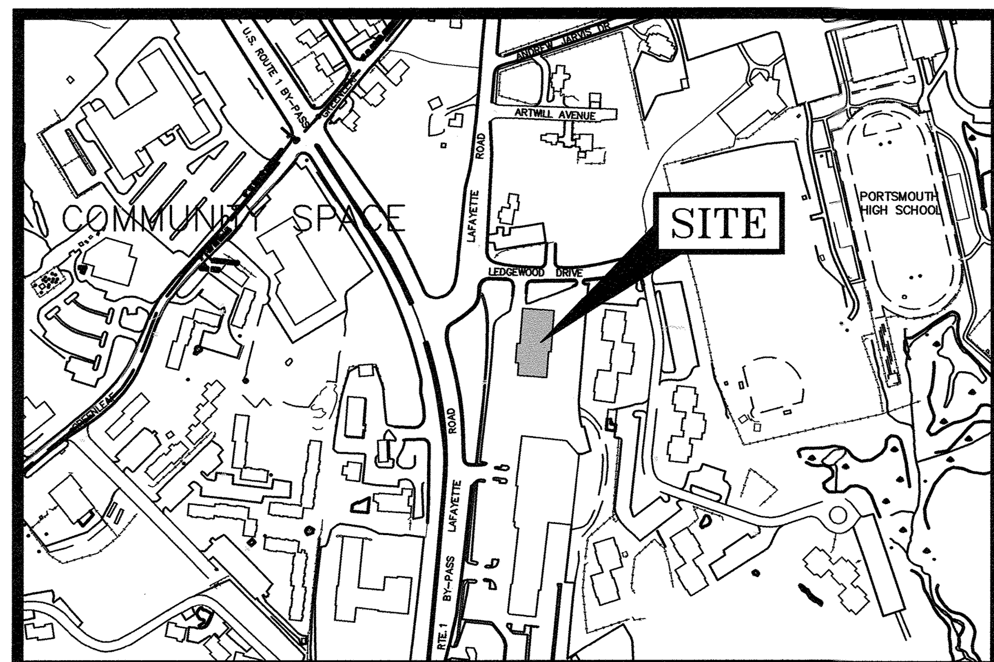
CHAIRMAN ____________________ DATE ____________

SITE PLANS
MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

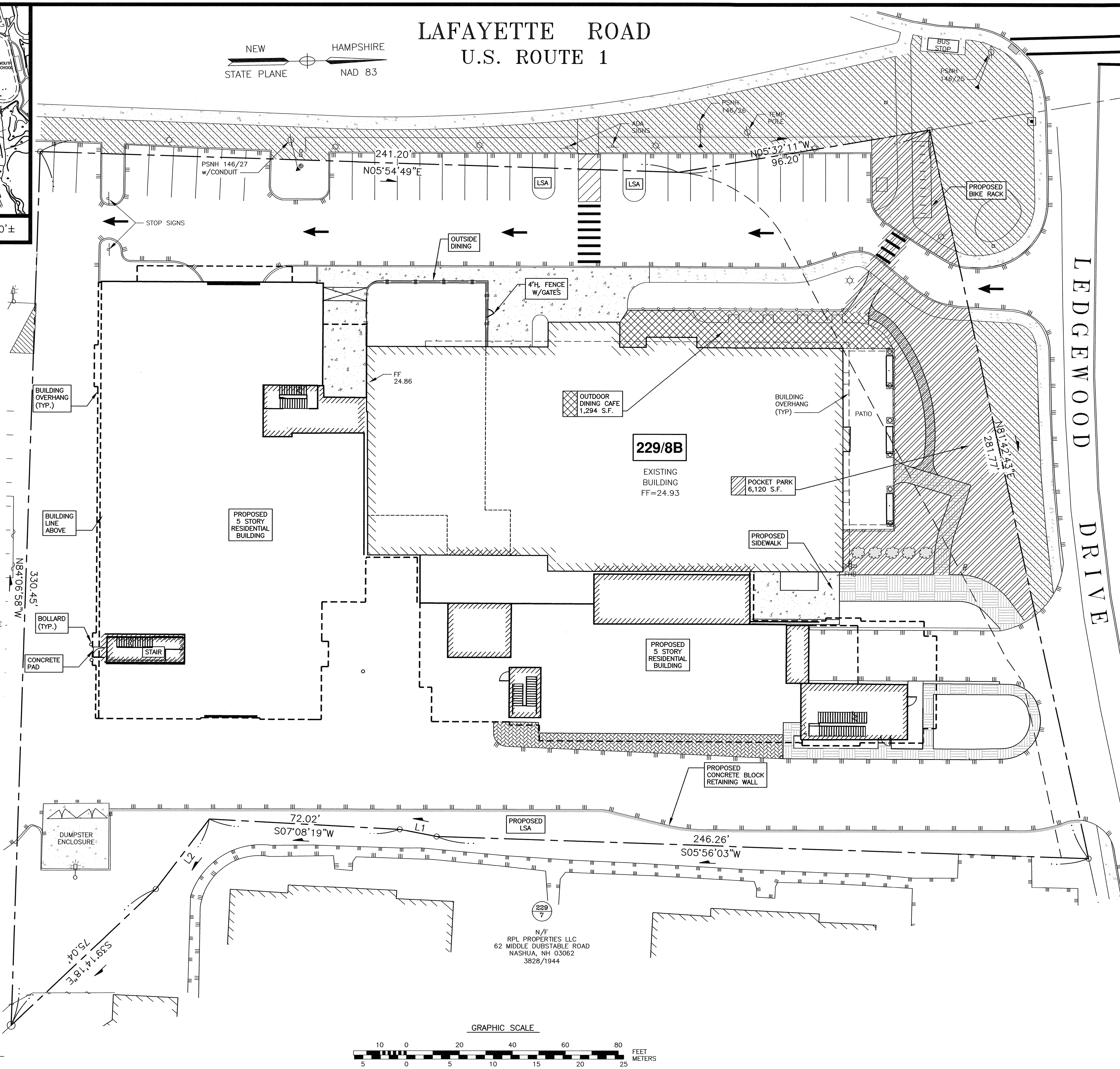
AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

PLAN SET SUBMITTAL DATE: 27 MARCH 2024

5010156 1397.04



LOCATION MAP SCALE: 1" = 400'±



LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S15°17'27"W	14.20'
L2	S48°43'16"E	33.26'

COMMUNITY SPACE

6,120 S.F. OF POCKET PARK

1,294 S.F. OF OUTDOOR DINING CAFE

PROPOSED COMMUNITY SPACE 7,414 S.F.
LOT AREA 98,124 S.F.

COMMUNITY SPACE REQUIRED: 10%
(PER SECTION 10.5B41.80.2)
COMMUNITY SPACE PROVIDED: 7.6%

COMMUNITY SPACE USES
(PER SECTION 10.5B102)

PROPOSED USES: OUTDOOR DINING CAFE
POCKET PARK

MAINTENANCE AREA

9,351 S.F. OF AREA WHERE THE LANDSCAPING WILL BE MAINTAINED BY THE OWNER OF TAX MAP 229 LOT 8B.

ABUTTERS

229/8
N/F
599 LAFAYETTE LLC
C/O BAKER PROPERTIES
953 ISLINGTON STREET #23D
PORTSMOUTH, NH 03801
5592/0456

229/3
CITY OF PORTSMOUTH
SCHOOL
PO BOX 628
PORTSMOUTH, NH 03801
1985/0379

231/8
STATE OF NEW HAMPSHIRE
STATE HOUSE
CONCORD, NH 03301
2303/0042

243/1
N/F
155 GREENLEAF LLC
549 US HIGHWAY 1 BYPASS
PORTSMOUTH, NH 03801
6127/1245

243/2
N/F
OPERATION BLESSING MASTER CARD
600 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

229/6
N/F
DOMER REALTY LLC
545 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
4231/1881

229/6A
N/F
ST. NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE
PORTSMOUTH, NH 03801
2410/0505

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

JOHN R. CHAGNON, LLS 738 — 3.24.24
DATE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.436.2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270F, EFFECTIVE JANUARY 29, 2021

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE COMMUNITY SPACE EASEMENT ON TAX MAP 229 LOT 8B AND THE ADDITIONAL OFF-SITE AREA WHERE CITY LANDSCAPE MAINTENANCE WILL BE THE RESPONSIBILITY OF THE TAX MAP 229 LOT 8B PROPERTY OWNER.

NO.	DESCRIPTION	DATE
2	TITLE, ABUTTERS	3/24/24
1	EASEMENT LOCATIONS	2/21/24
0	ISSUED FOR COMMENT	1/24/24

REVISIONS

581 LAFAYETTE ROAD COMMUNITY SPACE & EASEMENT PLAN TAX MAP 229 – LOT 8B TO THE CITY OF PORTSMOUTH

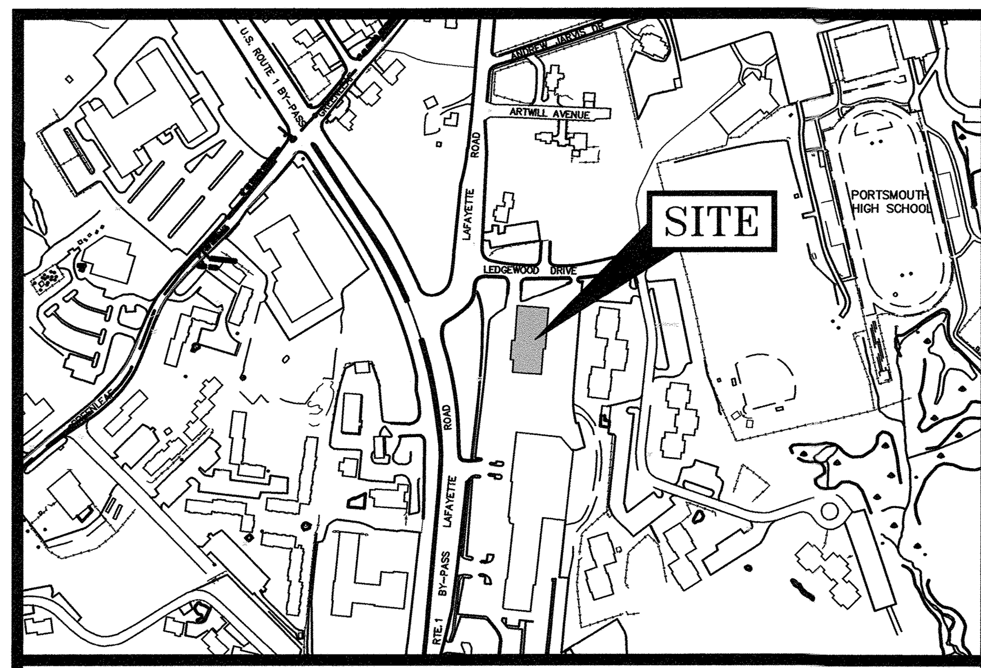
OWNER

ATLAS COMMONS, LLC

PROPERTY LOCATED AT
581 LAFAYETTE ROAD
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' JANUARY 2024

FB 259, PG 10 5010156



LOCATION MAP SCALE: 1" = 400'±

LEGEND

EXISTING	DESCRIPTION
124/21	MAP 124 / LOT 21
N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
	BOUNDARY LINE
	SETBACK LINE
RR SPK FND	RAILROAD SPIKE FOUND
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
DH FND	DRILL HOLE FOUND
BND w/ DH	BOUND w/ DRILL HOLE
FM	FORCE MAIN
S	SEWER LINE
G	GAS LINE
D	STORM DRAIN
W	POTABLE WATER LINE
	UNDERGROUND ELECTRIC
	OVERHEAD WIRES
100	CONTOUR LINE
97x3	SPOT ELEVATION
	EDGE OF PAVEMENT
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY) (w/ LIGHT)
	LIGHT POLE
WSO GSO SSO	SHUTOFF/CURB STOP (WATER, GAS, SEWER)
GV	GATE VALVE
HYD.	HYDRANT
CB	CATCH BASIN
T	TELEPHONE MANHOLE
S	SEWER MANHOLE
D	DRAIN MANHOLE
FF	FINISHED FLOOR
INV.	INVERT
TBM	TEMPORARY BENCHMARK
TYP.	TYPICAL

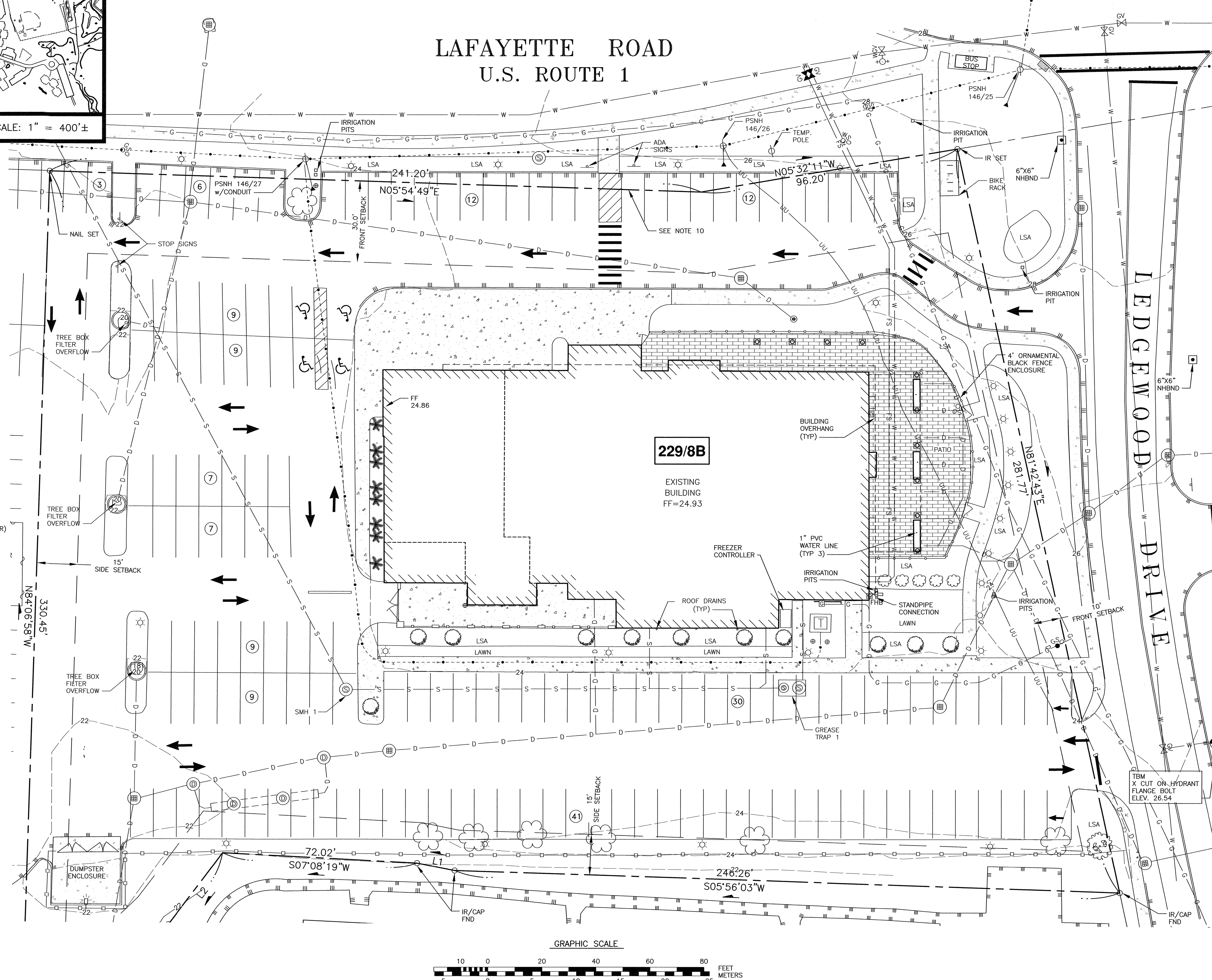
PROJECT ABUTTERS:

TM/LOT	NAME
229/3	CITY OF PORTSMOUTH
229/7	RPL PROPERTIES, LLC
229/8	599 LAFAYETTE, LLC
231/8	STATE OF NEW HAMPSHIRE
243/1	155 GREENLEAF, LLC
243/2	OPERATION BLESSING
229/6	DOMER REALTY, LLC
229/6A	ST. NICHOLAS GREEK ORTHODOX CHURCH

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S15°17'27"W	14.20'
L2	S48°43'16"E	33.26'

NEW HAMPSHIRE STATE PLANE NAD 83



AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270F, EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY (GW) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 229 LOT 8B.

8) EASEMENTS & RESTRICTIONS:
A) ROAD/UTILITY EASEMENT AREA: SEE C-3316 AND RCRD 2110/428 AND 2184/184. THIS EASEMENT WAS PARTIALLY TERMINATED ON 11/9/15: SEE RCRD 5669/0645.

B) 30' RIGHT OF WAY: SEE D-8806 AND 5446/2589.

C) MUTUAL PARKING AND ACCESS RIGHTS FOR LOTS 1-3 ON PLAN D-8806 ARE OF RECORD. RCRD 2343/128 AND 5446/2588.

9) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

10) THE 2011 NHDOT LAFAYETTE ROAD PROJECT IDENTIFIED THIS ENCROACHMENT.

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ABUTTERS	3/24/24
2	CONTOURS, NOTE 6	1/24/24
1	ISSUED FOR APPROVAL	9/5/23
0	ISSUED FOR COMMENT	7/5/23

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON SIGNATURE

SCALE: 1"=20' JULY 2023

EXISTING CONDITIONS PLAN

C1

FB 259 PG 10

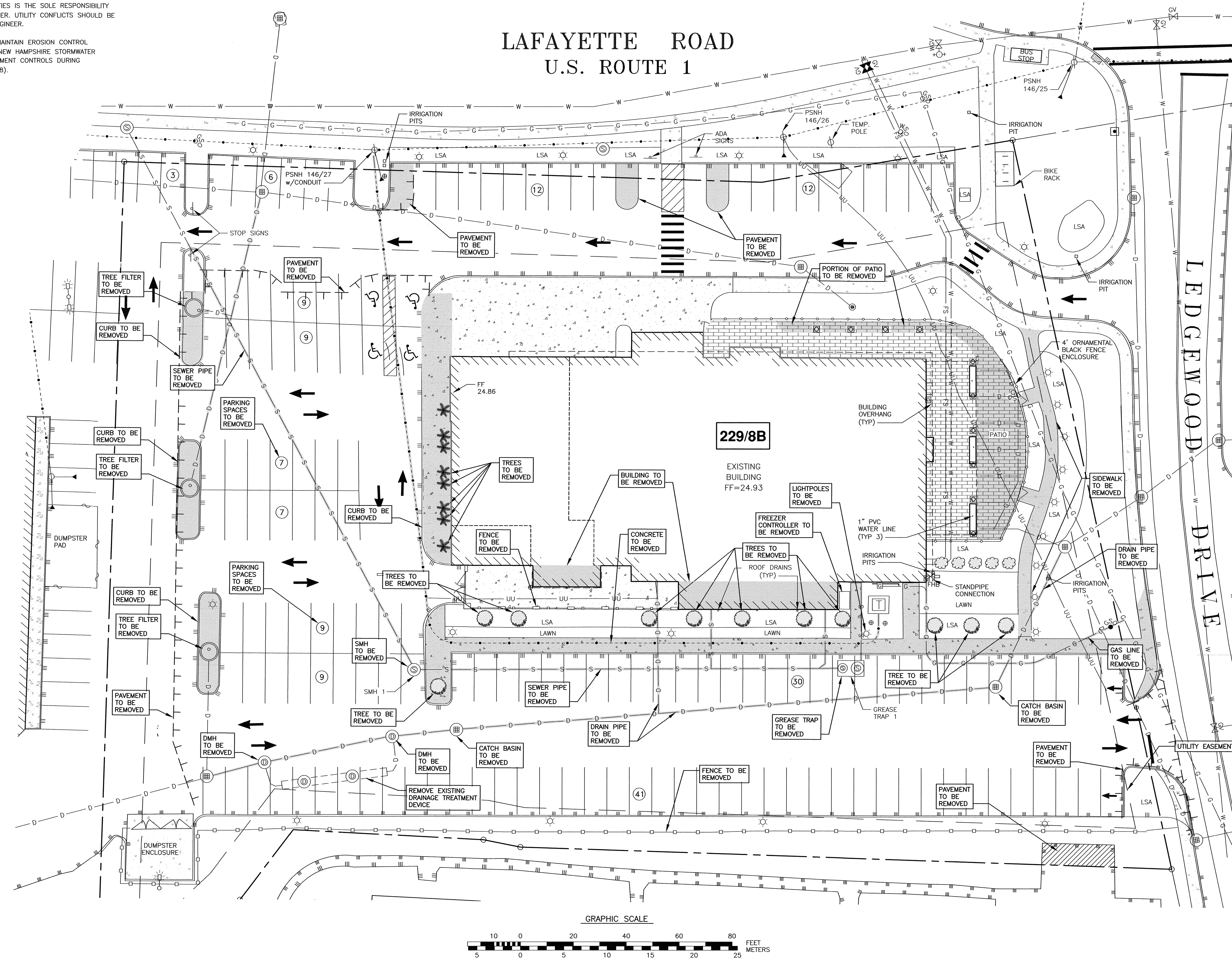
1397.04

GENERAL NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).



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A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN 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 WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

J) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

K) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	BUILDING & SIDEWALK DEMO	2/21/24
1	ISSUED FOR APPROVAL	9/5/23
0	ISSUED FOR COMMENT	7/5/23

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7651 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20'   JULY 2023

DEMOLITION PLAN

C2

FB 259 PG 10   1397.04

ZONING TABLE

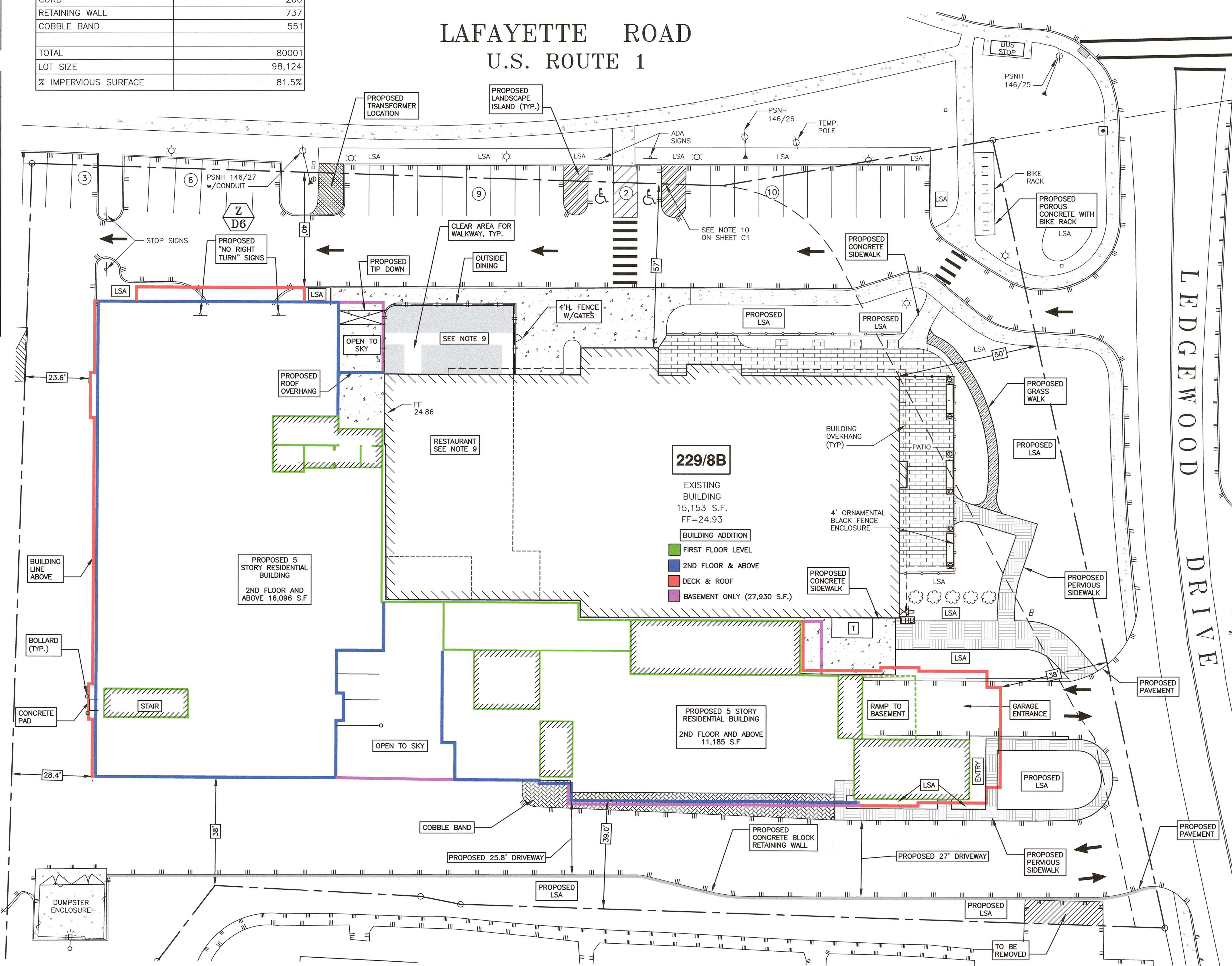
	allowed	proposed
Zone	G1	
Height	**5 stories or 60 ft** per Density Bonus 10.5B72.30: 4 stories or 50 ft (+ density bonus 1 story or 10') 10.5B.22.20, at streets <60' row: 35' max <25' setback 45' max <50' setback. 60' max >50' setback.	<35'/3 stories at street fronts <45'/4 stories beyond <60'/5 stories at center: **Building A: 56'-9 13/16" +/-** **Building B: 57'-8 1/16" +/-**
Penthouses	10' above allowed building height	n/a
Roof appurtenance	<10' above allowed height. Roof decks, roof gardens, and related structures and appurtenances shall not be counted in the building height limits.	<10' elevator & stair overruns
Façade Types	forecourt, recessed entry, dooryard, step, porch	recessed entry
Building Types	A Mixed-Use Building	A Mixed-Use Building
Setbacks (ft) *		
Front (principle)	70'-90' from cl of Lafayette Rd	Waiver for setback within public way
Front (secondary)	min 0' & max 50' from Lot Line at Ledgewood	38'
Side	Minimum side setback: 15 ft.	23.6'
Rear	20 ft min,	38.0'
Front lot line buildout commercial/mixed-use	75%	83.0%
Frontage, Lafayette	100 ft min	337.4
Lot area (sf)	NR	
lot area per dwelling unit	Workforce Housing incentive, 36 per acre = 81 units	72 units
Building Coverage, maximum	60%	43.0%
Footprint, max	24,000 sf	**Waiver**
ground floor area per use, max	NR	parking
Open space, minimum	20%	20.6
permitted uses (G1)	multifamily, restaurant	multifamily
façade modulation length, max (ft)	100'	modulations < 100 ft
floor height above sidewalk, max	24"	8"
glazing, shopfront, min	50% ground floor	glazed and open > 50%
roof types(pitch)	ALL (flat roofs must have "parapet wall that acts as a structural expression of the building façade and its materials)	Flat & Sloped

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	42434
SIDEWALK	4,604
PAVEMENT	31,409
CURB	266
RETAINING WALL	737
COBBLE BAND	551
TOTAL	80001
LOT SIZE	98,124
% IMPERVIOUS SURFACE	81.5%

WAIVER REQUESTS:

SECTION 10.5B22.40 – SPECIAL SETBACK FROM LAFAYETTE ROAD
SECTION 10.5B34.80 MIXED USE BUILDING: MAXIMUM DWELLING UNITS PER BUILDING
SECTION – 10.5B41.80 – COMMUNITY SPACE COVERAGE
SECTION 10.5B34.80 MIXED USE BUILDING: MAXIMUM BUILDING FOOTPRINT



GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

PORTSMOUTH APPROVAL CONDITIONS NOTES:

1) ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

2) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

3) 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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED BUILDING ADDITION ON TAX MAP 229 LOT 8B.

8) DESIGN BASED ON ARCHITECTURAL PLAN BY ARCOVE ARCHITECTS DATED 3/25/24.

9) CONVERSION OF TUSCAN MARKETPLACE TO RESTAURANT (NORTHEASTERN THAI, LLC) APPROVED UNDER PERMIT: LU-22-254

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
7	DRIVE RAMP	3/5/24
6	BUILDING REVISION, PARKING LAYOUT	2/21/24
5	SIGNAGE	2/6/24
4	TABLES & PARKING	1/24/24
3	LANDSCAPE AREA, IMPERVIOUS TABLE	1/2/24
2	IMPERVIOUS SURFACE TABLE	12/19/23
1	ISSUED FOR APPROVAL	11/20/23
0	ISSUED FOR COMMENT	8/31/23

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 738 LICENSED LAND SURVEYOR

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7651 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20' JULY 2023

SITE PLAN

C3

FB 259 PG 10

1397.04

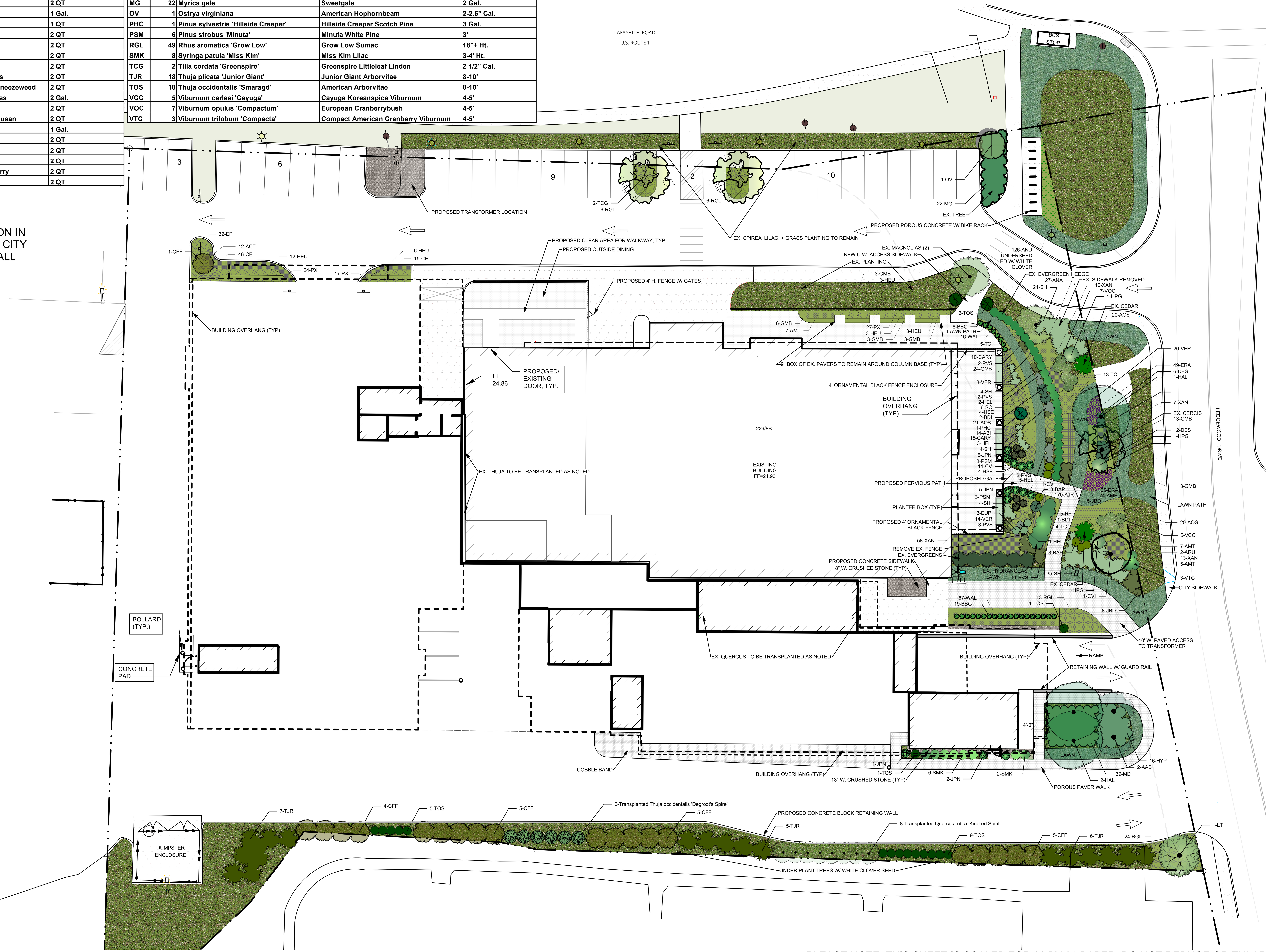
Plant List - Perennials

ID	Qty	Botanical Name	Common Name	Scheduled Size
ABI	14	Amsonia 'Blue Ice'	Blue Star Flower	2 QT
ACT	12	Actaea racemosa	Bugbane	1 Gal.
AJR	170	Ajuga reptans 'Mahogany'	Bugleweed	2 QT
AMH	24	Amsonia hubrichtii	Arkansas Blue Star	1 Gal.
AMT	19	Amsonia tabernaemontana	Eastern Blue Star	1 Gal.
ANA	27	Aster novae-angliae	New England Aster	2 QT
AND	126	Andropogon ger. 'Blackhawks'	Big Bluestem	Plugs
AOS	70	Aster oblongifolius 'October Skies'	Aromatic Aster	2 QT
ARU	2	Aruncus dioicus	Goat's Beard	2 QT
BAP	6	Baptisia australis 'Screaming Yellow'	False Indigo	2 QT
CARY	25	Caryopteris clandonensis 'First Choice'	First Choice Bluebeard	2 QT
CE	61	Carex eburnea	Seersucker Sedge	2 QT
CV	22	Coreopsis verticillata 'Moonbeam'	Threadleaf Coreopsis	2 QT
DES	18	Deschampsia cespitosa	Tussock Grass	1 Gal.
EP	32	Epimedium x rubrum 'Sweetheart'	Barrenwort	1 QT
ERA	114	Eragrostis spectabilis	Purple Lovegrass	2 QT
EUP	3	Eupatorium maculatum 'Gateway'	Joe Pye Weed	2 QT
GMB	55	Geranium macrorrhizum 'Bevan's'	Cranesbill	2 QT
HEL	11	Helianthus salicifolius	Willowleaf Sunflower	2 QT
HEU	27	Heuchera villosa 'Autumn Bride'	Autumn Bride Coral Bells	2 QT
HSE	8	Helenium 'Sahin's Early Flowerer'	Sahin's Early Flowerer Sneezeweed	2 QT
PVS	20	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 Gal.
PX	68	Polystichum acrostichoides	Christmas Fern	2 QT
RF	5	Rudbeckia fulgida 'Goldstrum'	Goldstrum Black-Eyed Susan	2 QT
SH	71	Sporobolus heterolepsis	Prairie Dropseed	1 Gal.
SO	6	Stachys officinalis	Bishop's Wort	2 QT
TC	22	Thermopsis caroliniana	Carolina Lupine	2 QT
VER	42	Vernonia lettermannii 'Iron Butterfly'	Iron Butterfly Ironweed	2 QT
WAL	83	Waldsteinia ternata	Siberian Barren Strawberry	2 QT
XAN	88	Xanthorhiza simplicissima	Yellowroot	2 QT

Plant List - Trees and Shrubs

ID	Qty	Botanical Name	Common Name	Scheduled Size
AAB	2	Amelanchier grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	2 1/1" Cal.
BBG	27	Buxus microphylla 'Baby Gem'	Baby Gem Boxwood	4-4 1/2'
BDI	3	Buddlea 'Davidii'	Butterfly Bush	4-5'
CFF	20	Carpinus betulus 'Frans Fontaine'	Frans Fontaine Hornbeam	1 1/2-2" Cal.
CVI	1	Chionanthus virginicus	Fringe Tree	7-8'
HAL	3	Halesia carolina 'Jersey Belle'	Jersey Belle Carolina Silverbelle	1 1/2" Cal.
HPG	3	Hydrangea paniculata 'Grandiflora'	PeeGee Panicle Hydrangea	5 Gal.
HYP	16	Hypercum 'Hidcote'	St. Johnswort	5 Gal.
JBD	13	Juniperus communis depressa 'AmiDak'	Blueberry Delight Juniper	2 Gal.
JPN	13	Juniperus procumbens 'Nana'	Dwarf Japanese Garden Juniper	3 Gal.
LT	1	Liriodendron tulipifera	Tulip Tree	2 1/2" Cal.
MD	39	Microbiota decussata	Russian Arborvitae	2 G
MG	22	Myrica gale	Sweetgale	2 Gal.
OV	1	Ostrya virginiana	American Hophornbeam	2-2.5" Cal.
PHC	1	Pinus sylvestris 'Hillside Creeper'	Hillside Creeper Scotch Pine	3 Gal.
PSM	6	Pinus strobus 'Minuta'	Minuta White Pine	3'
RGL	49	Rhus aromatica 'Grow Low'	Grow Low Sumac	18"+ Ht.
SMK	8	Syringa patula 'Miss Kim'	Miss Kim Lilac	3-4' Ht.
TCG	2	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden	2 1/2" Cal.
TJR	18	Thuja plicata 'Junior Giant'	Junior Giant Arborvitae	8-10'
TOS	18	Thuja occidentalis 'Smaragd'	American Arborvitae	8-10'
VCC	5	Viburnum carlesi 'Cayuga'	Cayuga Koreanspice Viburnum	4-5'
VOC	7	Viburnum opulus 'Compactum'	European Cranberrybush	4-5'
VTC	3	Viburnum trilobum 'Compacta'	Compact American Cranberry Viburnum	4-5'

NOTE: IRRIGATION IN THE FORM OF SPRINKLER HEADS IN THE LAWN AREAS AND DRIP IRRIGATION IN PLANTING BEDS SHALL BE SOURCED FROM THE CITY OF PORTSMOUTH'S MUNICIPAL WATER, AND SHALL INCLUDE A BACK FLOW PREVENTION.



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LICENSED LANDSCAPE ARCHITECT
TERRENCE P. PARKER
041
STATE OF NEW HAMPSHIRE

No.	Date	By	Revision Notes

No.	Date	Issue Notes
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C	2/12/2024	COMMUNITY SPACE DESIGN
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A	1/2/2024	TAC COMMENTS

Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title
581 LAFAYETTE

Sheet Title
On-Site Community Space Landscape Plan

Project Manager	Project ID 581 LAFAYETTE
Drawn By TC	Scale 1:240
Reviewed By TP	Sheet No. L-1A of 2
Date 11/20/2023	
CAD File Name 581LAFAYETTE32624.vwx	

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE.

Plant List - Off-Site Perennials

ID	Qty	Botanical Name	Common Name	Scheduled Size
AND	925	Andropogon ger. 'Blackhawks'	Big Bluestem	Plugs
BAP	15	Baptisia australis 'Screaming Yellow'	False Indigo	2 QT
DES	43	Deschampsia cespitosa	Tussock Grass	1 Gal.
ERA	30	Eragrostis spectabilis	Purple Lovegrass	2 QT
GMB	16	Geranium macrorrhizum 'Bevan's'	Cranesbill	2 QT
LIA	363	Liatris spicata	Gayfeather	2 QT
PVS	63	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 Gal.
RF	13	Rudbeckia fulgida 'Goldstrum'	Goldstrum Black-Eyed Susan	2 QT
SH	45	Sporobolus heterolepsis	Prairie Dropseed	1 Gal.
XAN	2	Xanthorhiza simplicissima	Yellowroot	2 QT

Plant List - Off-Site Trees + Shrubs

ID	Qty	Botanical Name	Common Name	Scheduled Size
CK	3	Cladrastis kentukea	Yellowwood	2 1/2" Cal.
CR	20	Cornus racemosa	Grey Dogwood	5 Gal.
HAL	2	Halesia carolina 'Jersey Belle'	Jersey Belle Carolina Silverbelle	1 1/2" Cal.
HYP	12	Hypercum 'Hidcote'	St. Johnswort	5 Gal.
JBD	25	Juniperus communis depressa 'AmiDak'	Blueberry Delight Juniper	2 Gal.
JES	6	Juniperus virginiana 'Emerald Sentinel'	Emerald Sentinel Red Cedar	3" Cal.
MG	31	Myrica gale	Sweetgale	2 Gal.
MP	26	Myrica pensylvanica	Northern Bayberry	2 Gal.
NS	4	Nyssa sylvetica	Black Tupelo	3" Cal.
OV	2	Ostrya virginiana	American Hophornbeam	2-2.5" Cal.
RGL	187	Rhus aromatica 'Grow Low'	Grow Low Sumac	18"+ Ht.
RYC	5	Rhododendron yaku. 'Crete'	Yaku Crete Rhododendron	3-4'
SA	6	Sassafras albidum	Sassafras	3 1/2" Cal.
VTC	3	Viburnum trilobum 'Compacta'	Compact American Cranberry Viburnum	4-5'

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TERRENCE P. PARKER 041
LICENSED LANDSCAPE ARCHITECT
STATE OF NEW HAMPSHIRE

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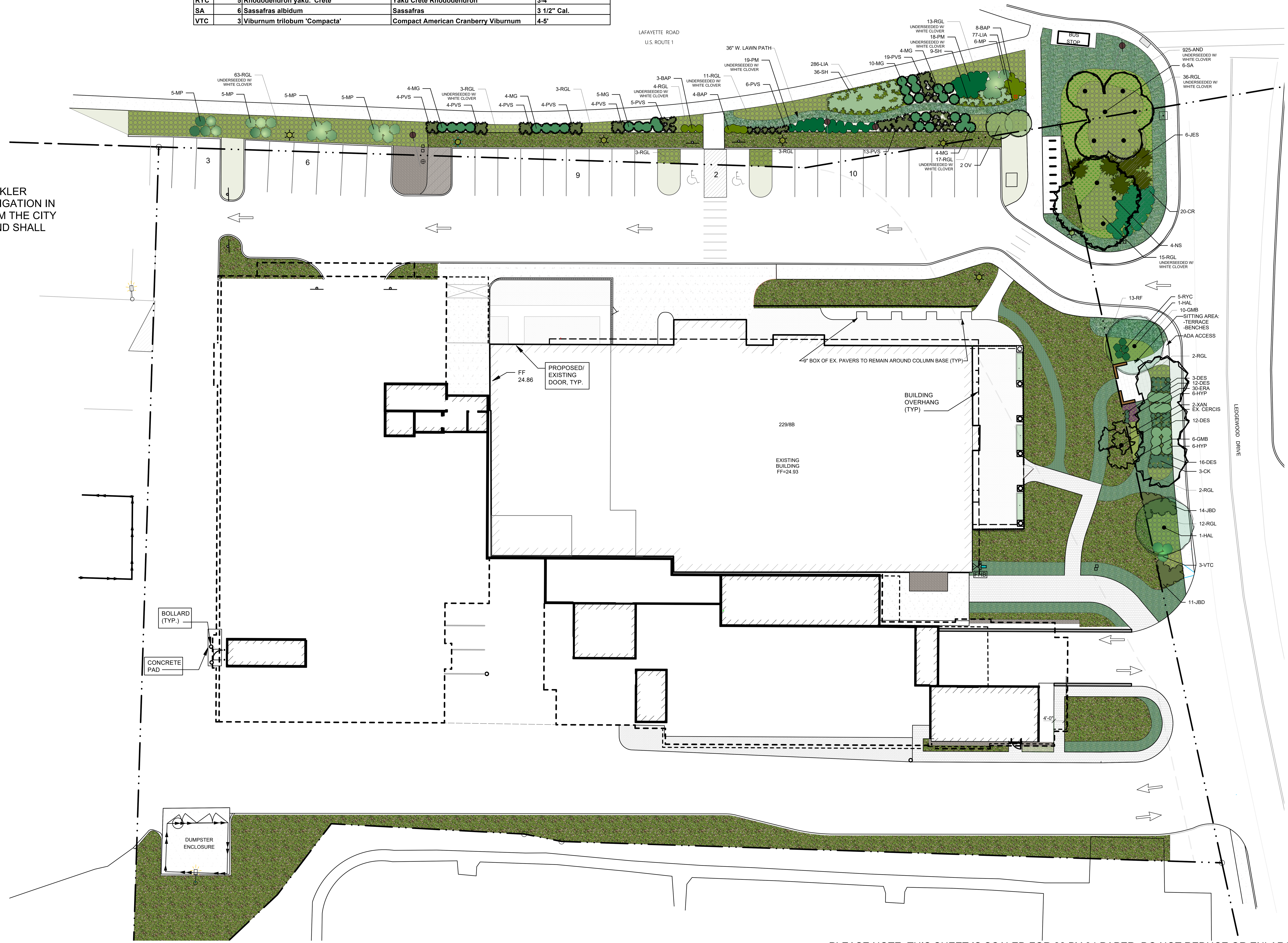

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Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title
581 LAFAYETTE

Sheet Title
Off-Site Community Space Landscape Plan

Project Manager	Project ID: 581 LAFAYETTE
Drawn By: TC	Scale: 1:240
Reviewed By: TP	Sheet No.: L-1B of 2
Date: 11/20/2023	
CAD File Name: 581LAFAYETTE32624.vwx	

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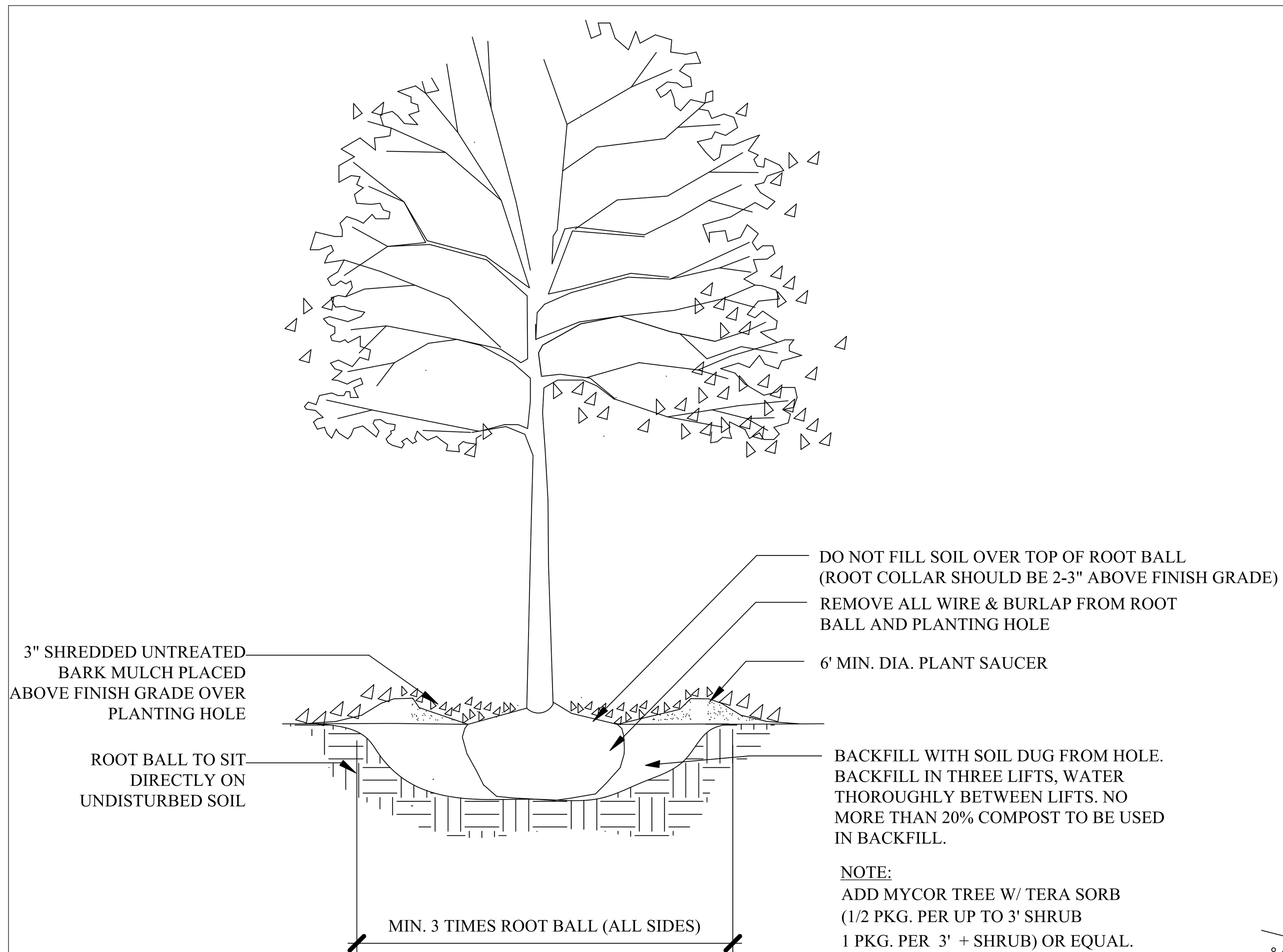
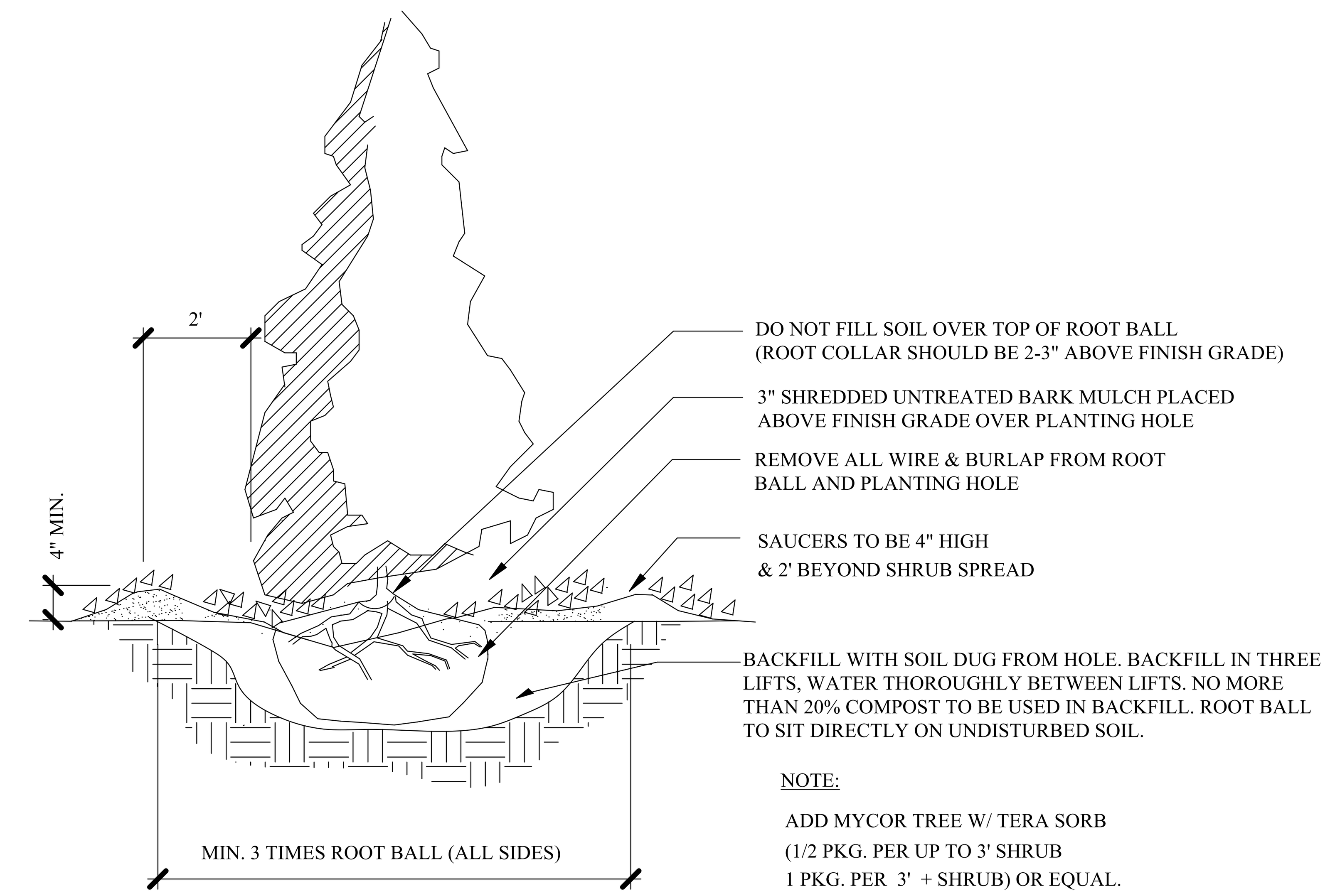
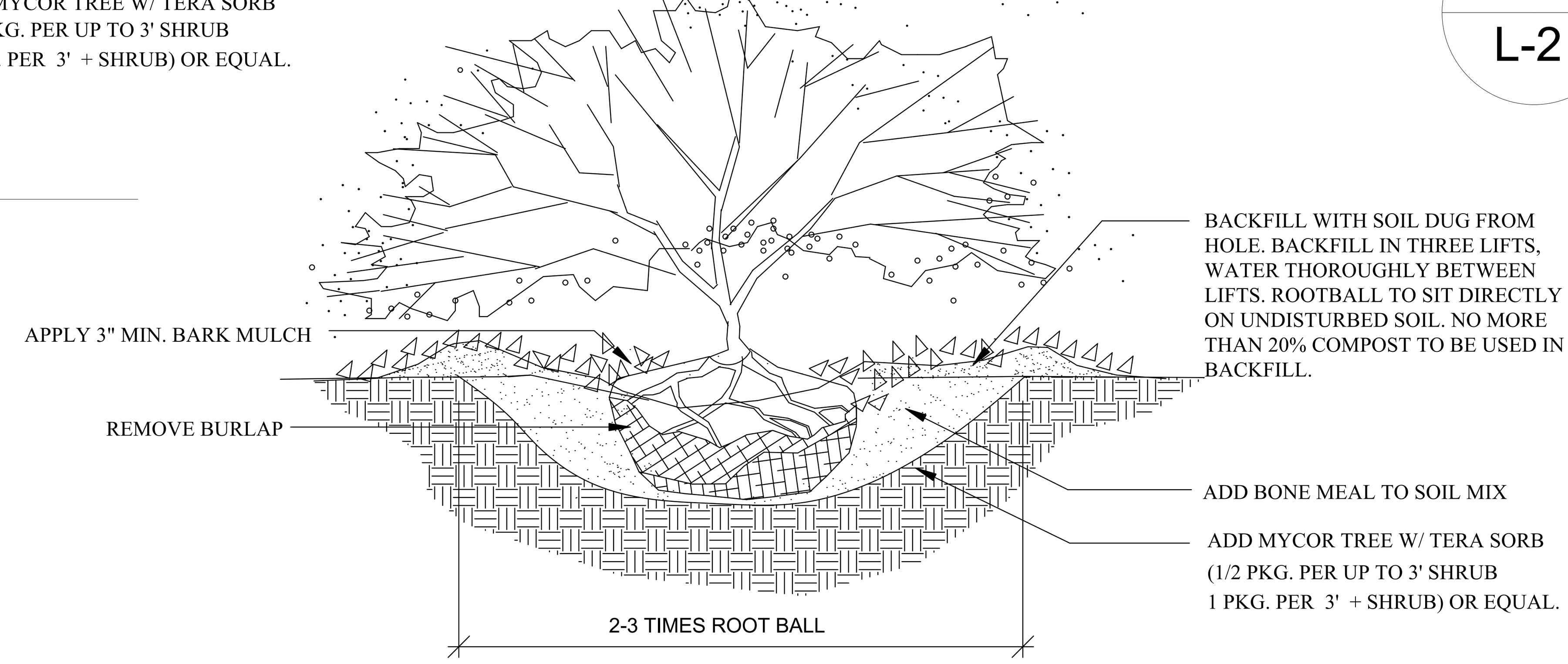


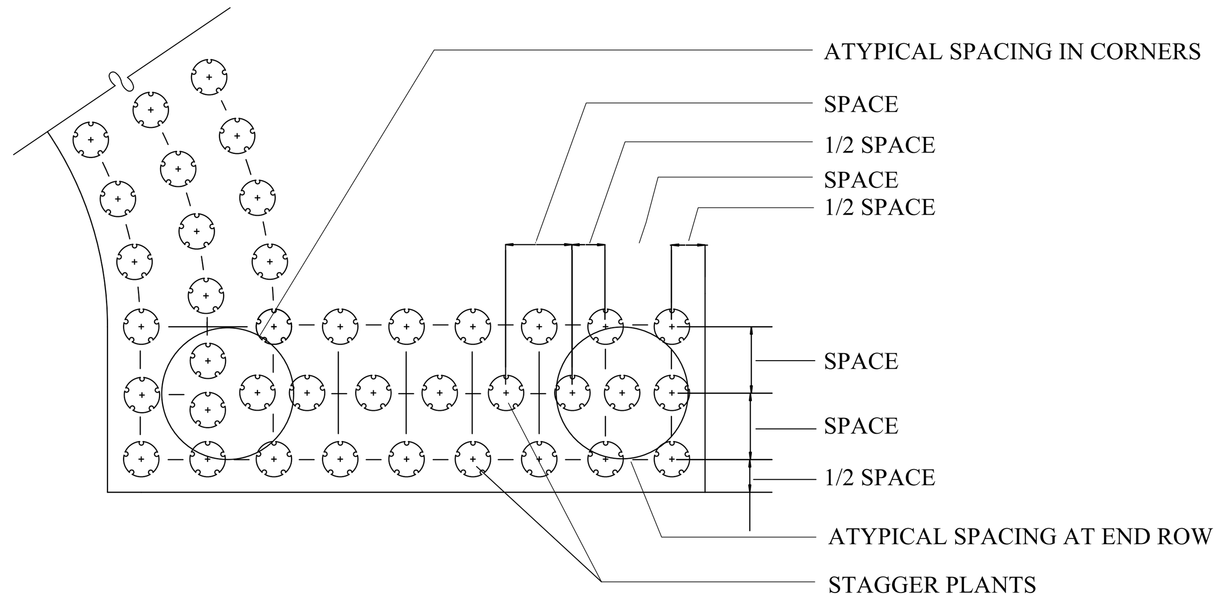
1
L-2
TREE PLANTING - 2"+ CAL.
SCALE: NTS



2
L-2
PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS



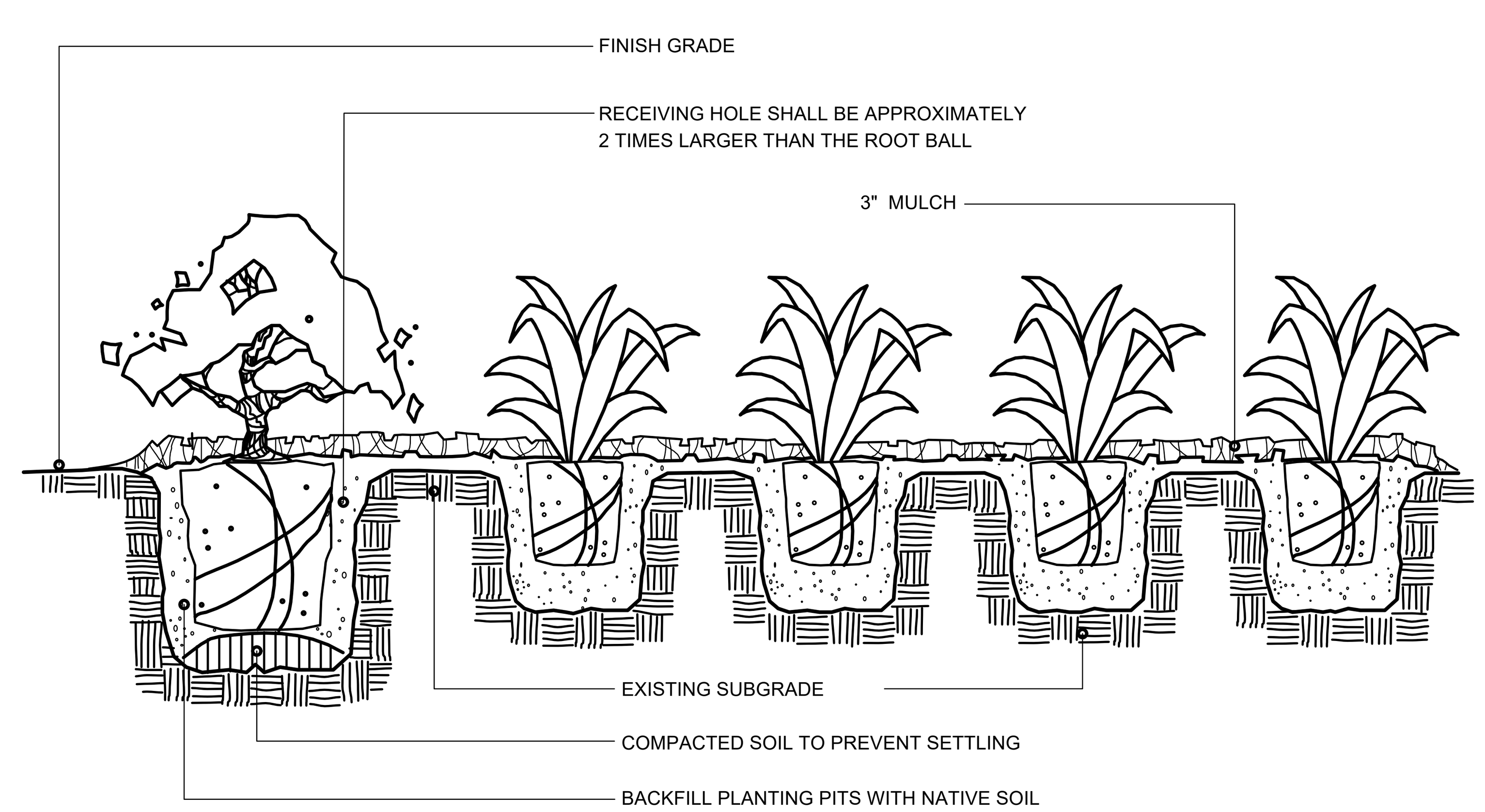
3
L-2
B&B SHRUB PLANTING
SCALE: NTS



NOTES:

1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

4
L-2
GROUND COVER SPACING DETAIL
SCALE: NTS



NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

5
L-2
SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE WARRANTY PERIOD. THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2-3" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
21. ALL PLANTING HOLES TO BE HAND-DUG, EXCEPT IN NEW CONSTRUCTION WITH NEW PLANTING PITS, PLANTING NEAR CURBS, OR AREAS WHERE SILVA CELLS WILL BE USED. IF HOLES ARE MACHINE-DUG, BOTTOM OF HOLES NEED TO BE THE APPROPRIATE HEIGHT, AND FIRMED BY THE MACHINE TO CREATE STABILITY FOR THE PLANT MATERIAL.

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE. .

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LICENSED LANDSCAPE ARCHITECT
TERRENCE P. PARKER
041
STATE OF NEW HAMPSHIRE

Terrence P. Parker

No.	Date	By	Revision Notes

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Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title
581 LAFAYETTE

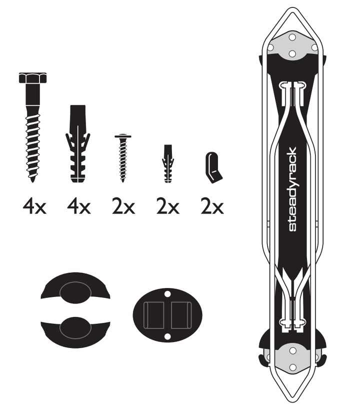
Sheet Title
Landscape Details

Project Manager	Project ID: 581 LAFAYETTE
Drawn By: TC	Scale: AS NOTED
Reviewed By: TP	Sheet No.: L-2 of 2
Date: 11/20/2023	
CAD File Name: 581LAFAYETTE32624.vwx	

INCLUDED

- 1 x Steadyrack
- 2 x End Caps
- 1 x Rear Tyre Rest
- 4 x Hex Bolts – for rack
- 4 x Masonry* Wall Plugs – for rack
- 2 x Screws – for Rear Tyre Rest
- 2 x Masonry* Wall Plugs – for Rear Tyre Rest
- 2 x Spare Rubber Tips

*Masonry use only



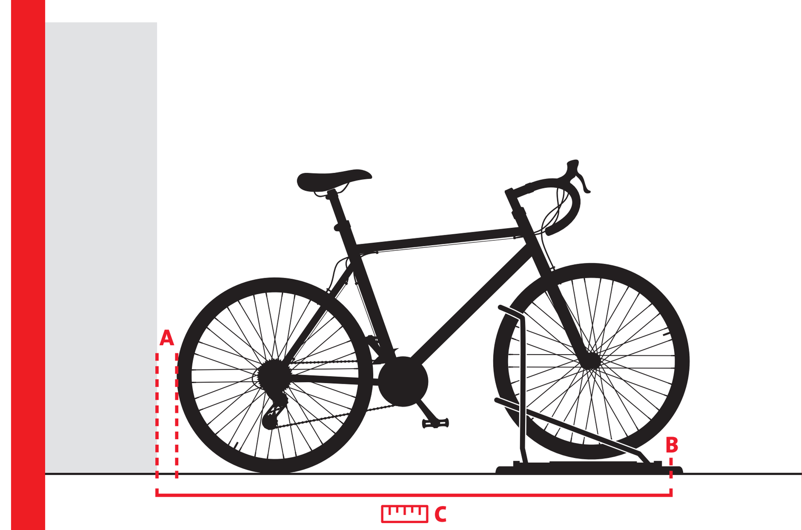
Fixings are for either Masonry (brick/concrete) or timber. If you're installing into a different type of wall structure, speak to your local hardware store for the correct fixings. Racks can be mounted to any vertical surface capable of supporting the rack + bike weight.

WARNING
We do not recommend installing your Steadyrack into gyprock, plasterboard or drywall. Doing so will void your Steadyrack warranty. The provided wall plugs are for masonry use only.

NEEDED

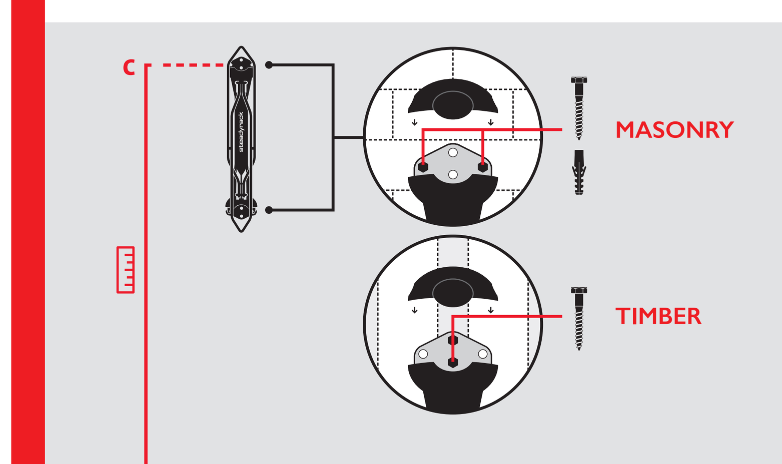
1. MEASURE MOUNTING HEIGHT

- Place the rack on the floor.
- Make sure your bike fits in the rack before drilling. If you have any concerns, get in touch with our Customer Support team.
- Place the bike in the rack, leaving a gap (around 50 – 75mm) between the back tyre and wall (A).
- The gap is the distance from the ground when the bike is in the rack.
- Pencil a mark on the floor in the top mounting hole (B).
  - 2 x vertical holes for timber install.
  - 2 x horizontal for masonry install.
- Measure the distance from the wall to the mark on floor (C).



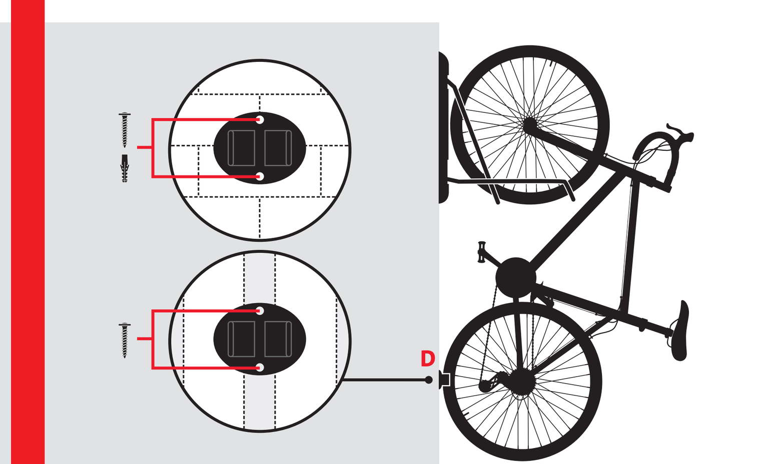
2. MOUNT RACK (WALL OR FRAME)

- Transfer the measurement to the wall (C). Drill the hole using the 10mm bit.
- Line up the rack and loosely install the single bolt.
- Place the spirit level against the plastic body – ensure it's level.
- Hold the rack in place and pencil mark the remaining holes.
- Remove the rack. Drill the remaining holes.
- If it's masonry, insert the supplied masonry wall plugs.
- Line the rack up over the holes. Insert 4 x hex bolts and firmly affix the rack. Click the End Caps in place.



3. INSTALL REAR TYRE REST

- Hang the bike in the rack.
- Line the Rear Tyre Rest up with the rear axle (D).
- Pencil mark the top mounting hole.
- Remove the rest and bike.
- Place the spirit level in centre - ensure the rack and rest are aligned.
- Drill a hole using the 8mm bit on the pencil mark.
- Line up the rest – mark the second hole.
- Drill the second hole and, if installing in masonry, insert the wall plugs.
- Place the rest and affix with the screws.



4. ROLL BIKE ON. DONE. EASY.

LET'S KEEP THIS EASY...

INSTRUCTIONS

HI अनुवादित निर्देशों के लिए, "Steadyrack इंस्टॉलेशन निर्देश" खोजें.
KO 번역된 설명은, "스테디랙 설치 안내"를 검색하세요.
JA 手順の翻訳版は､｢ステディラック取り付け手順｣を検索してください。
ES Si desea consultar las instrucciones traducidas, busque «Instrucciones de instalación de Steadyrack».
PT Para consultar as instruções traduzidas, pesquise "Instruções de Instalação Steadyrack".
DA Til oversatte instruktioner, søg "Steadyrack Installationsvejledning".
NO For oversatte instruksjoner, søk på "Steadyrack installeringsinstruksjoner".
RU Перевод инструкции находится в разделе «Инструкции по установке стеллажей».
DE Für eine Übersetzung der Anleitung suchen Sie bitte nach "Steadyrack Installationsanleitung".
FR Pour consulter la traduction de ces instructions, recherchez « Instructions d'installation du Steadyrack ».
NL Zoek op 'Steadyrack Installatiehandleiding' voor vertaalde instructies.
IT Per consultare la traduzione delle istruzioni, cerca "Istruzioni Installazione Steadyrack".

steadyrack
STORE EASY

FOR MORE INSTALLATION ADVICE VISIT STEADYRACK.COM/INSTALLATION

MAINTAINING YOUR STEADYRACK

To ensure your Steadyrack Bike Rack operates perfectly we recommend you perform the following basic maintenance and checks:

Check and adjust tension on the nuts on Central Pivot Bar
The nuts that attach the central pivot bar to the top and bottom mounting brackets are pre-tensioned in the factory to a torque setting of 5Nm. This is to ensure there is enough resistance when you push your bike into the rack to stop the arms swinging out of the way.

Remove the two clip-in End Caps which cover the mounting brackets using a 13mm socket wrench or a suitable spanner. Adjust the nuts connecting the central spine to the top and bottom mounting brackets to the desired tension. Be sure to not overtighten or the rack won't pivot. Replace your End Caps and you are good to go.

Check the nuts attaching the top and bottom arms to the Central Pivot Bar
The 2 arms are connected to the central pivot bar by tamper-proof bolts with dome nuts and black tips either side. Tamper-proof bolts have been used to provide added security against potential theft of your bike. These can work loose over time. Check them periodically and tighten using a Pin Torx 6 Lobe bit, which can be purchased from your local hardware store.

Check your mounting bolts from time to time to make sure they have not worked loose and tighten if necessary.

Cleaning
Wipe the rack down with lukewarm soapy water using a soft sponge or microfibre cloth. Then wipe down with a clean, soft cloth to remove the cleaning solution and dry thoroughly. For more stubborn marks, mix one part vinegar with one part water and follow the above processes.

Materials
Mild Steel Zinc or Chrome plated and ABS, PP, TPE and Nylon plastics.

WARRANTY

The boring but necessary legal stuff.

Steadyrack warrants that the Steadyrack Bike Rack is free from defects in workmanship and materials for a period of 12 months from the date of retail purchase. Any claim for breach of this warranty must be made on the following conditions:

a. the defects have arisen solely from faulty materials or workmanship;

b. the Steadyrack Bike Rack must not have been changed nor tampered with in any way;

c. failure of the Steadyrack Bike Rack must not be due to misuse, improper installation or other maltreatment, interference or abuse including, but not limited to, use in a manner contrary to our specifications or instructions;

d. the Steadyrack Bike Rack must be returned to the supplier;

e. Steadyrack will not be responsible for damage or loss caused during or as a result of shipping;

f. Steadyrack warranty is voided if racks are used to transport bicycles.

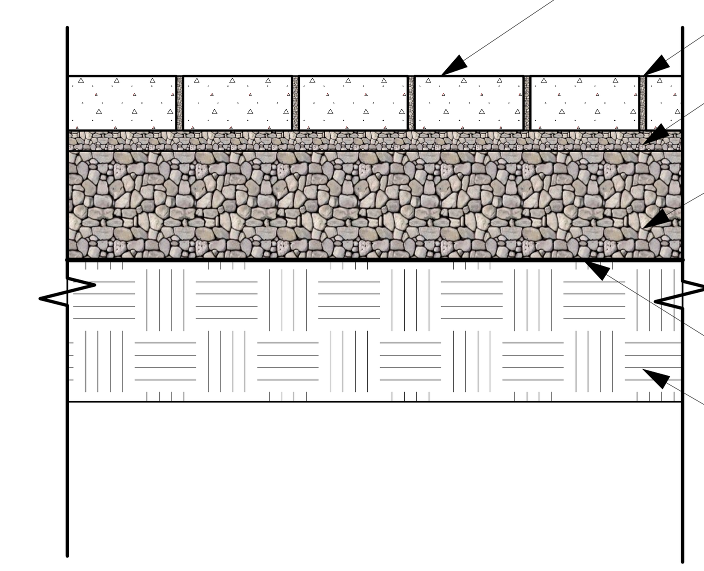
Subject to the above conditions of warranty, if the Steadyrack Bike Rack fails for any reason within the warranty period and the Steadyrack Bike Rack is returned to us, Steadyrack will at its discretion repair or replace, or cause to be repaired or replaced, the Steadyrack free of charge at its expense.

Except as expressly provided herein all express and implied warranties, guarantees and conditions under statute or general law as to merchantability, description, quality, suitability or fitness of the Steadyrack Bike Rack for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are, to the extent permitted by law, hereby expressly excluded and Steadyrack shall not be liable for physical or financial injury loss or damage or for consequential loss or damage of any kind arising out of the supply, assembly, installation or use of the Steadyrack Bike Rack or arising in any other way whatsoever. Still awake? Right, now that's out of the way, let's install that Steadyrack!

TURN OVER FOR FULL INSTRUCTIONS

SCAN THE QR CODE TO WATCH THE INSTALLATION VIDEO ONLINE

1 / L-3 BIKE RACK DETAIL
SCALE: NTS



2 / L-3 POROUS SIDEWALK DETAIL
SCALE: 1" = 1'-0"

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE. .

terra firma
landscape architecture
163.a court street · portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandarch.com

LICENSED LANDSCAPE ARCHITECT
TERRENCE P. PARKER
041
STATE OF NEW HAMPSHIRE
Terrence P. Parker

No.	Date	By	Revision Notes

No.	Date	Issue Notes
G	3/26/2024	PLANNING SUBMISSION
F	3/4/2024	TAC SUBMISSION
E	2/21/2024	PLANNING SUBMISSION
D	2/14/2024	T+G COMMENTS (GATE REMOVAL)
C	2/12/2024	COMMUNITY SPACE DESIGN
B	1/10/2024	TREES + GREENERY COMMENTS
A	1/2/2024	TAC COMMENTS

Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

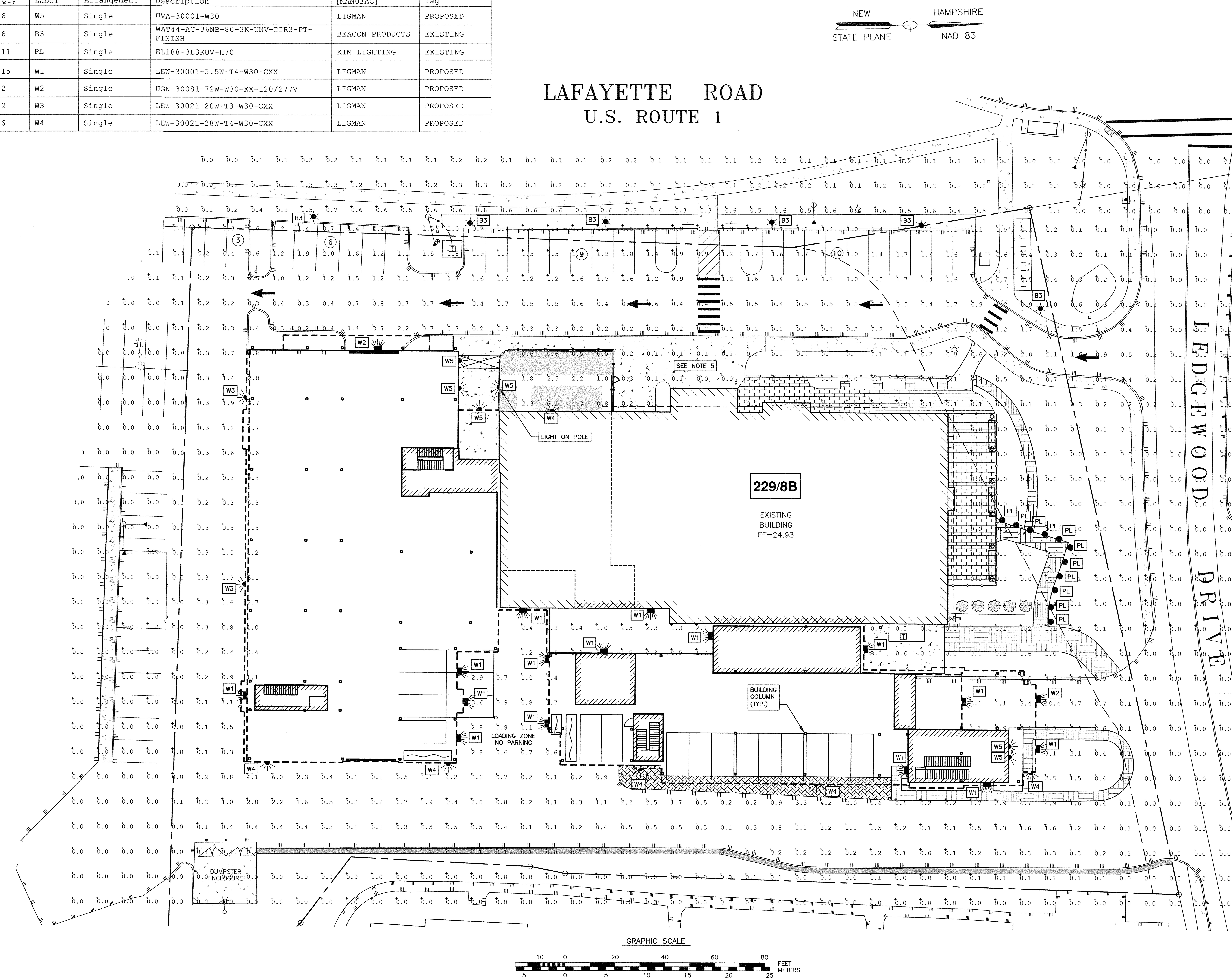
Project Title
581 LAFAYETTE

Sheet Title
Landscape Details

Project Manager	Project ID: 581 LAFAYETTE
Drawn By: TC	Scale: AS NOTED
Reviewed By: TP	Sheet No.: L-3 of 2
Date: 11/20/2023	
CAD File Name: 581LAFAYETTE32624.vwx	

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	[MANUFAC]	Tag
	6	W5	Single	UVA-30001-W30	LIGMAN	PROPOSED
	6	B3	Single	WAT44-AC-36NB-80-3K-UNV-DIR3-PT-FINISH	BEACON PRODUCTS	EXISTING
	11	PL	Single	EL188-3L3KUV-H70	KIM LIGHTING	EXISTING
	15	W1	Single	LEW-30001-5.5W-T4-W30-CXX	LIGMAN	PROPOSED
	2	W2	Single	UGN-30081-72W-W30-XX-120/277V	LIGMAN	PROPOSED
	2	W3	Single	LEW-30021-20W-T3-W30-CXX	LIGMAN	PROPOSED
	6	W4	Single	LEW-30021-28W-T4-W30-CXX	LIGMAN	PROPOSED



AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

WWW.HALEYWARD.COM

200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED LIGHTING ON TAX MAP 229 LOT 8B.

4) LIGHTING DESIGN BY EXPOSURE ESS. CONTACT: KEN SWEENEY 603-759-1043.

5) NO CHANGE PROPOSED TO THE EXISTING BUILDING FRONT AND SIDE LIGHTING.

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ADDED FIXTURES	3/27/24
1	BUILDING	2/21/24
0	ISSUED FOR APPROVAL	1/24/24

REVISIONS

SCALE: 1"=20'

JULY 2023

LIGHTING PLAN

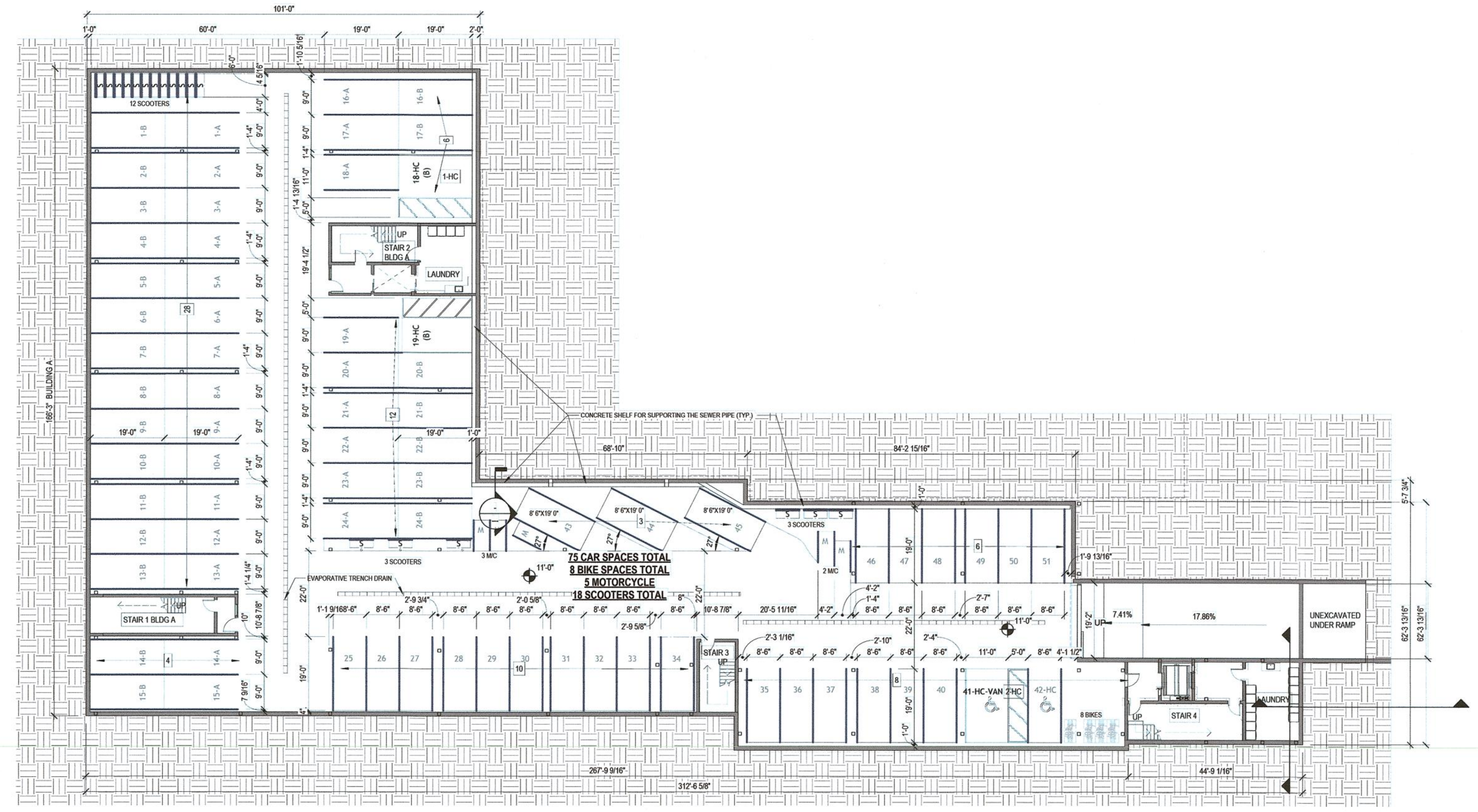
LT1

FB 259 PG 10

1397.04

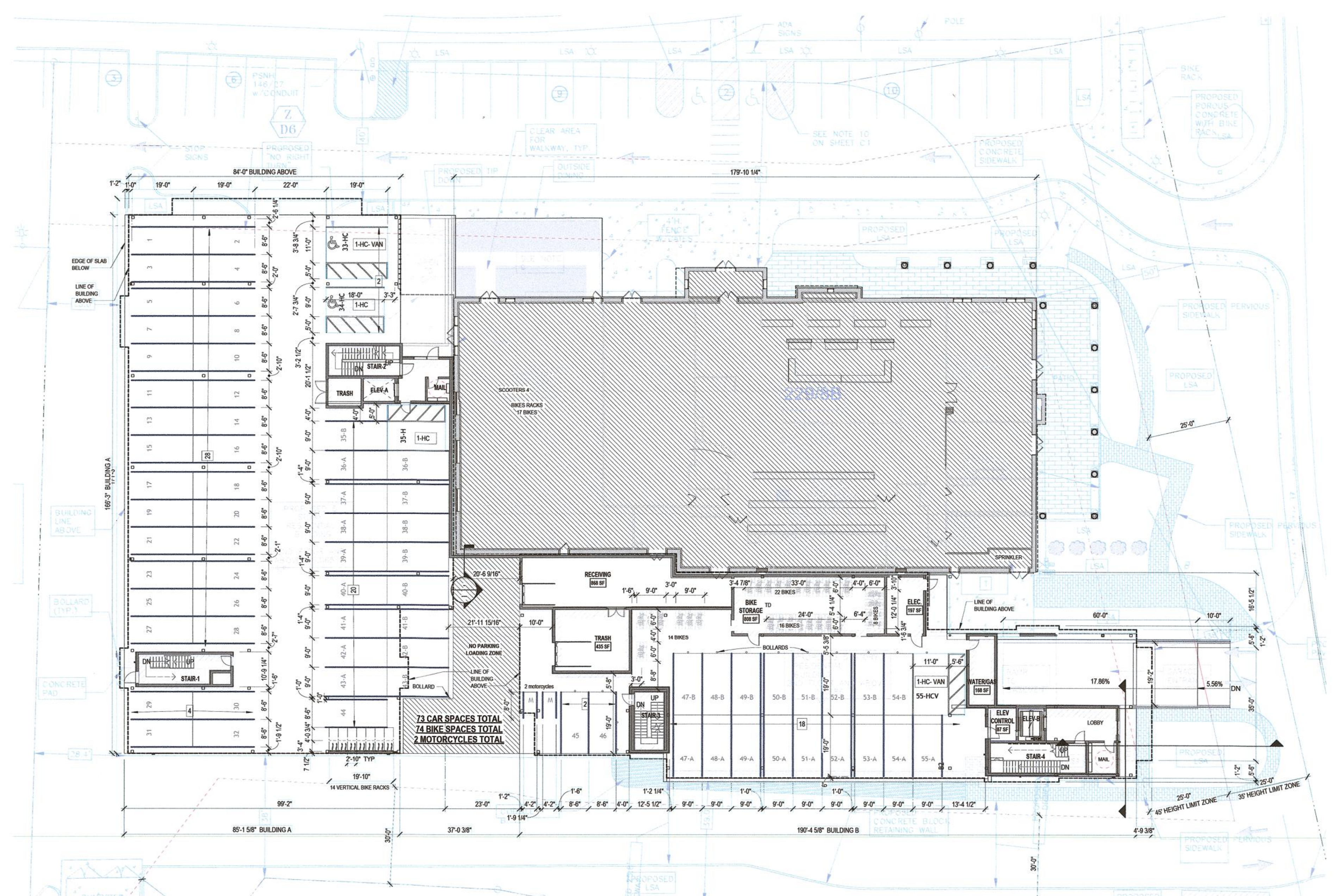
P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Plans & Specs\Site\Final Set revised 3-27-24\LIGHTING 3-27-24.dwg, 3/26/2024 2:43:28 PM, \\SVRPSM-FS01\Portsmouth Plotter Canon TX3000

PARKING ASSIGNMENT:
BASEMENT PARKING WILL BE ASSIGNED TO 51 RESIDENTIAL UNITS (24 STACKED/27 SINGLE).



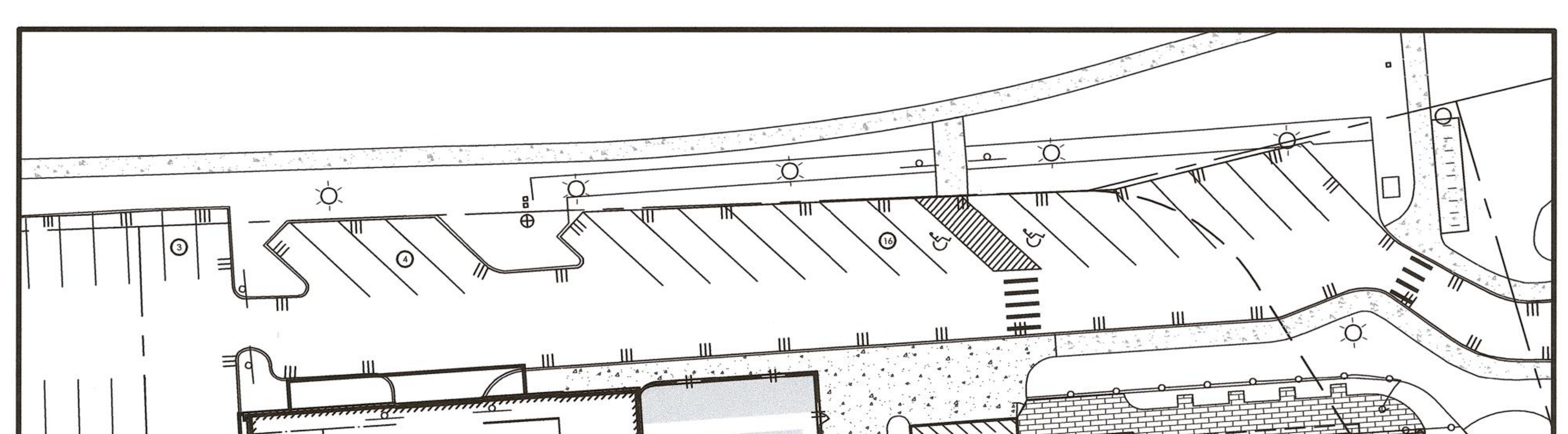
BASEMENT— 75 TOTAL SPACES NTS

PARKING ASSIGNMENT:
LEVEL 1 STACKED PARKING WILL BE ASSIGNED TO RESIDENTIAL UNITS— 6 STACKED AND COMMERCIAL UNITS (EMPLOYEE VALET) 12 STACKED.
SINGLE SPACES ARE NOT ASSIGNED.

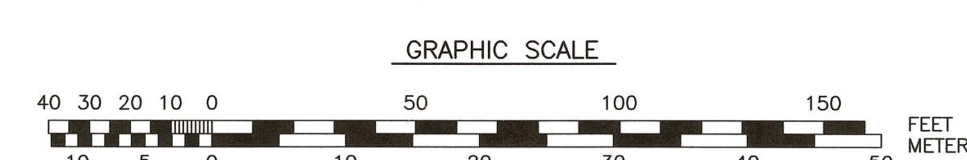


LEVEL 1— 73 TOTAL SPACES NTS

30 OUTDOOR SPACES ARE NOT ASSIGNED.



ALTERNATE PARKING LAYOUT
NOTE: THE ALTERNATE PARKING LAYOUT REDUCES SITE PARKING 7 SPACES (30–23)



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A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
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603.430.9282
WWW.HALEYWARD.COM

NOTES:

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2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PURPOSE OF THIS PLAN IS TO SHOW PARKING IN GENERAL FOR THE PROPOSED SITE DEVELOPMENT ON ASSESSOR'S MAP 229 LOT 8B IN THE CITY OF PORTSMOUTH.

4) TANDEM SPACES SHALL BE ASSIGNED TO PARTICULAR UNITS TO CONFORM TO SECTION 10.1114.33

5) IF THE NHDOT REQUIRES THE PARKING ENCROACHMENT ON ROUTE 1 TO BE ELIMINATED AND THE PARKING NEEDS TO BE REVISED THEN THE ALTERNATIVE PARKING LAYOUT WILL BE CONSTRUCTED.

6) PARKING TALLY:
ASSIGNED SPACES RESIDENTIAL: 87
COMMERCIAL & NON–ASSIGNED SPACES: 91
TOTAL SPACES: 178

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
7	PARKING LAYOUTS	3/27/24
6	PARKING LAYOUTS	3/5/24
5	COMBINE PARKING PLANS, ALTERNATIVE	2/21/24
4	SEWER SIZE, NOTE 4	2/6/24
3	PARKING TABLES, PARKING LAYOUT	1/24/24
2	PARKING TABLES	12/19/23

REVISIONS

SCALE: 1"=40'/NTS JULY 2023

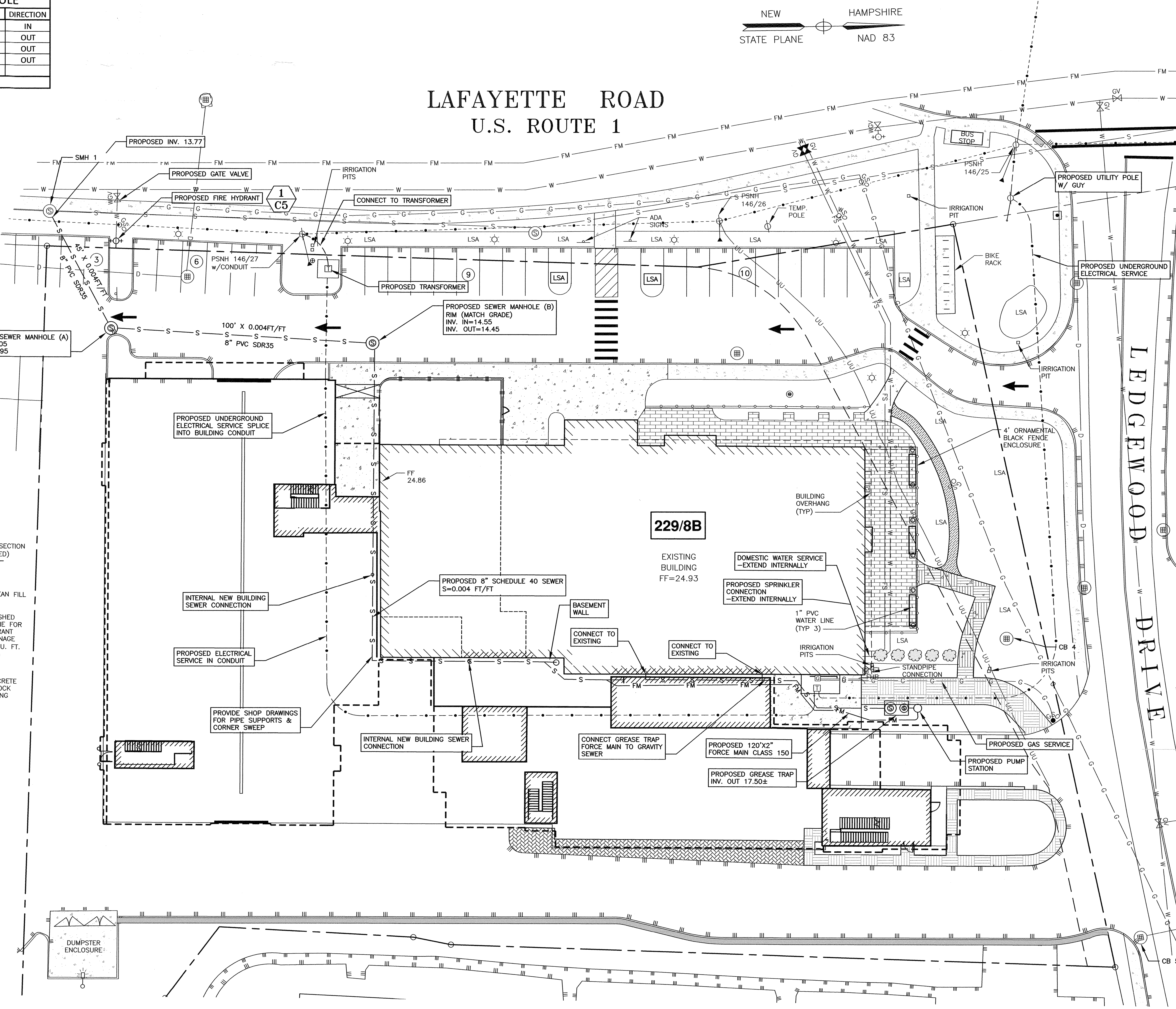
PARKING PLAN

C4

FB 259 PG 10

1397.04

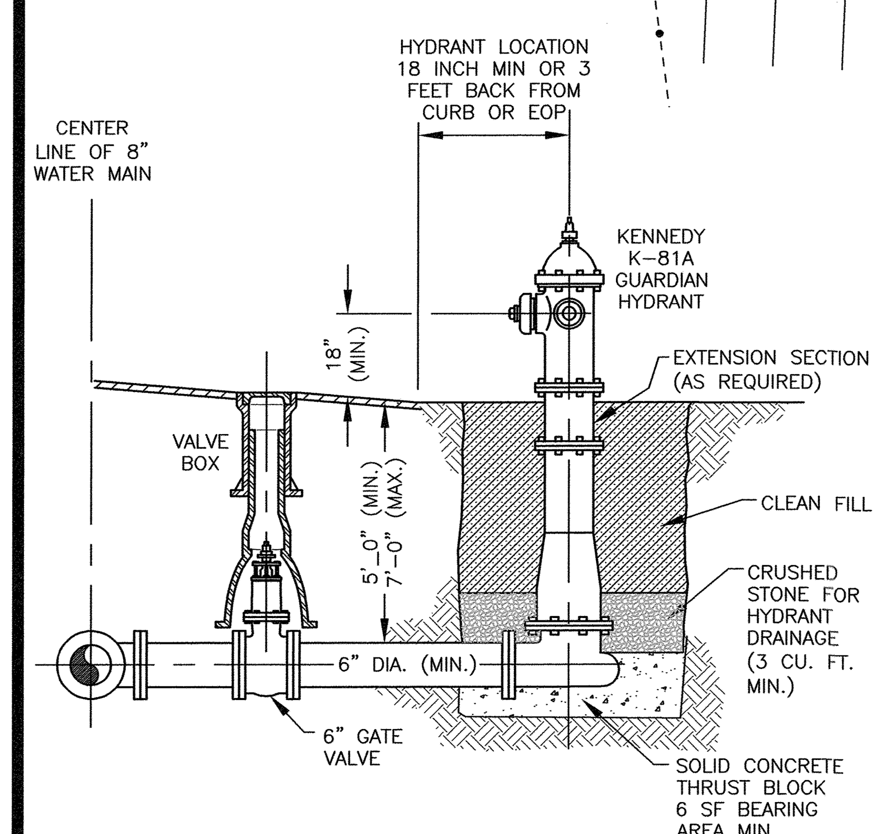
EXISITNG SEWER STRUCTURE SCHEDULE					
STRUCTURE	PROP/EX	RIM	PIPE SIZE	INVERT	DIRECTION
SMH 1	EX	22.56	8" CI	13.26	IN
			8" CI	13.21	OUT
GREASE TRAP 1	EX	23.63		17.58	OUT
GREASE TRAP 1	EX	23.63		17.23	OUT



GRAPHIC SCALE

10 0 20 40 60 80 FEET

5 0 5 10 15 20 25 METERS



NOTES:
1) THE PUMPER OUTLET NOZZLE SHALL FACE THE STREET.
2) CENTERLINE OF NOZZLES SHALL BE A MINIMUM OF 2 FEET ABOVE FINISHED GRADE OF STREET.
3) AREA AROUND HYDRANT SHALL BE GRADED TO ALLOW ANY SURFACE WATER TO DRAIN AWAY FROM HYDRANT.
4) HYDRANT SHALL BE FIRMLY SUPPORTED ALL AROUND THE STANDPIPE.
5) EARTH FILL SHALL BE TAMPED TO GIVE FIRM SUPPORT TO THE HYDRANT BARREL.
6) A GATE VALVE SHALL BE INSTALLED BETWEEN THE HYDRANT AND THE MAIN ON THE LATERAL.
7) HYDRANT LATERALS SHALL BE 6" INSIDE DIAMETER (MINIMUM).
8) HYDRANT LATERALS SHALL BE CONNECTED TO WATER MAINS 8 INCHES IN DIAMETER OR LARGER.
9) INSTALLATION OF HYDRANTS IN AREAS OF HEAVY VEGETATIVE GROWTH SHALL HAVE A 10 FOOT RADIUS CLEAR AREA ALL AROUND THE OPERATING NUT OF THE HYDRANT AND THERE SHALL ALSO BE AN INDICATOR POST FABRICATED FROM 2 INCH INSIDE DIAMETER GALVANIZED STEEL PIPE, 7 FEET ABOVE FINISHED GRADE, AND SET 2 FEET BELOW GRADE IN CLASS "A" CONCRETE CONCRETE 6 INCHES ALL AROUND POST. THIS POST SHALL BE COATED WITH ZINC CHROMATE PRIMER AND PAINTED WITH HIGH VISIBILITY RED. THE INDICATOR POST SHALL BE NO CLOSER THAN 3 FEET FROM THE OPERATING NUT, AND SET ON THE SIDE OF THE HYDRANT FACING ONCOMING TRAFFIC. TOP OF POST SHALL BE THREADED AND CAPPED.
10) INSTALLATION OF HYDRANTS IN HEAVY GROWTH AREAS SHALL HAVE GATE BOXES RAISED 6 INCHES ABOVE GRADE AND SHALL BE PAINTED ORANGE FOR HIGH VISIBILITY.

1 / C5 FIRE HYDRANT DETAIL

NTS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) SEWER FLOW CALCULATION
EXISTING RESTAURANTS(S)
225 SEATS X 10 GPD/SEAT = 2,250 GPD

PROPOSED RESIDENCES
106 BEDROOMS X 80 GPD/BEDROOM = 8,480 GPD

TOTAL FLOW = 10,730 GPD

5) FINAL SEWER PIPE DESIGN (BUILDING PERMIT PHASE) SHALL BE REVIEWED AND APPROVED BY PORTSMOUTH DPW.

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
6	NOTE 5, HYDRANT	3/27/24
5	BUILDING & SEWER	3/5/24
4	TRANSFORMER, NOTE 4	2/6/24
3	FORCE MAIN	1/24/24
2	GREASE TRAP	12/19/23
1	ISSUED FOR APPROVAL	11/20/23
0	ISSUED FOR COMMENT	5/8/23

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN CHAGNON
No. 7651
LICENSED
PROFESSIONAL ENGINEER

SCALE: 1"=20'

FEBRUARY 2023

UTILITY PLAN

C5

FB 259 PG 10

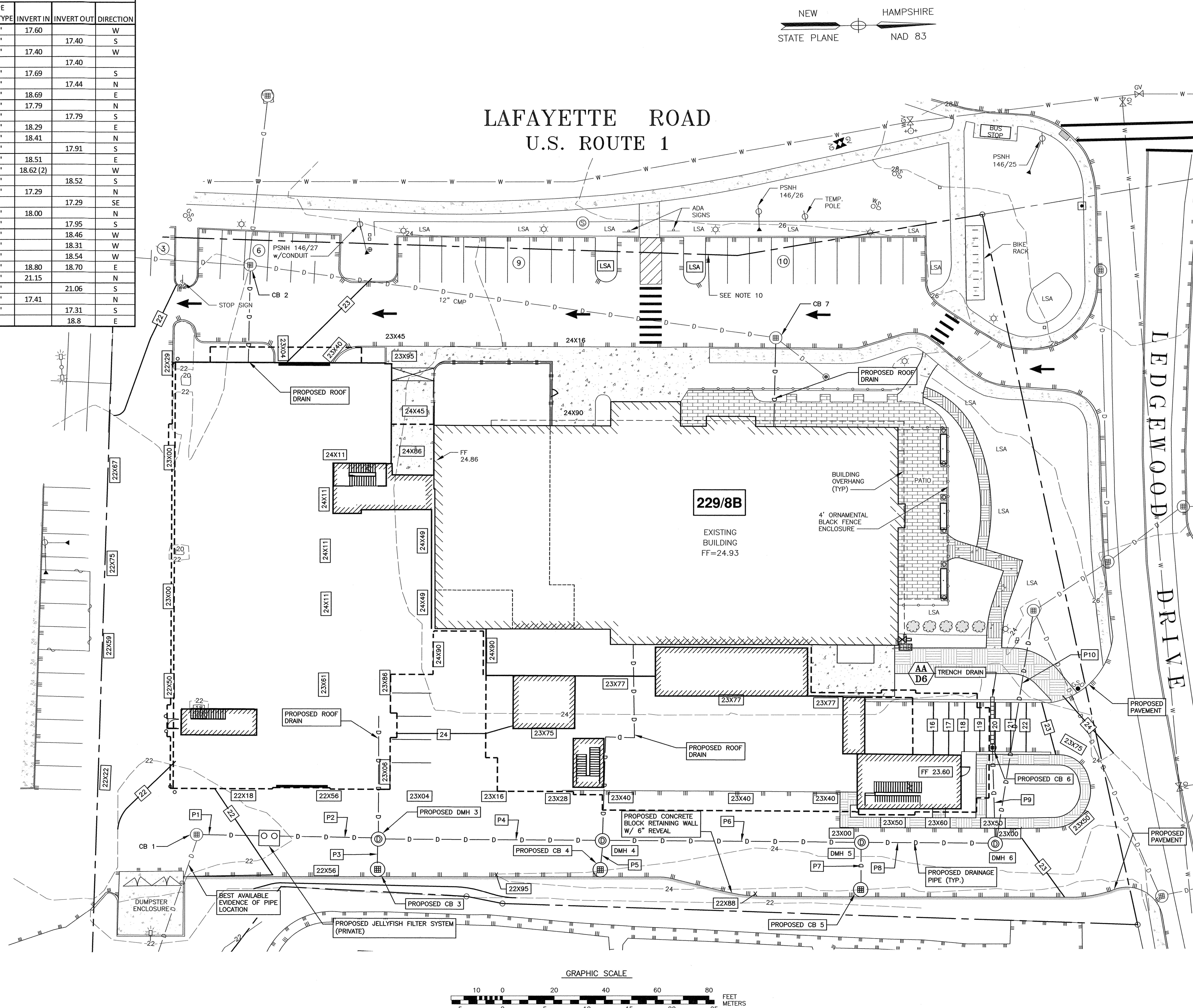
1397.04

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT	DIRECTION
DMH 1	EX	22.3	15"	17.60		W
			10"		17.40	S
DMH 2	EX	22.3	15"	17.40		W
					17.40	
DMH 3	PROP	22.4	24"	17.69		S
			18"		17.44	N
			12"	18.69		E
DMH 4	PROP	23.2	18"	17.79		N
			18"		17.79	S
			12"	18.29		E
DMH 5	PROP	23.0	12"	18.41		N
			18"		17.91	S
			12"	18.51		E
DMH 6	PROP	23.0	12"	18.62 (2)		W
			12"		18.52	S
CB 1	EX	21.46	24"	17.29		N
					17.29	SE
CB 2	EX	22.00	12"	18.00		N
			15"		17.95	S
CB 3	PROP	22.16	12"		18.46	W
CB 4	PROP	22.45	12"		18.31	W
CB 5	PROP	22.60	12"		18.54	W
CB 6	PROP	20.05	12"	18.80	18.70	E
CB 7	EX	24.16	12"	21.15		N
			10"		21.06	S
JELLYFISH FILTER	PROP	23.05	24"	17.41		N
			24"		17.31	S
TRENCH DRAIN	PROP	20.05			18.8	E

DRAINAGE PIPE SCHEDULE

PIPE #	PIPE SIZE	LENGTH	SLOPE
P1	24"	22'	0.0008
P2	24"	36'	0.0008
P3	12"	7'	0.0022
P4	18"	82'	0.0012
P5	12"	6'	0.0022
P6	18"	95'	0.0012
P7	12"	13'	0.0022
P8	12"	47'	0.0022
P9	12"	33'	0.0022
P10	12"	88'	0.0022



GRAPHIC SCALE

10 0 20 40 60 80 FEET

5 0 5 10 15 20 25 METERS

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COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	PIPE SCHEDULE	3/27/24
4	PIPE/DMH LAYOUT	3/5/24
3	BUILDING GRADES	2/21/24
2	GRADES	1/24/24
1	ISSUED FOR APPROVAL	11/20/23
0	ISSUED FOR COMMENT	2/7/23

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20'

JULY 2023

GRADING DRAINAGE EROSION CONTROL PLAN

C6

FB 259 PG 10

1397.04

ASTM D 448 GRADATION TABLE

1		2		3	
ASTM No. 8 BEDDING & JOINT FILLER		ASTM No. 57 STONE OPEN GRADED BASE		ASTM No. 2 STONE SUBBASE	
SIEVE SIZE	PASSING BY WEIGHT (%)	SIEVE SIZE	PASSING BY WEIGHT (%)	SIEVE SIZE	PASSING BY WEIGHT (%)
1/2" (12.5mm)	100	1.5" (37.5mm)	100	3" (75mm)	100
3/8" (9.5mm)	85–100	1" (25mm)	95–100	2.5" (63mm)	90–100
No. 4 (4.75mm)	10–30	1/2" (12.5mm)	25–60	2" (50mm)	35–70
No. 8 (2.36mm)	0–10	No. 4 (4.75mm)	0–10	1.5" 37.5mm)	0–15
No. 16 (1.16mm)	0–5	No. 8 (2.36mm)	0–5	3/4" (19mm)	0–5

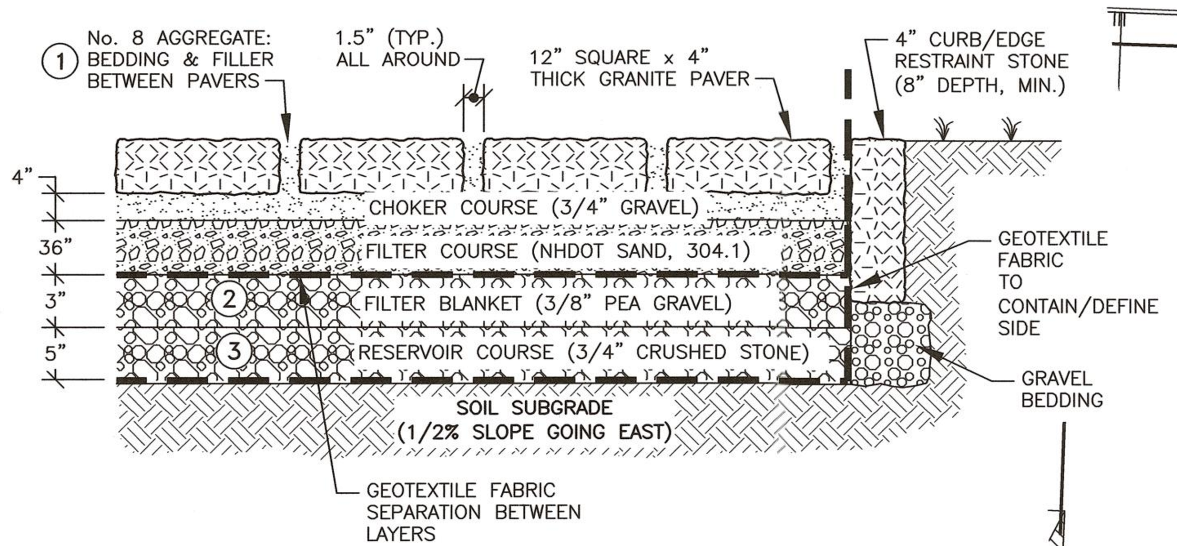
NOTES:
1) PAVING SYSTEM BASE DESIGN IS SIMILAR TO BASE REQUIRED FOR THE UNI ECO–STONE PAVER. INSTALLATION SHALL FOLLOW MANUFACTURER'S INSTRUCTIONS FOR PLACEMENT OF BASE MATERIALS.
2) ALL STONE SHALL BE ANGULAR, WITH 90% FRACTURED FACES. STONE SHALL BE WASHED WITH LESS THAN 1% PASSING THE 200 SIEVE.
3) CONTRACTOR SHALL SUBMIT SIEVE ANALYSIS FOR EACH COURSE MATERIAL TO PROJECT ENGINEER FOR APPROVAL PRIOR TO PLACEMENT.
4) ALL FABRIC TO BE TENCATE MIRAFI 140N NONWOVEN GEOTEXTILE.

OPEN SPACE CALCULATION
(TO PROPERTY LINE)

STRUCTURE	POST–CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	42343
SIDEWALK	2,888
PAVEMENT	31,409
CURB	266
RETAINING WALL	737
NON QUALIFYING	181
TOTAL	77824
LOT SIZE	98,124
% LOT COVERAGE	79.3%

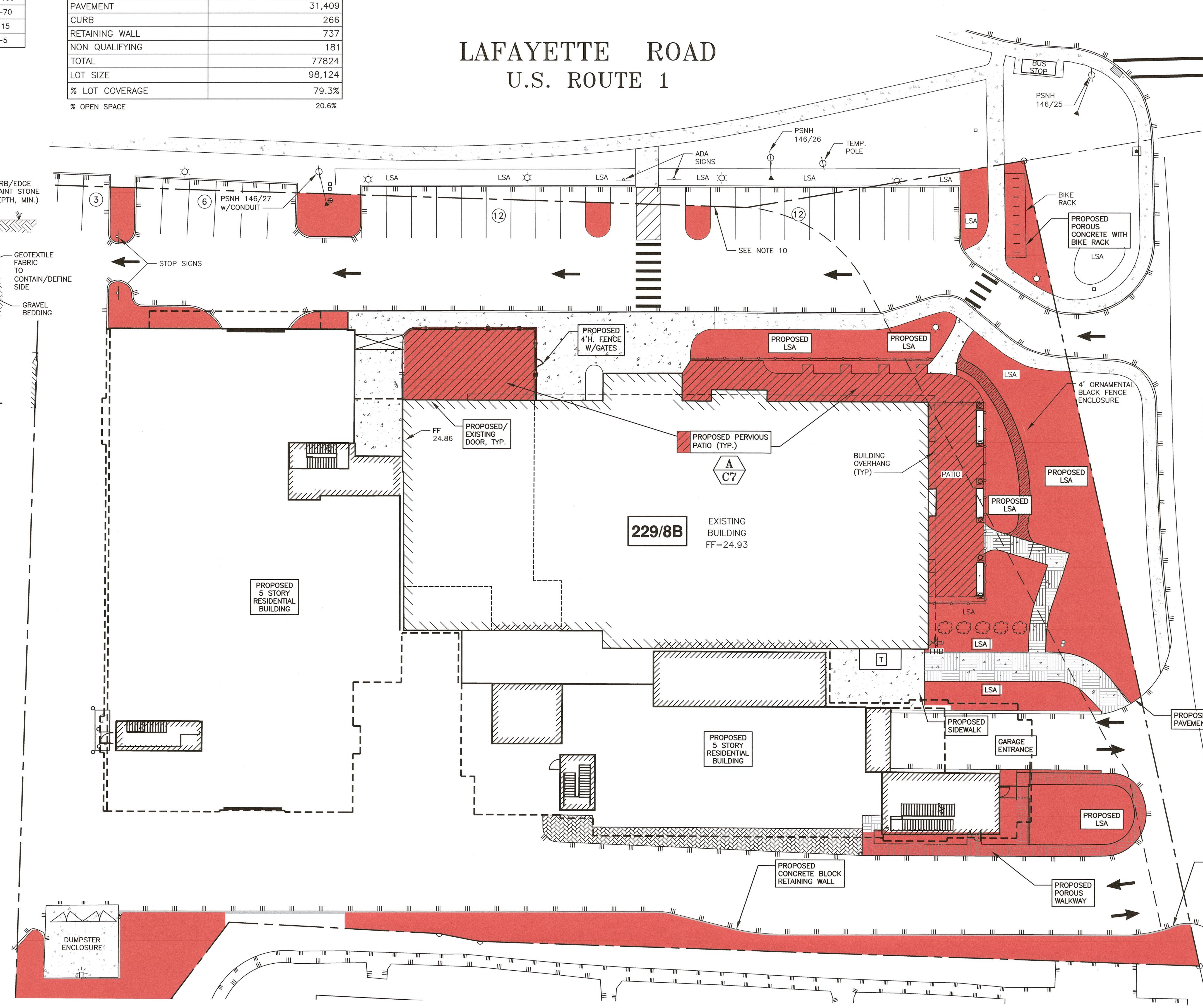
% OPEN SPACE 20.6%

SIDEWALK NOTES:
IMPERVIOUS WALKWAY= 4,604 S.F.
POROUS WALKWAY= 1,716 S.F.
REMAINING IMPERVIOUS= 4,604–1,716= 2,888 S.F.



A / C7 POROUS PATIO SECTION
12" SQUARE GRANITE PAVERS OR APPROVED EQUAL
NTS

OPEN SPACE



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

NOTES:
1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.
2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538
3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005
4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC
5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.
6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10
7) THE PURPOSE OF THIS PLAN IS TO SHOW THE OPEN SPACE ON TAX MAP 229 LOT 8B.

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	UPDATE	3/27/24
2	UPDATE	2/21/24
1	OPEN SPACE	1/2/24
0	ISSUED FOR COMMENT	12/19/23

REVISIONS

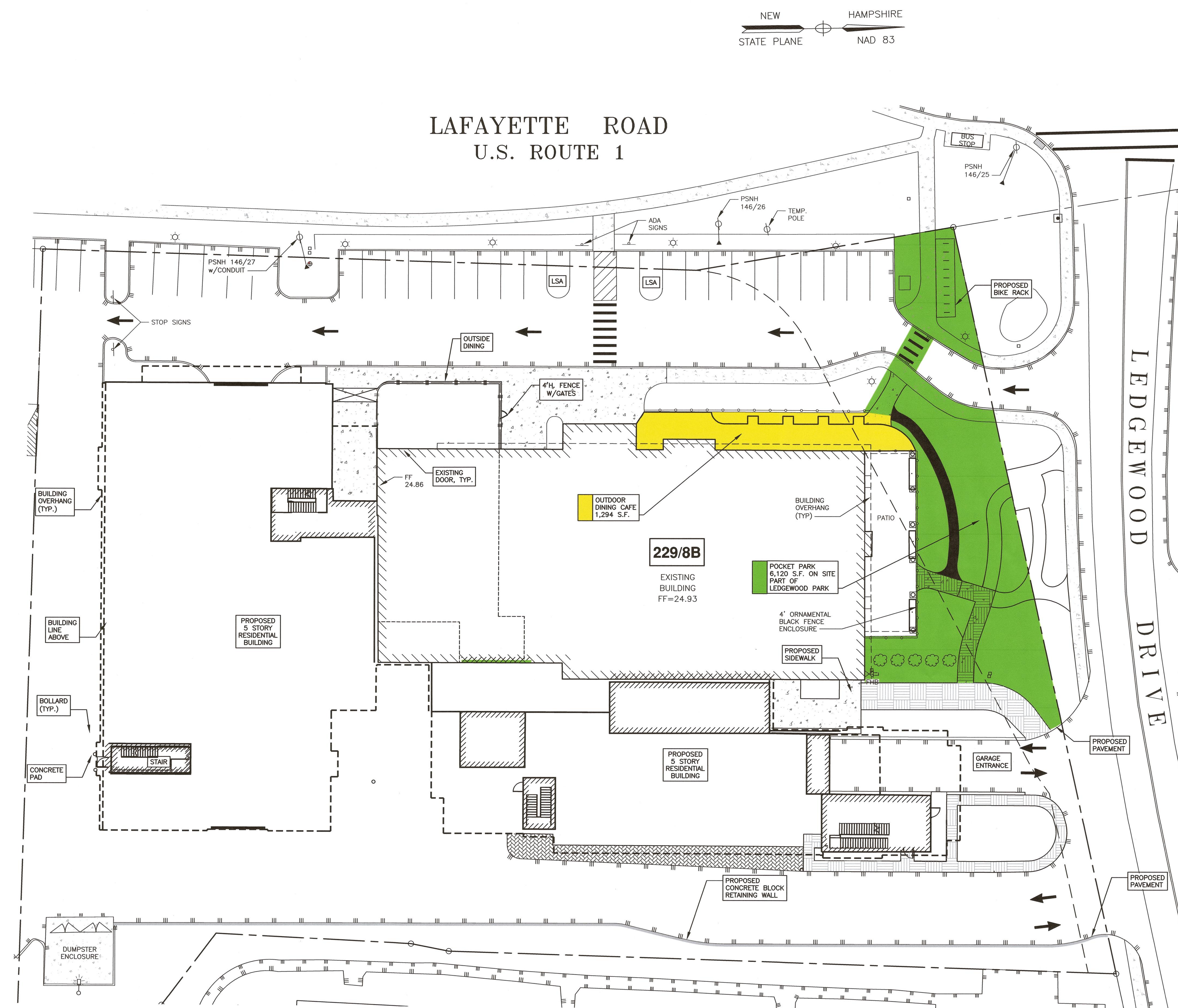
STATE OF NEW HAMPSHIRE JOHN CHAGNON No. 738 LICENSED LAND SURVEYOR

SCALE: 1"=20'
JULY 2023

OPEN SPACE PLAN

C7

FB 259 PG 10
1397.04



COMMUNITY SPACE ON-SITE

POCKET PARK	= 6,120 S.F.
OUTDOOR DINING CAFE	= 1,294 S.F.

PROPOSED ON-SITE COMMUNITY SPACE 7,414 S.F.
LOT AREA 98,124 S.F.

COMMUNITY SPACE REQUIRED: 10%
(PER SECTION 10.5B41.80.2)
ON-SITE COMMUNITY SPACE PROVIDED: 7.6%

COMMUNITY SPACE USES
(PER SECTION 10.5B102)

PROPOSED USES: OUTDOOR DINING CAFE
POCKET PARK

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

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5 0 5 10 15 20 25 METERS

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PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270F, EFFECTIVE JANUARY 29, 2021

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE ON-SITE COMMUNITY SPACE ON TAX MAP 229 LOT 8B.

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	BUILDING LAYOUT	3/27/24
3	AREAS/TYPES	2/21/24
2	COMMUNITY SPACE TYPES	2/6/24
1	AREAS/TYPES	1/24/24
0	ISSUED FOR COMMENT	12/19/23

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN CHAGNON
No. 738
LICENSED LAND SURVEYOR

SCALE: 1"=20'

JULY 2023

ON-SITE
COMMUNITY SPACE
PLAN

C8

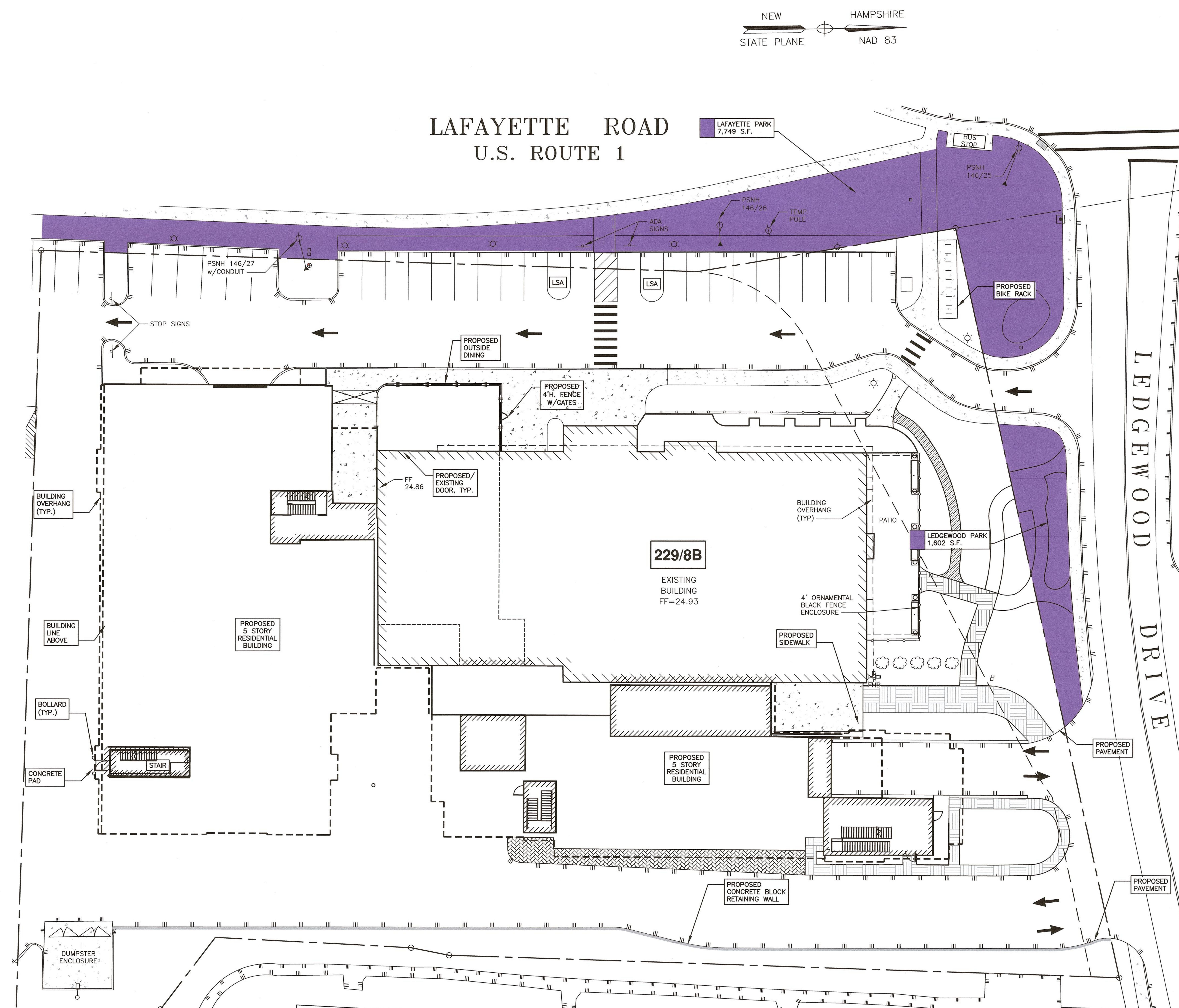
FB 259 PG 10

5010156

OFF-SITE LANDSCAPE MAINTENANCE AREA

LAFAYETTE PARK	=	7,749 S.F.
LEDGEWOOD PARK	=	1,602 S.F.

PROPOSED OFF-SITE MAINTENANCE AREA 9,351 S.F.



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

GRAPHIC SCALE

10 0 20 40 60 80 FEET

5 0 5 10 15 20 25 METERS

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603.430.9282

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NOTES:

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3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270F, EFFECTIVE JANUARY 29, 2021

4) EXISTING LOT AREA:
98,124 S.F.
2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE OFF-SITE COMMUNITY SPACE TO BE MAINTAINED BY THE OWNER OF TAX MAP 229 LOT 8B.

8) SIGNAGE IDENTIFYING THE POCKET PARK AS PUBLIC SPACE TO BE PROVIDED.

COMMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	BUILDING LAYOUT	3/27/24
1	TITLE	2/21/24
0	ISSUED FOR COMMENT	2/21/24

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN CHAGNON
No. 738
LICENSED LAND SURVEYOR

SCALE: 1"=20'

JULY 2023

OFF-SITE LANDSCAPE MAINTENANCE AREA

C8.1

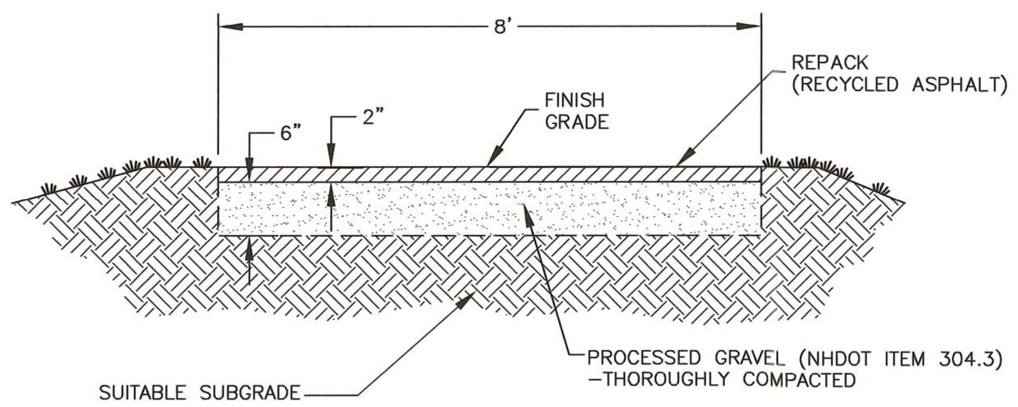
FB 259 PG 10

5010156

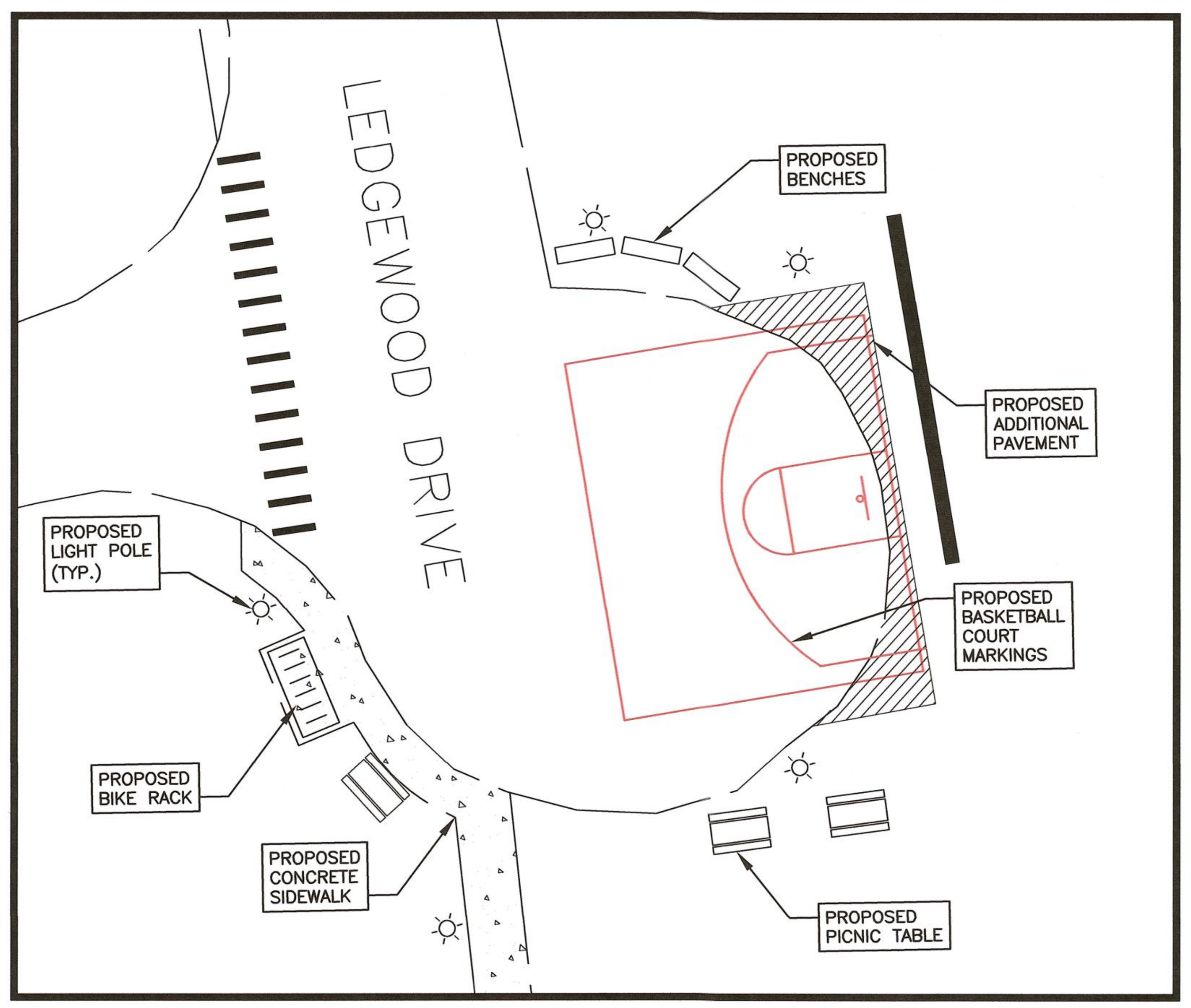
PUBLIC REALM

PUBLIC REALM IMPROVEMENT (PER SECTION 10.5B73.20.1)
LINEAR STREET FRONTAGE OF SITE: 619 FT
PROPOSED TRAIL NETWORK LENGTH: 707 FT

REQUIRED LENGTH: 619 FT
PROVIDED LENGTH: 707 FT



1 C9 PATH NTS



2 C9 LEDGEWOOD IMPROVEMENTS NTS

GRAPHIC SCALE
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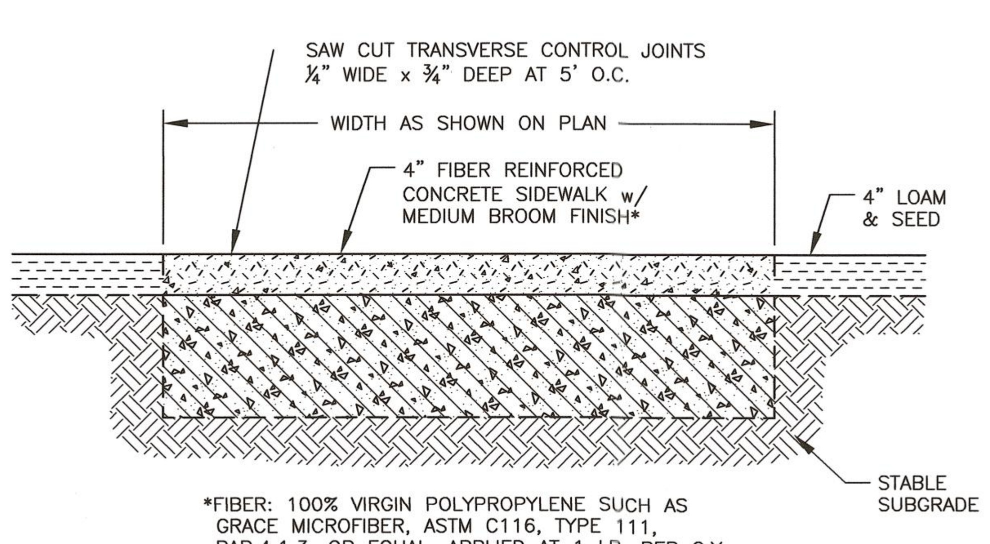
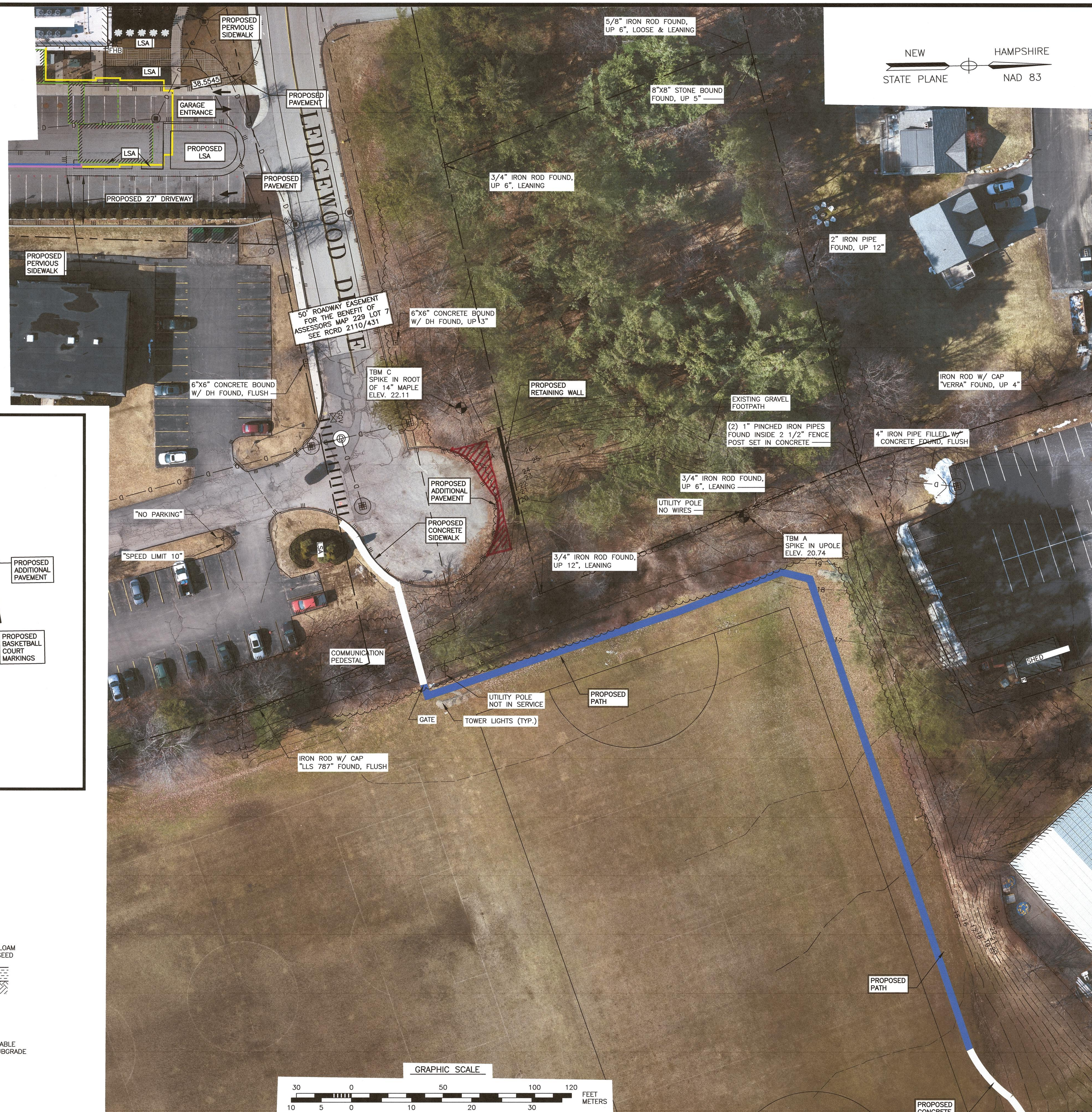
3 0 5 10 15 METERS
1"=20'



*FIBER: 100% VIRGIN POLYPROPYLENE SUCH AS GRACE MICROFIBER, ASTM C116, TYPE 111, PAR.4.1.3. OR EQUAL. APPLIED AT 1 LB. PER C.Y.

3 C9 CONCRETE SIDEWALK NTS



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 229 AS LOT 8B.

2) OWNERS OF RECORD:
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6474/1538

3) THE PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0270E, EFFECTIVE MAY 17, 2005

4) EXISTING LOT AREA:
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2.2526 AC

5) PARCEL IS LOCATED IN THE GATEWAY NEIGHBORHOOD CORRIDOR (G1) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW PUBLIC REALM IN ACCORDANCE WITH SECTION 10.5B7320.1 ON TAX MAP 229 LOT 8B.

8) PUBLIC REALM IMPROVEMENTS SHOWN HERON ARE SUBJECT TO CITY OF PORTSMOUTH SCHOOL DEPARTMENT REVIEW AND APPROVAL. FINAL DESIGN & LOCATION TO BE DETERMINED.

COMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ORTHO PHOTO UPDATED, DETAIL 3	3/27/24
1	PUBLIC REALM TRAIL	2/6/24
0	ISSUED FOR COMMENT	1/4/24

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

SCALE: 1"=30'
JANUARY 2024

PUBLIC REALM PLAN
C9

FB 259 PG 10
1397.04

P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Plans & Specs\Site\1397.04 Public Realm 2024.dwg, 3/27/2024 8:39:25 AM, \\SVRPSM-PS01\Portsmouth Plotter Canon 1X3000

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6474/1538

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98,124 S.F.
2.2526 AC

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SEE ZONING ORDINANCE SECTION 10.5B22.10

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8) PUBLIC REALM IMPROVEMENTS SHOWN HERON ARE SUBJECT TO CITY OF PORTSMOUTH SCHOOL DEPARTMENT REVIEW AND APPROVAL. FINAL DESIGN & LOCATION TO BE DETERMINED.

COMERCIAL DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ORTHO PHOTO UPDATED, SIDEWALK	3/27/24
1	PUBLIC REALM TRAIL	2/6/24
0	ISSUED FOR COMMENT	1/4/24

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
No. 738
JOHN CHAGNON
SIGNATURE

SCALE: 1"=30' JANUARY 2024

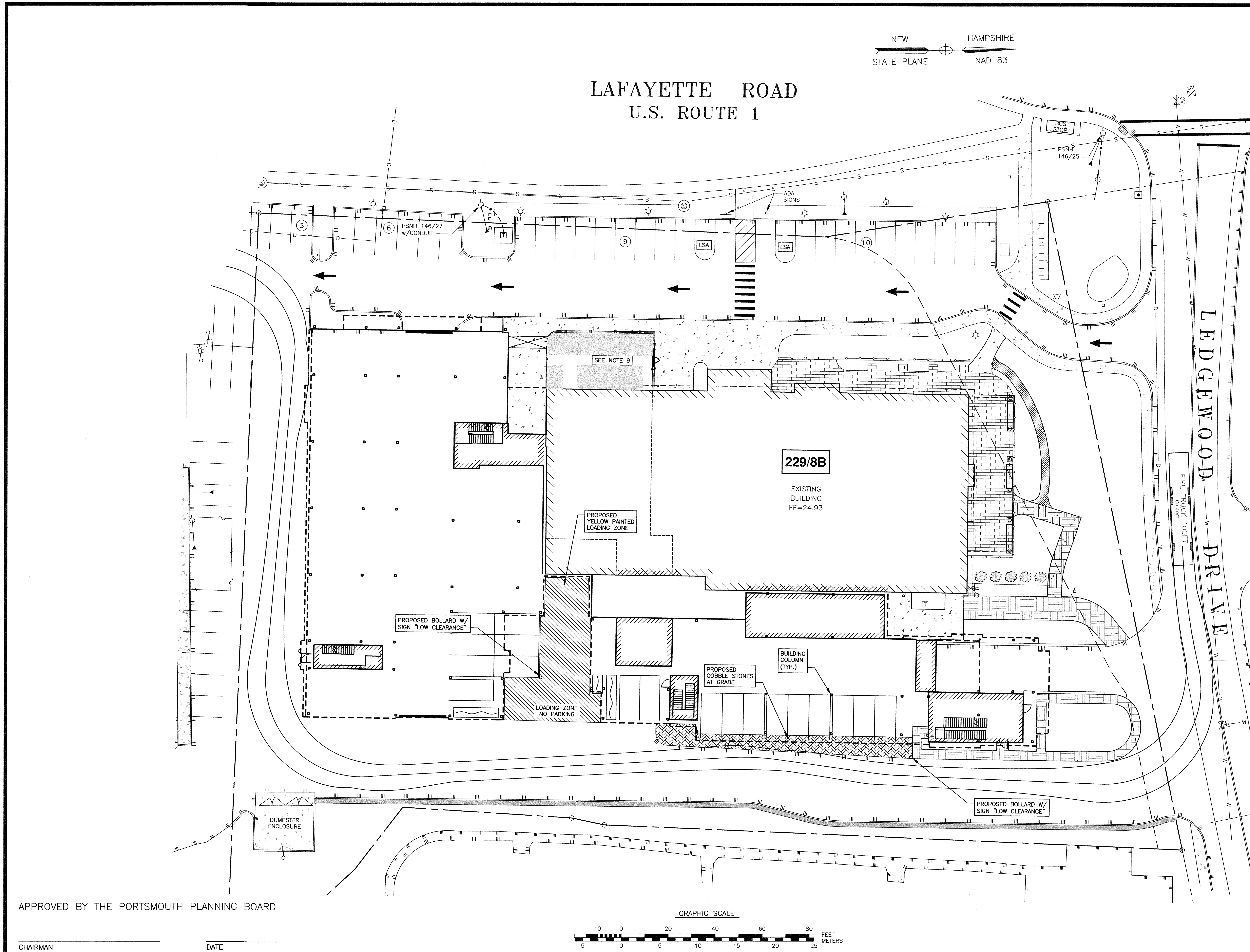
PUBLIC REALM PLAN

C10

FB 259 PG 10

1397.04

P:\NH\5010156-McNabb_Properties\1397.03-Lafayette Rd., Portsmouth-JRC\2023 Site Plan 1397.03\Plans & Specs\Site\1397.04 Public Realm 2024.dwg, 3/27/2024 8:36:22 AM, Portsmouth Plotter Canon TX3000.pc3



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

WWW.HALEYWARD.COM

200 Griffin Road, Unit 3
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6474/1538

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6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE SECTION 10.5B22.10

7) THE PURPOSE OF THIS PLAN IS TO SHOW GENERAL TURNING MOVEMENTS ON TAX MAP 229 LOT 8B.

8) DESIGN BASED ON ARCHITECTURAL PLAN BY ARCOVE ARCHITECTS DATED 8/22/23.

9) CONVERSION OF TUSCAN MARKETPLACE TO RESTAURANT (NORTHEASTERN THAI, LLC) APPROVED UNDER PERMIT: LU-22-254

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	BUILDING COLUMNS & BOLLARD	3/27/24
2	BUILDING	3/5/24
1	ISSUED FOR APPROVAL	9/29/23
0	ISSUED FOR COMMENT	8/31/23

REVISIONS

SCALE: 1"=20'

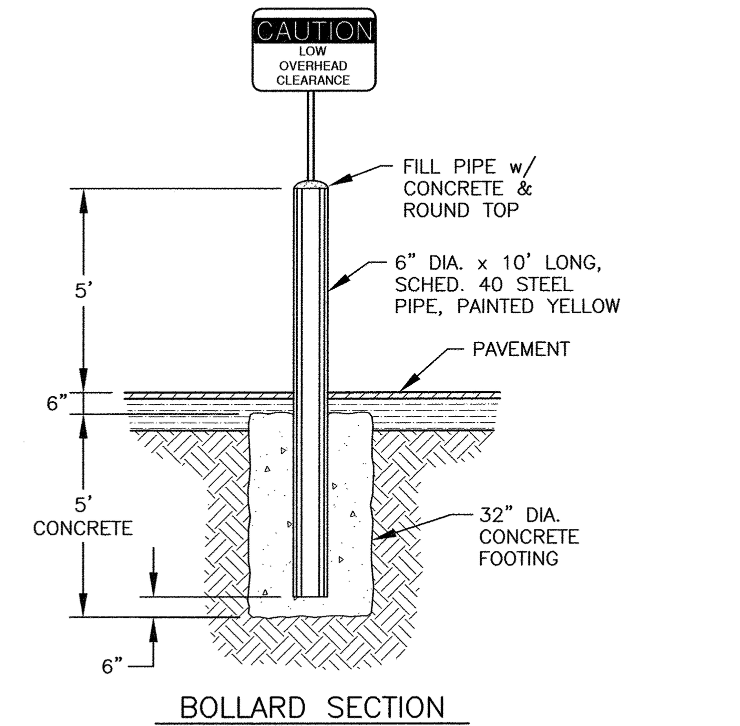
JULY 2023

FIRE TRUCK TURNING PLAN

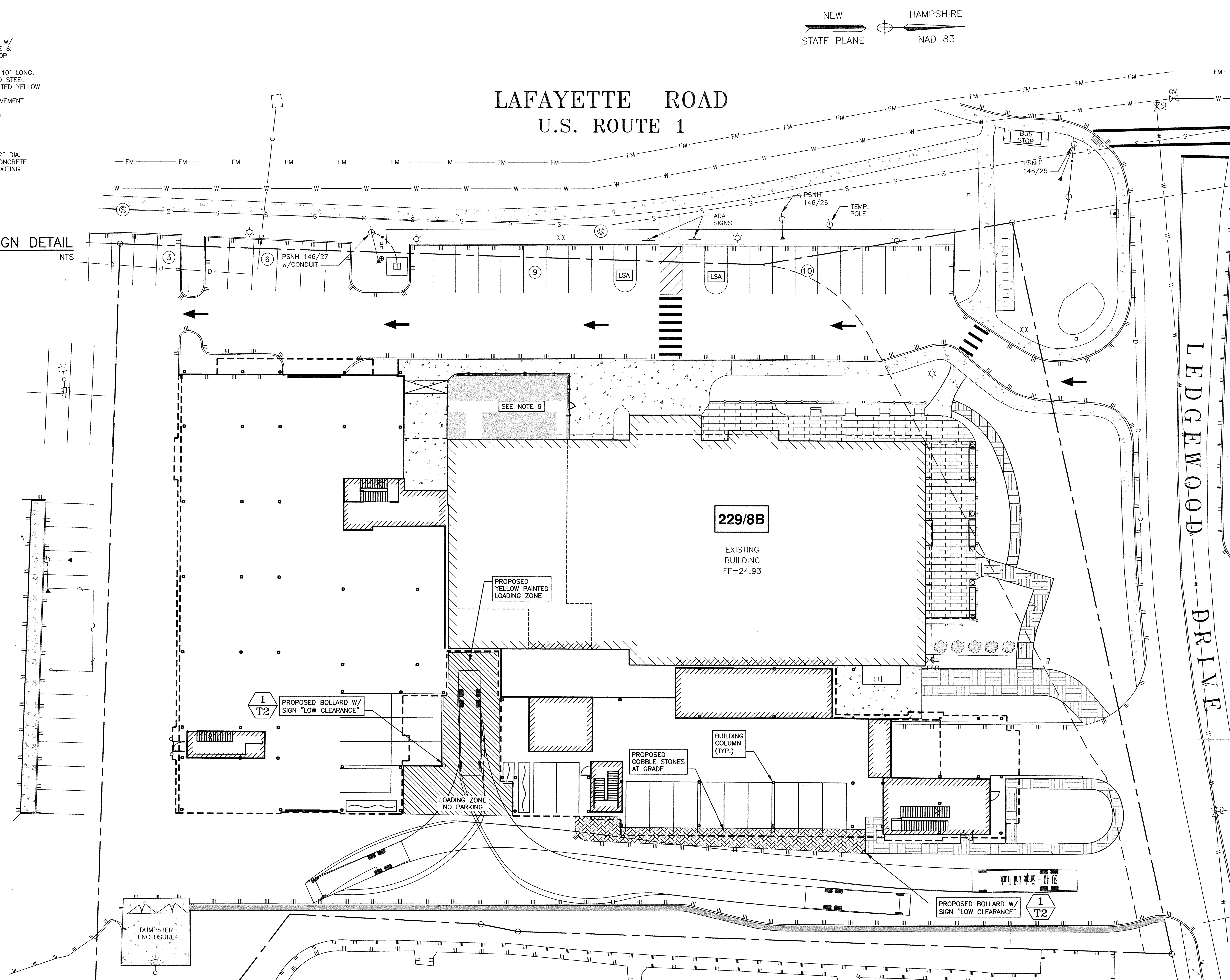
T1

FB 259 PG 10

1397.04



1 T2 BOLLARD W/ SIGN DETAIL
NTS



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

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A DIVISION OF HALEY WARD, INC.

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6474/1538

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2.2526 AC

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9) CONVERSION OF TUSCAN MARKETPLACE TO RESTAURANT (NORTHEASTERN THAI, LLC) APPROVED UNDER PERMIT: LU-22-254

COMMERCIAL DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	BUILDING COLUMNS & BOLLARD	3/27/24
2	BUILDING	3/5/24
1	ISSUED FOR APPROVAL	9/29/23
0	ISSUED FOR COMMENT	8/31/23

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 9381 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=20'   JULY 2023

DELIVERY TRUCK TURNING PLAN

T2

FB 259 PG 10   1397.04

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. THE CONTRACTOR SHALL OBTAIN AN **NPDES** PHASE II STORMWATER PERMIT BEFORE BEGINNING CONSTRUCTION AND SHALL HAVE ON SITE A STORMWATER POLLUTION PREVENTION PLAN (**S.W.P.P.P.**) AVAILABLE FOR INSPECTION BY THE PERMITTING AUTHORITY DURING THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THE **S.W.P.P.P.** AND INSPECTING AND MAINTAINING ALL BMP'S CALLED FOR BY THE PLAN. THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (**N.O.T.**) FORM TO THE REGIONAL EPA OFFICE WITHIN 30 DAYS OF FINAL STABILIZATION OF THE ENTIRE SITE OR TURNING OVER CONTROL OF THE SITE TO ANOTHER OPERATOR.
3. INSTALL PERIMETER CONTROLS, i.e., SILTSOXX AROUND THE LIMITS OF DISTURBANCE AND CATCH BASIN BASKETS AS NEEDED BEFORE ANY EARTH MOVING OPERATIONS.
4. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.
5. CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED.
6. DEMOLISH EXISTING WALKWAYS, PAVEMENT, AND UTILITIES AS INDICATED ON THE PLANS.
7. REPLANT TREES OR MOVE TO STABLE LOCATION.
8. BEGIN CONSTRUCTION OF ADDITIONS.
9. LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES UP TO 10' OF THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.
10. FINISH GRADE SITE, BACKFILL ROAD SUBBASE GRAVEL IN TWO, COMPACTED LIFTS. PROVIDE TEMPORARY EROSION PROTECTION IN THE FORM OF MULCHING, JUTE MESH OR DITCH DAMS.
11. INSTALL RETAINING WALL.
12. INSTALL DRAINAGE SYSTEM.
13. PLACE BINDER LAYER OF PAVEMENT, THEN RAISE CATCH BASIN FRAMES TO FINAL GRADE. REINSTALL BASIN INLET PROTECTION.
14. PLANT LANDSCAPING IN AREAS OUT OF WAY OF BUILDING CONSTRUCTION. PREPARE AND STABILIZE FINAL SITE GRADING BY ADDING TOPSOIL, SEED, MULCH AND FERTILIZER.
15. AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.
16. CONSTRUCT ASPHALT WEARING COURSE.
17. REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

GENERAL CONSTRUCTION NOTES

1. THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". 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.
2. DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.
3. ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.
4. DUST CONTROL: IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
5. SILT FENCES AND SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES AND SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.
6. AVOID THE USE OF FUTURE OPEN SPACES (LOAM AND SEED AREAS) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ACCESS DRIVES AND PARKING AREAS.
7. ADDITIONAL TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNTS NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS--CONSTRUCT SILT FENCE OR SILTSOXX AROUND TOPSOIL STOCKPILE.
8. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. STUMPS SHALL BE DISPOSED OF IN AN APPROVED FACILITY.
9. ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.
10. ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.
11. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.
12. FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.
13. DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.
14. THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.
15. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
    - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
    - EROSION CONTROL BLANKETS HAVE BEEN INSTALLED

VEGETATIVE PRACTICE

FOR PERMANENT MEASURES AND PLANTINGS:

LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE.

FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.

SEED SHALL BE SOWN AT THE RATES SHOWN IN THE TABLE BELOW. 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. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE, AND SHALL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.

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 SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.

A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE:

GENERAL COVER	PROPORTION	SEEDING RATE
CREEPING RED FESCUE	50%	100 LBS/ACRE
KENTUCKY BLUEGRASS	50%	

SLOPE SEED (USED ON ALL SLOPES GREATER THAN OR EQUAL TO 3:1)

CREEPING RED FESCUE	42%	
TALL FESCUE	42%	48 LBS/ACRE
BIRDSFOOT TREFOIL	16%	

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH APPLICABLE STATE AND FEDERAL SEED LAWS.

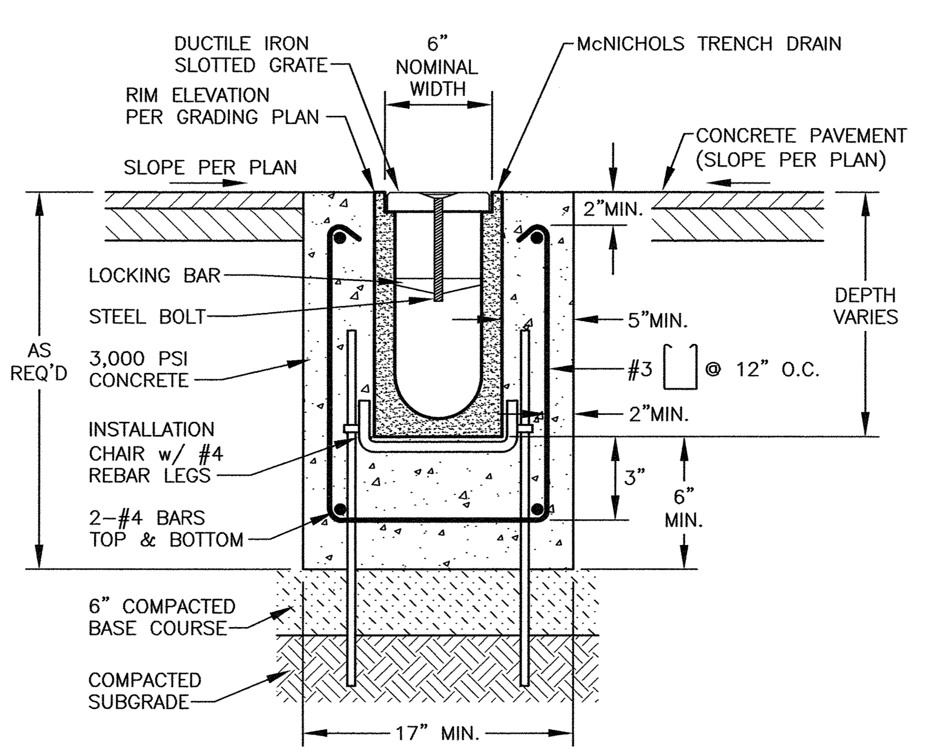
FOR TEMPORARY PROTECTION OF DISTURBED AREAS:
MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:
PERENNIAL RYE: 0.7 LBS/1,000 S.F.
MULCH: 1.5 TONS/ACRE

MAINTENANCE AND PROTECTION

1. THE CONTRACTOR SHALL MAINTAIN ALL LOAM & SEED AREAS UNTIL FINAL ACCEPTANCE AT THE COMPLETION OF THE CONTRACT. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REMOVAL OF STONES AND OTHER FOREIGN OBJECTS OVER 1/2 INCHES IN DIAMETER WHICH MAY APPEAR AND THE FIRST TWO (2) CUTTINGS OF GRASS NO CLOSER THEN TEN (10) DAYS APART. THE FIRST CUTTING SHALL BE ACCOMPLISHED WHEN THE GRASS IS FROM 2 1/2 TO 3 INCHES HIGH. ALL BARE AND DEAD SPOTS WHICH BECOME APPARENT SHALL BE PROPERLY PREPARED, LIMED AND FERTILIZED, AND RESEEDED BY THE CONTRACTOR AT HIS EXPENSE AS MANY TIMES AS NECESSARY TO SECURE GOOD GROWTH. THE ENTIRE AREA SHALL BE MAINTAINED, WATERED AND CUT UNTIL ACCEPTANCE OF THE LAWN BY THE OWNER'S REPRESENTATIVE.
2. THE CONTRACTOR SHALL TAKE WHATEVER MEASURES ARE NECESSARY TO PROTECT THE GRASS WHILE IT IS DEVELOPING.
3. TO BE ACCEPTABLE, SEEDED AREAS SHALL CONSIST OF A UNIFORM STAND OF AT LEAST 90 PERCENT ESTABLISHED PERMANENT GRASS SPECIES, WITH UNIFORM COUNT OF AT LEAST 100 PLANTS PER SQUARE FOOT.
4. SEEDED AREAS WILL BE FERTILIZED AND RESEEDED AS NECESSARY TO INSURE VEGETATIVE ESTABLISHMENT.
5. THE SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATION IS ESTABLISHED.
6. THE SILT FENCE OR SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
7. SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, 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.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER NOVEMBER 15TH, 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.

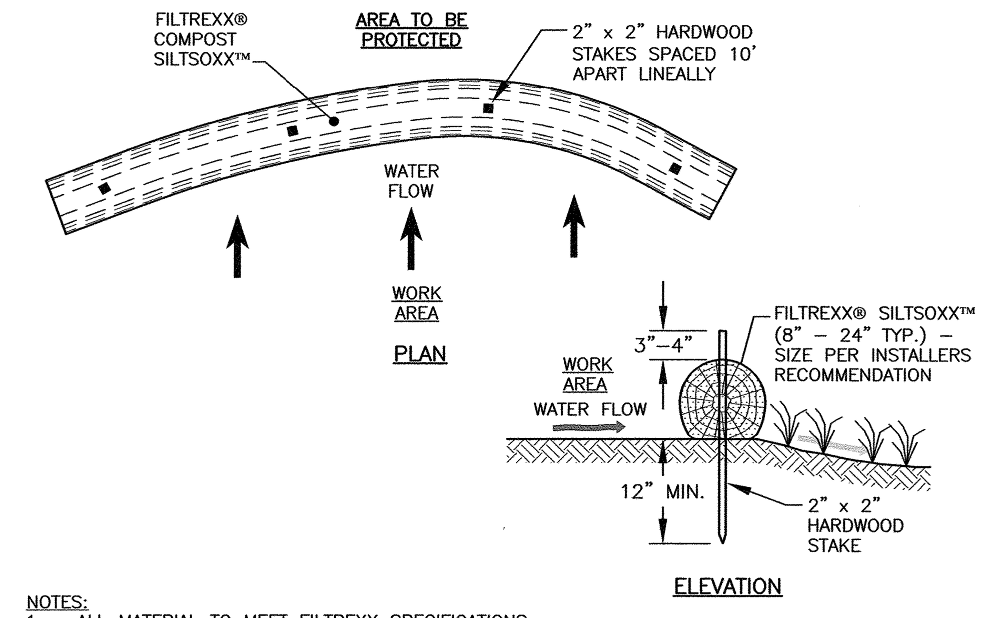


D / C4 EVAPORATIVE TRENCH DRAIN DETAIL
IN GARAGE
NTS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

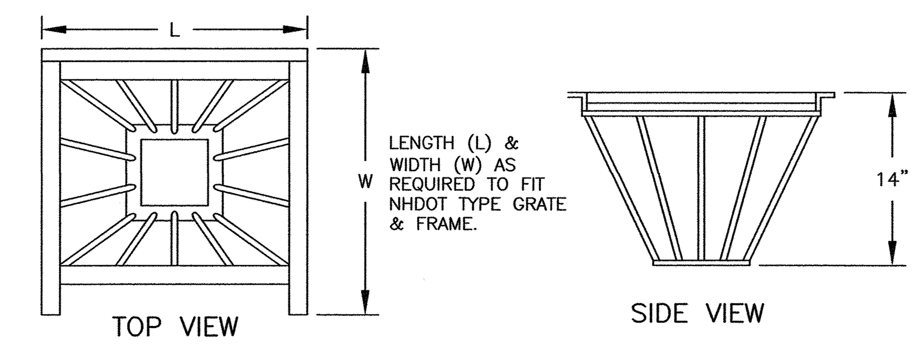
CHAIRMAN

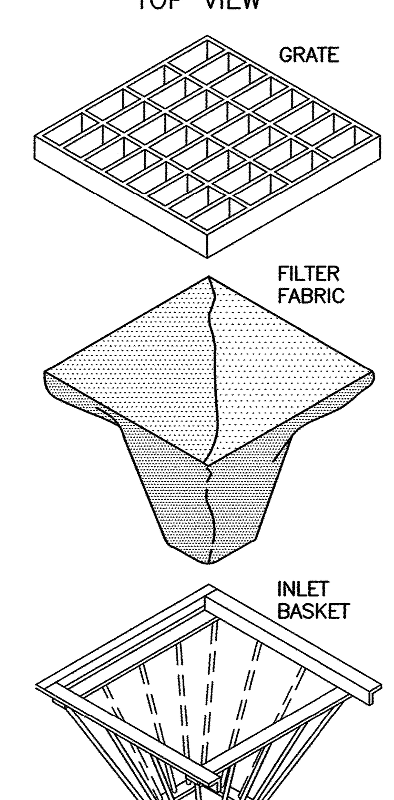
DATE



NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

A / C6 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
NTS





1) INLET BASKETS SHALL BE INSTALLED IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION IS COMPLETE AND SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.

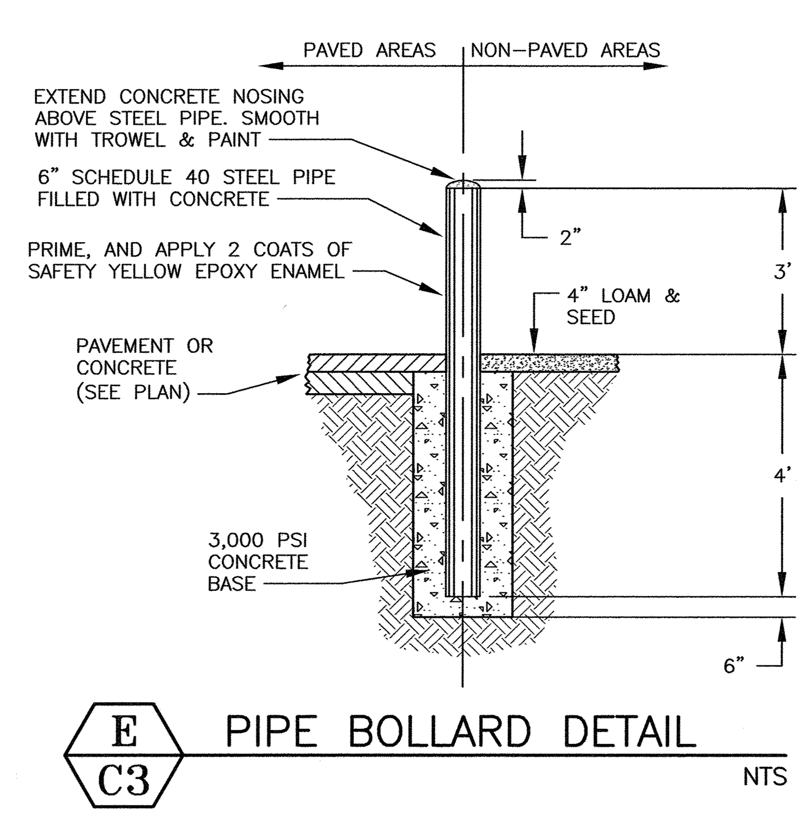
3) THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
-RAB STRENGTH: 45 LB. MIN. IN ANY PRINCIPAL DIRECTION (ASTM D1682)
-MULLEN BURST STRENGTH: MIN. 60 psi (ASTM D774)

4) THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 gpm/s.f. (MULTIPLY THE PERMITTIVITY IN SEC.-1 FROM ASTM 54491-85 CONSTANT HEAD TEST USING THE CONVERSION FACTOR OF 74.)

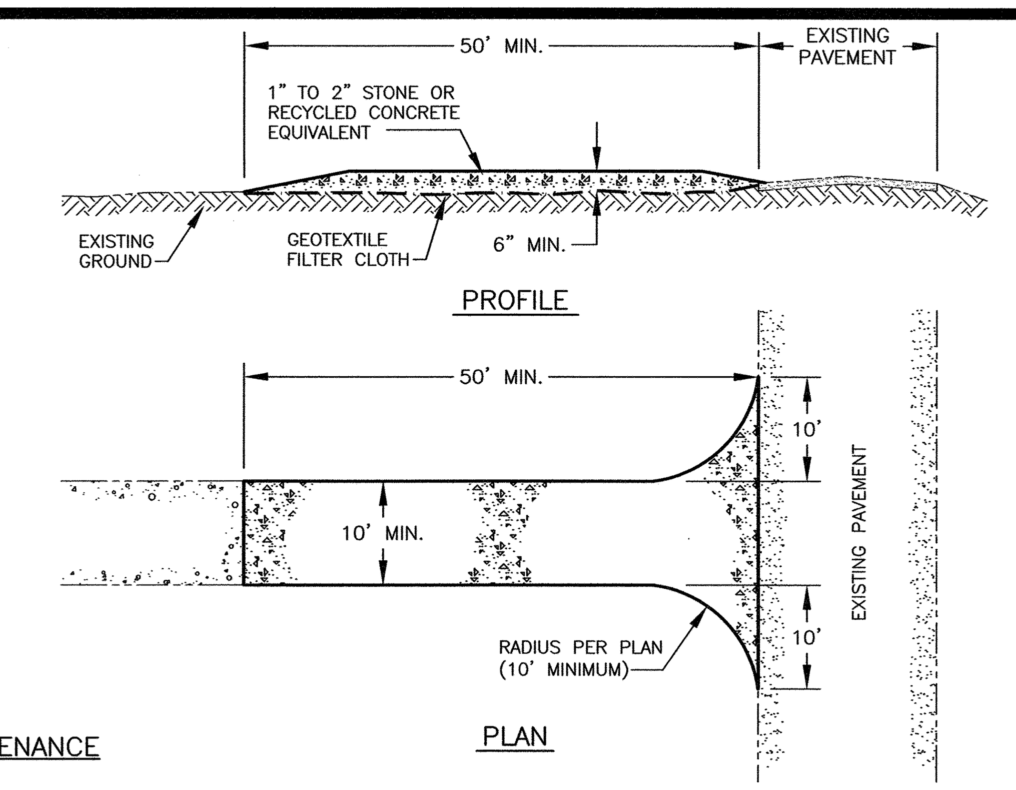
5) THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

6) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

B / C6 CATCH BASIN INLET BASKET
NTS



E / C3 PIPE BOLLARD DETAIL
NTS



MAINTENANCE

1) MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE GRAVEL AND THE EFFECTIVENESS OF THE GRAVEL PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOP DRESSED WITH NEW STONE. COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2) IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS

1) STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2) THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3) THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4) THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5) GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6) ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8) WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

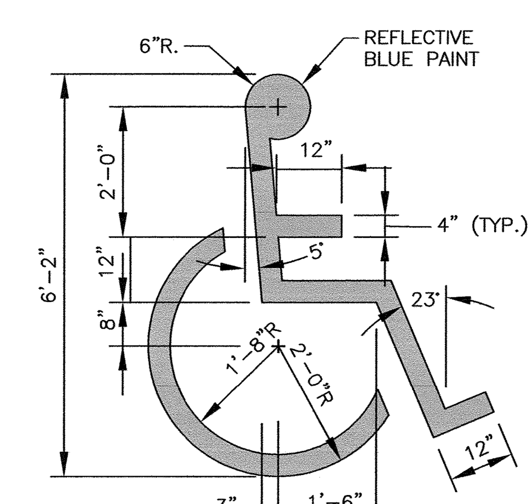
C / C6 STABILIZED CONSTRUCTION ENTRANCE
NTS

R7-8a
12" x 18"
SIGN ON POST

EACH SPACE SHALL HAVE THIS SIGN DISPLAYED PER ADA CODE

SIGNAGE

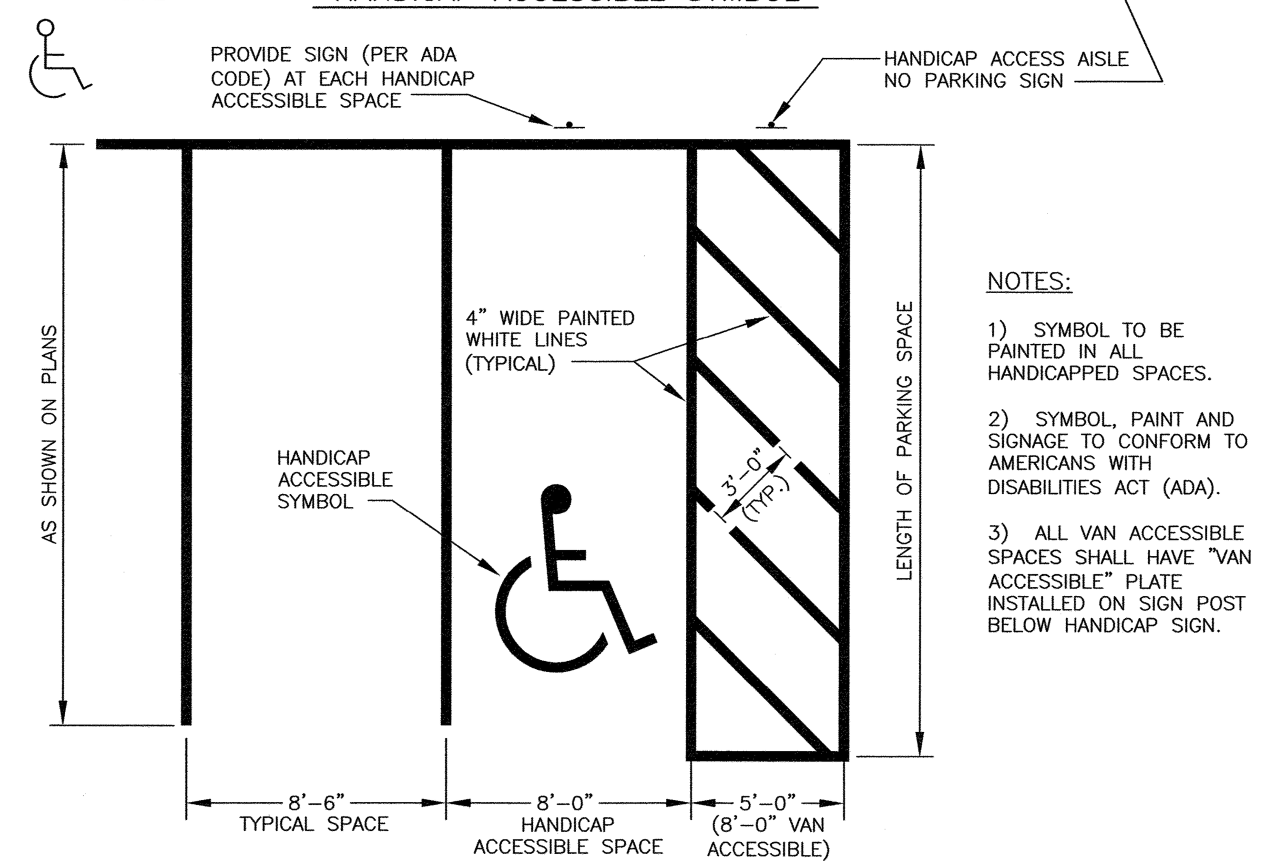
LEGEND SYMBOL



HANDICAP ACCESSIBLE SYMBOL

K-4438
12" x 18"
SIGN ON POST

SIGNAGE



NOTES:

1) SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES.

2) SYMBOL, PAINT AND SIGNAGE TO CONFORM TO AMERICANS WITH DISABILITIES ACT (ADA).

3) ALL VAN ACCESSIBLE SPACES SHALL HAVE "VAN ACCESSIBLE" PLATE INSTALLED ON SIGN POST BELOW HANDICAP SIGN.

EE / C3 HANDICAP PARKING DETAIL
NTS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

NOTES:

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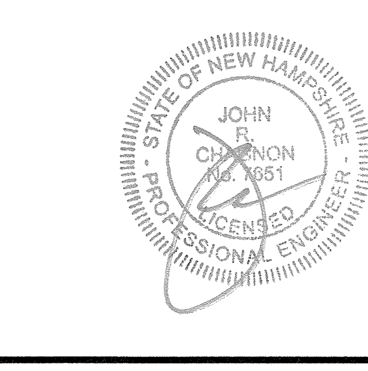
2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	DETAIL EE	2/21/24
0	ISSUED FOR COMMENT	11/20/23

REVISIONS



SCALE: AS NOTED
NOVEMBER 2023

EROSION CONTROL NOTES & DETAILS

D1

FB 259 PG 10

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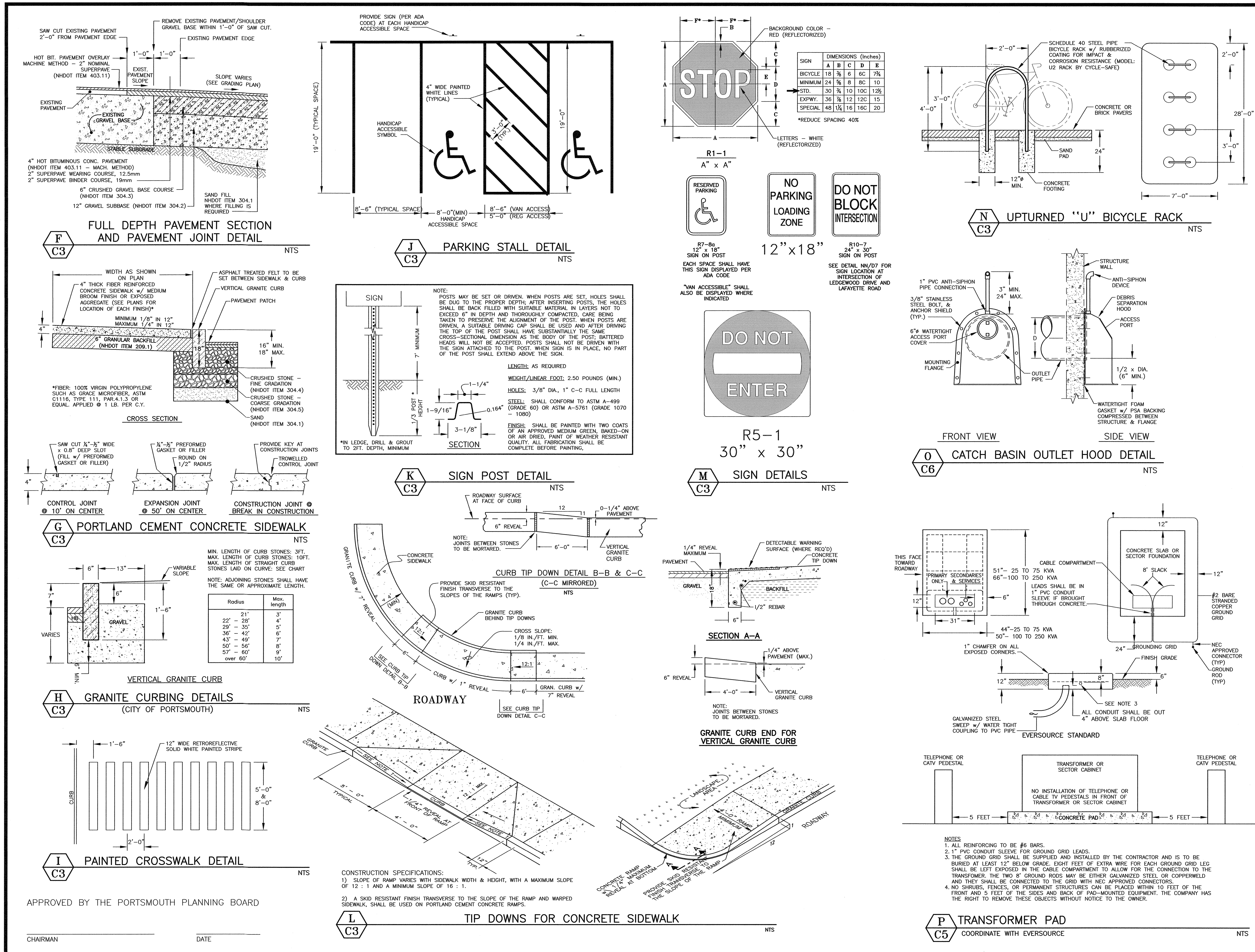

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN | DATE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3
Portsmouth, NH 03801
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MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	11/20/23

REVISIONS

SCALE: AS NOTED

NOVEMBER 2023

DETAILS

D2

FB 259 PG 10

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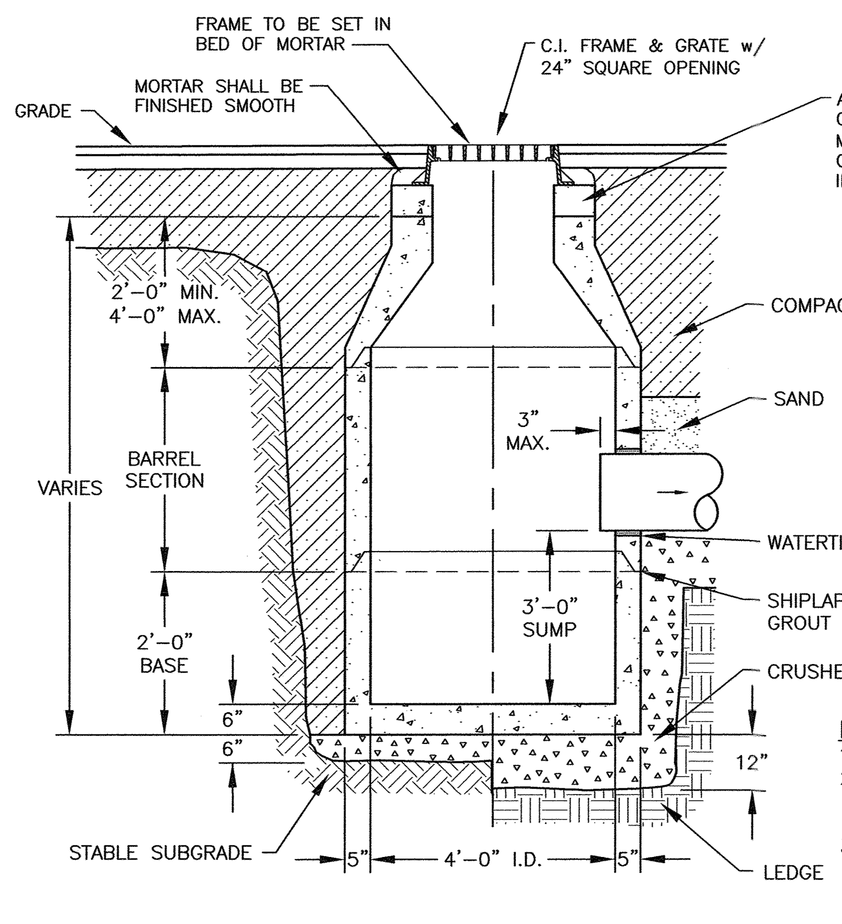
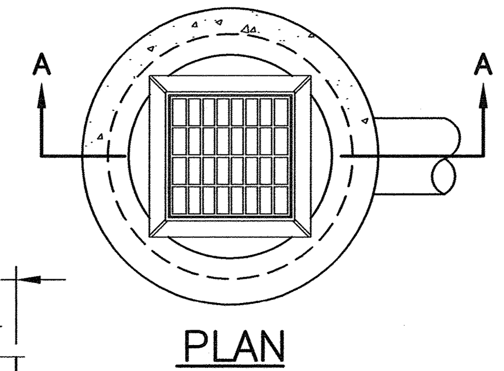
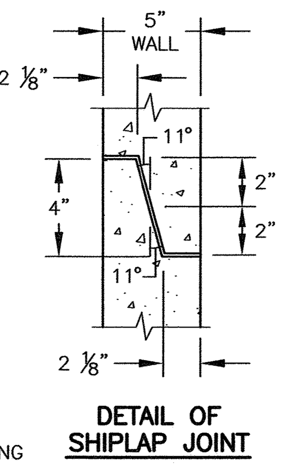






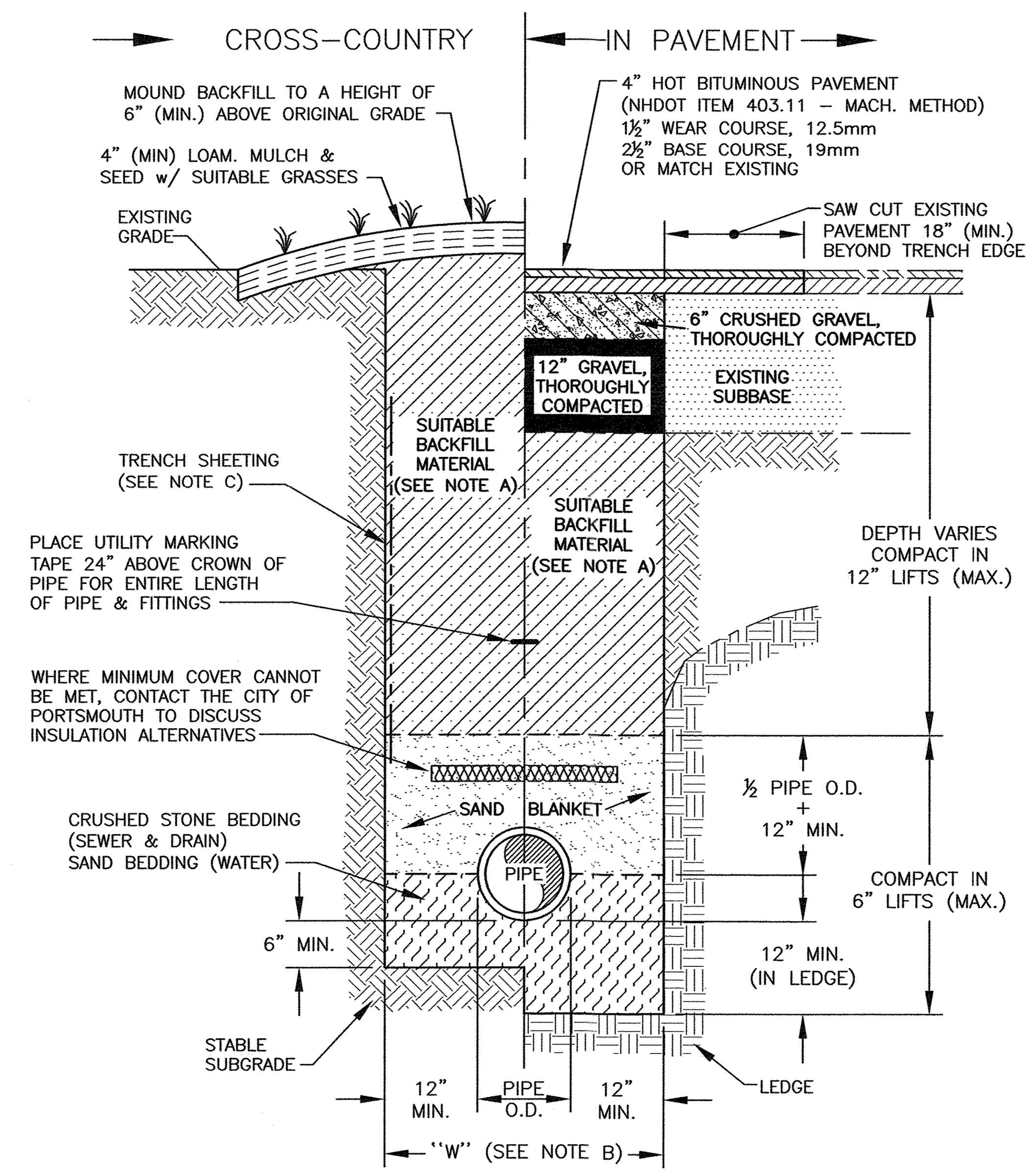
NOTES:

1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.

SECTION A – A

Q / C5 CATCH BASIN DETAIL

NTS



TRENCH NOTES:

A) TRENCH BACKFILL:
– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

– IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

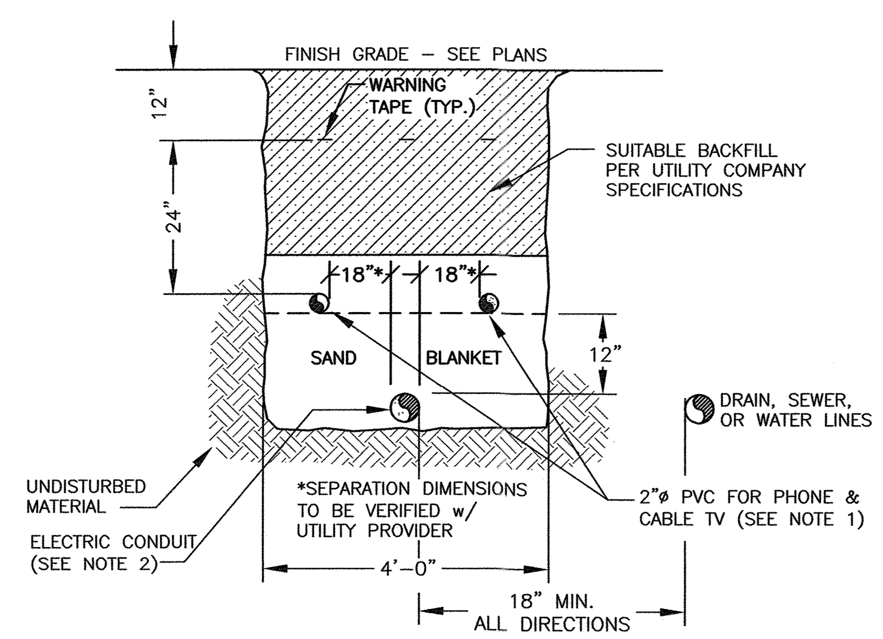
C) TRENCH SHEETING:
IF REQUIRED. WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID–DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
6' MINIMUM FOR SEWER (IN PAVEMENT)
4' MINIMUM FOR SEWER (CROSS COUNTRY)
3' MINIMUM FOR STORMWATER DRAINS
5' MINIMUM FOR WATER MAINS

E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.

R / C4 TYPICAL PIPE TRENCH

NTS

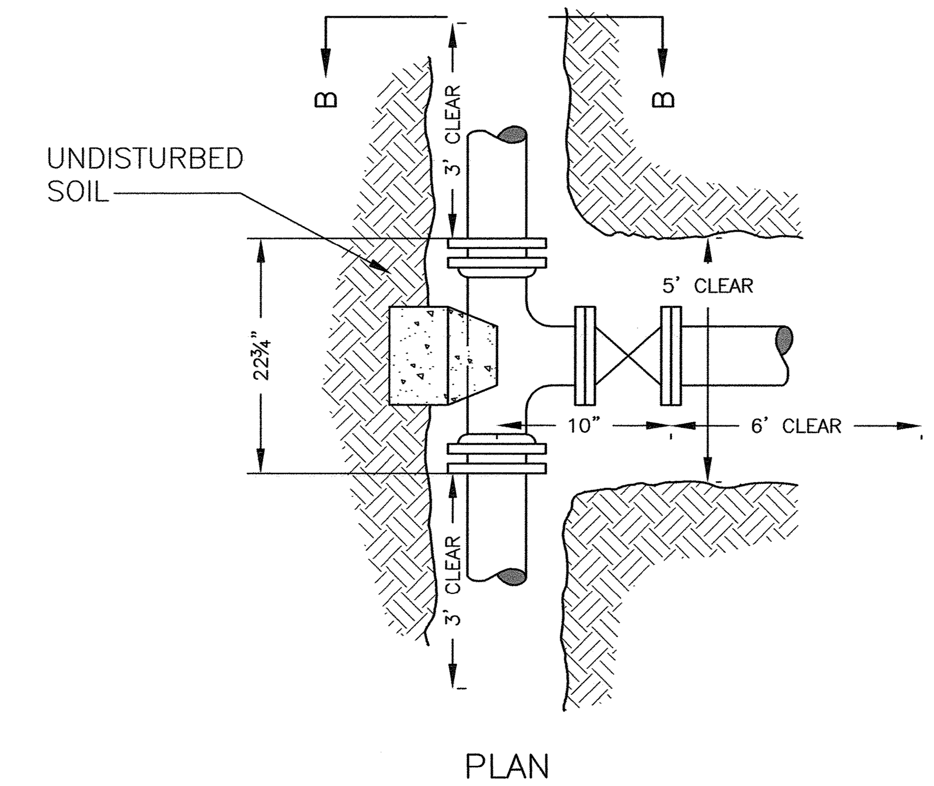


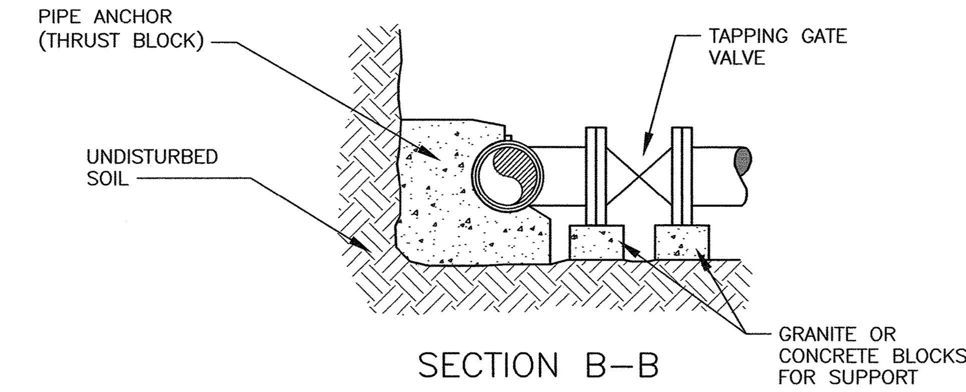
NOTES:

1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

S / C4 UTILITY TRENCH ELECTRIC/COMMUNICATIONS

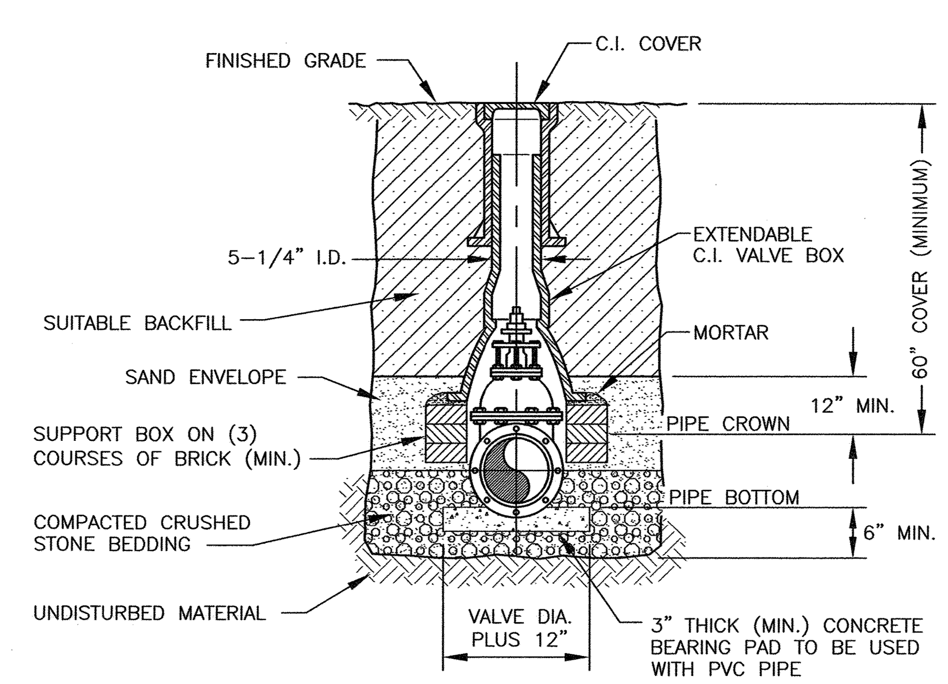
NTS



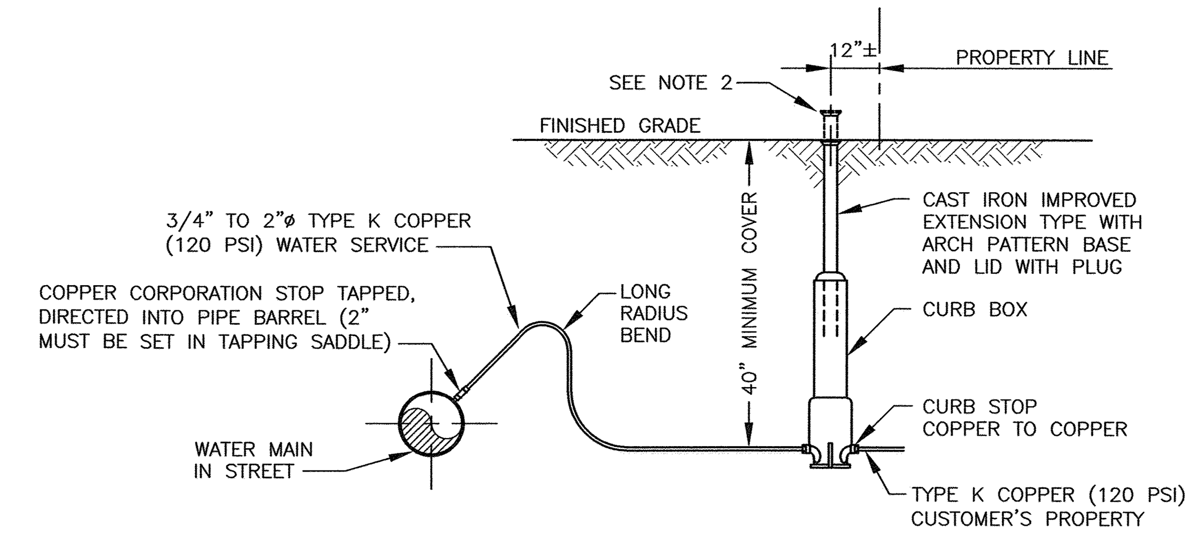


NOTES:
1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.
2) ALL JOINTS SHALL BE MECHANICAL.
3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

T / C4 TAPPING SLEEVE AND GATE
INSTALL PER PORTSMOUTH REQUIREMENTS NTS

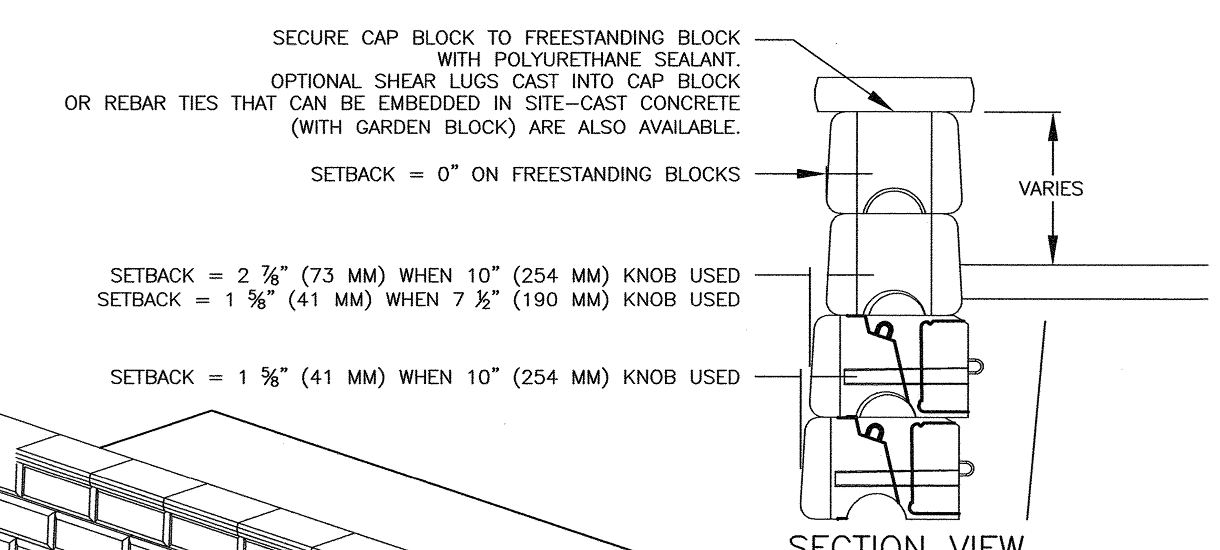


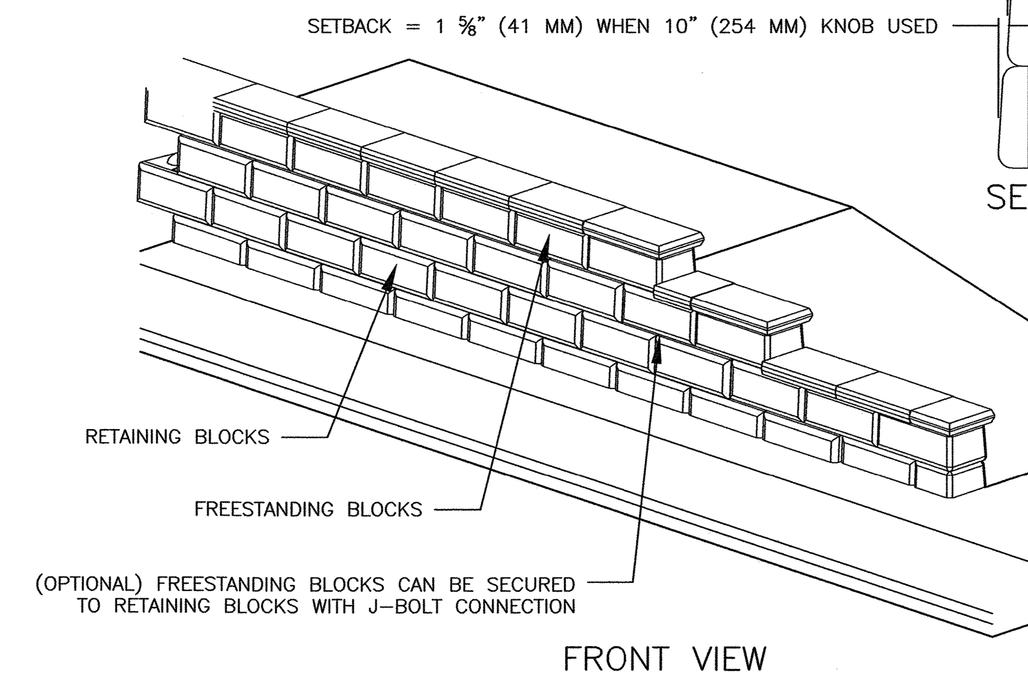
U / C4 TYPICAL VALVE BOX INSTALLATION
INSTALL PER PORTSMOUTH REQUIREMENTS NTS



NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.

V / C4 WATER SERVICE CONNECTION
INSTALL PER PORTSMOUTH REQUIREMENTS NTS





W / C3 SMALL BLOCK RETAINING WALL
GENEST – BRUSSELS – UNILOCK WALL
COORDINATE COLOR WITH OWNER
NTS

AMBIT ENGINEERING, INC.
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APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	11/20/23

REVISIONS

SCALE: AS NOTED NOVEMBER 2023

DETAILS

D3

FB 259 PG 10

5010156 1397.04

JELLYFISH DESIGN NOTES

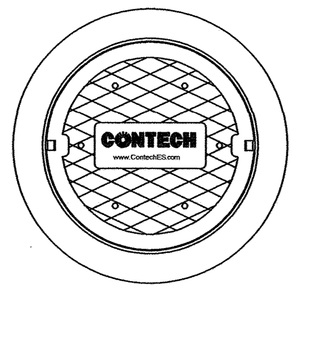
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

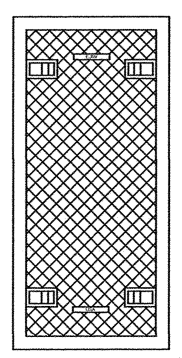
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.



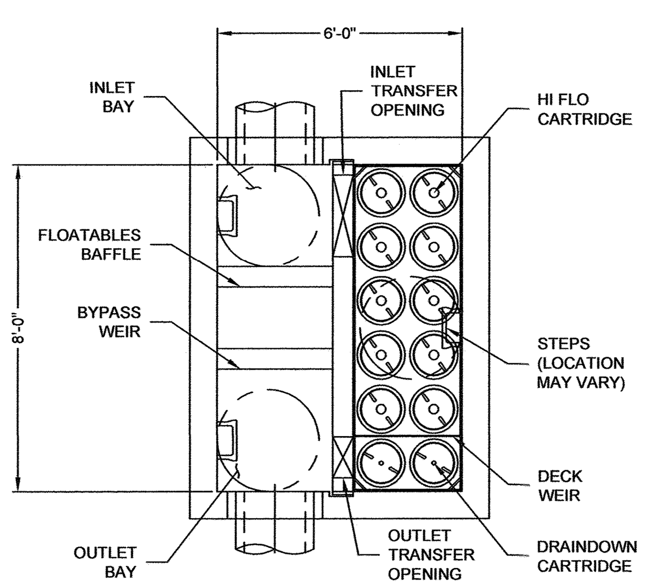
FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



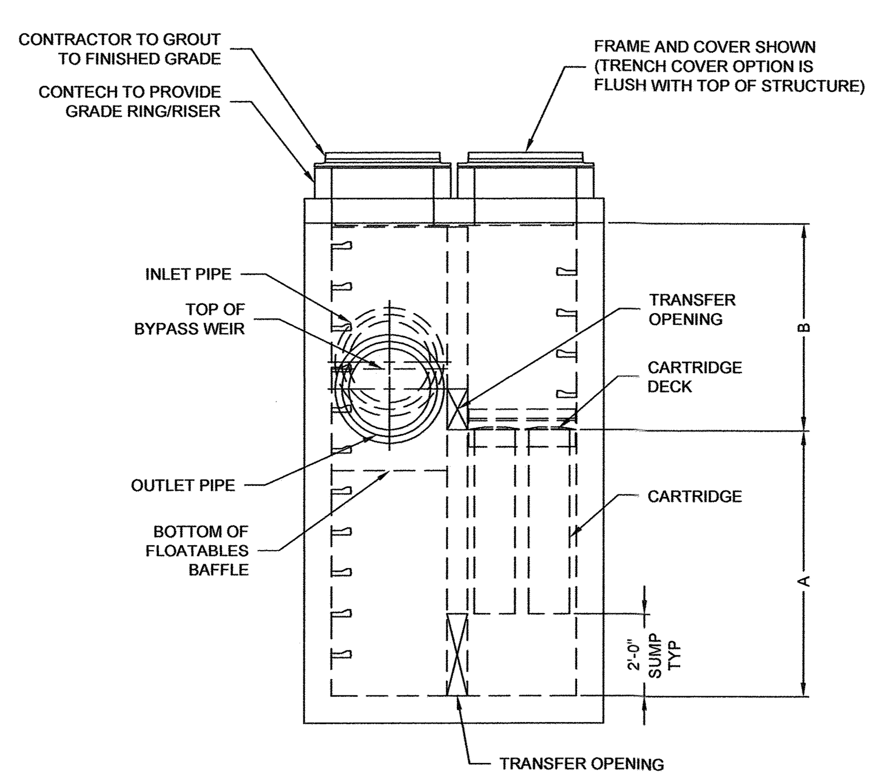
24" TRENCH COVER
(LENGTH VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID					ID
WATER QUALITY FLOW RATE (cfs)					WQFLOW
PEAK FLOW RATE (cfs)					PEAK
RETURN PERIOD OF PEAK FLOW (yrs)					RETURN
# OF CARTRIDGES REQUIRED (HF / DD)					CART
CARTRIDGE LENGTH					SIZE
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	ELEV	MAT'L	DIA	SLOPE	HGL
INLET #2	ELEV	MAT'L	DIA	SLOPE	HGL
OUTLET	ELEV	MAT'L	DIA	SLOPE	HGL
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.					
RIM ELEVATION					RIMELEV
ANTI-FLOTATION BALLAST			WIDTH		HEIGHT
			WIDTH		HEIGHT
NOTES/SPECIAL REQUIREMENTS:					
* PER ENGINEER OF RECORD					



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH FILTER DETAIL

NTS

1.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

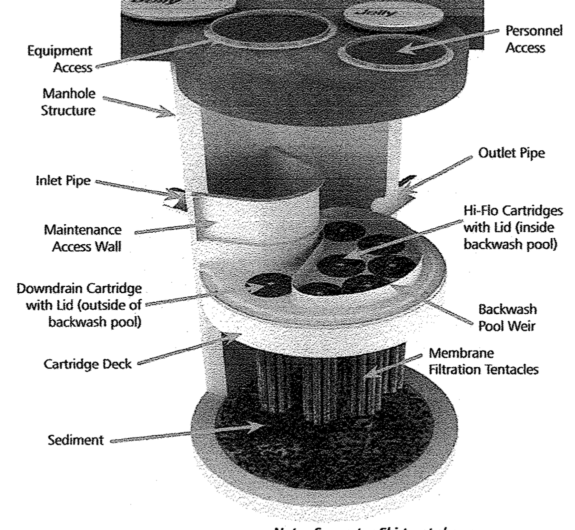
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed



Note: Separator Skirt not shown

2.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

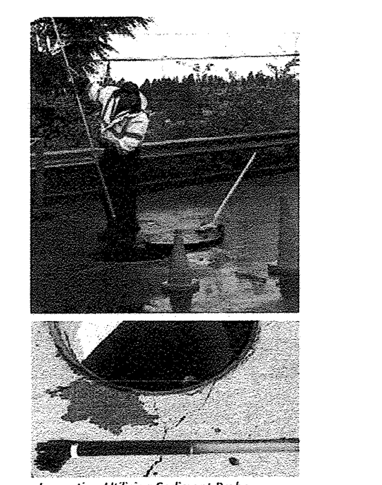
3.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

3.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.



Inspection Utilizing Sediment Probe

3

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

3.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

4.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

5.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

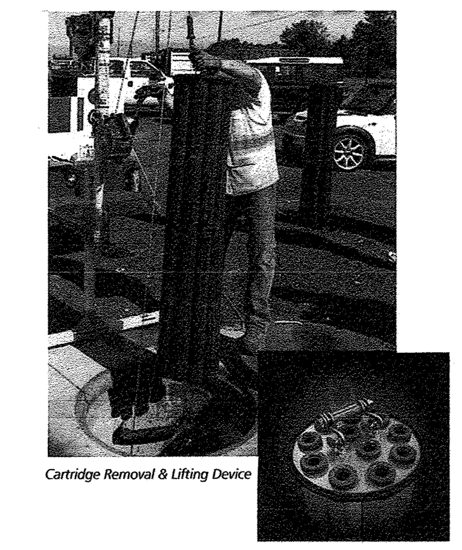
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage.*
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

5.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. ***Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs.***
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

5.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.



Cartridge Removal & Lifting Device

2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. ***Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane.***

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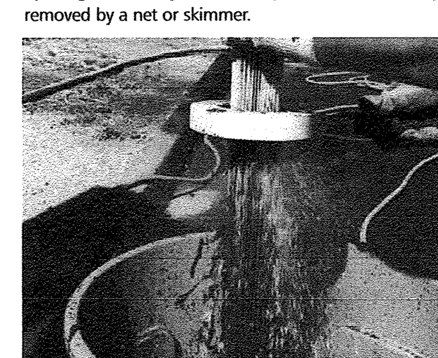
4. Collected rinse water is typically removed by vacuum hose.
5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

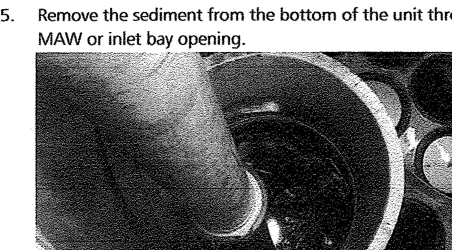
5.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.



Vacuuming Sump Through MAW

3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.



Vacuuming Sump Through MAW

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

5.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. ***Caution: Do not force the cartridge downward; damage may occur.***
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

5.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

5.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

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Jellyfish Filter Components & Filter Cartridge Assembly and Installation

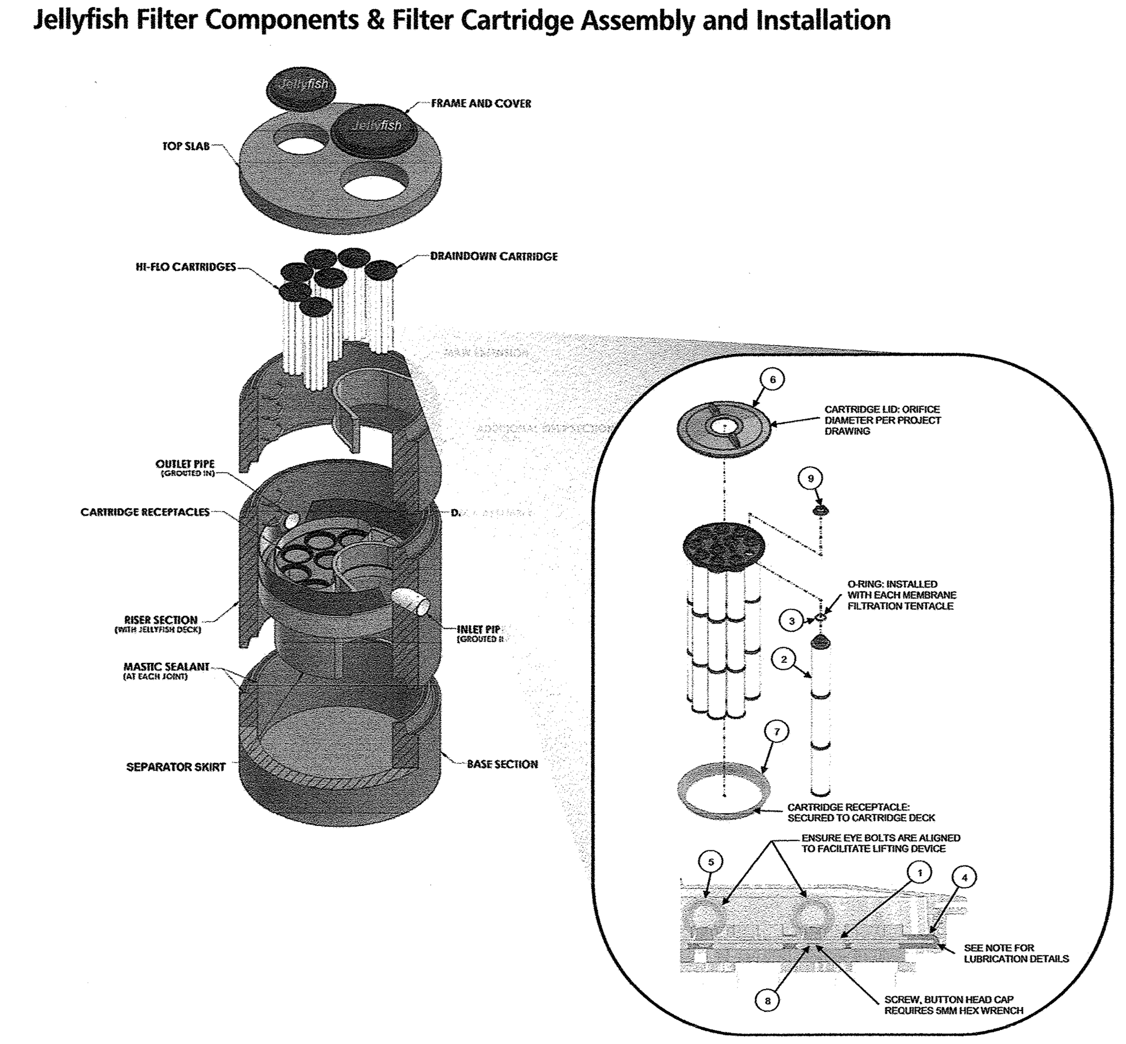

TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lide (ITem 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE EROSION AND SEDIMENT CONTROL BMP's" PUBLISHED BY THE NEW HAMPSHIRE D.E.S. IN 2008.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

MIXED USE DEVELOPMENT
581 LAFAYETTE ROAD
PORTSMOUTH, N.H.

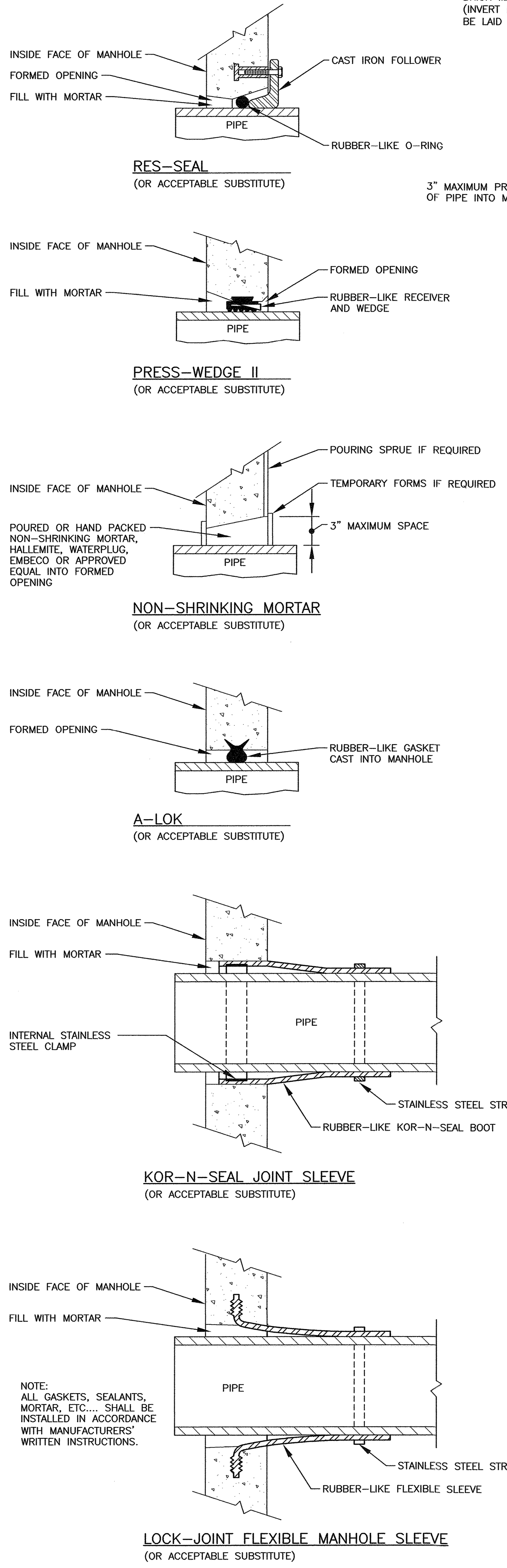
NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	11/20/23

REVISIONS

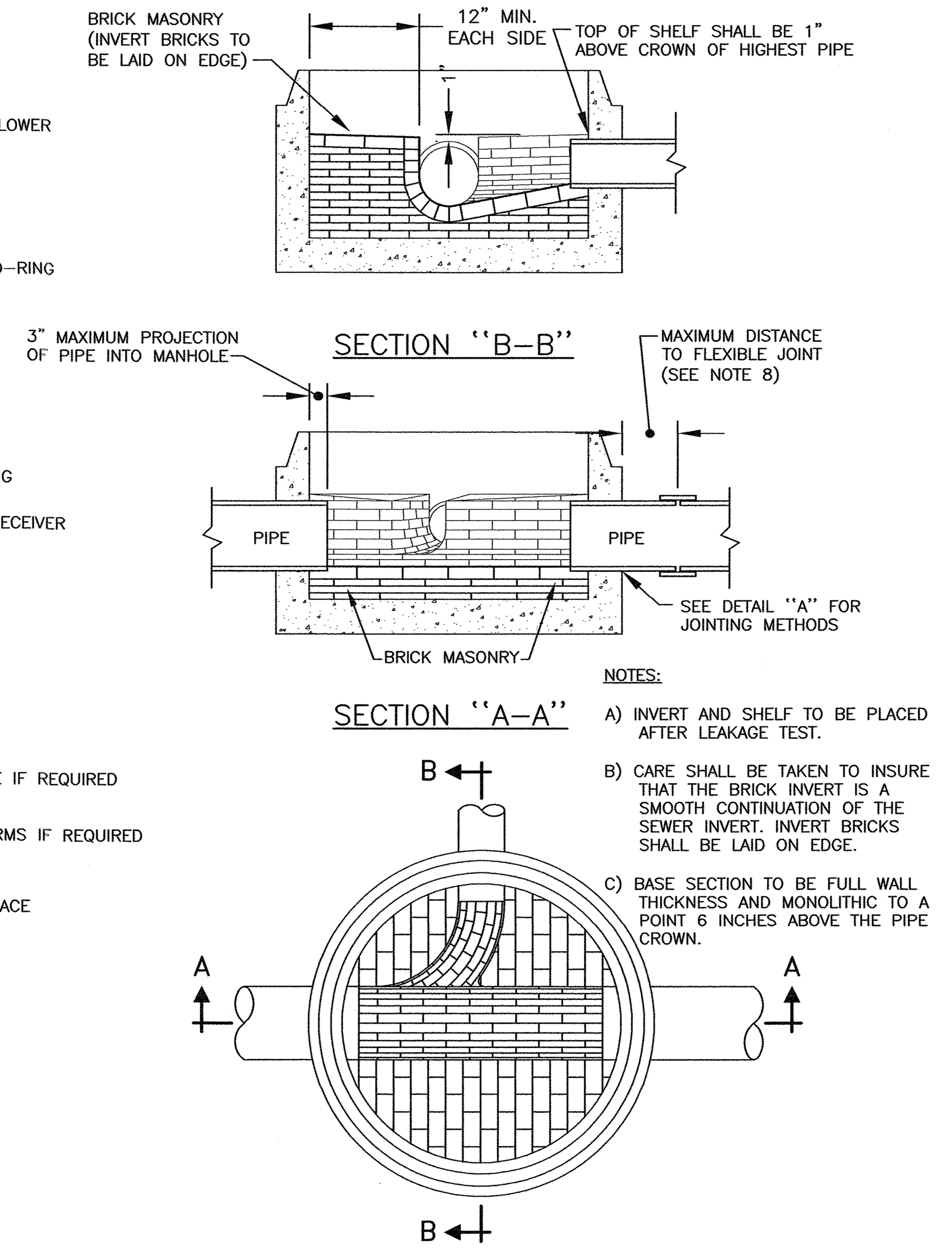
SCALE: AS NOTED NOVEMBER 2023

JELLYFISH DETAILS D4

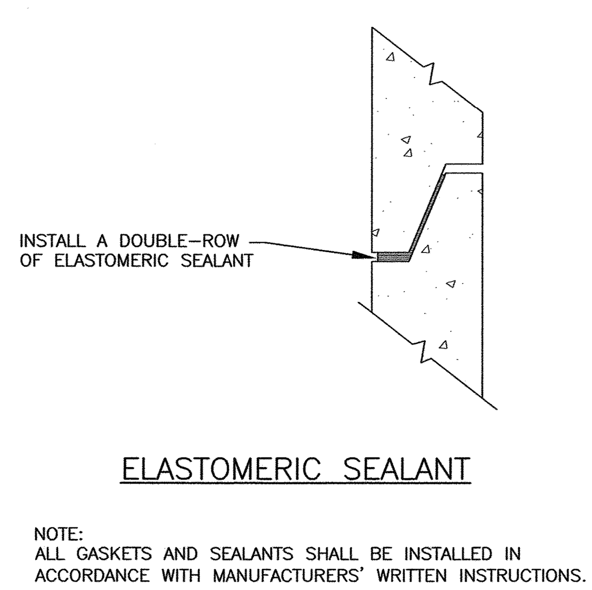
FB 259 PG 10 5010156 1397.04



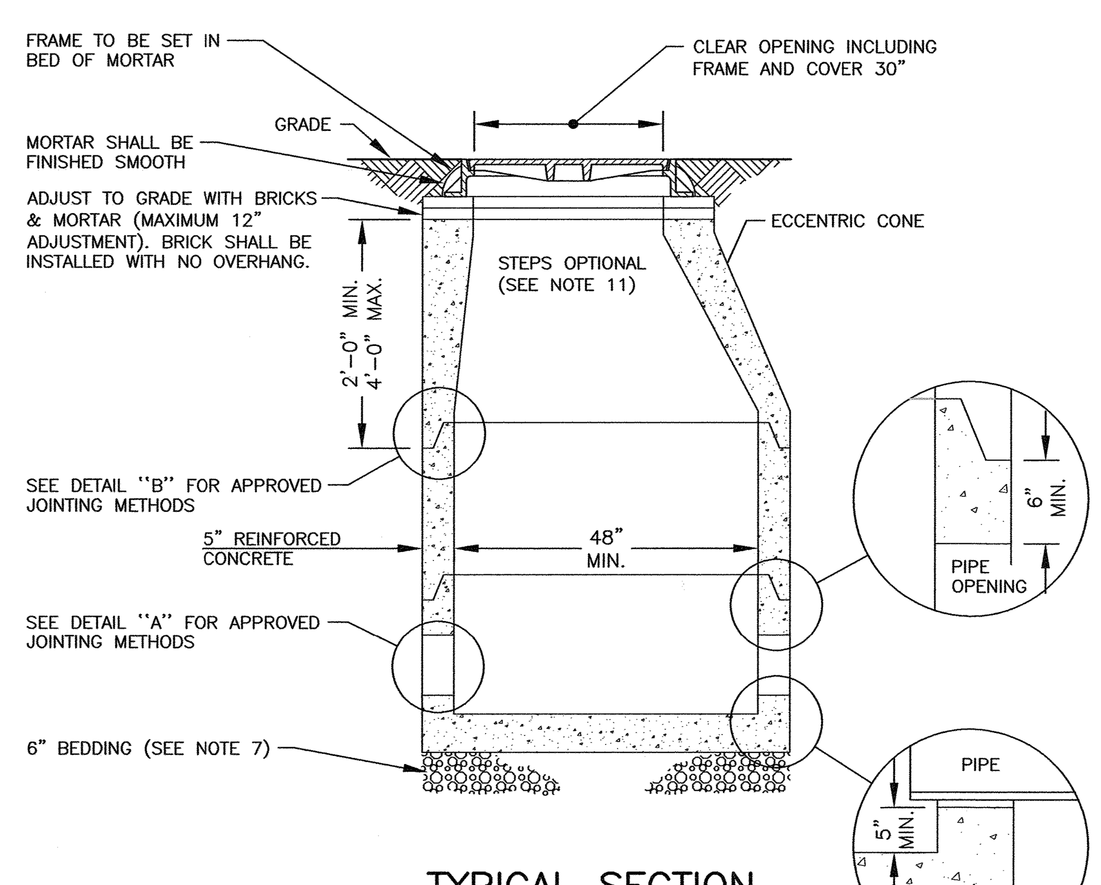
DETAIL "A" – PIPE TO MANHOLE JOINTS



TYPICAL MANHOLE – PLAN VIEW



DETAIL "B" – HORIZONTAL JOINTS



TYPICAL SECTION

SEWER MANHOLE DETAILS

INSTALL PER PORTSMOUTH REQUIREMENTS NTS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

MANHOLE NOTES

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAK PROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE, OR POURED IN PLACE REINFORCED CONCRETE IF POURED AS A COMPLETE MANHOLE.

3) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

4) LEAKAGE TEST MAY NOT BE FEASIBLE, BUT SHALL CONFORM TO ENV-WQ 704.10(X) THROUGH ENV-WQ 704.10(Z).

5) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE AND TANGENT TO THE CENTERLINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6) FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A THREE INCH (MINIMUM HEIGHT) WORD "SEWER" FOR SEWERS AND "DRAIN" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. CASTINGS SHALL CONFORM TO CLASS 30, ASTM A48.

7) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%- 55% PASSING	3/8 INCH SCREEN
0%- 10% PASSING	#4 SIEVE
0%- 5% PASSING	#8 SIEVE

WHEN ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.

8) FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:

RCP & CI PIPE – ALL SIZES – 48"

9) SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

10) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET, IN 2 ROWS. APPROVED ELASTOMERIC SEALANTS ARE:

RAM-NEK
KENT SEAL NO. 2
EZ

11) PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT.

12) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

13) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERS.

14) BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE LARGEST INCOMING PIPE.

GENERAL NOTES

1) MINIMUM PIPE SIZE FOR HOUSE SERVICE SHALL BE FOUR INCHES.

2) PIPE AND JOINT MATERIALS:

A. PLASTIC SEWER PIPE

1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 To T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
AWWA C900	PVC (SOLID WALL)	8" THROUGH 18"

*PVC: POLYVINYL CHLORIDE

2. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON BELL AND SPIGOT TYPE.

3) DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4) JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5) HOUSE SEWER INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND REFILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

6) THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4 INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7) TESTING: WHEN REQUIRED BY THE GOVERNING AUTHORITY, TESTING SHALL CONFORM TO ENV-WQ 704.07.

8) ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM HOUSE TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9) HOUSE WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, UNLESS IT IS ON A SHELF 12" HIGHER, AND 18" APART.

10) BEDDING: PROCESSED GRAVEL OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING THE FOLLOWING GRADATION (ALL STONE MUST HAVE AT LEAST 2 FRACTURED FACES):

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
0%- 75% PASSING	3/8 INCH SCREEN
0%- 25% PASSING	#4 SIEVE
0%- 5% PASSING	#10 SIEVE

WHERE ORDERED BY THE ENGINEER, OVEREXCAVATE UNSTABLE TRENCH BOTTOM AND BACKFILL WITH CRUSHED STONE.

11) LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.

12) CAST-IN-PLACE CONCRETE: SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG OF CEMENT
MAXIMUM AGGREGATE SIZE: 3/4 INCH

13) BACKFILL UP TO SUBBASE GRAVEL SHALL BE WITH EXCAVATED SOIL FROM TRENCHING OPERATIONS. COMPACT IN 8" LIFTS WITH VIBRATORY PLATE COMPACTORS TO 90% OF MODIFIED PROCTOR DENSITY. IF FINE-GRAINED, COMPACT WITH POGO STICKS OR SHEEPSFOOT ROLLERS. PLACE NO LARGE ROCKS WITHIN 24" OF PIPE. TRENCHES THAT ARE NOT ADEQUATELY COMPACTED SHALL BE RE-EXCAVATED AND BACKFILLED UNDER THE SUPERVISION OF THE DESIGN ENGINEER OR GOVERNING BODY. UNSUITABLE BACKFILL MATERIAL INCLUDES CHUNKS OF PAVEMENT, TOPSOIL, ROCKS OVER 6" IN SIZE, MUCK, PEAT OR PIECES OF PAVEMENT.

14) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB-SITE SAFETY AND COMPLIANCE WITH GOVERNING REGULATIONS.

15) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. FOR TRENCH WIDTH SEE TRENCH DETAIL.

16) SAND BLANKET: CLEAN SAND, FREE FROM ORGANIC MATTER, SO GRADED THAT 90% – 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.

17) BASE COURSE GRAVEL, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE:

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION.

18) IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.

19) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION.

20) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

21) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERS.

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NOTES:

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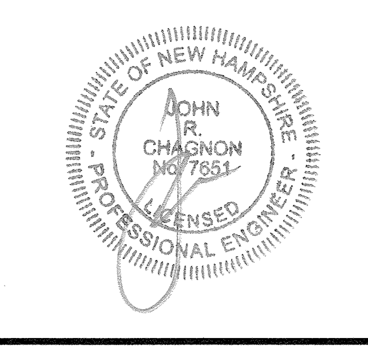
MIXED USE DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	11/20/23

REVISIONS



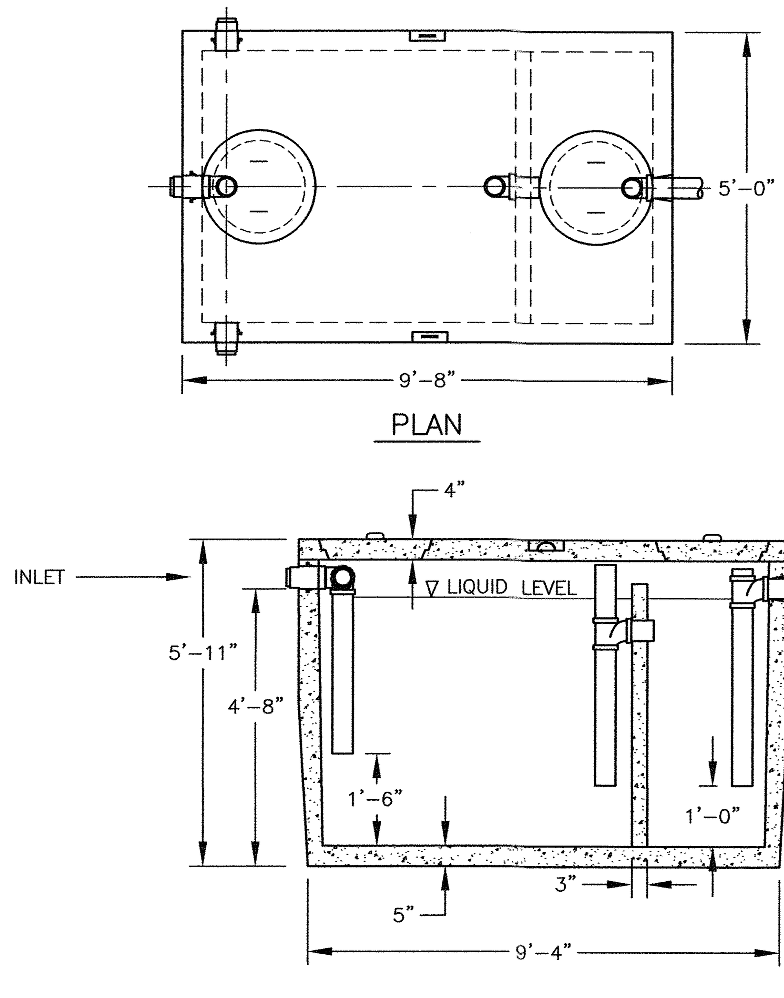
SCALE: AS NOTED NOVEMBER 2023

SEWER DETAILS

D5

FB 259 PG 10

5010156 1397.04

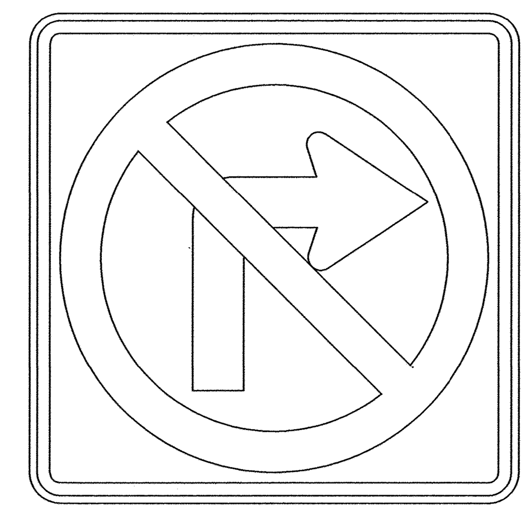


GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1) 4000 PSI @ 28 DAYS.
2) 4%-6% ENTRAINED AIR.
3) TANK PENETRATIONS ARE INTEGRALLY CAST.
4) ALL JOINTS SEALED WITH BUTYL RESIN.
5) EXTERIOR TO BE COATED.

GREASE TRAP INFORMATION:
1) TANKS SHOULD BE PUMPED AS NEEDED.
2) ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE.
3) TANKS CAN BE VACUUM TESTED AT AN ADDITIONAL COST.

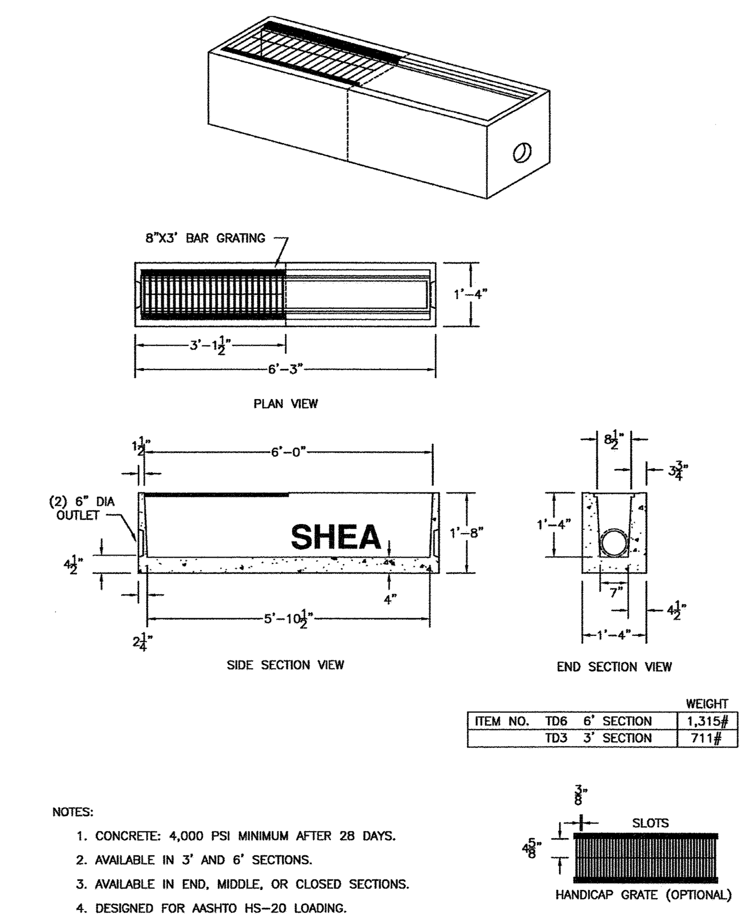
X / C5 SHEA CONCRETE 1000 GALLON 2 COMP. GREASE TRAP — NTS
14,825 Lbs — ITEM # M1000H — H20 LOAD RATED



MUTCD R3-1

SIGN TO BE MOUNTED SO BOTTOM EDGE IS NO LESS THAN 7 FEET FROM GROUND SURFACE AND EDGE NEAREST STREET IS NO LESS THAN 2 FEET LATERALLY FROM EDGE OF PAVEMENT.

Z / C3 WALL MOUNTED NO RIGHT HAND TURN SIGN — NTS

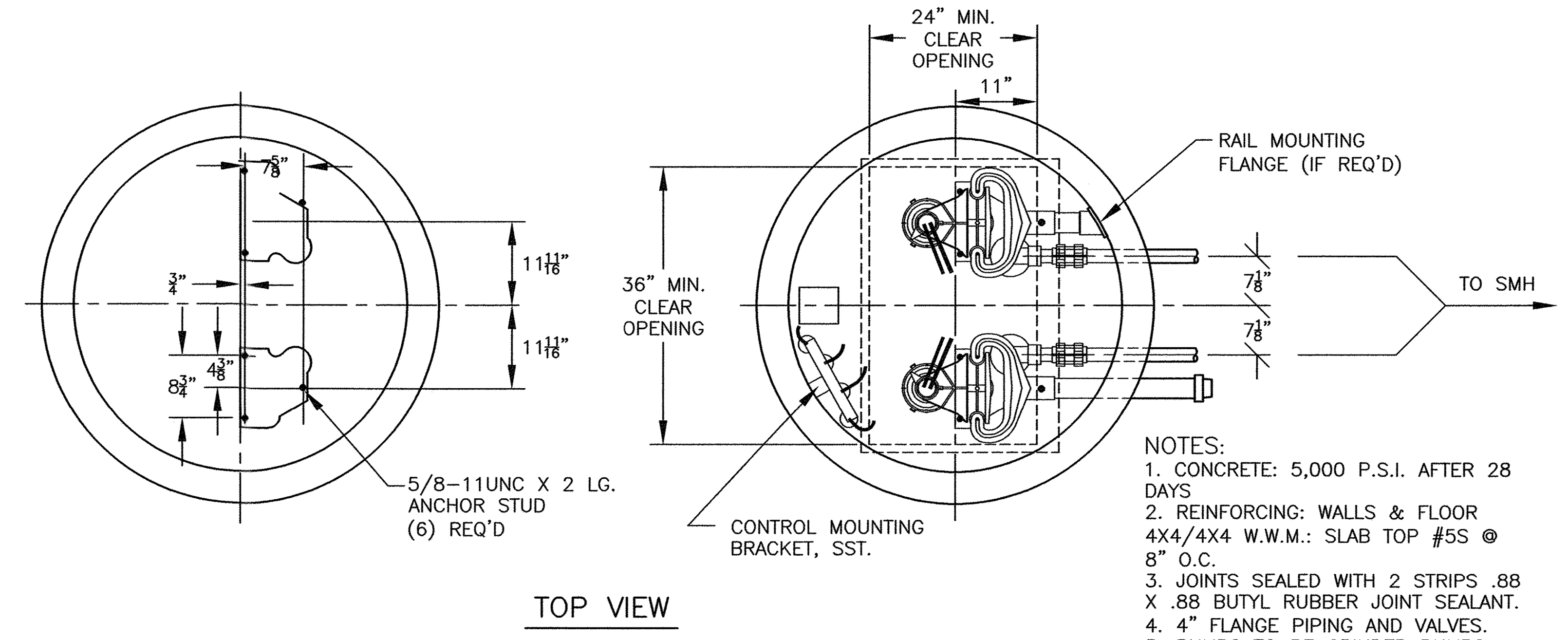


ITEM NO.		WEIGHT
TD6	6' SECTION	1,315#
TD3	3' SECTION	711#

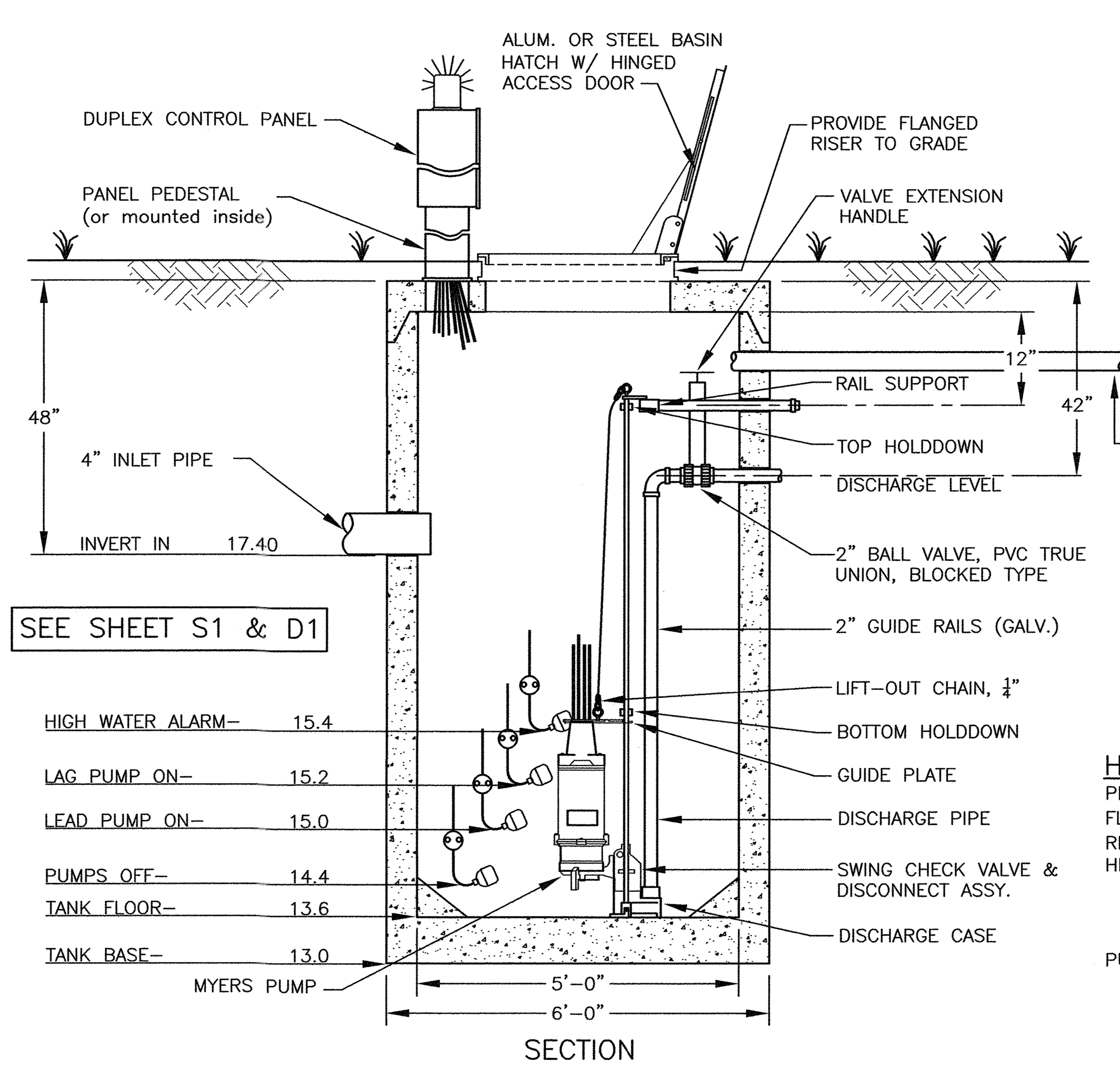
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. AVAILABLE IN 3' AND 6' SECTIONS.
3. AVAILABLE IN END, MIDDLE, OR CLOSED SECTIONS.
4. DESIGNED FOR AASHTO HS-20 LOADING.

SHEA PRODUCT ID: TD3/TD6
TRENCH DRAIN 8"X16"
WEIGHT (LBS): 711#/1,315#

AA / C6 STRIP DRAIN — NTS



NOTES:
1. CONCRETE: 5,000 P.S.I. AFTER 28 DAYS
2. REINFORCING: WALLS & FLOOR 4X4/4X4 W.W.M.: SLAB TOP #5S @ 8" O.C.
3. JOINTS SEALED WITH 2 STRIPS .88 X .88 BUTYL RUBBER JOINT SEALANT.
4. 4" FLANGE PIPING AND VALVES.
5. PUMPS TO BE GRINDER PUMPS. PUMPS MUST MAINTAIN 3 FT/SEC MIN. VELOCITY IN FORCE MAIN.
6. EMERGENCY PUMP CONNECTION AVAILABLE IN VALVE PIT.
7. PUMP STATION TO BE TESTED FOR WATER TIGHTNESS.
8. ALL PIPING LEAVING MANHOLE SHALL BE GASKETED PIPING.

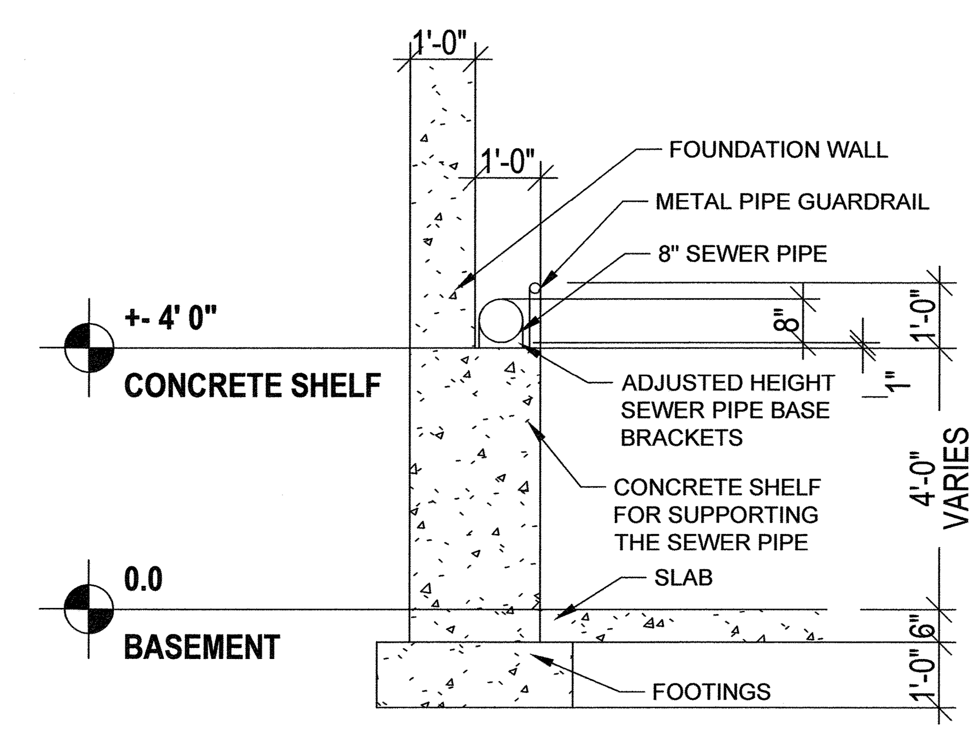


SEE SHEET S1 & D1

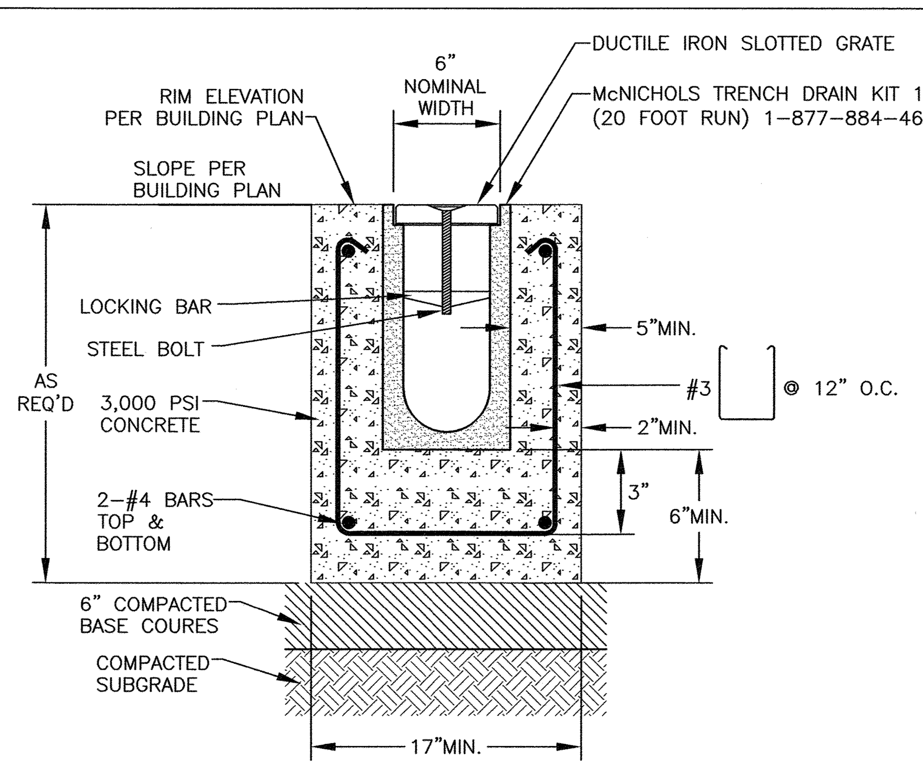
4" SDR35 GASKETED VENT PIPING. VENT TANKS TO COMMON VENT PIPE IN BUILDING WALL. TERMINATE VENT WITH MUSHROOM CAP 2'-0" ABOVE ROOFLINE / OR TO LIGHT POLE 10' ABOVE BASE

HYDRAULIC CALCULATIONS:
PROPOSED FLOW: 500 GPD
FLOW PER DOSE: 500/6 = 83 GALLONS PER DOSE
REQUIRED STORAGE WITH 60" DIAMETER PUMP STATION: 0.6'
HEAD LOSS CALCULATION:
STATIC HEAD + FRICTION HEAD
(17.5 – 14.4) + (4 x 0.64) = 5.6'
USE EFFLUENT PUMP TO RUN AT 20 GPM
PUMP RUN TIME AT TDH = 83 GAL./20 GPM = 4.1 MINUTES

Y / C5 COMMERCIAL EFFLUENT PUMP STATION — OR APPROVED EQUAL — NTS



BB / C6 SEWER PIPE DETAIL — NTS



CC / C6 EVAPORATION TRENCH DETAIL — NTS

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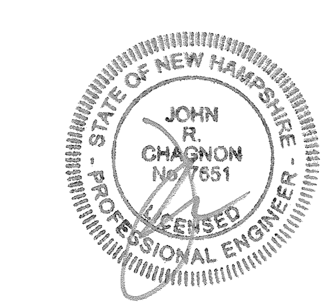
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN — DATE

MIXED USE DEVELOPMENT 581 LAFAYETTE ROAD PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	DETAIL 4	3/27/24
3	DETAIL Y, AA, BB, CC	3/5/24
2	DETAIL Z	2/21/24
1	DETAIL Y	2/6/24
0	ISSUED FOR COMMENT	1/2/24

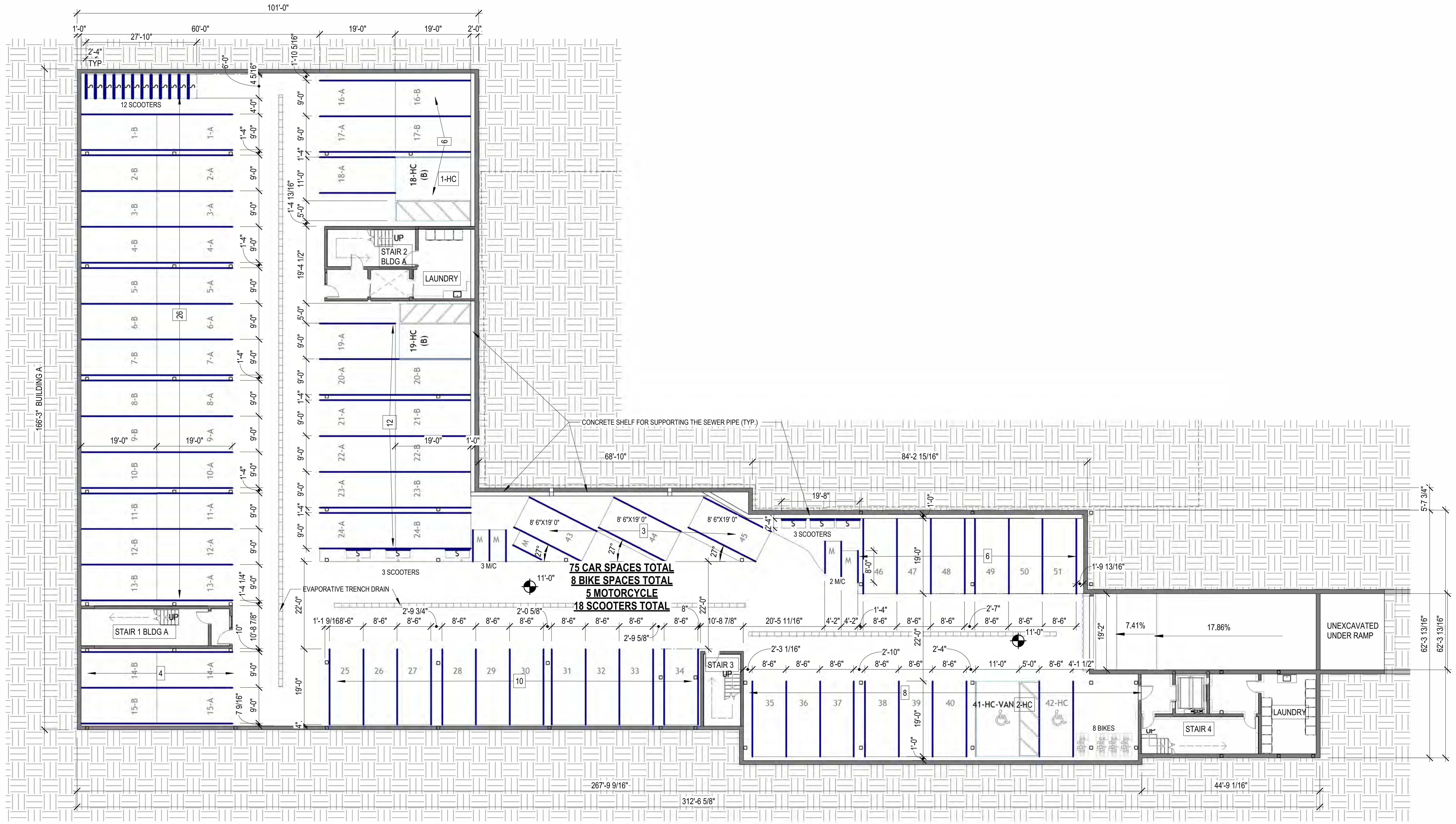
REVISIONS



SCALE: AS NOTED — JANUARY 2024

DETAILS — D6

FB 259 PG 10 — 5010156 1397.04



1 BASEMENT OVERALL PLAN - PB
1/16" = 1'-0"

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LICENSED ARCHITECT TRACY S. KOZAK No. 2662 STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

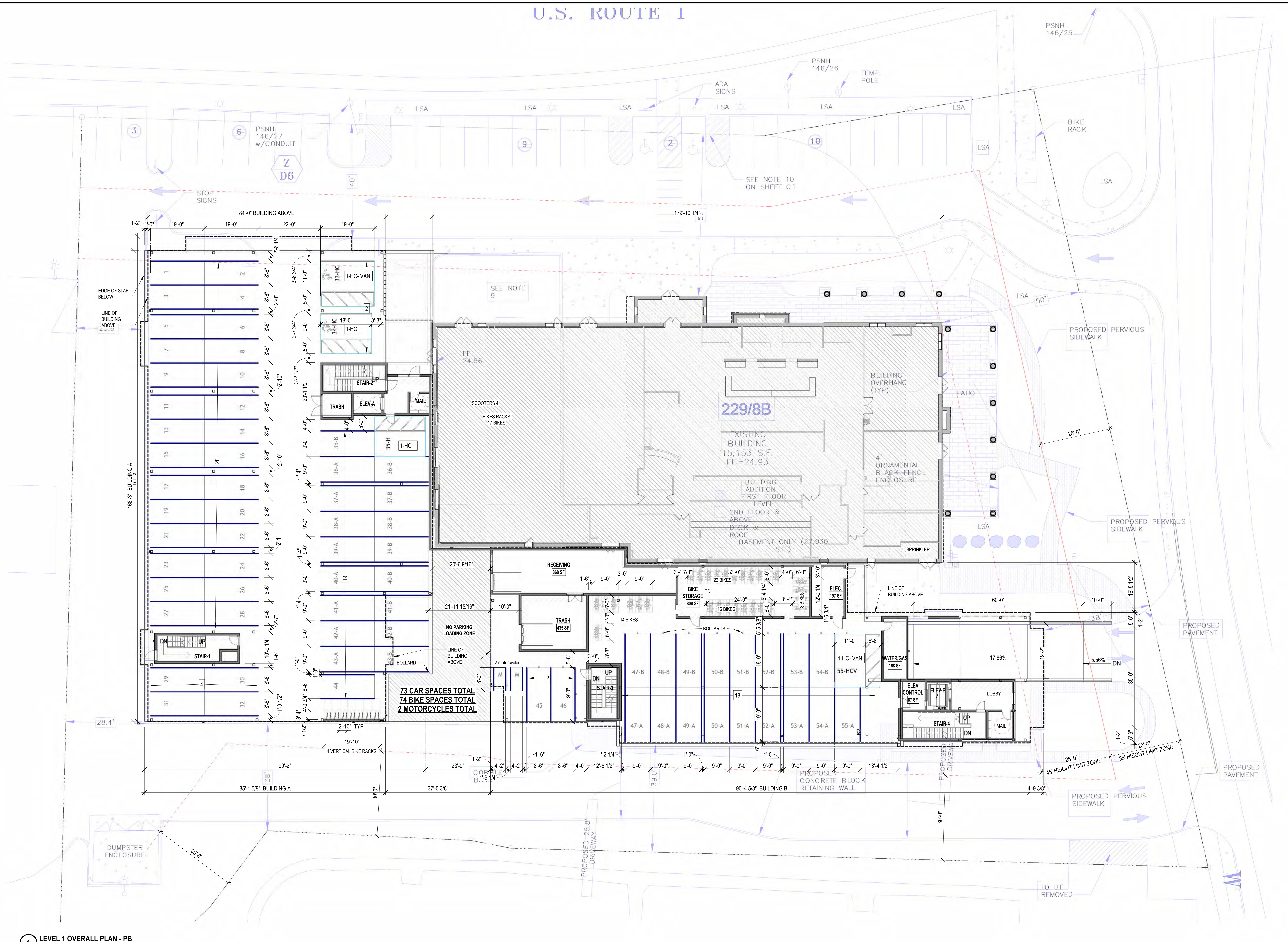
REVISIONS

NO.	DATE	DESCRIPTION

BASEMENT DIMENSIONED PARKING PLAN

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN: HA
CHECKED: TK

PB1.00



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SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

LEVEL 1 DIMENSIONED PARKING PLAN

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN: Author
CHECKED: Checker

PB1.01

1 LEVEL 2 - OVERALL PLAN - PB
1/16" = 1'-0"

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SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

LEVEL 2 FLOOR PLAN

0' 4' 8' 16' 32'

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN: TK/SV
CHECKED: TK

PB1.02

1 LEVEL 3 - OVERALL PLAN - PB
1/16" = 1'-0"

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SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

LEVEL 3 FLOOR PLAN

0' 4' 8' 16' 32'

SCALE: 1/16" = 1'-0"

DATE: 3/27/2024
DRAWN: TK/SV
CHECKED: TK

PB1.03

1 LEVEL 4 - OVERALL PLAN - PB
1/16" = 1'-0"

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SITE PLAN REVIEW

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NO.	DATE	DESCRIPTION

LEVEL 4 FLOOR PLAN

0' 4' 8' 16' 32'

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN: TK/SV
CHECKED: TK

PB1.04

1 LEVEL 5 - OVERALL PLAN - PB
1/16" = 1'-0"

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SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

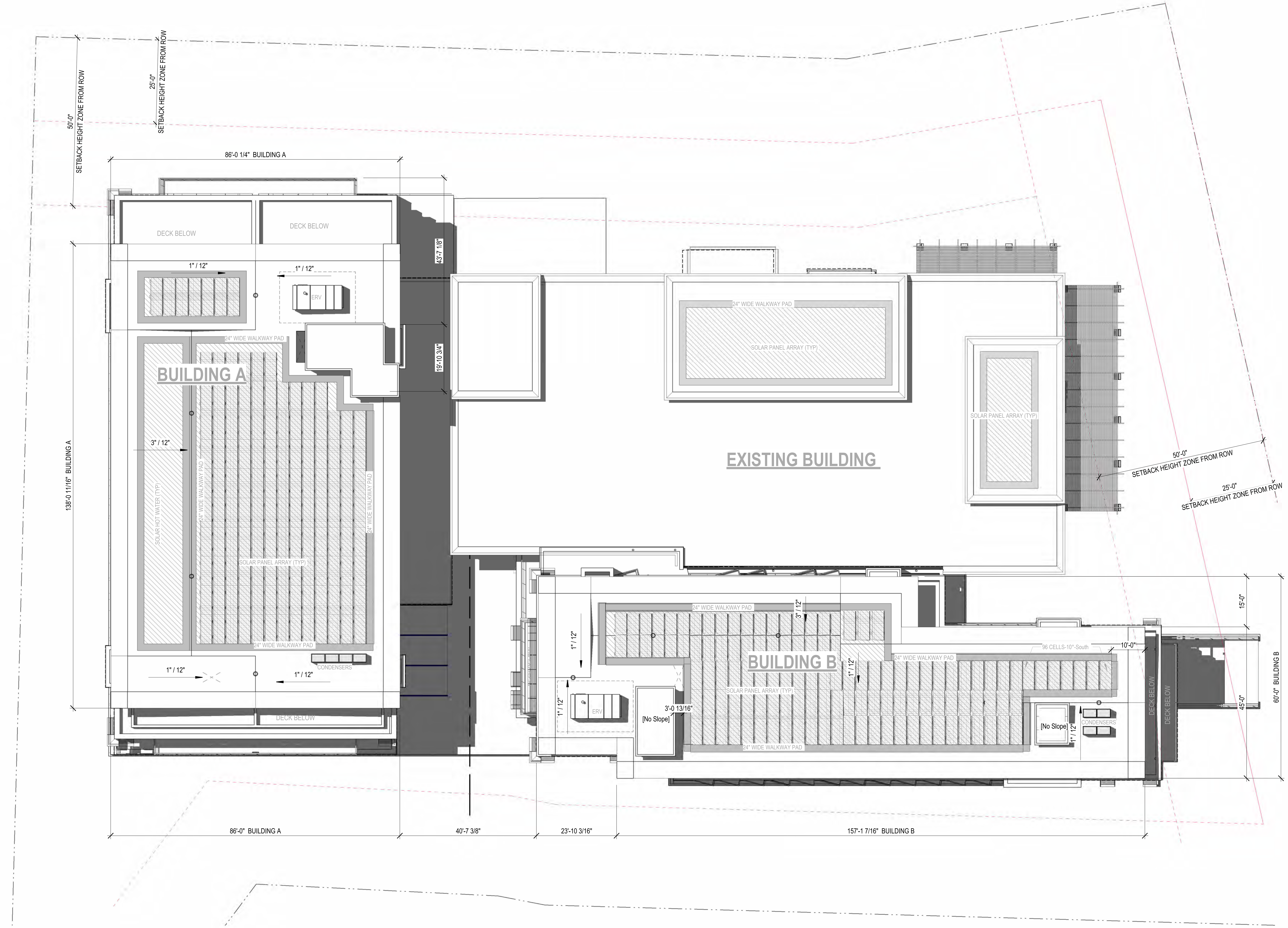
LEVEL 5 FLOOR PLAN

0' 4' 8' 16' 32'

SCALE: 1/16" = 1'-0"

DATE: 3/27/2024
DRAWN: TK/SV
CHECKED: TK

PB1.05



1 ROOF - OVERALL PLAN - PB
1/16" = 1'-0"

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SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

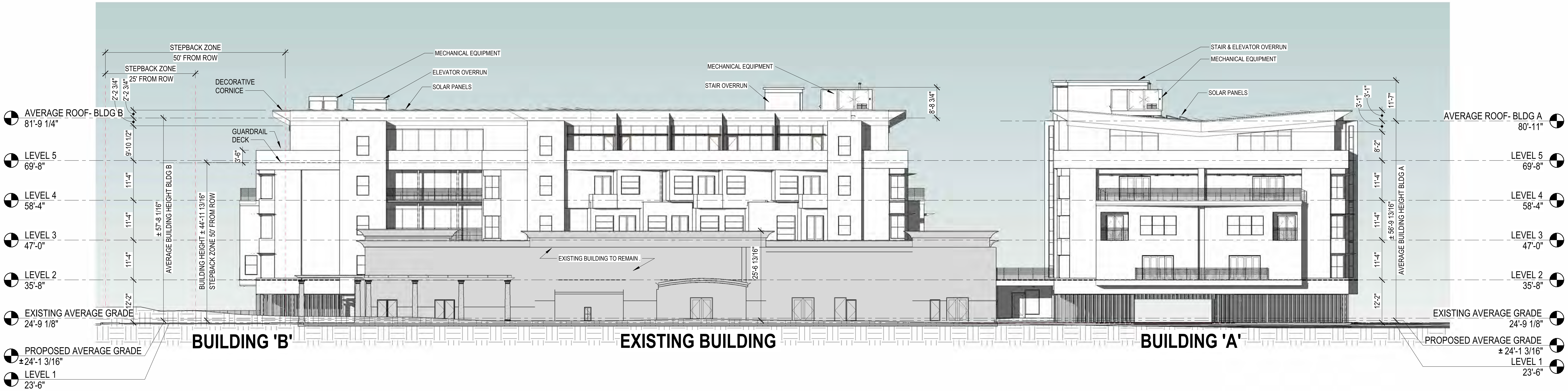
ROOF PLAN

0' 4' 8' 16' 32'

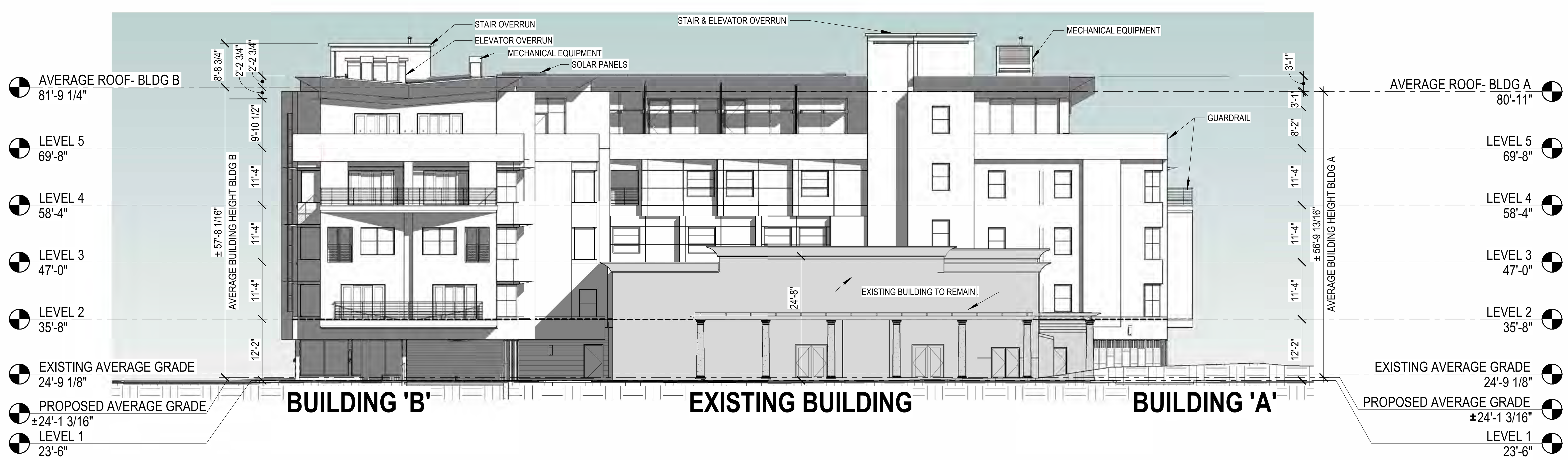
SCALE: 1/16" = 1'-0"

DATE: 3/27/2024
DRAWN: Author
CHECKED: Checker

PB1.06



2 WEST ELEVATION PB
1/16" = 1'-0"



1 NORTH ELEVATION PB
1/16" = 1'-0"

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LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

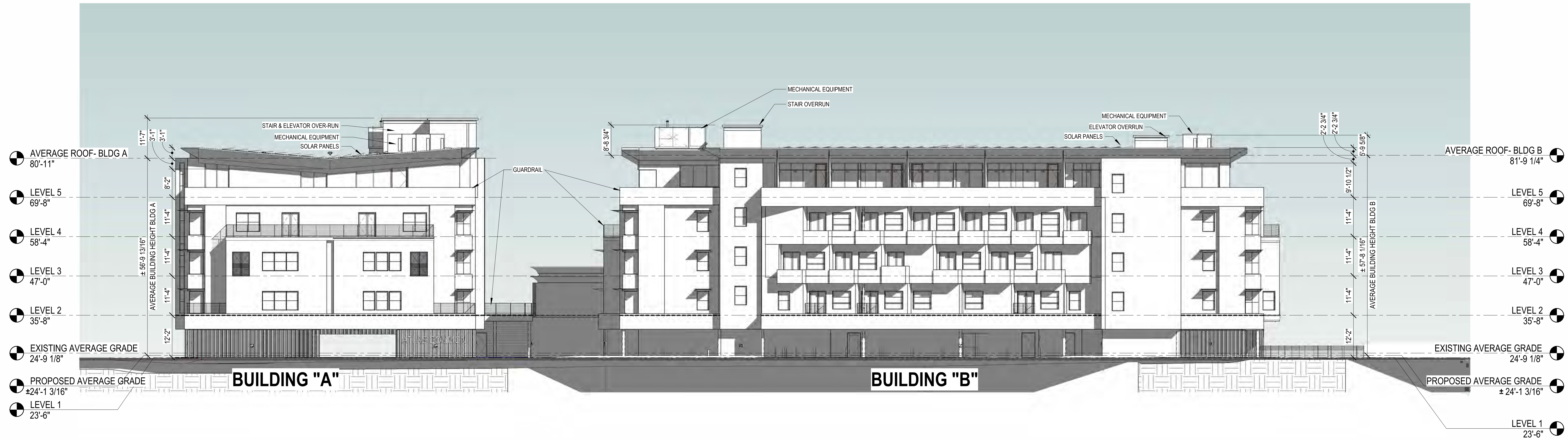
REVISIONS

NO.	DATE	DESCRIPTION

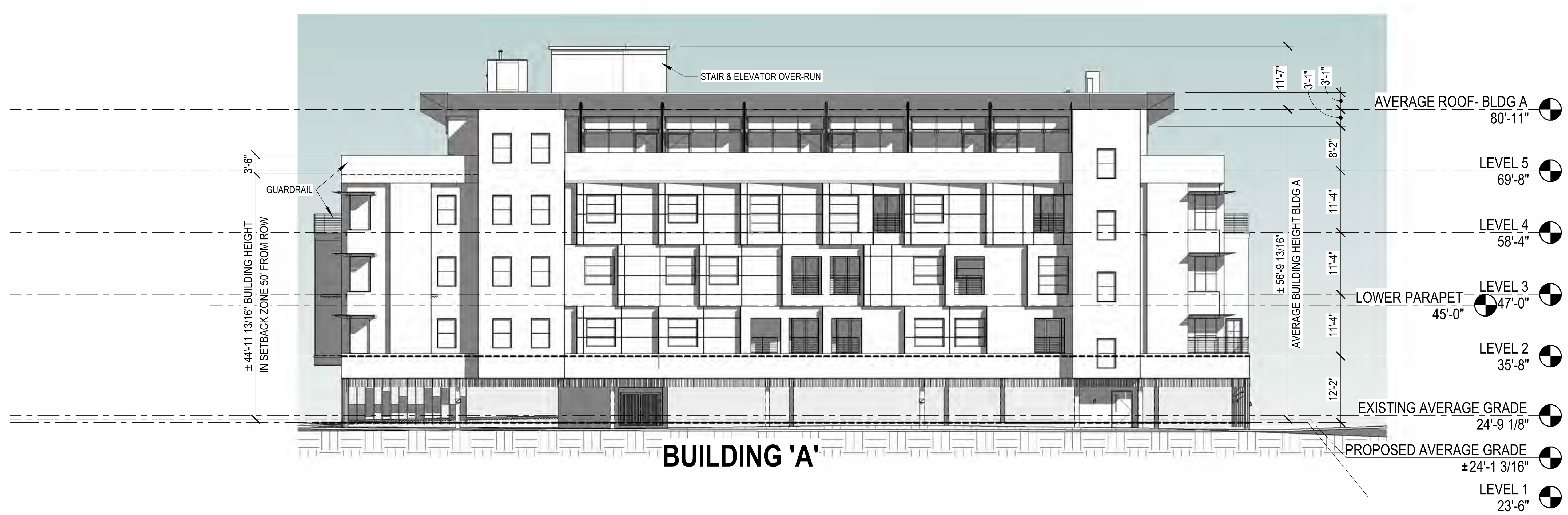
ELEVATIONS

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN:
CHECKED:

PB2.01



2 EAST ELEVATION PB
1/16" = 1'-0"



1 SOUTH ELEVATION PB
1/16" = 1'-0"

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LICENSED ARCHITECT
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STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

ELEVATIONS

SCALE: 1/16" = 1'-0"
DATE: 3/27/2024
DRAWN: Author
CHECKED: Checker

PB2.02

PERSPECTIVE FROM NW

PERSPECTIVE FROM SE

PERSPECTIVE FROM SW

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ARCHITECTS

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581 Lafayette Road Apartments

581 LAFAYETTE RD
PORTSMOUTH, NH, 03801

PROJECT NO: 1013

OWNER
ATLAS COMMONS, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
603.427.0725

CIVIL ENGINEERING
AMBIT ENGINEERING; A DIVISION OF HALEY WARD
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, NH 03801
603.430.9282
https://www.ambitengineering.com/

LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
STATE OF NEW HAMPSHIRE

SITE PLAN REVIEW

REVISIONS

NO.	DATE	DESCRIPTION

RENDERING

SCALE: 3/4" = 1'-0"

DATE: 3/27/2024
DRAWN: Author
CHECKED: Checker

PB3.01

PERSPECTIVE FROM NE

ARCOVE
ARCHITECTS
3 CONGRESS ST., SUITE1
PORTSMOUTH NH 03801
603.988.0042
www.ARCove.com

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DATE: 3/27/2024
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PB3.02