

City of Biddeford
Planning Board
July 21, 2021 6:00 PM City Hall
Council Chambers, & Zoom:
Jul 21, 2021 06:00 PM Eastern Time (US and Canada)
Topic: Planning Board

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1. **DECLARATION OF QUORUM/VOTING MEMBERS**
2. **ADJUSTMENTS TO THE AGENDA**
3. **PLANNER'S BUSINESS**
4. **CONSENT AGENDA**
 - 4.A. Approval of the Meeting Minutes from 7-7-21
[PB Minutes 070721-DRAFT.pdf](#)
5. **UNFINISHED BUSINESS**
6. **NEW BUSINESS**
 - 6.A. 2021.17 - Public Hearing and Preliminary Subdivision/Site Plan Review for a proposed Contract Zone for Adams Point, LP and Southern Maine Affordable Housing at 69 Adam's Street (Tax Map 38, Lot 296) to allow for 39 units of multi-family housing in a 5-storey, 60 foot tall building (plus additional height for utility and elevator structures at a reduced parking provision 0.75 parking spaces per unit.
[2021.17 Board Report - Adams Point Prelim Plan.pdf](#)
[Site Plan Review Application & Supporting Materials_06-14-2021.pdf](#)
[Tansley Transmittal 06-14-2021.pdf](#)
[Adams Point Drawings Site Plan Review 06-14-2021.pdf](#)
[2021.10 HPC 69 Adams St COA.pdf](#)
[2021-06-25_69 Adams Street - Engineering Dept Comments.pdf](#)
[Saucier to Tansley 07-07-21.pdf](#)

[DP1 to DP5 25 Yr Hydrograph.pdf](#)
[OPA Preliminary Review Comment Responses.pdf](#)

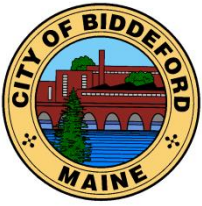
- 6.B. 2021.23 - Shoreland Zoning Determination for Greatest Practical Extent for 2538970 Ontario, Inc. at 7 Bayberry Road (Tax Map 68, Lot 26) in the Coastal Residential and Limited Residential (Shoreland) Zone.

[Board Report - Lebel- 7 Bayberry Rd \(SLZ\).pdf](#)
[2021.23 Draft FOF for 7 Bayberry Rd.pdf](#)
[Application Package June 2021.pdf](#)
[02c Site Plan TMS Logo-stamp.pdf](#)

7. **OTHER BUSINESS - Comprehensive Plan Public Engagement Process Advisory Committee (PEPAC) Meeting** - *The Planning Board and PEPAC will meet following the Planning Board's "New Business" to review the public engagement process to date and the draft community-wide survey being developed for release the following week. The PEPAC Meeting will begin no earlier than 7 PM but may begin after 7 PM following the Planning Board's conclusion of "New Business".*

8. **ADJOURN**

The Board reserves the right to halt official business at 9:30 p.m. Items not heard at tonight's meeting shall be rescheduled to the next meeting of the Board. All materials pertaining to items on the agenda are available for public review at the Biddeford Planning Department, second floor, Biddeford City Hall during normal business hours.



CITY OF BIDDEFORD

Planning and Development Department

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Planning Board Meeting Minutes (DRAFT)

Date: June 7, 2021
Time: 6:00 PM
Location: City Hall Council Chambers & REMOTE ACCESS MEETING (1MRSA § 403-A permits public proceedings through remote access during the declaration of state of emergency due to COVID-19).

1. Declaration of Quorum/Voting Members
Quorum Present: Bill Southwick (Chair), Sean Tarpey, Spiros Droggitis, Roch Angers, Bruce Benway, Michael Cantara & Alexa Plotkin.
Chair Southwick opened the meeting at 6:02 PM
 2. Adjustments to the Agenda
 3. Planner's Business
 4. Consent Agenda
 4. A. Approval of Planning Board Meeting Minutes from June 16, 2021
MOTIONS: 6:05 PM
Benway-Motion- Motion to approve the Consent Agenda for June 16, 2021.
Angers-Second
Chair Southwick-Roll Call for Vote-Motion Passed, 4-0 (Droggitis, Tarpey, Angers Benway)
 5. Unfinished Business
 6. New Business
 6. A. 2020.39 -To revise the Historic Preservation Ordinance to provide a process for the Nomination and addition of historic buildings, landmarks, and sites, and to clarify the responsibilities of the Historic Preservation Commission. This amendment is the first step in the process of attaining "Certified Local Government" status through the Maine Historic Preservation Commission, opening new grant opportunities for historic preservation purposes.
 - Brad Favreau, Economic Development Coordinator updated the Board on changes made to the proposed ordinance at the request of the State.
 - There were no public comments on this item.
 - The Board discussed the ordinance revision with Mr. Favreau.
- MOTIONS: 6:18 PM
Benway-Motion- Motion to recommend the amendments be forwarded to the City Council with a positive recommendation.
Angers-Second

**Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0
(Droggitis, Tarpey, Angers & Benway)**

6. B. 2021.29--To revise Table A (Table of Land Uses) to allow “Public and private schools” in the Industrial-3 (I-3), zone as a Permitted Use (P).

- City Planner, Greg Tansley, introduced the proposal to the Board & Public
- The following commented from the public:
Ken Buechs & Sterling Roop
- Chair Southwick brought the item back to the Board. The Board discussed the topic with Planner Tansley.

MOTIONS: 6:33 PM

Benway-Motion-Motion to recommend the amendments be forwarded to the City Council with a positive recommendation.

Droggitis-Second

Chair Southwick-Roll Call for Vote-Motion Passed, 3-1 (Benway, Tarpey, Droggitis for and Angers against).

6.C. 2021.27- To amend 565 Elm Street (Tax Map 13, Lot 43) for 565 Elm Street, LLC to change the zoning for this parcel from Business-2 (B-2) to Industrial-1 (I-1).

- Planner Tansley introduced the project.
- The applicant, Joe Engelken, spoke on the project.
- Ken Bucci, owner of 561 Elm Street, spoke from the public
- The Board discussed the proposal as well as different options.

MOTIONS: 6:57 PM

Benway-Motion- to recommend that the zoning for 565 Elm Street be changed from B-2 to I-1 based on the reasons outlined in the applicant’s letter dated May 27, 2021.

Droggitis-Second

Chair Southwick-Roll Call for Vote Motion Failed, 3-2 (For: Benway, Droggitis; Against: Anger, Tarpey, Southwick breaking the tie)

Benway-Motion-Not recommend the lot be changed from a B-2 to I-1 for the reasons that it may have a negative impact on abutting businesses, the Board has not completed the Comprehensive Plan and there may be changes in that area that may need to be considered.

Anger-Second

Chair Southwick-Roll Call for Vote Motion Passed 3-1 (For: Benway, Anger, Tarpey; Against: Droggitis)

6.D. 2021.25--To amend Contract Zone #19 for the York Judicial Center at n/f Tax Map 88, Lot 5 and Lot 44, and Tax Map 3, Lot 66-1 to allow solar panel arrays in the parking lots of the York Judicial Center located off Elm Street (Route 1).

- Planner Tansley introduced the project
- The applicant was represented by:
Phil Johnston
Clair Colburn

Doug Reynolds
Dylan Hanscom

- Sterling Roop spoke from the public
- The Board discussed the proposal with the applicant's team, involving lighting, glare, completion time and solar designs.

MOTIONS: 7:41 PM

Benway-Motion- to approve the amended site plan and conditional use application and Findings of Fact to allow for the installation of solar arrays in the parking lots at the new York Judicial Center off Elm Street as reflected in the application materials as approved by the Planning Board and that Planning Board authorizes the City Planner to sign the final plan on behalf of the Planning Board subsequent to Board approval of the actual array installation and other fencing and screening as maybe necessary and declares that the final plan once signed by the City Planner shall be deemed to have been signed by individual members of the Planning Board evidencing approval of the final plan and the final array arrangements.

Anger-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

Benway-Motion-to recommend that the Amendment to the York Judicial Courts Contract Zone #19 be amended to allow solar panels in the parking lots of the facility as reflected in the application materials as approved by the Planning Board to recognize and complement the applicant using Zero Net Energy meeting the City's Climate Control Goals.

Angers-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

6. E. 2021.21-Shoreland Zoning Determination of Greatest Practical Extent for Maria Schultz at 5 Surf Avenue (Tax Map 55, Lot 30-2) Coastal Residential Zone.

- Consulting City Planner, Christopher Di Matteo introduced the project.
- Maria Schultz spoke as applicant
- No public comments
- Board discussed the project with Mr. Di Matteo & Mrs. Schults.

MOTIONS: 7:56 pm

Benway-Motion-to approve the Determination of Greatest Practical Extent for Maria Shultz based on the materials submitted and that Planning Board authorizes the City Planner to sign the final plan on behalf of the Planning Board and declares that the final plan once signed by the City Planner shall be deemed to have been signed by individual members of the Planning Board evidencing approval of the final plan.

Angers-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

6. F. 2021.11-Shoreland Zoning Determination of Greatest Practical Extent for Sumi Dolben at 25 Mile Stretch Road (Tax Map 62, Lots 24 & 24-1) in the Coastal Residential Zone.

- Mr. Di Matteo introduced the project
- Mike Morse from Morse Environmental represented the applicant
- The Board discussed the project including septic designs standing up to seawater going over them. A dwelling versus a garage, consulting with the City Attorney and the DEP Shoreland Community Coordinator were discussed.
- The following spoke from the public:

Ken Buechs as a member of the Conservation Commission

Thomas Bean, Trustee of the SBB Realty Trust of 28 Mile Stretch Road

Peter Hess of 21 Mile Stretch Road

MOTIONS: 8:52 PM

Benway-Motion-to table the item to allow the Planner time to review the application with the EPA, City Attorney and the CEO on placement of the septic.

Angers-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

6. G. 2021.30-Conceptual Subdivision Application for 6 Lot Subdivision for Ginger Hill Design + Build at 158 Oak Ridge Road (Tax Map 4, Lot 57) in the Rural Farm Zone.

- Mr. Di Matteo introduced the project
- Bill Walsh from Walsh Engineering represented the applicants
- Emily & Robert Ingwersen from Ginger Hill Design spoke as applicants
- Bob Fortier of Oak Ridge Road spoke from the public
- The Board and applicants discussed the project, including cluster subdivisions

MOTIONS: 9:26 PM

Benway-Motion- proposed subdivision on 158 Oak Ridge Road is a major subdivision

Angers-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

Benway-Motion-to extend the time of the meeting

Angers-Second

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

6. H. 2021.31-Conceptual Subdivision Application for 6 Lot Subdivision for Ginger Hill Design + Build at 918 Pool Street (Tax Map 4, Lot 48) in the Coastal Residential and Rural Farm Zones.

- Mr. Di Matteo introduced the project
- Bill Walsh from Walsh Engineering represented the applicants
- Emily & Robert Ingwersen from Ginger Hill Design spoke as applicants
- No comments from the public
- The Board discussed the project with the applicants

MOTIONS: 9:36 PM

**Benway-Motion-proposed subdivision at 918 Pool Street is a major subdivision.
Angers-Second**

Chair Southwick-Roll Call for Vote Motion Passed 4-0 (Benway, Anger, Tarpey & Droggitis)

7. Other Business

8. Adjourn

MOTIONS: 9:36 PM

- **Benway-Motion-to adjourn**
- **Angers-Second**

**Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0
(Droggitis, Tarpey, Angers & Benway)**

Meeting adjourned at 6:55 PM

Planning Board Chair/Vice Chair

Date

These minutes are summary and are not intended to be verbatim. Archived meetings are viewable on the City's website: www.biddefordmaine.org.

PLANNING BOARD
REPORT

July 15, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: Adams Point Housing – Southern Maine Affordable Housing
69 Adams Street (Tax Map 38 Lot 296)

Site Plan/Subdivision Preliminary Plan Review

Review Status: New application.

(Sketch Plan reviewed at the 5/5/21 Mtg)

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Cover letter by Oak Point Associates dated 6/14/2021.
2. *Site Plan Review Application* prepared by Oak Point Associates. Information includes: Application form dated 6/14/2021, project description and photographs, draft Contract Zone Agreement, property deed, winter management plan, Fire Department and ability to serve letters, Traffic Impact Study (Sewall), Geotechnical report, Stormwater management report, and Stormwater maintenance plan.
3. Engineering Preliminary Plan set entitled: *Adams Point Housing, 69 Adams Street, Biddeford, Maine*. Date: 6/14/2021. Prepared by Oak Point Associates. (landscape, building and lighting plans by others, see below)
4. Landscape Plan entitled *Adams Point* dated June 14, 2021, prepared by Carroll Associates.
5. Architectural Floor Plans and Elevations entitled: *Adams Point Multi Family Housing*. Issue date 4/2/2021 - 6/8/2021. Prepared by CHA Architecture.

With review of the above information and the Land Development Regulations, I offer the following comments on compliance with the City's ordinances.

PROJECT DESCRIPTION

The project site, located on an approx. 1.5 AC vacant lot in the MSRD-2 Zone between. The property has access to Adams Street to the north and, via a 15-foot wide water easement, access to Birch Street to the south. The site is located behind the current Parish Place Apartments, and the St. James School and Ledgewood Apartments (Graham Street). The applicant is seeking approval, in conjunction with a contract zone, for 39 affordable housing units in a new five story building.

COMPLETENESS REVIEW

The application is before the Planning Board as required by Article XI (Site Plan Review) of the Land Development Regulations and Chapter 66 (Subdivisions) subject to Site Plan and Subdivision review and approval. Per the City's Subdivision ordinance (66-26), all applications have a three tier approval process beginning with a Sketch plan review that was reviewed in May.

The applicant has prepared and submitted information that is adequate for a preliminary plan review, though it would be helpful for the applicant to provide a narrative(s) that address how the application conforms to the various applicable standards and identify all requested waivers. (Specifically Sec. 5.B *Site design criteria* (Part II of the Site Plan Review). The applicant has identified factors addressed by the submitted draft contract zone.

The application, as it pertains to Sec. 66-35 of the *Subdivisions* ordinance and Article VI, Sec. 47.A *Multifamily developments* (LDR), generally **appears to be complete** for preliminary plan review.

COMPLIANCE WITH THE CITY'S ORDINANCES

Below are comments that were made as part of the Sketch Plan review that may still be pertinent, followed by initial comments concerning conformance with the Subdivisions ordinance and the Land Development Regulations:

PREVIOUS SKETCH PLAN COMMENTS

1. *Proposed sidewalk. At first glance it appears the proposed sidewalk along the entrance drive ends abruptly at Adams Street. With closer examination, the applicant may be assuming that simply terminating it at the public ROW is sufficient to connect with the public sidewalk. The Planning Board and the applicant should discuss the expectation here concerning pedestrian connections the two existing public sidewalks along Adams Street. Perhaps the applicant, in consultation with Public Works, should propose a design for appropriate crosswalks and sidewalk ramps within the ROW. **Has the applicant consulted with***

Public Works on the design of the intersection? See comment #9 below for more elaboration.

2. *Parking design.* *It is assumed that the proposed number of parking spaces is based on the requested (March 18, 2021 letter from the applicant) parking requirement of .75 spaces per housing unit, rather than the 2 spaces per unit required. It is stated that this has been found to be the average for the other affordable housing developments the applicant manages. Considering the 33 dwelling units referenced in the 3/18 letter (the application includes 39 proposed units, the applicant should clarify), and the reduced ratio, 25 parking spaces would be required. This would include the required single van accessible handicap parking space. Is there a need for the 10 other accessible spaces proposed? See comments #15 thru #18 below for more elaboration.*
3. *Site design.* *The applicant should discuss constraints of the site and the proposed building location. Has there been any consultation with the Fire Department that has been informed the current site design? With consideration of what appears to be a 17-foot-high wall in the vicinity of the first parking space to the left coming up the driveway, and the potential for less parking and need for closer fire access to the building, perhaps the location of new parking proposed as close as it is along the steep southeast slope of the property should be reconsidered. Other items that might be considered for discussion/elaboration include: the need for a vehicular drop-off and type of open space (see landscape plan) being proposed. The applicant has stated in the cover letter that changes to the site design were considered but not incorporated. See comment #22 for more.*
4. *In addition to the general site development and subdivision standards, the applicant should review Section 47 Multifamily developments (Article VI Performance Standards under the Land Development Regulations (LDR)). The Planning Board should provide input early on one provision in particular, Sec.47.D.3 concerning the Board's discretion on requiring more than one street access for development containing more than 15 dwelling units. The applicant has proposed emergency access via a proposed easement from Birch Street. See comment #10 below for more elaboration.*
5. The Board may want the applicant to elaborate on the building's architectural design and how it will appear among the neighboring buildings adjacent to the site and in the area. The Board should share their expectations on what architectural information is to be included in subsequent submittals. **The applicant has submitted architectural elevations.**
6. A parking plan with bicycle and pedestrian components is required for all development within the MSRD districts, per Sec. 49 Off-street parking and loading. **See comment #14 for more.**

LAND DEVELOPMNENT REGULATIONS

Under Article 4 Section 6 District regulations/land use/lot size requirements, multifamily along with nonresidential uses shall be subject to Site Plan (Article XI) Review. The following are performance standards that may be applicable for multifamily development:

Article 6 Section 47 Multifamily developments:

7. Subsection B Design requirements appear to have been met or will be met through the Building Permit application process, with the exception of the requirement for a group or common mailbox system located on site. The applicant should address the specifics of this item.
8. Subsection C Stormwater and drainage The applicant has submitted a Stormwater Report. See comments from the Engineering Peer-review letter prepared by Site Design Associates.
9. Subsection D Access, circulation, and parking. A Traffic Impact Study has been prepared and submitted for the Board's review. That applicant should review the proposed design of intersection of the site's driveway and Adams Street. As Site Design Associates has pointed out, the proposed driveway design has the effect of extending Adams Street into the site. The Board may want to consider changes that would make it clearer the extent of the public street. The proposed driveway is 24 feet wide, larger than the Adams Street travel way when excluding the on-street parking. Consideration should be given to providing for a traditional hammerhead-turn around at the end of Adams and a more modest driveway entrance to the development.
10. Subsection D.3. More than one street access. It appears the applicant is proposing a 20-foot-wide fire lane from Birch Street to the proposed building along the existing parking lot serving Parish Place (apartments currently owned and managed by the applicant). The applicant should clarify that the access to this proposed emergency access is via the existing parking lot entrance to the Parish Place apartments. If this is the case, a draft easement should be submitted for review prior to final approval. Installation of signage identifying the fire lane and prohibition of parking should be depicted on the plans.

Article 6 Section 49 Off-Street Parking and Loading: Subsection A.11 are standards pertinent to the MSRD District. The following provisions appear to be applicable to the proposed development.

11. *(d) Exterior lighting shall not create glare onto the street or onto or into residential properties. Lighting fixtures shall be in concert with the existing historic lighting on Main Street. A photometrics plan has been submitted. The plan should be revised to extend the limits to the property line and catalog cuts for the fixtures and poles need to be submitted for review in cut-off/dark sky compliance.*

12. *(f) Parking spaces shall be provided as required and made available for use prior to the issuance of the certificate of occupancy. **This should be reflected on the final plans.***
13. *(g) The existing landscaping shall be preserved in its natural state wherever possible. Parking lots shall be landscaped with a continuous border of shrubbery along all lot lines. Large parking lots covering more than one quarter of an acre shall be proposed with a landscape plan stamped by a licensed landscape architect. The plan should include plantings in coordination with the City's arboretum, if possible. Except where screening is provided, parking areas should be designed and landscaped to avoid long, uninterrupted rows of vehicles. Parking lots containing more than 30 spaces shall be broken as by the use of landscaped islands, pedestrian and bicycle areas and/or buildings. **A Landscape Plan has been prepared and submitted. See comment #24 for more.***

Article 6 Section 49 Off-Street Parking and Loading: Subsection C are standards that appear to be applicable to the proposed development.

14. *(5) All new buildings or redevelopment of existing buildings in the MSRD districts shall include a parking plan with a bicycle and pedestrian circulation plan component. **The plans depict a total of four bicycle racks outside (two at each level) on the Landscape Plan and a dedicated storage room in the basement depicted on the building floor plans. The applicant should confirm the total capacity (interior/exterior) that is proposed for the development and include it as a plan note on the Site Plan.***

Table 6-49B Parking Space Requirements. The minimum required parking for a residential use is 2 spaces per dwelling unit, plus 5% more for multifamily developments. There is an intent by the City to allow for 1 parking space for 1-bedroom and studio dwellings. The proposed development provides for 39 dwelling units consisting of 13 one-bedroom apartments and 26 two-bedroom and larger apartments. The required parking calculates to be a total of 65 spaces $((26 \times 2) + (13 \times 1))$, three spaces of which being accessible. The proposed number of parking spaces is 35, that includes 11 accessible spaces (narrative references 36). 1 for every 24 parking spaces is required to be ADA, which equates to 3 spaces for the proposed development.

15. The applicant should elaborate on the logistics and rationale behind providing only 24 standard (non-ADA) spaces for 39 apartments. Will parking spaces be designated? Is it the assumption that 11 out of the 39 apartments (28%) will require an ADA parking space? Is it assumed that people that don't have an ADA placard/license plate will park on the street if the other 24 spaces are occupied? Or will there be parking available on the adjacent Parish Place property?

16. In the draft contract zone, .75 parking spaces per unit is referenced as the parking space requirement proposed for the development. That equates to just less than 30 spaces, or 46% of the required 65 spaces. Planning should determine if the overall 54% reduction is reasonable (65 spaces reduced to 35) as well as the increase in ADA spaces.
17. Since the parking space reduction is proposed as part of the contract zone and not as a waiver, should the parking ratio be based on what is actually proposed, where 35 spaces equates to .9 parking spaces per unit.
18. The final parking calculations should be depicted on the final plan.

Site design criteria. There are a number of provisions/requirements that are applicable to the the proposed development that would be easier to determine compliance with the aide of a narrative that specifically addresses the criteria under Sec. 5.B. of Article XI (part II) of the Land Development Regulations. The following are some comments from an initial review

19. Sec. 5.B.4.a Design of buildings. The applicant has provided building elevations that depict proposed materials and colors. The Board should review and determine if it conforms to the ordinance.
20. Sec. 5.B.4.c Fire protection. Has the applicant reviewed the standards with the Fire Department?
21. Sec. 5.B.4.i Parking, loading, and protective buffers. Calculations and values for the non-vegetated areas should be provided and included in the Site Plan notes.

ADDITIONAL COMMENTS

22. A subdivision plan or combined subdivision site plan, needs to be prepared suitable for recording that documents the number of dwelling units created.
23. Site design as it relates to elevations grades and driveway design and how that informs the location of parking and the proximity of a very high retaining wall (maxing out at 18') still remains to be an area that should require more reconsideration by the applicant. The reasons given for not perusing a steeper grade for the driveway does not appear to reflect the maximum grades allowed by the City's ordinance for roads and recommended by AASHTO for urban streets. The applicant should demonstrate the design changes, be it with the driveway assent or by lowering the Finished Floor Elevation of the building cannot be reasonably accommodated to address the height of the wall.
24. After consideration of methods to reduce the height of the wall, it is likely the height will still remain high in some locations and the potential safety issues associated with such structures, e.g. children climbing or falling off, should be considered.

25. The Landscape Plan provides for a varied and interesting plan palate. The applicant should clarify difference in screening needs between the development and Parish Place and the other abutting buildings in that there appears to be more of a robust design. It would appear that abutting properties along the new parking lot and driveway may require more than the proposed flowering wall climbing vine. These properties would likely benefit from a mix of evergreen and flowering trees and shrubs.
26. The slope created between the northerly side of the building and the driveway, looks to be close to a 1:1 slope, should be reconsidered, and determine other ways to manage the slope. If required (perhaps reducing the driveway width as mentioned earlier could help) low walls that terrace the slope and ornamentally planted, might be a more esthetic and safer solution. If a planting solution is favored, details on the slope stabilizing system that will be utilized and the manner to discourage/keep people from negotiating down it (from the building down to the drive).
27. Existing sanitary sewer (ESS (4")) lines between the Parish Place and the site are noted on the plans to be abandoned, however are not identified on the removals plan as being removed. Please explain.
28. Proposed Easements. All easements, new and modified, should be shown on the plan and draft language provided prior to final approval. It appears there is proposed utilities and relocation of structures (shed/playground) that is depicted on the plans that is not supported by easements and/or permission from the abutting property. All utilities and access (emergency and otherwise) between Birch Street and the site need to be clarified in an easement document and clearly identified on the plans.
29. The Removals Plan does not appear to be complete when compared to existing features on the survey plan, e.g. "concrete stairs" and altar are not called out to be removed.
30. All sidewalks/walkways should be concrete and not bituminous as proposed.
31. Please elaborate on the different accessible access proposed for the two banks of handicap parking. In front of the building individual ramps are used while the other has a continuous ramp. The latter, with flush curb, needs to provide a different design to keep vehicles from encroaching on the access walk.
32. After review with the Fire Department, identify a Fire Lane on the plans.
33. Provide a conceptual intersection design for Adams and Jefferson streets for review with City Staff.
34. Review detail sheets and ensure all applicable details are included, e.g. stairways, ADA parking space and signage, dumpster enclosure (Wooden Privacy Enclosure w/gate), striping, etc...

WAIVER REQUESTS

None requested. As prior to past contract zones, waivers and proposed changes to the zoning will be addressed together in the contract zone agreement. The applicant should summarize these items for the Board's consideration.

CONCLUSION

The submitted application provides enough information for Board members to hold a public hearing, make comments and ask questions to begin to familiarize themselves with the details of the project. There are a number of items related to design and logistics, that need to be considered prior to final approval. If the Board is inclined to grant preliminary approval, there are a number of comments and potential issues that need to be addressed with revised plans and reviewed by staff prior to submitting a final plans to the Board. **For suggested motions see Planning Board Packet Summary.**

Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245

Site Plan Review Application

CITY OF BIDDEFORD, MAINE
PLANNING BOARD
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

APPLICATION FORM

Type of Application:

- | | | |
|--|--|--------------------------------------|
| ☐ Shoreland Zoning Permit | ☒ Site Plan Review | ☐ Extraction |
| ☐ Conditional Use Permit | ☒ Subdivision | ☐ Private Way |
| ☐ Other: _____ | | |

Applicant Information:

Applicant's Name: Southern Maine Affordable Housing

Applicant's Mailing Address: 22 South Street Biddeford, ME 04005

Applicant's Telephone: 207-415-2939

What is Applicant's legal interest in the property?

- ☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: Same as Above

Owner's Address: _____

Owner's Telephone: _____

Agent's Name: Jacques Gagnon Jr. P.E, LEED AP

Agent's Address: 231 Main Street Biddeford, ME 04005

Telephone: 207-283-0193

Engineer/Surveyor: Oak Point Associates

Engineer/Surveyor's Address: same as agent

Telephone: _____

Project Location and Lot Information:

Street Address: 69 Adams Street

Tax Map: 38 Lot: 296

Current Zoning: MSRD-2 Shoreland Zoning: N/A

Size of lot: 1.44 ☒ acres ☐ s.f. Lot Frontage: 85.18

Existing Use of Property: Vacant (former convent burned in 1995)

Property currently serviced by:

☒ City Road	☐ Private Road
☐ Public Sewer	☐ Septic System
☐ Public Water	☐ Private Well
☐ Public Trash	☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3 % slope) ☐ Rolling (3-8% slope) ☒ Hilly (8-15% slope) ☒ Steep (15% + slope)

Are there any wetlands or waterbodies on the site? ☐ Yes ☒ No If yes, attach information

Do you plan to bring fill onto the lot? ☒ Yes ☐ No If yes, attach information
(approximately 2000 cy fill)

Description of proposed use of property:

Project/Proposed Use Description: Construct 39 unit family housing

Property to be serviced by:

☒ City Road	☐ Private Road
☒ Public Sewer	☐ Septic System
☒ Public Water	☐ Private Well
☐ Public Trash	☒ Private Hauler

Is this project part of a larger project? ☐ Yes ☒ No

☐ N/A If in a Shoreland Zone:

Percent of residential lot coverage (Max. 20%): _____

Percent of structure expansion (Max. 30%): _____

☒ If Subdivision Review, number of lots proposed: 39 dwelling units

☐ N/A If a Private Way is proposed, number of lots served: _____

☒ If Site Plan Review, you must provide the following information:

Total new square feet footprint of structures: 9,050 sf

Total new square feet paving/parking: 24,050 sf

Waiver Requests (attach details):

1. See draft contract zone agreement
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

- ☐ Fire Department - Contact Chief or Deputy Chief - 282-9986
- ☐ Ability to Serve for Water Service – Maine Water - 282-1543
- ☐ Ability to Serve for Sewer Service- Engineering Dept (Sewer) - Tom Milligan 284-9118
- ☒ Police Department - E-911 Road Name Designation - Contact Joanne Fisk - 282-5127

B. Letter to Planning Board describing project, waiver requests, proposed improvements, addressing permit requirements, etc.

C. Photographs of site.

D. Architectural renderings/drawings of proposed buildings, as required.

E. Engineered Plans, as required.

Fees (due at time of application): \$4,800

Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

☒ Project proposed to have 1 acre or more of site disturbance:

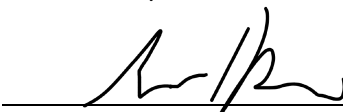
-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of applicant:



Date: 6-14-2021

Signature of owner of property:



Date: 6-14-2021

**IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE).
CHECK WITH PLANNING STAFF FOR CLARIFICATION.**

**CHECKLIST FOR
SITE PLAN
REQUIREMENTS** N/A for Concept Plan

YES **NO**

- | | | |
|-------------------------------------|--------------------------|--|
| ☒ | ☐ | Be on sheet size of 24 by 36 inches. |
| ☒ | ☐ | The scale of said plan shall be not less than one inch equals 50 feet and shall be indicated on the plat by use of a bar scale. |
| ☒ | ☐ | The plan shall bear the date, title, north point. |
| ☒ | ☐ | The plan shall contain a location or vicinity sketch (suggested scale one inch equals 800 feet). |
| ☒ | ☐ | The plan shall contain the name and address of the developer and applicant. |
| ☒ | ☐ | All appropriate dimensional requirements. |
| ☒ | ☐ | Existing and proposed easements. |
| ☒ | ☐ | Plan of the site showing existing watercourses and water bodies, seasonal wet areas. |
| ☒ | ☐ | Plan of the site showing soil type and location of test borings. |
| ☒ | ☐ | Location of all existing and proposed utilities. |
| ☒ | ☐ | Topographic contours (every five percent for zero to three percent slope; or every two feet for steeper areas). |
| ☒ | ☐ | Plan should include preservation and supplementation of existing dominant vegetation. |
| ☒ | ☐ | Plan shall indicate which features are to be retained and which are to be removed or altered. |
| ☒ | ☐ | Location of stonewalls, graveyards, fences, stands of trees, and other important unique natural areas and site features, including but not limited to floodplains, deer wintering areas, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, sand and gravel aquifers, and historic and/or archaeological resources, together with description of such features. |
| ☒ | ☐ | Plan view of all buildings with their use, size, location, and first-floor elevation in respect to grade. |
| ☒ | ☐ | Standard elevation view of existing and proposed buildings or structures on-site. |

YES **NO**

- | | | |
|-------------------------------------|--------------------------|---|
| ☒ | ☐ | Outline of any buildings located within 200 feet of such existing or proposed buildings or structures indicating their shape, size, location, heights and volume. |
| ☒ | ☐ | Existing use of abutting properties shall be identified with approximate location of any structures thereon including access roads. |
| ☒ | ☐ | Location, width, curbing, and paving of access ways, egress ways, and streets within the site for both pedestrian and vehicular use. |
| ☒ | ☐ | The location of off-street parking and loading spaces with a layout of the parking indicated. |
| ☒ | ☐ | The size and proposed location of water mains and sanitary sewerage facilities will all necessary engineering data. |
| ☒ | ☐ | The size and location of all other existing and proposed public service connections including, without limitation, gas lines, power lines, telephone lines, and fire alarm connections and locations, indicating whether above or below ground. |
| ☒ | ☐ | The type, nature, and composition of all solid, liquid, and gaseous waste, industrial or otherwise, and the location, type, and design criteria of the storage and disposal facilities dealing with such waste. |
| ☒ | ☐ | A landscape plan and open space areas indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening; plus size, location, purpose and type of vegetation. |
| ☒ | ☐ | A drainage plan including location, elevation, layout of catch basins and other surface and subsurface drainage features. |
| ☐ | ☐ | Location, size and design of proposed signs and other advertising or instructional devices. |
| ☒ | ☐ | Existing and proposed contours and finished grade elevations as well as the type, extent, and location of existing and proposed landscaping and open space areas which will be retained. |
| ☒ | ☐ | Location and type of lighting for outdoor facilities. |
| ☒ | ☐ | Lines of existing and proposed abutting streets showing width. |
| ☒ | ☐ | Surveyed property lines showing their bearing and distances and monument locations. |
| ☒ | ☐ | If subdivision is involved, the lines and names of all proposed streets, lanes, ways, or easements intended to be dedicated for public or private use. |

YES **NO**

- | | | |
|---------------------------------------|------------------------------|---|
| ☐ N/A | ☐ N/A | Provide copies of any covenants or restrictions that are intended to cover all or part of the land area to be developed. |
| ☐ N/A | ☐ N/A | Indicate limits of the wetland areas on the property. |
| ☒ X | ☐ | Delineate existing zoning boundaries within 1,000 feet of the site. |
| ☒ X | ☐ | Stamp and signature of either a Maine licensed land surveyor, professional engineer, or architect responsible for said plan. |
| ☒ X | ☐ | Any other exhibits or data deemed necessary by the Planning Board to evaluate the proposed development for site plan review purposes. |

1. Project Description and Photographs

Project Description
Site Plan/Subdivision Review Application
Adams Point
69 Adams Street
Biddeford, Maine 04005

June 14, 2020

The purpose of this project is to construct a 39-unit apartment building with a footprint of 9,024 square feet. The building will be partially four stories and partially 5-stories. A 200-foot long, 24-foot-wide road with a 5-foot-wide sidewalk will be constructed to access the site. Pedestrian access will be provided from Adams Street and Birch Street. The pedestrian access will allow for residents to walk to work in the downtown area, utilize on-street parking on Adams and Birch Streets and access to bus services on Alfred Street. Parking for 36 vehicles, a drop off area and a firetruck turn around will be provided at the building site. A 20- wide fire lane will be constructed from Birch Street to the site though an easement on Parish Place and St James School properties.

The project is located at the dead-end portion of Adams Street. The site was formerly used as a convent and then housing for the mentally ill until it burned down in 1996. The driveway, parking lot and old carriage house foundation remains on the site.

A boundary and topographic survey have been completed and it has been determined that there are two easements that exist on the site, one that reserves an area for a "Religious Grotto" to benefit the Roman Catholic Bishop of Portland, and the other is an "Area Reserved for a Street" to benefit the Roman Catholic Bishop of Portland. A 12' wide portion of this "Area Reserved for a Street" also benefits the Servantes du Coeur Immacule De Marie. These easements will be extinguished as part of the negotiations with the Roman Catholic Bishop of Portland. The site also has the benefit of a 15-foot-wide water line easement on the St James School property. This easement is in the process of being revised to allow a fire lane and pedestrian walk and approval by the Roman Catholic Bishop of Portland and will be finalized as a condition of approval. Parish Place (also owned by Southern Maine Affordable Housing) will grant an easement to benefit this new project site. The new easement will be a 5-foot strip of land (adjacent to the abutting 15-foot-wide easement) to create a 20-foot fire lane.

No wetlands were observed on or adjacent to the site. Trees larger than 20' in diameter were survey located and are depicted on the plans. Large trees that will be saved are show on the removals and site plans.

Utilities will consist of domestic and fire suppression water, natural gas, electric, communications, sewer and storm drains. All utilities except sewer and storm drain will be connected to the existing combined sewer on Adams Street. Exterior lighting will consist of a combination of free-standing pole mounted light fixtures and building mounted light fixtures.

Stormwater will be controlled by use of catch basins and subsurface piping that is directed to an underground storage tank. The outlet of the storage tank has a controlled outlet to throttle flows to not exceed predevelopment rates.



Photo 1 – View from Adams Street



Photo 2 – Former building location near Parish Place.



Photo 3 – Existing Access Drive with Guardrail



Photo 4 – St James School Playground (right) and Parish Place (left)

2. Draft Contract Zone Agreement

DRAFT – FOR CITY COUNCIL CONSIDERATION

CONTRACT ZONE AGREEMENT

AGREEMENT made as of _____, 2021, by and between Adams Point, LP, a Maine limited partnership and Southern Maine Affordable Housing, a Maine corporation with an established place of business in Biddeford, Maine (hereinafter, jointly and severally called the “Owner”) and THE CITY OF BIDDEFORD, a body politic and corporate located in Biddeford, Maine, (hereinafter called “Biddeford”).

WHEREAS, the Owner (or one of them) is the owner of certain real estate (the “Property”) situated at 69 Adams Street, so-called, in Biddeford, the Property is currently designated as Tax Map 38, Lot 296, and contains approximately 1.54 acres. Owner desires to transfer to Adams Point, LP (the “Developer”) who intends to develop the Property as a 39 unit affordable housing building for families on the Property. The description of the Property is shown on the plan entitled “Adams Point Housing – Biddeford, ME; Existing Conditions” prepared by Oak Point Associates as revised though [DATE TBD], attached hereto as EXHIBIT A; and

WHEREAS, Owner has applied for and obtained approval to re-zone the Property pursuant to the Contract Zoning provisions of the Zoning Ordinance of the City of Biddeford to create Contract Zone 19; and

WHEREAS, the parties are entering into this Agreement to provide written contractual evidence of the agreement of the parties and the terms and conditions of the Contract Zone.

NOW, THEREFORE,

in consideration of the mutual agreements hereinafter set forth and in consideration of the granting of the zoning ordinance change, the parties agree as follows:

1. **Development of the Property.** Owner agrees that in the event it shall transfer title to Developer, it shall require as a condition of sale that the Developer or its assignee approved by the Biddeford Planning Board or such other municipal board or committee having jurisdiction (the “Approved Assignee”) shall develop the Property in accordance with the following provisions and conditions:
 - A. Findings of Fact and Recommendations of the City of Biddeford Planning Board attached hereto as EXHIBIT B; and
 - B. Materials and plans entitled “Adams Point Housing”, prepared by Oak Point Associates and consisting of 10 pages attached hereto as [SIGNATURE SHEET OF SITE PLAN APPLICATION] of which contains the signatures of the Biddeford Planning Board members and will be duly recorded in the York Registry of Deeds.
2. **Municipal Building Permit Fee Reduction.** The Developer has requested, and the Council has granted, a 50% reduction of the project’s building permit fees as well as electrical, plumbing and mechanical permit fees in order to facilitate the creation of affordable housing. Also

recognizing that Southern Maine Affordable Housing is an affiliated non-profit of Biddeford Housing Authority.

3. **Failure to Complete Development.** In the event the Developer, or its Approved Assignee, shall fail to commence significant construction of the improvements within four (4) years of the effective date of the Contract Zone and shall complete construction within seven (7) years of the effective date of the Contract Zone, the Contract Zone granted hereby shall automatically be void and the Property shall revert to the zoning classification of the abutting properties. Significant commencement of construction shall mean the installation of all infrastructure improvements and grading within the limits of the Project.

In the event that the zones have changed, each portion of the Property shall revert to the zoning classifications of the abutting properties. In the event the changed abutting properties shall have more than one zoning classification, the Property shall become part of the more restrictive abutting zone.

4. **Construction and Effect.** This agreement shall be construed in accordance with the laws of the State of Maine and shall be binding upon and inure to the benefit of the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties have caused this instrument to be signed all as of the day and date above written.

Witness:

ADAMS POINT, LP

By: _____
Guy M. Gagnon, Member

SOUTHERN MAINE AFFORDABLE HOUSING

By: _____
Guy M. Gagnon, President

CITY OF BIDDEFORD

By: _____
James Bennett, Its Manager

EXHIBIT B

Findings of Fact and Recommendations of the City of Biddeford Planning Board

To: Mayor Alan Casavant
Members of the Biddeford City Council

The Planning Board of the City of Biddeford has met and reviewed the Request for Contract Zone submitted by Adams Point, LP and Southern Maine Affordable Housing, with respect to property located at 69 Adams Street in Biddeford. The property is composed of the property currently designated as Tax Map 38, Lot 296 and contains approximately 67,082 square feet (1.54 acres). The Project will involve the construction of 39 total family housing units and 35 parking spaces. In addition to the creation of a Contract Zone, it will be necessary for the Project to be further reviewed under the site plan review procedures of the Biddeford Zoning Ordinance as well as the Maine Department of Environmental Protection.

Upon review, the Planning Board of the City of Biddeford makes the following findings of fact:

- A. The proposed contract zone as hereinafter set forth is consistent with the Comprehensive Plan of the City of Biddeford in that the area to be developed is located in a section of the City of Biddeford which is currently developed for large scale uses such as municipal offices, medical offices, office buildings, higher-density residential housing, and elderly care support facilities; and
- B. The proposed residential use is consistent with the existing or permitted uses within the original zone that is, the existing MSRD2 zone which provides for areas of medium density residential development; and
- C. The proposed zone change shall meet all of the area, front yard, side yard, rear yard and height requirements of the proposed contract zone; and
- D. The proposed zone will not create unreasonable traffic congestion on contiguous or adjacent streets, provided anticipated improvements required by various governmental approvals are constructed; and
- E. The proposed zone change and use authorized includes provisions for providing and maintaining adequate:
 - 1. Utility services; and
 - 2. Sewage disposal; and
 - 3. Drainage; and
 - 4. Solid waste disposal; and
 - 5. Access; and

6. Parking and loading; and
 7. All other necessary site improvements; and
-
- F. The proposed use will conform to the general character of the neighborhood in that the materials to be used, style of buildings, fences, plantings and the like are compatible with the character of the neighborhood; and
 - G. Insofar as practicable, the landscaping will be preserved in its natural state; and
 - H. There will be sufficient setbacks of structures and screening to provide an adequate visual and sound barrier; and
 - I. Off-street parking facilities are sufficiently screened from view of surrounding properties; and
 - J. There will be no significant adverse effect resulting from the proposed use and the proposed zone change upon the public health, safety and general welfare of the neighborhood.

The Planning Board of the City of Biddeford specifically finds there is a demonstrated need for the type of housing to be constructed which is intended to be for families of personnel employed by businesses located in the neighborhood. While Biddeford does have an existing rental housing stock, the units in this building will be affordable units specifically for families in the community.

The Planning Board of the City of Biddeford therefore recommends that the Request for Zone Change be affirmatively acted upon by the City Council.

The Board recommends that the real estate depicted on the Materials and plans entitled “Adams Point Housing-Biddeford, ME; Site Plan”, prepared by Oak Point Associates and consisting of 10 pages attached hereto as Exhibit A, be rezoned pursuant to the provisions of Article XVII, Section 3 of the Zoning Ordinance of the City of Biddeford to a zone which is labelled Contract Zone 19 (CZ-19).

CZ-19 shall provide for the following:

1. The permitted uses in the zone shall include the multifamily apartment building containing no more than 39 units of housing on the property.
2. The minimum lot size for each unit shall be 1,900 square feet. All buildings shall be located as ultimately approved by the Biddeford Planning Board as a part of its separate review under the Site Plan Review standards of the City of Biddeford Zoning Ordinance.
3. No building or structure as located and constructed shall exceed 60 feet in height or a maximum of five (5) stories. Height shall be as defined as the vertical distance from grade to top of the highest roof beams of a flat roof, excluding any parapets for elevators, roof access, or the screening of mechanical equipment.
4. The minimum required parking in the zone shall be 0.75 parking spaces per dwelling unit.

In consideration of such Contract Zone Change the Applicant agrees to use Applicant's (or the Developer's) best efforts to:

1. Construct thereon a maximum of 39 units of multifamily residential housing, all in accordance with the aforesaid Plan.
2. It shall be a condition of this Contract Zone Change that the Applicant shall undertake significant commencement of construction within 4 years of the effective date of the Zone Change and shall complete construction within 7 years of the effective date of the Zone Change. Significant commencement of construction shall mean the installation of all infrastructure improvements and grading within the limits of the Project.

In the event Applicant shall not comply with the provisions of this paragraph, the Zone Change granted hereby shall automatically be void and the property shall revert to the zoning classification that the Property was in of the date of the Contract Zone Agreement. In the event that the zones have changed, the property shall revert to the zoning classifications of the abutting properties. In the event the abutting properties shall have more than one zoning classification, the property shall become part of the most restrictive abutting zone.

City of Biddeford Planning Board

_____, 2021

By: _____

Its Chairman Duly authorized

The undersigned Applicant agrees with the City of Biddeford to be bound by the terms, conditions and provisions of this Approval, if the zone change is enacted

_____, 2021

ADAMS POINT, LP

By: _____

Guy M. Gagnon, Member

SOUTHERN MAINE AFFORDABLE HOUSING

By: _____

Guy M. Gagnon, Executive Director

3. Locus Deed

Milda A. Castner
Scott M. Edmunds
William J. Gallitto, III
Britton R. Garon
Michael W. Macleod-Ball
James S. Mundy
Sarah B. Neault



Durward W. Parkinson
Erin E. Sherman
Of Counsel
Jonathan Bangs
Barbara I. Belik
Christian L. Barner
In Memoriam
Wayne T. Adams

February 16, 2021

Guy M. Gagnon, President
Southern Maine Affordable Housing
22 South Street
Biddeford, ME 04005

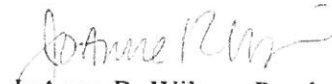
RE: 69 Adams Street, Biddeford, Maine

Dear Mr. Gagnon:

Enclosed is the original Quitclaim Deed that was electronically recorded with the York County Registry of Deeds.

If you should have any questions, please feel free to contact me.

Sincerely yours,


JoAnne R. Wilson, Paralegal

Enclosure

Maine R.E. Transfer Tax Paid

DLN 1002040123593

QUITCLAIM DEED

DIANE MORENCY of Wells, Maine and RAYMOND A. MORENCY of Lyman, Maine

for consideration paid, grants to

SOUTHERN MAINE AFFORDABLE HOUSING (SMAH), a Maine nonprofit corporation

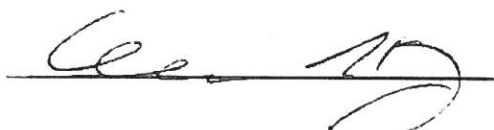
with a place of business located at 22 South Street, Biddeford, Maine 04005, without Covenants, the following described real property in the City of Biddeford, County of York and State of Maine:

See Exhibit A attached hereto and made a part hereof

Also hereby conveying all rights, easements, privileges, and appurtenances, belonging to the premises hereinabove described.

WITNESS our hands and seals this 30th day of November, 2020.

WITNESS


DIANE MORENCY


RAYMOND A. MORENCY

State of Maine
County of York, ss.

Personally appeared before me DIANE MORENCY and RAYMOND A. MORENCY, and acknowledged the foregoing instrument to be their free act and deed on November 30, 2020.

Before me,


Notary Public / Attorney-at-Law
Print Name: William S. Kay
My commission expires: _____

DLN 1002040123593

QUITCLAIM DEED

DIANE MORENCY of Wells, Maine and **RAYMOND A. MORENCY** of Lyman, Maine

for consideration paid, grants to

SOUTHERN MAINE AFFORDABLE HOUSING (SMAH), a Maine nonprofit corporation

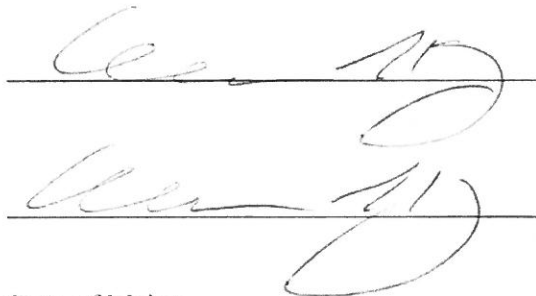
with a place of business located at 22 South Street, Biddeford, Maine 04005, without Covenants, the following described real property in the City of Biddeford, County of York and State of Maine:

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Also hereby conveying all rights, easements, privileges, and appurtenances, belonging to the premises hereinabove described.

WITNESS our hands and seals this 30th day of November, 2020.

WITNESS



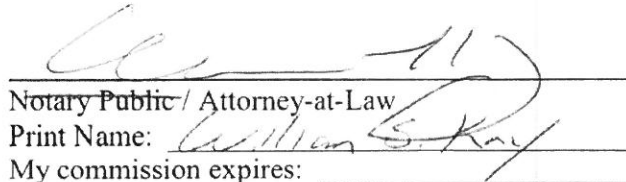
DIANE MORENCY

RAYMOND A. MORENCY

State of Maine
County of York, ss.

Personally appeared before me **DIANE MORENCY** and **RAYMOND A. MORENCY**, and acknowledged the foregoing instrument to be their free act and deed on November 30, 2020.

Before me,



Notary Public / Attorney-at-Law
Print Name: William E. Kay
My commission expires: _____

EXHIBIT A
(69 Adams Street, Biddeford)

A certain lot or parcel of land with the buildings thereon, located off Adams Street in the City of Biddeford, County of York and State of Maine, being bounded and described as follows:

BEGINNING at an iron pipe set on the southerly side of Adams street at the northwest corner of land now or formerly of Harvey, thence southeast $40^{\circ}05'11''$ a distance of 202.5 feet along said land of Harvey to an iron fence post; thence $S46^{\circ}32'16''W$ a distance of 225.08 feet to an iron fence post and land of Parish Place Association; thence $N41^{\circ}13'52''W$ a distance of 160.96 feet along said land of Parish Place Association to an iron pipe and land of St. Joseph School; thence $N36^{\circ}48'14''W$ a distance of 171.52 feet along said land of St. Joseph School to an iron fence post and land of C.M. Cimino Realty Inc.; thence $N70^{\circ}07'26''E$ a distance of 194.27 feet along said land of Cimino Realty to an iron pipe set at the northwest end of Adams Street, thence $S40^{\circ}30''E$ a distance of 50 feet along the end of Adams Street to an iron pipe set at the southwesterly end of Adams Street; thence $N49^{\circ}30'E$ a distance of 35.41 feet along said Adams Street to the point of beginning.

TOGETHER WITH that certain easement set forth in the deed from Raymond A. Morency and Diane Morency and the Roman Catholic Bishop of Portland, dated December 24, 2001 and recorded in the York County Registry of Deeds at Book 11252, Page 66

For title reference see Deed given by Diane Morency and Raymond A. Morency as tenants-in-common to Diane Morency and Raymond A. Morency as Joint Tenants, which deed was recorded in the York County Registry of Deeds in Book 17897, Page 243 on February 20, 2019.

28592

KNOW ALL MEN BY THESE PRESENTS, that it, the Roman Catholic Bishop of Portland, a body politic and corporation sole, created and existing under the laws of the State of Maine, and having its chancery in Portland, County of Cumberland and State of Maine, being the owner in fee simple of certain lands located in the City of Biddeford, County of York and State of Maine, and described as follows, viz:

Being a portion of the premises conveyed to the Grantor herein on June 20, 1929, and recorded in the York County Registry of Deeds in Book 2025, at Page 383 of the York County Registry of Deeds.

Said property is primarily used as a playground for school children and is situated on Birch Street in Biddeford and consists of an area approximately 15' wide and 205' in length along and adjacent to the property known as Parish Place and runs from said Birch Street to the property of Raymond A. Morency and Diane Morency along the property line of the said Roman Catholic Bishop of Portland at St. Joseph's Parish, Biddeford.

In consideration of One Dollar (\$1.00) and other valuable considerations paid by Raymond A. Morency and Diane Morency, both of Wells, said County and State, the receipt whereof is hereby acknowledged does hereby give, grant, sell and quit-claim to said Raymond A. Morency and Diane Morency, their heirs and assigns, the rights and easements hereinafter set forth which are to be exercised over the above described 15 x 250' strip parcel of land as follows: To enter upon, excavate, lay, relay, remove, repair and maintain, an underground water pipe and main and all appurtenances thereto belonging for the purpose of installing, connecting and operating a water line across and along the boundary line of property owned by the Grantor in Biddeford, Maine.

This conveyance is subject to the Grantee's agreement and covenant to promptly restore the surface of the Grantor's land to its prior condition after an excavation or disturbance to said surface in connection with the exercise of the rights, privileges and easements herein granted, such restoration to include, without limitation, regrading, regrass-seeding, and reasphalting of said surface as the Grantor shall direct.

Provided further, anything herein to the contrary notwithstanding, the Grantor, its successors and assigns, does hereby reserve the right of ingress and egress at all times to and from the subject premises and nothing herein granted by the Grantor to the Grantee is intended or in fact shall authorize a foreclosure, impediment or barrier to free passage of Grantor, its successors and assigns, to and from, over and upon the subject premises.

MAINE REAL ESTATE TRANSFER TAX PAID

12

TO HAVE AND TO HOLD the said rights, privileges and easements to said Raymond A. Morency and Diane Morency, their heirs and assigns forever.

IN WITNESS WHEREOF, it, the said Roman Catholic Bishop of Portland, has caused this easement to be executed this 19th day of July, A.D. 1988.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

ROMAN CATHOLIC BISHOP OF PORTLAND

Joseph Ford
Witness

By: Edward C. O'Leary
Edward C. O'Leary, Roman Catholic
Bishop of Portland

STATE OF MAINE
Cumberland, ss.

Personally appeared the above-named Edward C. O'Leary, Roman Catholic Bishop of Portland, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of the said corporation sole.

Before me,

Ann P. Foley
Notary Public
Ann P. Foley

MY COMMISSION EXPIRES
JULY 31, 1989

RECEIVED YORK, SS.

1988 JUL 13 AM 10:03

RECORDED REGISTRY OF DEEDS

ATTEST: Ann M. Ponzetti
REGISTER

QUITCLAIM WITH COVENANT DEED

KNOW ALL MEN BY THESE PRESENTS,

THAT, we, **Raymond A. Morency** and **Diane Morency**, of Wells, County of York and State of Maine, in consideration of One Dollar (\$1.00) and other valuable considerations, paid by the **Roman Catholic Bishop of Portland**, a corporation sole and body politic with a Chancery at 500 Ocean Avenue, Portland, Maine, the receipt whereof we do hereby acknowledge, do hereby give, grant, and convey unto the said Roman Catholic Bishop of Portland, its successors and assigns forever, the following described premises:

See Exhibit A.

The Roman Catholic Bishop of Portland, a corporation sole, hereby enters into a COVENANT with Raymond A. Morency and Diane Morency that during any period of its ownership and control of the premises, it will reserve an area 800 square feet on the premises to be used for location of a religious grotto, to be accessible for veneration and prayer by the Roman Catholic faithful. The Roman Catholic Bishop of Portland in its discretion may from time to time relocate the said 800 square foot area for a grotto onto another portion of the premises. The premises are conveyed SUBJECT TO A FURTHER COVENANT INTENDED TO RUN WITH THE LAND that if the Roman Catholic Bishop of Portland transfers the premises, a 800 square foot grotto area shall remain on the premises, accessible for veneration and prayer, in such location as the Roman Catholic Bishop of Portland, at the time of such transfer, directs, or if no direction is provided at the time of such transfer, in such location as the grotto is then located.

The premises are conveyed SUBJECT TO THE RESTRICTION, intended to last for so long as the Roman Catholic Bishop of Portland owns and operates a school on adjoining property, that the Roman Catholic Bishop of Portland, shall not transfer ownership of the premises. This restriction shall automatically terminate of its own accord at such time as the Roman Catholic Bishop of Portland may cease to own and operate the said school, after which time any transfer of the premises shall be free of this restriction.

TO HAVE AND TO HOLD, the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Roman Catholic Bishop of Portland, its successors and assigns, to its and their use and behoof forever.

MAINE R.E. TRANSFER TAX PAID

EXHIBIT A

A certain lot or parcel of land with the buildings thereon, located off Adams Street in the City of Biddeford, County of York and State of Maine, being bounded and described as follows:

BEGINNING at an iron pipe set on the southerly side of Adams Street at the northwest corner of land now or formerly of Harvey, thence southeast $40^{\circ}05'11''$ a distance of 202.5 feet along said land of Harvey to an iron fence post; thence $S46^{\circ}32'16''W$ a distance of 225.08 feet to an iron fence post and land of Parish Place Association; thence $N41^{\circ}13'52''W$ a distance of 160.96 feet along said land of Parish Place Association to an iron pipe and land of St. Joseph School; thence $N36^{\circ}48'14''W$ a distance of 171.52 feet along said land of St. Joseph School to an iron fence post and land of C.M. Cimino Realty Inc.; thence $N70^{\circ}07'26''E$ a distance of 194.27 feet along said land of Cimino Realty to an iron pipe set at the northwest end of Adams Street, thence $S40^{\circ}30''E$ a distance of 50 feet along the end of Adams Street to an iron pipe set at the southwesterly end of Adams Street; thence $N49^{\circ}30''E$ a distance of 35.41 feet along said Adams Street to the point of beginning.

FOR SOURCE OF TITLE reference may be had to deed from the Servants of the Immaculate Heart of Mary, aka Les Servantes du Coeur Immacule de Marie, to Raymond A. Morency and Diane Morency, dated July 1, 1987, and recorded in the York County Registry of Deeds at Book 4365, Page 263.

ALSO conveying all right, title and interest in the easement set forth in the deed from the Roman Catholic Bishop of Portland to Raymond A. Morency and Diane Morency, dated July 8, 1988, and recorded in the York County Registry of Deeds at Book 4771, Page 317.

And we do covenant with the said Grantee, its successors and assigns, that we shall and will Warrant and Forever Defend the same to the said Grantee, its successors and assigns against the lawful claims and demands of all persons claiming by, through or under us.

IN WITNESS WHEREOF, we, the said Raymond A. Morency and Diane Morency, have hereunto set our hand and seal this 24th day of December, 2001.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF

[Signature]
Raymond A. Morency
[Signature]
Diane Morency

STATE OF MAINE
Cumberland County, SS. Dec 24, 2001

Then personally appeared the above named Diane Morency and acknowledged the above instrument to be her free act and deed.

Before me,

Thomas R Kelly
Notary Public Attorney At Law Bar Roll No. 7555
Thomas R Kelly

STATE OF MAINE
Cumberland County, SS. Dec 24, 2001

Then personally appeared the above named Raymond A. Morency and acknowledged the above instrument to be his free act and deed.

Before me,

Thomas R Kelly
Notary Public Attorney At Law, Bar Roll No. 7555

RECEIVED YORK S.S. *Thomas R Kelly*

2001 DEC 31 AM 10:00

ATTEST: *Levi M. Mease*
REGISTER OF DEEDS

*Robinson Haysan + M
PO Box 568
Pitts, Me 04112-0568*

KNOW ALL MEN BY THESE PRESENTS,

THAT, the **Roman Catholic Bishop of Portland**, a body politic and corporation sole, created and existing under the laws of the State of Maine, and having its chancery in Portland, County of Cumberland and State of Maine, in consideration of One Dollar (\$1.00) and other valuable considerations paid by Diane Morency, of Wells, Maine, and Raymond A. Morency of Alfred, Maine, the receipt of which consideration it does hereby acknowledge, does hereby remise, release, and convey, and forever quit-claim unto the said **Diane Morency and Raymond A. Morency**, as tenants-in-common, their successors and assigns, the following described real estate:

See attached Exhibit A.

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging to the said Grantees, their successors and assigns forever.

The Grantor covenants with the Grantees, their heirs and assigns that it will warrant and forever defend the premises to the said Grantees, their heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through or under the Grantor.

In Witness Whereof, the said Roman Catholic Bishop of Portland, a body politic and corporation sole, has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Richard Malone, Roman Catholic Bishop of Portland, thereunto duly authorized, according to the discipline and government of the Roman Catholic Church and the

397 Robinson, Kriger & McCallum
P.O. Box 568
E Portland ME 04112
MAINE R.E. TRANSFER TAX PAID

laws of the State of Maine, this 11th day of January, in the year of our Lord
Two Thousand and Seven.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF

ROMAN CATHOLIC BISHOP OF PORTLAND

Arthur J. Buscetta

By: Richard Malone
Richard Malone, Roman Catholic
Bishop of Portland

STATE OF MAINE
Cumberland, ss.

January, 11, 2007

Personally appeared the above named Richard Malone, Roman Catholic Bishop of
Portland, and acknowledged the above instrument to be his free act and deed in his said capacity,
and the free act and deed of said corporation sole.

Before me,

Carol A. Connolly
Notary Public

CAROL A. CONNOLLY
Notary Public, Maine
My Commission Expires November 1, 2012

SEAL

Exhibit A

A certain lot or parcel of land with the buildings thereon, located off Adams Street in the City of Biddeford, County of York and State of Maine, being bounded and described as follows:

BEGINNING at an iron pipe set on the southerly side of Adams Street at the northwest corner of land now or formerly of Harvey, thence southeast $40^{\circ}05'11''$ a distance of 202.5 feet along said land of Harvey to an iron fence post; thence $S46^{\circ}32'16''W$ a distance of 225.08 feet to an iron fence post and land of Parish Place Association; thence $N41^{\circ}13'52''W$ a distance of 160.96 feet along said land of Parish Place Association to an iron pipe and land of St. Joseph School; thence $N36^{\circ}48'14''W$ a distance of 171.52 feet along said land of St. Joseph School to an iron fence post and land of C.M. Cimino Realty Inc.; thence $N70^{\circ}07'26''E$ a distance of 194.27 feet along said land of Cimino Realty to an iron pipe set at the northwest end of Adams Street, thence $S40^{\circ}30''E$ a distance of 50 feet along the end of Adams Street to an iron pipe set at the southwesterly end of Adams Street; thence $N49^{\circ}30'E$ a distance of 35.41 feet along said Adams Street to the point of beginning.

TOGETHER WITH that certain easement set forth in the deed from Raymond A.

Morency and Diane Morency and the Roman Catholic Bishop of Portland, dated December 24, 2001 and recorded in the York County Registry of Deeds at Book 11252, Page 66.

FOR SOURCE OF TITLE, reference may be had to a certain deed from Raymond A.

Morency and Diane Morency, dated December 24, 2001 and recorded in the York County Registry of Deeds at Book 11252, Page 66. With respect to any and all covenants, obligations or restrictions previously established by and between the Grantees on the one side and the Grantor on the other side, whether personal or running with the land hereby conveyed, including all such matters set forth in the deed referenced next above, the Grantor and Grantees acknowledge by delivery and acceptance of this deed, their discharge, termination and as applicable, merger by deed.

END OF DOCUMENT

4. Winter Management Plan



Winter Management Plan
Site Plan/Subdivision Review Application
Adams Point
69 Adams Street
Biddeford, Maine 04005

June 14, 2020

Introduction:

A comprehensive winter management plan the Adams Point Apartments for the harsh Maine winters. Keeping the property at safe when the Maine winters set in is important to maintaining the safety of the residents and public.

Traffic & Pedestrian area:

The areas of vehicular traffic exist at the driveway from Adams Street and the parking area. There is an emergency fire access lane from Birch Street to the site that will also require all weather access. A pedestrian walk will be constructed from Adams Street to the building. Another walkway will be constructed from Birch Street to the Building. Interior walkways on the site will connect various doors at the building to the main pedestrian walkways.

Proactive Measures:

To assist in ice and snow removal we take the most proactive approach possible. Removing snow and ice as soon as possible manually with shovels or snow truck plows to keep the ice and snow at bay. The owner also shovels and plows frequently to minimize buildup or vehicle compaction. Taking these actions allows the owner to minimize our use of sand & salt on the traffic, access drives and building entrances.

Ice or Sand:

Both sand and salt will have some type of effect on the environment and assets, we use these “tools” in moderation to maintain the safety of the residents and the general public. Maine winters and activities around or during the storms will require a tailored solution. While an ice storm would require the ice-busting salt to maintain safe travel-way and walkways. Sand would be best for assisting in traction for hard-packed snow.

Ice Removal & Management:

For ice management, the owner uses both salt & sand depending on the “tool” needed for the specific situation. The access drive is sanded or salted a local subcontractor that’s familiar with the local ice management needs, specifics of our property and understands the owners’ interest in minimizing any impact on the environment or assets. The building entrances and sidewalks are maintained by personnel using the same tools and mindset as our subcontractor. Ice-melt is stored in bags at the facilities building.

Snow Removal & Management:

Storm meetings and communication are performed for each potential storm event. Maine winter storms come in a wide range of precipitation types and the team performing the snow removal must adjust a bit to achieve a positive outcome for each type of event. Examples of adjustment could be starting removal operations very early in the morning and plowing periodically through the storm and working late.

5. Letter of Approval from Fire Department

From: jgagnon@oakpoint.com
Sent: Wednesday, June 9, 2021 11:52 AM
To: 'Labrecque, Paul'
Subject: RE: Fire Department apparatus Information
Attachments: 02 ADAMS POINT - SITE with Fire Lane.pdf

Hi Paul,

I understand you met with Guy Gagnon regarding this project. I was told by Guy that the last portion of the fire lane needs to be 20 feet wide and capable of supporting your outriggers. Can you tell me if the attached plans meet your needs? We are submitting this project to the planning department next Monday and we will need a letter of approval from your office for the submission if possible.

I am in the office this week and would be happy to meet with you or field any questions you have on the phone.

Thanks,

Jack

Jacques L Gagnon Jr. | Associate
TEL 207.283.0193 | CELL 207.216.2836 | FAX 207.283.4283
www.oakpoint.com | jgagnon@oakpoint.com



OAK POINT
ASSOCIATES

architecture
engineering
planning

From: jgagnon@oakpoint.com <jgagnon@oakpoint.com>
Sent: Thursday, March 25, 2021 3:27 PM
To: 'Labrecque, Paul' <paul.labrecque@biddefordmaine.org>
Subject: RE: Fire Department apparatus Information

Hi Paul, I think I have most all the information I need except for the type of front suspension. I see your front tires are 16.2" wide (411 mm), the attached document shows the cramp angle is dependent on the type of front suspension. Leaf Spring suspension has the tightest turn radius.

Jack

Jacques L Gagnon Jr. | Associate
TEL 207.283.0193 | CELL 207.216.2836 | FAX 207.283.4283
www.oakpoint.com | jgagnon@oakpoint.com



OAK POINT
ASSOCIATES

architecture
engineering
planning

From: Labrecque, Paul <paul.labrecque@biddefordmaine.org>
Sent: Thursday, March 25, 2021 2:29 PM
To: jgagnon@oakpoint.com
Subject: RE: Fire Department apparatus Information

Please let me know if you need additional information. Not sure what inspection fees you are inquiring about.

Thanks,

Paul

From: jgagnon@oakpoint.com <jgagnon@oakpoint.com>
Sent: Thursday, March 25, 2021 1:47 PM
To: Labrecque, Paul <paul.labrecque@biddefordmaine.org>
Subject: RE: Fire Department apparatus Information

Thank You Paul,

Do you know the turning radius?

The client has asked me to inquire about application and inspection fees, do you know what they might be or where I can find them?

Jack

Jacques L Gagnon Jr. | Associate
TEL 207.283.0193 | CELL 207.216.2836 | FAX 207.283.4283
www.oakpoint.com | jgagnon@oakpoint.com



From: Labrecque, Paul <paul.labrecque@biddefordmaine.org>
Sent: Thursday, March 25, 2021 1:06 PM
To: Jacques Gagnon Jr. (jgagnon@oakpoint.com) <jgagnon@oakpoint.com>
Subject: Fire Department apparatus Information

Hi Jack,

Attached is a copy of our apparatus overall dimensions to help with the planning for the project. As you will see the largest is the 100' Aerial platform.

Please let me know if you need additional information.

Regards,

Paul



Paul R. LaBrecque
Assistant Chief

Biddeford Fire Department
152 Alfred Street
Biddeford, ME 04005

(207) 282-6632 Office
(207) 571-1687 Fax
Paul.Labrecque@Biddefordmaine.org

The contents of this e-mail message and any attachments are confidential and are intended solely for addressee. The information may also be legally privileged. This transmission is sent in trust, for the sole purpose of delivery to the intended recipient. If you have received this transmission in error, any use, reproduction or dissemination of this transmission is strictly prohibited. If you are not the intended recipient, please immediately notify the sender by reply e-mail or phone and delete this message and its attachments, if any.

Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

6. Ability to Serve Letter from Maine Water Company



June 11th, 2021

Oak Point Associates
ATTN: Jacques Gagnon Jr., P.E., LEED AP
231 Main St
Biddeford, ME 04005

Re: Ability to Serve – Adam's Point – Southern Maine Affordable Housing

Dear Mr. Gagnon,

The Maine Water Company (MWC) has received your request for an Ability to Serve Determination on behalf of your client, Southern Maine Affordable Housing, for the property located 69 Adams Street, Biddeford, Maine for the above referenced project. The request indicates a plan at, Map 38 / Lot 296 to build a 39-unit family housing building. The expected domestic demand has been presented as 8,640 gallons per day (gpd) with a peak demand of 200 gallons per minute (gpm). The estimated fire demand is between 750 to 1000gpm. The complex is proposed to be served with public water and accessed from Birch Street through an existing waterline easement across an abutting parcel. The static pressure in the area is approximately **45 psi**. Based on the criteria that has been presented, MWC does have sufficient capacity in the area from the existing 12-inch main on Birch Street to serve this project. Additional infrastructure improvements are required at the expense of the developer to meet the overall needs of this project.

Conditions of Service

- A hydrant flow test must be conducted at the expense of the developer at the nearest hydrant to ensure adequate flows are available in the event of a fire.
- Documentation of the existing waterline easement must be provided before final approval.
- An easement for access and operation of all water service valves on this property must be signed, notarized and registered with the county registry before activation. MWC will draft and supply this document to be executed by the owner.
- Additional coordination with MWC is required before construction. Maine Water requires upfront payment for inspection and paperwork to be fully completed before any construction on waterworks materials.

Should a Customer Agreement for service not be executed within one year of the date of this letter, MWC reserves the right to reevaluate its ability to serve this project.

All work must be completed in accordance with MWC Terms and Conditions as well as material specifications. All appropriate paperwork must be completed and deposit paid prior to the start of construction. Please forward all design plan revisions as the project develops to prevent construction delays. Water service will be provided in accordance with Maine Public Utility Commission rules. If you have any additional questions, please do not hesitate to contact our office at 1-800-287-1643 or by email at Marcus.Knipp@mainewater.com. We look forward to working with you throughout design and construction.

Sincerely,
The Maine Water Company

A handwritten signature in black ink, appearing to read "M. Knipp".

Marcus Knipp, E.I.T.
Engineer

From: [Marcus Knipp](#)
To: jgagnon@oakpoint.com
Subject: RE: 69 Adams St - Biddeford - Request for Ability to Serve Letter
Date: Friday, June 11, 2021 2:37:25 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[Ability to Serve - 69 Adams St - Adams Point.pdf](#)

Hi Jack,

Attached is an ability to serve determination for your review. Also some screenshots showing approximate waterline location around the proposed Birch Street connection. (Locations of waterline infrastructure are only approximate and must be field verified prior to construction)





Let me know once a utility plan is proposed and I'll provide comments before moving to our final approval process.

Thanks,
Have a good weekend.

Marcus

Marcus Knipp, E.I.T.
Engineer



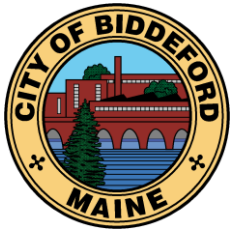
93 Industrial Park Road
Saco, ME 04072
Office: 207-294-6943
Cell: 207-468-2089

From: jgagnon@oakpoint.com <jgagnon@oakpoint.com>
Sent: Friday, June 11, 2021 9:58 AM
To: Marcus Knipp <Marcus.Knipp@MaineWater.com>
Subject: RE: 69 Adams St - Biddeford - Request for Ability to Serve Letter

Please note: THIS EMAIL ORIGINATED FROM AN EXTERNAL SOURCE.

Thanks!

7. Ability to Serve Letter from Tom Milligan Regarding Sanitary Sewer Service



City of Biddeford, Maine

City of Biddeford

Public Works Department / Engineering Division
P.O. Box 586 • 205 Main Street, Suite 301
Biddeford, ME 04005
Phone: (207) 284-9118 • Fax: (207) 571-0662

City of Biddeford, Maine
Wastewater Department
205 Main Street • PO Box 586 • Biddeford, Maine 04005-0586
Telephone 207 284-9118

Letter of Wastewater Treatment Plant Capacity to Serve

49 Adams Street Adams Point

Jacques Gagnon, PE
Oak Point Engineers
Main Street
Biddeford, Maine 04005

June 9, 2021

Brief description of project: **39 apartment units Adams Point Project**- Estimated flows: 8640 gpd.

Determination

You are proposing to build 39 apartment units on the subject parcel. You have indicated that previously there was a 32-34 rooming house in a single structure located on this lot.

The City of Biddeford Wastewater Department has reviewed the request to serve the above-described project. It has been determined that at this time the City has sufficient capacity at the City's Wastewater Treatment Facilities to serve the above described project. It is estimated that 8640 gpd of flow will be generated from the project. Changes to the project from that presented to this department may require a new review of the request for ability to serve. This determination will be effective for a period of one year from the date above.

Upon approval of the Planning Board the applicant must make application for sewer service. Flow amounts for the project will be determined at the time application is made and may or may not be the amount stated above. The applicant will be required to pay all fees including all impact fees based on the flow amount calculated at the time application is made and prior to the issuance of any building permits.

This Capacity to Serve Letter is intended only to state that the City of Biddeford Wastewater Treatment Plant Facility's ability to treat the flow from the above stated project once it is received at the treatment facility. The Planning Department, Engineering Department or other persons from the Wastewater Department may require further studies or documentation regarding the impact on the City's sewer collection system or its components.

205 Main Street, Biddeford, ME 04005 P: 207.284.9313 F: 207.571.0678 www.biddefordmaine.org

*The City of Biddeford is an equal opportunity provider. To file a complaint, write to
Human Resource Director, 205 Main Street Biddeford, ME 04005, or call (207) 286-0593.*

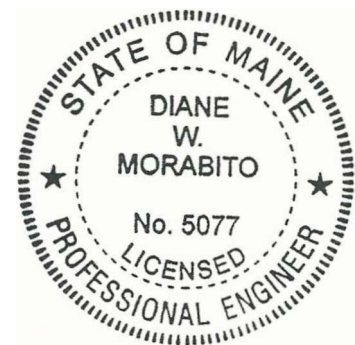
Thomas Milligan, PE
City Engineer
City of Biddeford Engineering Department
Tom.milligan@biddefordmaine.org
207-284-9118

CC: Jeff Demers, Public Works/Wastewater Director
Roby Fecteau, Code Enforcement
Greg Tansley, City Planner
Alex Buechner, Superintendent

8. Traffic Impact Study

**TRAFFIC IMPACT STUDY
ADAMS POINT APARTMENTS
BIDDEFORD, MAINE**

April 19, 2021



Prepared For:

Diane W. Morabito

**Southern Maine Affordable Housing
22 South Street
Biddeford, Maine 04005**

Prepared by:



A TFC Company

40 Forest Falls Drive, Suite 2 • Yarmouth, Maine 04096 • +1.207.817.5440 • sewall.com • info@sewall.com

INTRODUCTION

The purpose of this report is to summarize a traffic impact study performed by James W. Sewall Company (Sewall) for the proposed Adams Point apartments in Biddeford, Maine. The site location, at the end of Adams Street, is shown on the map in Figure 1. There will be thirty-three (33) affordable apartments in a five (5) story building.

This report details the traffic analysis which determines the expected number of trips to be generated by the residential units and any off-site impacts on level of service or safety for local City of Biddeford approval purposes.

It is understood that construction of the apartments is expected to begin in 2022 with occupancy expected to be completed in the spring of 2023. Hence, 2023 was selected as the study year for traffic analysis purposes.

TRIP GENERATION ANALYSIS

The number of trips to be generated by the proposed apartments was estimated utilizing the latest Institute of Transportation Engineers (ITE) "Trip Generation, 10th edition". Land use code (LUC) 221 – Multifamily Housing (mid-rise) was utilized on the basis of 33 dwelling units. The results are summarized below:

<u>Time Period</u>	ITE TRIP GENERATION
	<u>One-way Trips</u>
Weekday	180
Weekday AM Peak Hour	12
Entering	3
Exiting	9
Weekday PM Peak Hour	15
Entering	9
Exiting	6

The above results show that Adams Point apartments are expected to generate 180 one-way trips (90 roundtrips) on a daily basis (weekday). Twelve (12) one-way trips will be generated in the AM peak hour with fifteen (15) during the PM peak hour. This level of traffic would not be expected to have a significant impact off-site on traffic operations beyond the site drive.

However, to assess level of service to meet the requirements of the Biddeford ordinances and to assure no capacity concerns, traffic analysis was conducted for the intersection of Adams Street and Jefferson Street. Given the residential use, with similar AM and PM volumes, both the weekday AM and PM peak hours were initially selected as analysis periods.

TRAFFIC VOLUMES

Turning movement/classification counts were conducted by Sewall during the weekday AM (7:00 – 9:00) and PM (3:00 – 6:00) peak hour periods at the intersection of Adams Street and Jefferson Street to determine existing volumes. The AM peak hour occurred from 7:45 to 8:45 while the PM peak hour occurred from 4:00 – 5:00 PM. The count records are included in the appendix. The counts were factored to 30th highest hour conditions using Maine Department of Transportation (MaineDOT) urban group mean factors. These volumes typically occur under peak summer conditions in July and August in Maine. The resulting 2021 summer volumes are shown in Figure 2. The results show that the PM peak hour volumes are approximately 55 % greater than the AM volumes. Given this and the limited trips expected to be generated by the apartments, the PM peak hour was selected as the analysis period.

The trip assignments for Adams Point were based upon the travel patterns recorded during the counts. The resulting trip assignments are shown in Figure 3. Based upon the trip assignments the new residential apartments are expected to have a minimal impact on off-site traffic operations. Generally, a project won't have an impact on traffic operations unless it generates in excess of 25 lane hour trips. Based upon the trip assignments, Adams point will generate a maximum of six lane hour trips in the PM peak and nine during the AM peak hour. Given these trip assignments the study area would typically only extend through the site drive intersection, but it was extended through the intersection of Jefferson Street to evaluate impact on nearby intersections.

Existing average annual daily traffic (AADT) data for the area was obtained from "Traffic Volume Counts, 2019 and 2014 Annual Reports", published by MaineDOT. This data is summarized below:

<u>Location Description</u>	Average Annual Daily Traffic				
	<u>2010</u>	<u>2013</u>	<u>2016</u>	<u>2018</u>	<u>2019</u>
Adams Street, south of Main Street	---	3410	3580	3990	3690
Jefferson Street, se of Washington St	---	5650	5680	---	5520
Alfred Street, sw of Pool Street	11770	---	11030	---	10440

<u>Location Description</u>	<u>2010</u>	<u>2013</u>	<u>2016</u>	<u>2018</u>	<u>2019</u>
Alfred Street, north of Union Street	---	11090	11030	---	11190
South Street, east of Route 1	---	3700	3540	---	---
South Street, west of Adams Street	---	930	870	---	710

As seen above, most locations showed declining or steady volumes during the longer-term nine-year period. Most locations also showed declining volumes for the most recent short-term period. Based upon this historical data, a 1 % growth rate was utilized to project existing 2021 volumes to base 2023 conditions.

The City of Biddeford Planner was contacted to determine what other approved (but unbuilt) developments are expected to significantly impact Jefferson Street or Adams Street volumes, which need to be considered in the 2023 traffic analysis. The Planner identified The Riverdam and Draft Room project as the most recent. The Traffic Impact Study for the project was prepared by William Bray. Both other development trips from previously approved projects, as well as the Riverdam project, were obtained from that study. These other development volumes are shown in Figure 4. The projected 2023 No Build volumes, based upon a 1 % traffic growth rate, with consideration of the other development projects, are shown in Figure 5. Lastly, the projected Build 2023 volumes for the PM peak hour analysis period are shown in Figure 6.

CAPACITY ANALYSIS

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for unsignalized intersections is based upon average control delay per vehicle for each minor, opposed movement, as defined in the following table excerpted from the 2010 "Highway Capacity Manual":

Unsignalized Intersection Level of Service

<u>LOS</u>	<u>Delay Range</u>
A	< = 10.0 seconds
B	> 10.0 and <= 15.0
C	> 15.0 and <= 25.0
D	> 25.0 and <= 35.0
E	> 35.0 and <= 50.0
F	> 50.0

UNSIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was determined for the unsignalized intersection of Adams and Jefferson Streets for existing 2021 and projected 2023 No Build and Build conditions using Synchro 10 and SimTraffic, the average of five (5) simulation runs. The results are provided in the appendix and are summarized below:

<u>Approach</u>	Adams Street & Jefferson Street PM Peak Hour Level of Service		
	<u>Existing 2021</u>	<u>No Build 2023</u>	<u>Build 2023</u>
Jefferson Street Eastbound	A (0.2)	A (0.3)	A (0.2)
Jefferson Street Westbound	A (0.6)	A (0.8)	A (0.7)
Adams Street Northbound	A (5.9)	A (7.0)	A (7.3)
Adams Street Southbound	A (7.3)	A (8.3)	A (8.6)
Overall Intersection	A (3.4)	A (4.1)	A (4.3)

As seen above, Adams Street currently operates at a good LOS “A” during the PM peak hour with all approaches also at LOS “A”. The same level of service “A” is expected for all approaches under 2023 build volumes showing no significant delay. These results demonstrate the negligible impact off-site on traffic operations due to the new residential units, a 0.2 second increase in delay due to the increased volumes.

SAFETY ANALYSIS

ACCIDENT REVIEW

The Maine Department of Transportation uses two criteria to determine high crash locations (HCLs). The first is the critical rate factor (CRF), which is a measure of the accident rate. A CRF greater than one indicates a location which has a higher than expected crash rate. The expected rate is calculated as a statewide average of similar facilities.

The second criterion, which must also be met, is based upon the number of accidents that occur at a particular location. Eight or more accidents must occur over the three-year study period for the location to be considered a high crash location. The

MaineDOT Map Viewer was reviewed for any high crash locations within the vicinity of the site. Two high crash locations were identified for the most recent three-year period (2017 – 2019) as noted below:

<u>Location Description</u>	<u># of Acc.</u>	<u>CRF</u>
Intersection of Adams and Jefferson Streets	8	2.67
Intersection of Jefferson and Washington Streets	11	3.69

Collision diagrams were obtained from MaineDOT for both intersections to determine if there are any accident patterns or trends, which could indicate a potentially correctable safety deficiency. The diagrams are evaluated as follows:

Intersection of Adams Street and Jefferson Street

There were four accidents in 2017, three in 2018 and one in 2019. Three were angle collisions exiting Adams Street northbound while one was an angle involving a southbound Adams Street vehicle. All angle collisions were attributed to failure to yield. Two of the accidents involved pedestrians being struck in two of the crosswalks. One vehicle lost control turning and struck an oncoming vehicle. The last collision was a single vehicle that struck a pole while turning.

A field review was conducted to determine if there were any physical deficiencies or sight distance restrictions contributing to the angle collisions exiting Adams Street. Assuming the 25-mph urban unposted speed limit, a minimum of 250' of sight distance is recommended. Sight distance from both Adams Street approaches exceeds 300' to the southeast. To the northwest the sight distance is approximately 200', to the intersection of South and Crescent Streets. Given that vehicles are turning onto Adams Street at a slower rate of speed this sight distance is likely adequate. To improve overall safety, especially for pedestrians, given this densely developed urban area, Sewall recommends that All-way stop control be implemented at this intersection.

The capacity analysis was repeated for the 2023 build volumes under all-way stop control. Those results are presented in the following table contrasted with the two-way stop results:

Adams Street & Jefferson Street		
Build PM Peak Hour Level of Service		
<u>Approach</u>	<u>Two-Way Stop</u>	<u>All-Way Stop</u>
Jefferson Street Eastbound	A (0.2)	A (6.0)
Jefferson Street Westbound	A (0.7)	A (6.3)
Adams Street Northbound	A (7.3)	A (5.1)
Adams Street Southbound	A (8.6)	A (6.2)
Overall Intersection	A (4.3)	A (6.2)

As seen above, all approaches and the intersection would remain at LOS “A” under all-way stop control. Queue lengths were also evaluated for 2023 Build volumes for both stop control options to assure that the change to all-way stop would not result in excessive queues. The results are summarized with the link lengths below:

Adams Street & Jefferson Street			
Build 2023 PM Peak Hour 95th Percentile Queues (Feet)			
<u>Approach</u>	<u>Link Length</u>	<u>Two-Way Stop</u>	<u>All-Way Stop</u>
Jefferson Street Eastbound	165	14	66
Jefferson Street Westbound	200	16	90
Adams Street Northbound	300+	44	42
Adams Street Southbound	140	121	92

As seen above, all projected queue lengths are contained within the existing link lengths creating no interference concerns. The only approach where queue lengths are approaching the link length is southbound Adams Street. Under the all-way stop control option this queue length is reduced from 121 to 92 feet. Given these capacity and queue results, all-way stop control is recommended for the Adams Street and Jefferson Street intersection to improve safety and reduce crashes.

Intersection of Jefferson Street and Washington Street

There were five accidents in 2017 and six in 2018. No accidents were reported at the intersection in 2019. The intersection is equipped with an existing flashing beacon. Six of the collisions were angles exiting Washington Street northbound while the remaining five were angle collisions involving southbound Washington Street vehicles. Contributing causes were cited as failure to yield, excessive speed, and stop sign running.

A field review was also conducted of this intersection to see if any physical deficiencies are contributing to the accidents. The field review found generally adequate sight distances but noted that from the Washington Street approaches, there are some partial obstructions to sight lines, such as the flashing beacon pole and controller box combination or the fence line.

The recommended provision of all-way stop control at the adjacent Adams Street intersection may help to slow speeds on Jefferson Street and improve safety at this intersection as well given that these two intersections are just 250' apart. Given the provision of an existing flashing beacon and the proposed all-way stop at Adams Street, no other action is recommended at this intersection.

SUMMARY AND RECOMMENDATIONS

The Adams Point apartments are expected to generate just 12 to 15 one-way trips during peak hours. Given the traffic count results and the limited trip generation, the weekday PM peak hour was selected for the traffic analysis. Based upon the limited trip assignments, the study area was defined as extending from the site through the intersection of Jefferson Street to evaluate off-site impact on nearby intersections.

In terms of capacity, the unsignalized intersection of Adams Street and Jefferson Street currently operates at LOS "A" with all approaches also at LOS "A". LOS "A" is projected for all approaches and overall, under projected 2023 Build volumes showing no significant impact.

In terms of safety, there are two existing high crash locations within the study area. Based upon a review of collision diagrams and a field review, Sewall recommends that the intersection of Adams Street and Jefferson Street be converted to All-way stop control. The intersection of Jefferson Street and Washington Street is equipped with a flashing beacon. The implementation of all-way stop control at Adams Street will likely also slow travel speeds at Washington Street improving safety there given that there is just 250' between these intersections.

The capacity analysis was repeated for the recommended All-way Stop control and Build volumes at the Adams Street and Jefferson Street intersection to assure acceptable operations. All approaches will operate at LOS "A" with no significant delays. Additionally, the queue length on southbound Adams Street, the only approach where queues were approaching link length, will be reduced under the recommended all-way stop control.



Figure 1

Site Location Map

Adams Point Apartments

Biddeford, Maine





-- AM
(--) PM

AM Peak Hour: 7:45-8:45
PM Peak Hour: 4:00-5:00

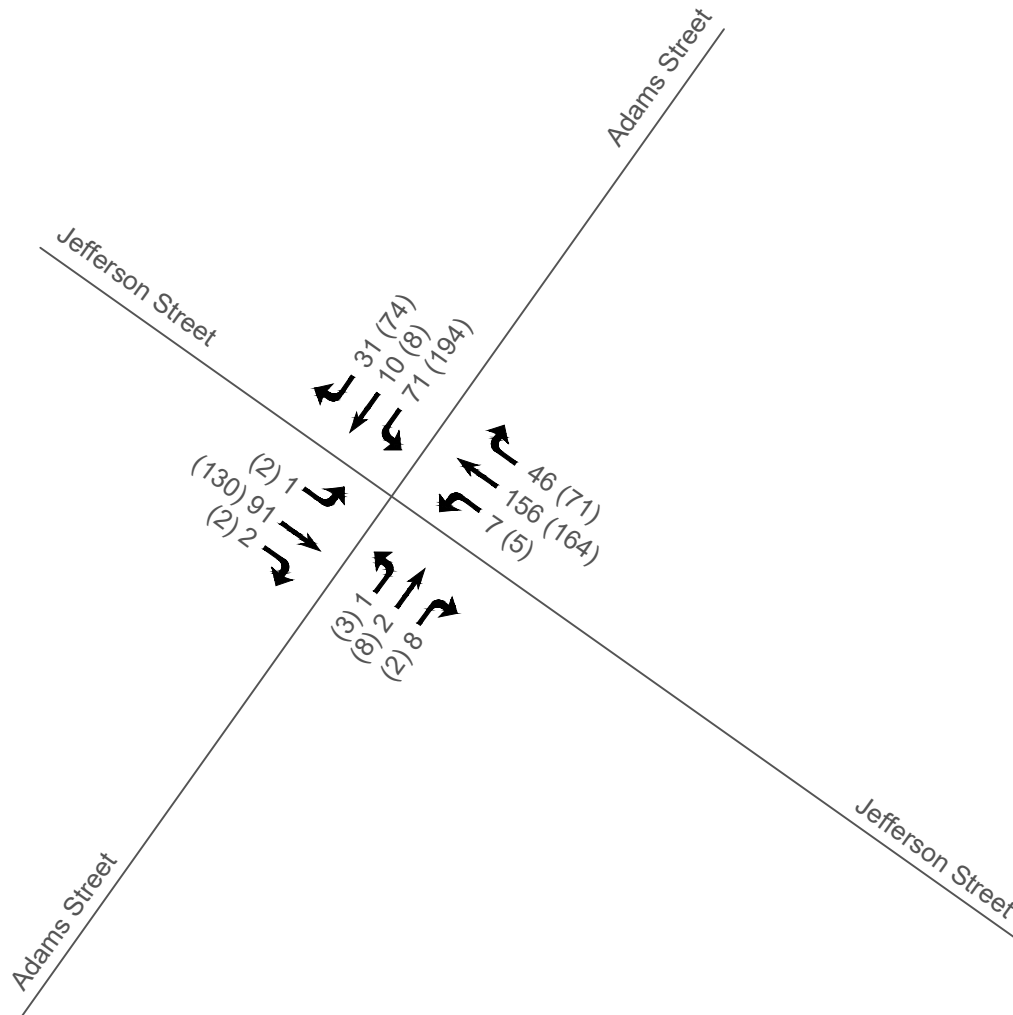


Figure 2

Existing 2021 Peak Hr Volumes

Adam's Point Apartments

Biddeford, Maine



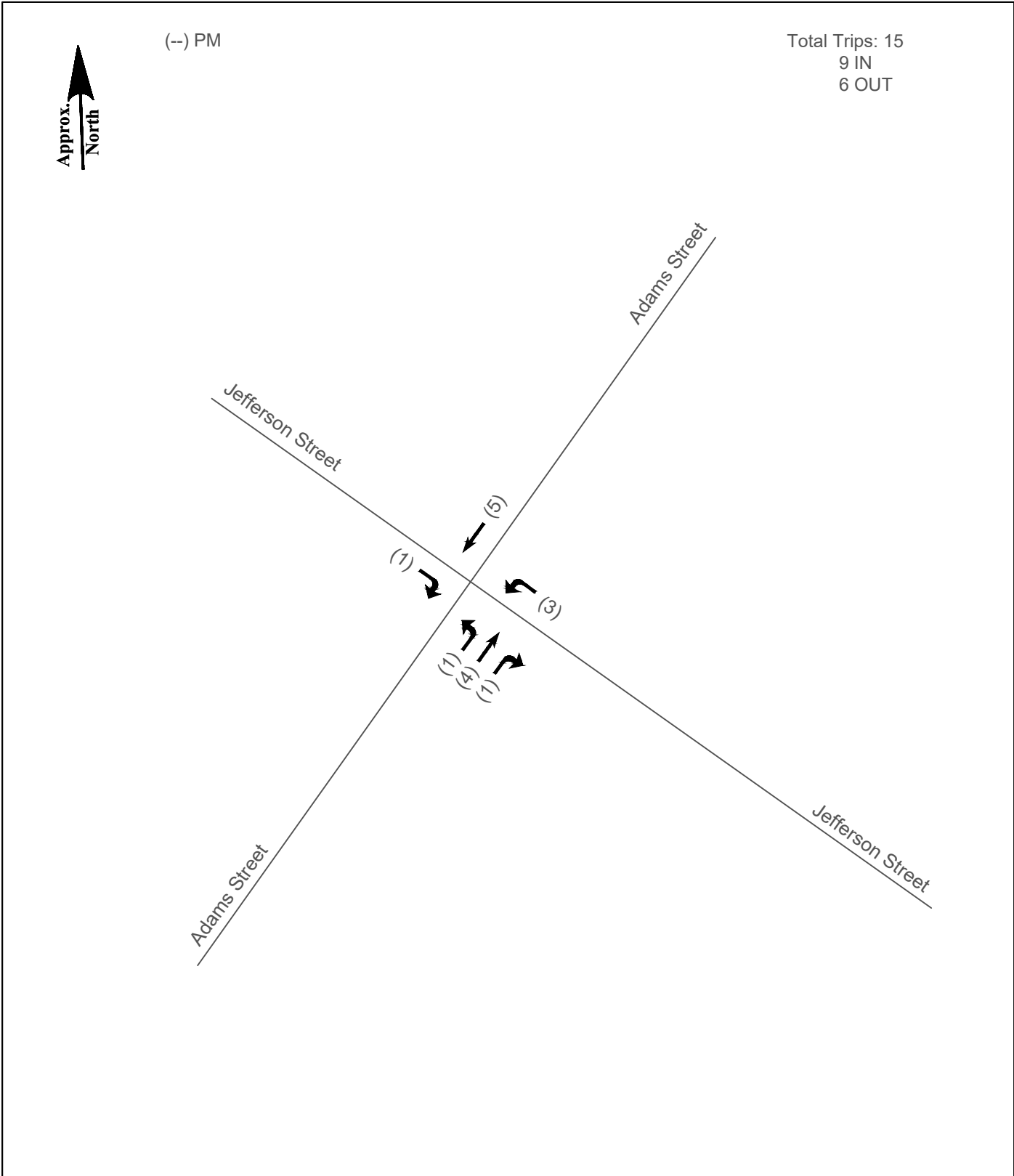


Figure 3

Trip Assignments - PM Peak Hr	
Adam's Point Apartments	
Biddeford, Maine	



(--) PM

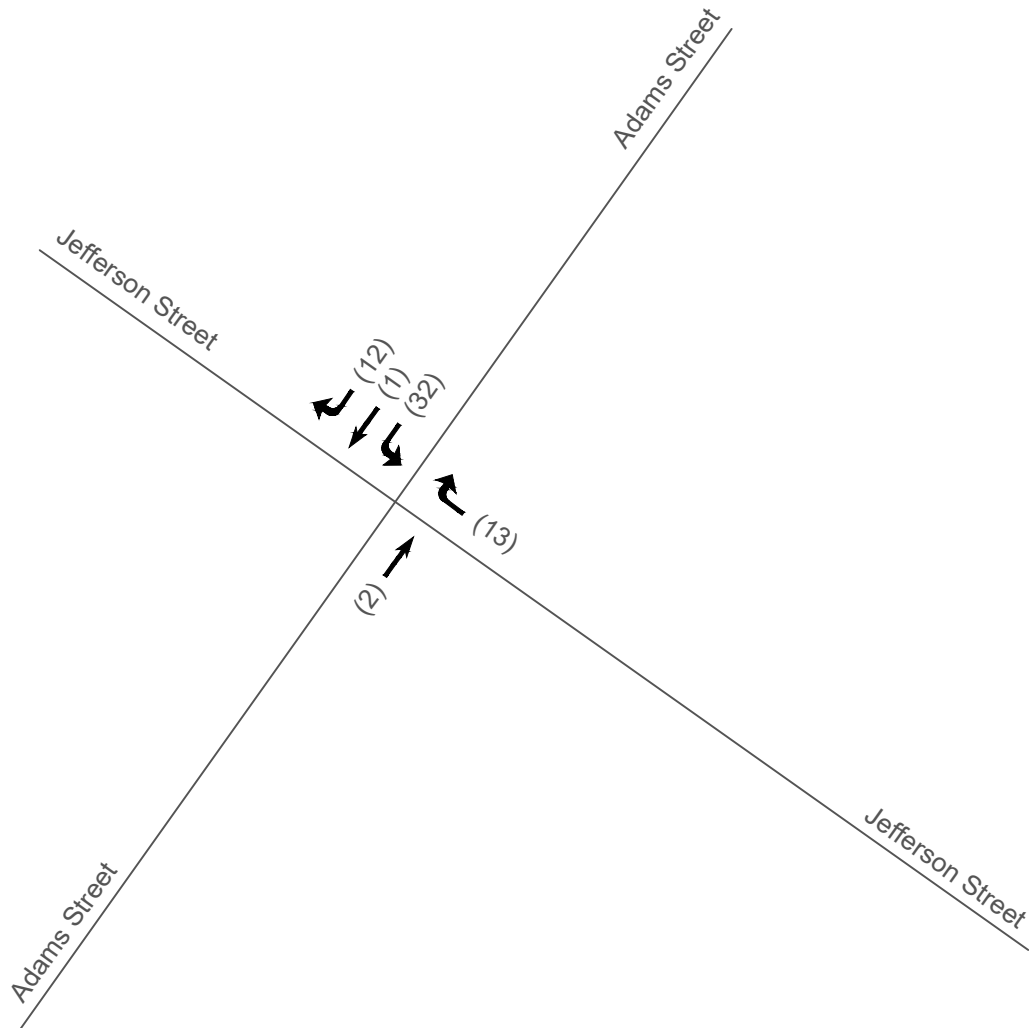


Figure 4

Other Developments - PM Peak Hr
Adam's Point Apartments
Biddeford, Maine





(-- PM

PM Peak Hour: 4:00-5:00

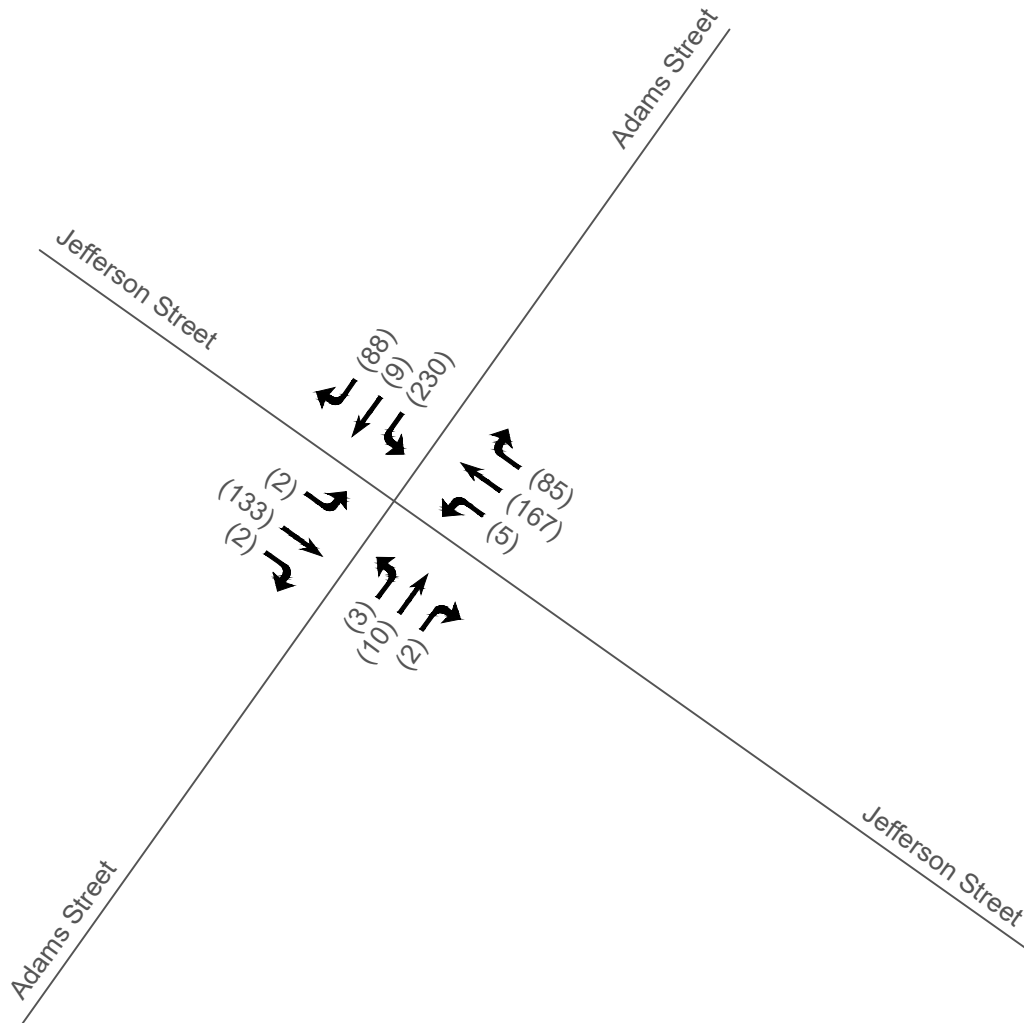


Figure 5

No Build 2023 PM Peak Hr Volumes
Adam's Point Apartments
Biddeford, Maine





(--) PM

PM Peak Hour: 4:00-5:00

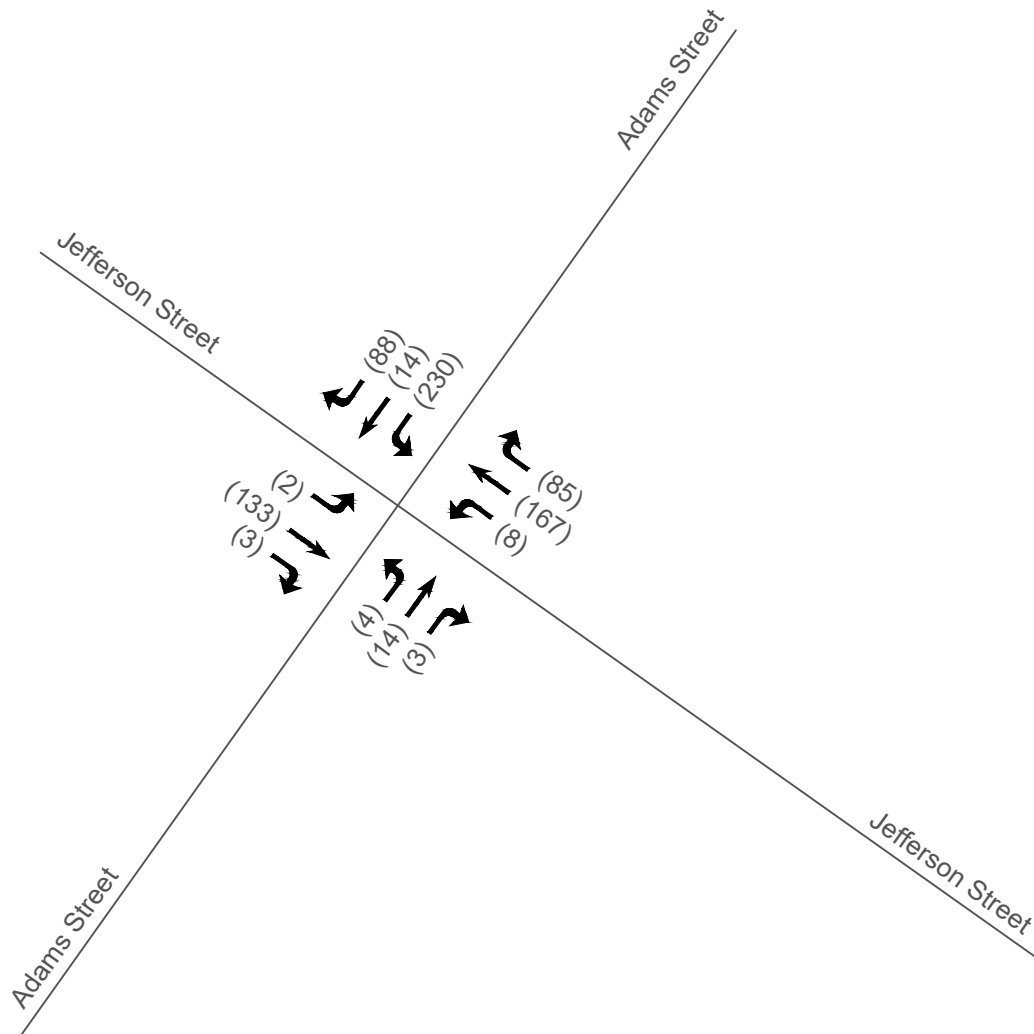


Figure 6

Build 2023 Peak PM Hr Volumes
Adam's Point Apartments
Biddeford, Maine



APPENDIX

Turning Movement Counts

Capacity Analysis

Collision Diagrams

Sewall

40 Forest Falls Drive
Yarmouth, Maine 04096

TITLE: Adams & Jefferson AM
TOWN: Biddeford
COUNTER: NAB
WEATHER: Clear

File Name : Adams&Jefferson AM
Site Code : 99999999
Start Date : 4/6/2021
Page No : 1

Groups Printed- PV - LV - HV

	Adams Street From North					Jefferson Street From East					Adams Street From South					Jefferson Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	14	1	4	1	20	0	12	13	0	25	1	1	0	0	2	1	5	0	2	8	55
07:15 AM	12	2	4	0	18	1	20	6	1	28	2	1	2	1	6	0	11	1	1	13	65
07:30 AM	24	2	13	0	39	0	23	10	0	33	0	1	2	1	4	2	26	1	0	29	105
07:45 AM	20	4	11	0	35	2	29	12	1	44	0	1	1	0	2	0	28	1	0	29	110
Total	70	9	32	1	112	3	84	41	2	130	3	4	5	2	14	3	70	3	3	79	335
08:00 AM	8	3	5	0	16	1	28	8	0	37	0	0	2	2	4	1	12	0	0	13	70
08:15 AM	16	1	5	1	23	1	25	13	0	39	1	1	2	1	5	0	16	1	1	18	85
08:30 AM	20	1	7	1	29	2	58	8	1	69	0	0	2	1	3	0	32	0	0	32	133
08:45 AM	19	1	7	1	28	0	38	13	0	51	0	1	0	5	6	0	18	0	0	18	103
Total	63	6	24	3	96	4	149	42	1	196	1	2	6	9	18	1	78	1	1	81	391
Grand Total	133	15	56	4	208	7	233	83	3	326	4	6	11	11	32	4	148	4	4	160	726
Apprch %	63.9	7.2	26.9	1.9		2.1	71.5	25.5	0.9		12.5	18.8	34.4	34.4		2.5	92.5	2.5	2.5		
Total %	18.3	2.1	7.7	0.6	28.7	1	32.1	11.4	0.4	44.9	0.6	0.8	1.5	1.5	4.4	0.6	20.4	0.6	0.6	22	
PV	131	15	55	3	204	7	226	82	3	318	4	6	11	10	31	4	141	4	4	153	706
% PV	98.5	100	98.2	75	98.1	100	97	98.8	100	97.5	100	100	100	90.9	96.9	100	95.3	100	100	95.6	97.2
LV	2	0	0	1	3	0	7	1	0	8	0	0	0	1	1	0	7	0	0	7	19
% LV	1.5	0	0	25	1.4	0	3	1.2	0	2.5	0	0	0	9.1	3.1	0	4.7	0	0	4.4	2.6
HV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% HV	0	0	1.8	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1

Sewall

40 Forest Falls Drive
Yarmouth, Maine 04096

TITLE: Adams & Jefferson AM
TOWN: Biddeford
COUNTER: NAB
WEATHER: Clear

File Name : Adams&Jefferson AM
Site Code : 999999999
Start Date : 4/6/2021
Page No : 2

	Adams Street From North					Jefferson Street From East					Adams Street From South					Jefferson Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	20	4	11	0	35	2	29	12	1	44	0	1	1	0	2	0	28	1	0	29	110
08:00 AM	8	3	5	0	16	1	28	8	0	37	0	0	2	2	4	1	12	0	0	13	70
08:15 AM	16	1	5	1	23	1	25	13	0	39	1	1	2	1	5	0	16	1	1	18	85
08:30 AM	20	1	7	1	29	2	58	8	1	69	0	0	2	1	3	0	32	0	0	32	133
Total Volume	64	9	28	2	103	6	140	41	2	189	1	2	7	4	14	1	88	2	1	92	398
% App. Total	62.1	8.7	27.2	1.9		3.2	74.1	21.7	1.1		7.1	14.3	50	28.6		1.1	95.7	2.2	1.1		
PHF	.800	.563	.636	.500	.736	.750	.603	.788	.500	.685	.250	.500	.875	.500	.700	.250	.688	.500	.250	.719	.748
PV	63	9	27	2	101	6	136	41	2	185	1	2	7	4	14	1	82	2	1	86	386
% PV	98.4	100	96.4	100	98.1	100	97.1	100	100	97.9	100	100	100	100	100	100	93.2	100	100	93.5	97.0
LV	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	0	6	0	0	6	11
% LV	1.6	0	0	0	1.0	0	2.9	0	0	2.1	0	0	0	0	0	0	6.8	0	0	6.5	2.8
HV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% HV	0	0	3.6	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
	71	10	31			7	156	46			1	2	8			1	91	2			

$$\text{Gr. I} = 0.97/0.87 = 1.115$$

Sewall

40 Forest Falls Drive
Yarmouth, Maine 04096

TITLE: Adams & Jefferson PM
TOWN: Biddeford
COUNTER: NAB
WEATHER: Clear

File Name : ADAMS&JEFFERSON PM
Site Code : 99999999
Start Date : 3/24/2021
Page No : 1

Groups Printed- PV - LV - HV

	Adams Street From North					Jefferson Street From East					Adams Street From South					Jefferson Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	31	1	10	0	42	3	36	15	2	56	1	2	1	2	6	4	26	0	0	30	134
03:15 PM	23	2	9	1	35	1	43	18	2	64	1	1	1	2	5	1	21	0	0	22	126
03:30 PM	34	6	14	2	56	1	34	14	0	49	2	2	1	4	9	2	28	4	1	35	149
03:45 PM	22	1	10	0	33	0	44	13	0	57	1	4	1	2	8	2	24	1	0	27	125
Total	110	10	43	3	166	5	157	60	4	226	5	9	4	10	28	9	99	5	1	114	534
04:00 PM	43	4	17	1	65	1	44	15	1	61	1	1	1	1	4	0	26	1	0	27	157
04:15 PM	49	1	22	1	73	0	35	10	0	45	1	4	0	1	6	0	32	1	0	33	157
04:30 PM	35	2	16	0	53	2	42	16	0	60	0	2	1	1	4	0	34	0	0	34	151
04:45 PM	43	0	10	0	53	1	23	21	0	45	1	0	0	4	5	2	22	0	1	25	128
Total	170	7	65	2	244	4	144	62	1	211	3	7	2	7	19	2	114	2	1	119	593
05:00 PM	41	1	14	6	62	1	48	21	0	70	1	3	0	2	6	1	15	1	0	17	155
05:15 PM	39	2	8	6	55	0	30	9	0	39	1	1	0	2	4	0	23	3	0	26	124
05:30 PM	29	2	12	5	48	3	26	9	0	38	0	1	2	2	5	2	27	2	0	31	122
05:45 PM	27	3	9	0	39	0	21	11	0	32	1	0	0	6	7	1	23	1	0	25	103
Total	136	8	43	17	204	4	125	50	0	179	3	5	2	12	22	4	88	7	0	99	504
Grand Total	416	25	151	22	614	13	426	172	5	616	11	21	8	29	69	15	301	14	2	332	1631
Apprch %	67.8	4.1	24.6	3.6		2.1	69.2	27.9	0.8		15.9	30.4	11.6	42		4.5	90.7	4.2	0.6		
Total %	25.5	1.5	9.3	1.3	37.6	0.8	26.1	10.5	0.3	37.8	0.7	1.3	0.5	1.8	4.2	0.9	18.5	0.9	0.1	20.4	
PV	416	25	149	19	609	13	426	172	5	616	11	21	7	27	66	15	300	14	1	330	1621
% PV	100	100	98.7	86.4	99.2	100	100	100	100	100	100	100	87.5	93.1	95.7	100	99.7	100	50	99.4	99.4
LV	0	0	0	3	3	0	0	0	0	0	0	0	1	2	3	0	1	0	1	2	8
% LV	0	0	0	13.6	0.5	0	0	0	0	0	0	0	12.5	6.9	4.3	0	0.3	0	50	0.6	0.5
HV	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% HV	0	0	1.3	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1

Sewall

40 Forest Falls Drive
Yarmouth, Maine 04096

TITLE: Adams & Jefferson PM
TOWN: Biddeford
COUNTER: NAB
WEATHER: Clear

File Name : ADAMS&JEFFERSON PM
Site Code : 99999999
Start Date : 3/24/2021
Page No : 2

	Adams Street From North					Jefferson Street From East					Adams Street From South					Jefferson Street From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	43	4	17	1	65	1	44	15	1	61	1	1	1	1	4	0	26	1	0	27	157
04:15 PM	49	1	22	1	73	0	35	10	0	45	1	4	0	1	6	0	32	1	0	33	157
04:30 PM	35	2	16	0	53	2	42	16	0	60	0	2	1	1	4	0	34	0	0	34	151
04:45 PM	43	0	10	0	53	1	23	21	0	45	1	0	0	4	5	2	22	0	1	25	128
Total Volume	170	7	65	2	244	4	144	62	1	211	3	7	2	7	19	2	114	2	1	119	593
% App. Total	69.7	2.9	26.6	0.8		1.9	68.2	29.4	0.5		15.8	36.8	10.5	36.8		1.7	95.8	1.7	0.8		
PHF	.867	.438	.739	.500	.836	.500	.818	.738	.250	.865	.750	.438	.500	.438	.792	.250	.838	.500	.250	.875	.944
PV	170	7	64	2	243	4	144	62	1	211	3	7	2	7	19	2	113	2	0	117	590
% PV	100	100	98.5	100	99.6	100	100	100	100	100	100	100	100	100	100	100	99.1	100	0	98.3	99.5
LV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	2
% LV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	100	1.7	0.3
HV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% HV	0	0	1.5	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
	194	8	74			5	164	71			3	8	2			2	130	2			

Gr. I factor = 0.99/.87 = 1.138

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	660	640	672	671	633	657
Vehs Exited	661	645	673	676	630	657
Starting Vehs	5	9	6	8	2	5
Ending Vehs	4	4	5	3	5	4
Travel Distance (mi)	126	121	127	128	119	124
Travel Time (hr)	5.9	5.6	5.9	5.8	5.5	5.7
Total Delay (hr)	0.8	0.8	0.8	0.7	0.7	0.8
Total Stops	300	307	291	269	267	287
Fuel Used (gal)	5.1	5.0	5.1	5.2	4.7	5.0

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	660	640	672	671	633	657
Vehs Exited	661	645	673	676	630	657
Starting Vehs	5	9	6	8	2	5
Ending Vehs	4	4	5	3	5	4
Travel Distance (mi)	126	121	127	128	119	124
Travel Time (hr)	5.9	5.6	5.9	5.8	5.5	5.7
Total Delay (hr)	0.8	0.8	0.8	0.7	0.7	0.8
Total Stops	300	307	291	269	267	287
Fuel Used (gal)	5.1	5.0	5.1	5.2	4.7	5.0

3: Adams Street & Jefferson Street Performance by approach

Approach	SE	NW	NE	SW	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.3	0.2
Total Del/Veh (s)	0.2	0.6	5.9	7.3	3.4

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	3.9

Intersection: 3: Adams Street & Jefferson Street

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	19	23	31	126
Average Queue (ft)	1	1	12	62
95th Queue (ft)	8	10	36	99
Link Distance (ft)	261	625	506	455
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	697	714	737	728	735	721
Vehs Exited	698	719	728	734	737	723
Starting Vehs	5	9	0	10	7	7
Ending Vehs	4	4	9	4	5	4
Travel Distance (mi)	131	136	140	140	139	137
Travel Time (hr)	6.2	6.6	6.5	6.8	6.6	6.5
Total Delay (hr)	0.9	1.0	0.9	1.1	1.0	1.0
Total Stops	321	345	324	347	353	338
Fuel Used (gal)	5.3	5.7	5.7	5.8	5.7	5.6

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	697	714	737	728	735	721
Vehs Exited	698	719	728	734	737	723
Starting Vehs	5	9	0	10	7	7
Ending Vehs	4	4	9	4	5	4
Travel Distance (mi)	131	136	140	140	139	137
Travel Time (hr)	6.2	6.6	6.5	6.8	6.6	6.5
Total Delay (hr)	0.9	1.0	0.9	1.1	1.0	1.0
Total Stops	321	345	324	347	353	338
Fuel Used (gal)	5.3	5.7	5.7	5.8	5.7	5.6

3: Adams Street & Jefferson Street Performance by approach

Approach	SE	NW	NE	SW	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.3	0.2
Total Del/Veh (s)	0.3	0.8	7.0	8.3	4.1

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	4.6

Intersection: 3: Adams Street & Jefferson Street

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	43	35	150
Average Queue (ft)	2	2	14	72
95th Queue (ft)	16	20	39	120
Link Distance (ft)	261	625	506	455
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	729	730	752	741	745	739
Vehs Exited	730	732	744	746	747	739
Starting Vehs	5	9	0	10	7	7
Ending Vehs	4	7	8	5	5	5
Travel Distance (mi)	139	139	143	142	141	141
Travel Time (hr)	6.6	6.7	6.7	6.9	6.8	6.7
Total Delay (hr)	1.0	1.1	0.9	1.1	1.1	1.0
Total Stops	335	365	330	358	354	349
Fuel Used (gal)	5.7	5.8	5.8	5.9	5.8	5.8

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	729	730	752	741	745	739
Vehs Exited	730	732	744	746	747	739
Starting Vehs	5	9	0	10	7	7
Ending Vehs	4	7	8	5	5	5
Travel Distance (mi)	139	139	143	142	141	141
Travel Time (hr)	6.6	6.7	6.7	6.9	6.8	6.7
Total Delay (hr)	1.0	1.1	0.9	1.1	1.1	1.0
Total Stops	335	365	330	358	354	349
Fuel Used (gal)	5.7	5.8	5.8	5.9	5.8	5.8

3: Adams Street & Jefferson Street Performance by approach

Approach	SE	NW	NE	SW	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.3	0.2
Total Del/Veh (s)	0.2	0.7	7.3	8.6	4.3

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	4.8

Intersection: 3: Adams Street & Jefferson Street

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	36	34	48	155
Average Queue (ft)	2	2	18	74
95th Queue (ft)	14	16	44	121
Link Distance (ft)	261	625	506	455
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	718	726	767	722	754	736
Vehs Exited	719	730	760	725	756	738
Starting Vehs	5	10	1	10	7	7
Ending Vehs	4	6	8	7	5	6
Travel Distance (mi)	137	138	145	138	143	140
Travel Time (hr)	7.0	7.2	7.5	7.1	7.5	7.2
Total Delay (hr)	1.5	1.6	1.6	1.6	1.7	1.6
Total Stops	718	729	763	720	756	737
Fuel Used (gal)	6.1	6.2	6.4	6.2	6.4	6.3

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	718	726	767	722	754	736
Vehs Exited	719	730	760	725	756	738
Starting Vehs	5	10	1	10	7	7
Ending Vehs	4	6	8	7	5	6
Travel Distance (mi)	137	138	145	138	143	140
Travel Time (hr)	7.0	7.2	7.5	7.1	7.5	7.2
Total Delay (hr)	1.5	1.6	1.6	1.6	1.7	1.6
Total Stops	718	729	763	720	756	737
Fuel Used (gal)	6.1	6.2	6.4	6.2	6.4	6.3

3: Adams Street & Jefferson Street Performance by approach

Approach	SE	NW	NE	SW	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.3	0.3
Total Del/Veh (s)	6.0	6.3	5.1	6.2	6.2

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	7.5

Intersection: 3: Adams Street & Jefferson Street

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	79	111	31	106
Average Queue (ft)	41	56	17	62
95th Queue (ft)	66	90	42	92
Link Distance (ft)	261	625	506	455
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

COUNTY: **YORK**

TOWN: **BIDDEFORD**

LOW NODE: **58701** HIGH NODE: **0000**

REGION: **1**

U/R: **URBAN**

DESCRIPTION: **Jct of Adams St & Jefferson St**

RTE # / RD #: **3110002** DATE DRAWN: **8/27/2020** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2017**

STUDY TO: **12/31/2019**

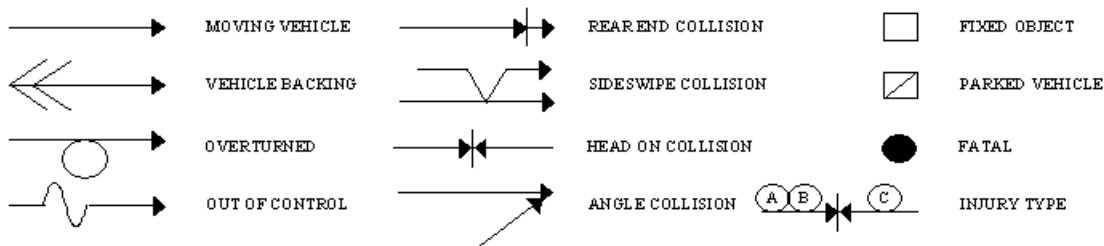
CRASH RATE: **1.24**

CRF: **2.66**

% INJURY: **25**

TOTAL CRASHES: **8**

LEGEND

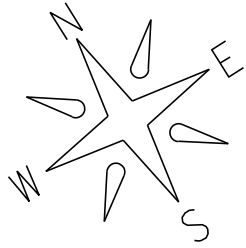


--- PATH OF: ☐ P PEDESTRIAN ☐ B BICYCLE ☐ A ANIMAL ☐ S SLED

PAVEMENT: D - DRY, I - ICY, W - WET, S - SNOW

WEATHER: C - CLEAR, F - FOG, R - RAIN, SL - SLEET, S - SNOW, CL - CLOUDY

TIME: A - AM, P - PM



STOP

18270 7-4-18 11:00A D/C Fail To Yield

Adams St.

Biddeford

Node: 58701

Study Period: 2017-2019

of Crashes: 8 / CRF: 2.66

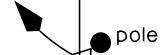
Prepared by Office of Safety (MP 8/27/20)

34230 11-13-17 3:15P W/R Fail To Yield



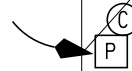
Jefferson St.

31900 10-26-17 12:40P
W/R Fail To Yield



40113 12-3-18 3:55P D/C Over corrected

31885 10-24-17 3:00P D/CL Reckless O.U.I.



76079 12-13-19 9:55A D/CL Fail To Yield

Jefferson St.

STOP

Adams St.

36816 12-4-17 12:55P D/C Fail To Yield

40140 12-13-18 1:15P D/C Fail To Yield

H. C. L. CRASH COLLISION DIAGRAM DATA PACKAGE

COUNTY: **YORK**

TOWN: **BERWICK**

LOW NODE: **58702** HIGH NODE: **0000**

REGION: **1**

U/R: **URBAN**

DESCRIPTION: **Jct of Jefferson St & Washington St**

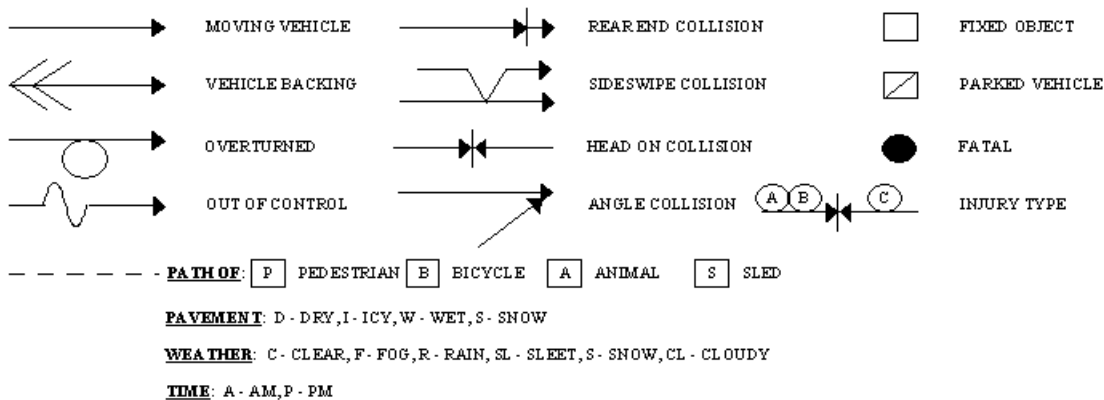
RTE # / RD #: **3110086** DATE DRAWN: **8/27/2020** DRAWN BY: **Michelle**

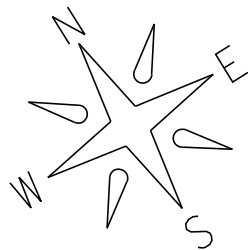
STUDY FROM: **1/1/2017**

STUDY TO: **12/31/2019**

CRASH RATE: **1.72** CRF: **3.69** % INJURY: **45.5** TOTAL CRASHES: **11**

LEGEND





STOP

17718 6-26-18 10:35A D/C Fail To Yield

Washington St.

Biddeford

Node: 58702

Study Period: 2017-2019

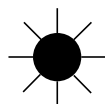
of Crashes: 11 / CRF 3.69

Prepared by Office of Safety (MP 8/27/20)

Pole

Jefferson St.

25215 9-4-18 8:10A D/C Ran Stop Sign
15958 6-4-18 4:50P W/R Fail To Yield
25215 9-4-18 8:10A D/C Ran Stop Sign
(B) 19146 7-10-18 12:05P D/C Fail To Yield
moped
(C)



29238 9-19-17 4:00P D/C Fail To Yield (C)

33328 10-29-18 12:20P W/R Fail To Yield

39006 12-10-17 12:35P SL/CL Fail To Yield

33872 11-10-17 4:30P D/C Ran Red Light

(C)
5446 2-9-17 12:25P S/S Speed
(B)
3688 2-3-17 2:45P D/CL Fail To Yield

Jefferson St.

STOP

 = Overhead Flasher

Washington St.

9. Geotechnical Report

The key to success starts with a solid foundation.
ENGINEERING | EXPLORATION | EXPERIENCE

Geotechnical Report

*Proposed Apartment Complex
Adams Street, Biddeford, ME*



Client

Southern Maine Affordable Housing
22 South Street
Biddeford, ME 04005

Project #: 21070
Date: 4/30/2021

Geotechnical Report

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Appendix A – Exploration Location Plan

Appendix B – Exploration Logs

Appendix C – Bedrock Recommendations

April, 30, 2021
SGS Project #: 21070

Southern Maine Affordable Housing
22 South Street
Biddeford, ME 04005
Attn: Guy Gagnon

Reference: Geotechnical Report – Proposed Apartment Complex
Adams Street, Biddeford, ME

Dear Guy;

Summit Geoengineering Services, Inc. (SGS) has completed a geotechnical investigation for the construction of the proposed site development referenced above. Our scope of services included the observation of twelve test pits and the preparation of this geotechnical report summarizing our findings and providing geotechnical recommendations.

Our scope of services for this project did not include an environmental site assessment or further investigation for the presence or absence of hazardous or toxic material on, below, or around the site. Any statements in this report, or on the exploration logs, regarding odors or unusual and suspicious conditions observed are for informational purposes and are not intended to constitute an environmental assessment.

1.0 Project Description

1.1 Proposed Construction

The project consists of a new 33-unit apartment complex. The building will have a footprint area of approximately 8820 square feet. The finished floor of the East side of the building is Elevation 128 feet and Elevation 140 feet on the West side of the building. A large parking lot will append the building and will connect to an access road that will outlet to the end of Adams street. A large cast in place retaining wall will be placed to the East of the site to construct the proposed access road and parking lot.

1.2 Existing Conditions

The existing site is moderately wooded with an old access road and two existing building foundations. These existing foundations and slabs will be removed before the construction of the new building. The existing grades within the site boundaries range from Elevation 98 feet near the East portion to 138 feet near the West portion. Based on the existing grades and the finished floor elevation of the East side (FFE 128 feet) of the building, up to 4 feet of fill and 6 feet of cut will be necessary. For the West side of the building (FFE 140 feet), up to 10 feet of fill will be necessary, if no basement or other area is proposed underneath the finished floor elevation.

The site grades were referenced from a plan entitled *Adams Point Housing* by Oak Point Associates, dated March 2021.

2.0 Explorations

2.1 Test Pits

Summit Geoengineering Services (SGS) observed the subsurface conditions on March, 12, 2021 with the excavation of 12 test pits. The explorations were completed by SGS using a Kubota mini tracked excavator. Each test pit was backfilled after completion.

Test pits were excavated to depths ranging from 1 foot to 8.5 feet (Elevations 104 feet to 136.5 feet). Soils were visually classified (*ASTM D2488*) and layering was determined from the ground surface using a measuring tape.

The test pit locations were determined by others and marked out by SGS prior to the excavation of the test pits. A test pit location plan and the test pit logs are included in *Appendix A* and *Appendix B*, respectively.

3.0 Subsurface Conditions

3.1 Soil

According to the *Surficial Geology Map* from the Maine Geological Survey, the soil around Adams Street in Biddeford, ME is classified as both Marine Regressive and Marine Shoreline. These formations are a mixture of sands and gravel.

From the explorations, the soil at this site generally consists of **topsoil** over **fill** over **marine shoreline** over bedrock.

The **topsoil** is generally described as dark brown fine sand silt with trace rootlets. It is generally loose to compact and moist. It is generally 0.5 feet to 1.5 feet thick. It is visually classified as ML, in accordance with the USCS system.

The existing **fill** is generally described as brown silty fine sand with gravel, some cobbles and boulders, and few pieces of rubble and occasional plastic wrappers and metal pieces. It is generally loose to compact and moist. Some portions of the existing fill extended to bedrock across the site. The fill is visually classified as SM, in accordance with the USCS system. The following table summarizes the description and thickness of fill for each test pit across the site:

FILL DESCRIPTION		
Location	Thickness (ft)	Description
TP-1	5.5	Silty fine-medium SAND. Some Gravel, angular Cobbles, & Boulders. Few roots and brick.
TP-2	6.5	Fine-medium SAND. Some Silt, Gravel, & Cobbles. Few small metal pieces, plastic wrappers, roots, & brick. Food wrapper found from 2011.
TP-3	2.5	Silty fine SAND. With Gravel. Some Cobbles. Bricks layered at the bottom of the test pit.
TP-4	7	Sandy SILT. With Gravel. Some Cobbles, shredded cloth, brick, rubble, one metal pipe, & rootlets. Trace Clay.
TP-5	6.5	Gravelly fine-medium SAND. Some plastic wrappers. Few Cobbles and rubble. Trace Silt.
TP-6	5.5	Gravelly medium-coarse SAND. Some porcelain & brick. Trace Silt & small metal pieces.
TP-7	3	Silty fine SAND. With rootlets. Some Gravel & Cobbles. Few brick & small metal pieces.
TP-8	---	No fill encountered. Bedrock very shallow.
TP-9	2	Fine Sandy SILT. Trace Gravel & angular Cobbles.
TP-10	5	Clayey SILT. Some Gravel.
TP-11	2.5	Fine Sandy SILT. With Gravel & large Boulders.
TP-12	---	No fill encountered. Bedrock very shallow

The **marine shoreline** is generally described as brown coarse sand with gravel and some cobbles and boulders. It is generally compact and moist. Where encountered, this layer extended to refusal on bedrock at depths ranging from 6 feet to 8.5 feet (Elevations 114 feet to 125 feet). The marine shoreline is visually classified as SP, in accordance with the USCS system.

In Test Pit 5 (TP-5) and TP-6, the upper layer of marine shoreline had a layer of red brown fine sandy silt that was soft to firm and moist. This layer was generally 0.5 feet to 1 foot thick and was visually classified as ML, in accordance with the USCS system.

Detailed descriptions of the soil can be found in the exploration logs in *Appendix B*.

3.2 Groundwater

Groundwater was only encountered in TP-10 at a depth of 3 feet where rapid seepage occurred. The surface of the forest floor near TP-10 was saturated before excavation occurred. TP-10 also had a different fill material than the other test pits, consisting primarily of gray clayey silt with sand and gravel. No other test pit had any sort of seepage. Based on this, SGS believes that during excavation, a trapped pocket of water was likely struck, causing this rapid seepage. This pocket of water is usually an indicator of an old foundation being present. We recommend that SGS be notified to observe this area of the building footprint during construction to provide further recommendations.

3.3 Bedrock

Probable bedrock was encountered at all of the test pits on the site except for TP-1. The probable bedrock was encountered at depths ranging from 1 foot to 8.5 feet (Elevations 104 feet to 136.5 feet) when the excavator struck refusal.

The following table summarizes the depths and elevations of the probable bedrock around the development:

PROBABLE BEDROCK DEPTHS AND ELEVATIONS			
Location	Depth (ft)	Elevation (ft +/-)	Reference
TP-2	8	114	Excavator refusal
TP-3	3	104	Excavator refusal
TP-4	7	118	Excavator refusal
TP-5	8.5	117.5	Excavator refusal
TP-6	8	120	Excavator refusal
TP-7	3.5	131.5	Excavator refusal
TP-8	1	134	Excavator refusal
TP-9	2.5	129.5	Excavator refusal
TP-10	6	125	Excavator refusal
TP-11	3.5	133.5	Excavator refusal
TP-12	1.5	136.5	Excavator refusal

According to the *Bedrock Geology Map* from the Maine Geological Survey, the bedrock around Adams Street in Biddeford, ME is classified as a granite in the Biddeford Pluton.

4.0 Geotechnical Evaluations

The soils at the site are suitable to support conventional spread footings. The key geotechnical challenges are the potential large amounts of cut and fill necessary at the site and the potential removal of bedrock and construction on bedrock.

The fill material primarily consisted of coarse-grained soils. Most portions of the fill had occasional landfill-like materials (metal pieces, plastic wrappers, etc.) and former rubble materials (brick, porcelain, etc.); we will call these unconformities. The ratio between the coarse-grained soil and these unconformities will not affect our recommendations when dealing with the existing fill layer. During construction, if large amounts of unconformities are present, remove them before continuing with our recommendations.

5.0 Geotechnical Recommendations

5.1 Bearing Pressure

Spread footings resting on the native soil should be proportioned using an allowable bearing pressure of **3,000 psf**. This value is based on the friction angle of the bearing soil, the soil unit

weight, and the required frost protection depth. Spread footings resting on bedrock should be proportioned using an allowable bearing pressure of **10,000 psf**.

5.2 Subgrade Preparation

Foundations at the required frost depth should have the following steps to prepare the footing subgrade:

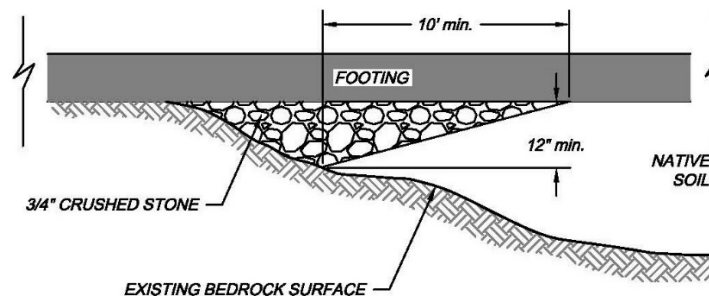
Footings on soil:

- After grubbing, excavate to the footing subgrade and proofroll the exposed soil by making a minimum of 4 passes in each of two perpendicular directions using a vibratory compactor. The footings can be constructed directly on the proofrolled native soil. Voids left at the base of the excavation from the removal of boulders should be filled with $\frac{3}{4}$ inch crushed stone (CS) or Structural Fill (SF).
- Soft, wet, and unstable areas should be removed and replaced with CS or SF.

Footings on bedrock:

- Footings should bear on hard bedrock when possible. Hard and intact bedrock is created by the removal of loose and weathered bedrock fragments down to a competent bedrock surface. Any large gaps or voids created by removing loose pieces of bedrock are filled with CS, flowable fill, or lean concrete.
- Footings on intact bedrock do not need the full frost protection since intact bedrock is non-frost susceptible.
- In the event that bedrock is sloping there are two options: cutting into the bedrock to make a shelf or placing a lean concrete or grout levelling pad directly on the intact bedrock surface. In the case of cutting to make the footing bearing area, dowelling into bedrock is optional unless required for uplift loadings. The level cut surface should extend a minimum of 1 foot beyond the edge of the footing. Where the footing construction surface is created by filling, dowelling into bedrock is strongly recommended.

The following figure covers the conditions where a portion of the foundation is on bedrock and a portion is on soil:



The CS transition is intended to reduce the differential settlement between footings supported on bedrock and footings supported on soil. Where bedrock is cut, it should be sloped to prevent ponding of groundwater.

5.3 Frost Protection

The design air freezing index for the Biddeford, Maine area is approximately 1,190-degree F days (10-year, 90% probability). Based on this, exterior footings and other footings exposed to freezing temperatures should be placed at a minimum depth of **4 feet** in order to provide adequate frost protection. We recommend that all foundations exposed to freezing temperatures be backfilled with Granular Borrow (GB). Specifications for GB are included in *Section 6.2* of this report.

Footings cast on bedrock, if clean, non-weathered, and hard, do not need to be at frost depth. The concrete should be placed directly on the bedrock to provide a water tight seal.

5.4 Seismic Design

Based on the discovered soils and their properties, this site can be classified as **Seismic Site Class D** in accordance with ASCE 7-10 and ASCE 7-16. The following seismic design coefficients should be used:

SUBGRADE SITE SEISMIC DESIGN COEFFICIENTS – ASCE 7-10 & ASCE 7-16		
Seismic Coefficient	ASCE 7-10 (Class D)	ASCE 7-16 (Class D)
Short period spectral response (S_S)	0.251	0.290
1 second spectral response (S_1)	0.079	0.072
Maximum short period spectral response (S_{MS})	0.402	0.455
Maximum 1 second spectral response (S_{M1})	0.190	0.173
Design short period spectral response (S_{DS})	0.268	0.303
Design 1 second spectral response (S_{D1})	0.127	0.115

5.5 Groundwater Control

Permanent groundwater is anticipated to be below the footings and excavations required to construct the footings. To account for any changes in the permanent groundwater table or seasonal precipitation, we recommend exterior perimeter foundation underdrains be installed. Underdrains should consist of 4" rigid PVC or flexible ADS pipe surrounded by 6" of CS, which is then surrounded by Mirafi 140N or equivalent. Underdrains should be outlet to a free draining location. Where exposed at the ground surface, a screen or other device should be placed over the outlet to prevent the migration of animals into the underdrain system.

Sub-slab foundation drains are not necessary.

5.6 Slabs-on-Grade

To provide a uniform support condition for slabs-on-grade, we recommend that slabs-on-grade be constructed on a minimum of 12 inches of SF or 8 inches of CS placed directly on the proofrolled native soil. Any soft or wet pockets should be removed and replaced with CS. Fill required to raise the grade to the base of the SF or CS can consist of the existing fill, the existing marine shoreline, GB or SF. The maximum particle size for these materials should be limited to 6 inches.

If bedrock prevents a level slab-on-grade, we recommend that the bedrock be removed (see *Section 6.1*) to a minimum of 6 inches below the bottom of the slab, while still allowing for a level surface. CS or SF should be placed between the bedrock and the bottom of the slab and compacted properly.

All fill should be compacted to 95% of ASTM D1557.

The gradation requirements for GB, CS, and SF can be found in *Section 6.2*.

5.7 Pavement Section Recommendations

The mean annual freezing index for the Biddeford, Maine area is estimated at 890-degree F days (2-year, 50% probability). Based on the subgrade and mean annual freezing index, the anticipated mean annual frost penetration depth is 36 inches.

For the proposed roadway and parking lots, we recommend a minimum total section thickness of **18 inches**. We further recommend that the pavement section consist of the following materials:

PAVEMENT SECTION MATERIALS AND THICKNESSES		
Material	Thickness (in)	Specifications
Asphalt Surface Course	3/4	MDOT 703.09 Type 12.5 mm
Asphalt Binder Course	2 1/4	MDOT 703.09 Type 12.5 mm
Base Soil	3	MDOT 703.06 Type A
Subbase Soil	12	MDOT 703.06 Type D

Reference: MDOT Standard Specifications (2014)

If bedrock is encountered in the construction of the paved areas, the guidelines for removing bedrock should be followed as noted in *Section 6.1*. We recommend a minimum of 6 inches of Type A Gravel be placed between the bedrock and the bottom of the asphalt layer.

Fill beneath the subbase soil can consist of the existing fill, the existing marine shoreline or GB, placed and compacted to a minimum of 95% of ASTM D1557.

Based on the depth to groundwater, underdrains will not be necessary beneath paved areas. Adequate side ditching should be provided to shed surface water away from the base and subbase soil.

5.8 Cast-in-Place Retaining Wall

The following table provides design recommendations for equivalent fluid pressures (EFP) for cast-in-place retaining walls:

EFP'S FOR CAST-IN-PLACE RETAINING WALLS			
Condition	γ_t (pcf)	ϕ (deg)	EFP (psf/ft)
At-Rest	130	36	55
Active	130	36	35
Passive	130	33	305

The above EFP's assume that the retaining wall is backfilled with GB and an underdrain is installed at the base of the walls.

The at-rest condition assumes that structural support at the top of the walls is provided prior to backfilling.

The active condition assumes the walls are free to rotate at the top.

Underdrains for the walls should consist of a 4" rigid perforated PVC surrounded by a minimum of 6 inches of CS and filter fabric to prevent clogging from the migration of the fine soil particles in the backfill soils. Underdrains should outlet at the end of the walls or through the face at a maximum spacing of 50 feet.

We recommend that the walls be designed using a minimum live load surcharge of **250 psf** for construction, transportation, and firefighting loads behind the wall, as applicable.

5.9 Segmental Block Walls

We recommend that segmental block walls be designed by a Maine Licensed Professional Engineer.

We recommend that a $\frac{3}{4}$ " crushed stone column with a minimum thickness of 12" be installed behind the entire wall, between the back of the blocks and the wall backfill, to prevent infiltrated water behind the wall from creating a hydrostatic load on the wall. An underdrain system should be provided continuously behind the retaining wall near its base to prevent the buildup of hydrostatic pressures.

Underdrains for the walls should consist of a 4" rigid perforated PVC surrounded by a minimum of 6 inches of CS and filter fabric to prevent clogging from the migration of the fine soil particles

in the foundation backfill soils. Underdrains should outlet at the end of the walls or through the face at a maximum spacing of 50 feet.

We anticipate that the segmental block walls will be constructed on the existing fill materials, the marine nearshore, imported fill, or bedrock. We recommend that the wall be constructed on a leveling pad consisting of a minimum 12" thick layer of CS. A geotextile fabric (such as Mirafi 180N) should be placed on the native soil beneath the wall leveling pad. We recommend that the exposed soil beneath the leveling pad be proofrolled prior to placing the geotextile and CS.

For leveling pads on bedrock, we recommend the subgrade preparation outlined in *Section 5.2* be followed. Where the wall base consists of bedrock, the geotextile layer between the bedrock and crushed stone levelling pad can be eliminated.

The walls can be designed using the allowable bearing pressure stated in *Section 5.1*.

The segmental block walls should be designed in accordance with the *National Concrete Masonry Association (NCMA), 3rd Edition*, design manual. Retaining wall backfill for gravity retaining walls and reinforced soil for geogrid reinforced retaining walls should consist of SF compacted to a minimum of 90% of its maximum dry density in accordance with ASTM D1557. The maximum particle size should be limited to 4 inches. Soil properties presented in the table below can be used in the wall design:

DESIGN PARAMETERS – SEGMENTAL BLOCK WALLS				
Soil Location	Soil Description	γ_t (pcf)	Shear Strength	
			ϕ'	c' (psf)
Foundation	Existing Fill/Marine Shoreline	128	32°	100
	CS over Weathered or Intact Bedrock	140	40°	0
Retained and Reinforced	Structural Fill (SF)	135	34°	0

We recommend that the walls be designed using a minimum live load surcharge of **250 psf** for construction, pedestrian, and firefighting loads behind the wall, if applicable.

Since modular blocks are tolerable to some shifting, the blocks do not need to be placed down to full frost depth. We recommend the following minimum embedment depths:

MINIMUM SEGMENTAL RETAINING WALL EMBEDMENT DEPTH	
Slope in Front of Wall	Minimum Embedment to Top of CS
Horizontal	H/20
3H:1V	H/10
2H:1V	H/7
Minimum Embedment	6 inches

Passive resistance of embedded portions of the wall should be ignored.

6.0 Earthwork Considerations

6.1 Earthwork for Construction

The marine shoreline can be used as fill beneath the SF or CS under slabs and in areas outside of the building footprint where fill is needed.

The marine shoreline and existing fill are classified as OSHA Type C classification. Based on this, any excavation deeper than 5 feet and below the groundwater should have side slopes which do not exceed 1.5H:1V.

Adequate proof rolling of the subgrade soil as mentioned in *Section 5.2* is important to the success of the frost protection material as a uniform bearing material, especially if the subgrade soil is loose in isolated areas.

Cuts may be required for the desired finished floor elevations, the proposed paved areas, and the proposed cast-in-place retaining wall. If bedrock prevents the desired elevation, excavation of the bedrock, mechanically or by controlled blasting, may be necessary. If controlled blasting is necessary, we recommend it be performed in general accordance with the guidelines presented in *Appendix C*. We recommend that the guidelines outlined in *Section 5.2* be followed for the CS transition of footings resting on both bedrock and soil.

6.2 Materials

The gradation requirements reflect the portion of soil passing the 3-inch sieve size. The following table presents the recommended grain sizes for the materials to be used at the site:

GRADATION REQUIREMENTS FOR SITE MATERIALS			
Sieve Size	¹ Structural Fill	² Crushed Stone	³ Granular Borrow
3 Inch	100	---	100
2 Inch	---	---	---
1 Inch	---	100	---
¾ Inch	---	90 - 100	---
½ Inch	35 – 80	20 - 55	---
⅜ Inch	---	0 - 15	---
¼ Inch	25 – 60	---	---
No. 4	---	0 – 5	---
No. 40	0 – 30	---	0 – 70
No. 200	0 – 7	---	0 – 7
Maximum Particle Size	6"	1"	8"
⁴ Minimum Compaction Requirement	95%	---	⁵ 95%

¹Maine DOT Specification 703.06, Type D (2014)

² *Maine DOT Specification 703.13, Crushed Stone ¾-Inch*

³ *Maine DOT Specification 703.19, Granular Borrow for Embankment Construction*

⁴ *Per ASTM D1557*

⁵ *Compaction requirement for GB can be reduced to 90%, where in landscaping areas.*

CS should be placed in 12-inch maximum lifts and compacted with a minimum of 4 passes with a vibratory compactor.

GB should consist of a free draining, granular soil.

7.0 Closure

Our recommendations are based on professional judgment, generally accepted principles of geotechnical engineering and project information provided by others. Some changes in subsurface conditions from those presented in this report may occur. Should the subsurface conditions, finish grades, or foundation loadings differ materially from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

We recommend that a qualified third-party testing agency be retained to provide QA/QC services during construction.

SGS should be contacted to provide subgrade inspections prior to construction of the foundations.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or if additional information is required, please do not hesitate to call.

Sincerely,
Summit Geoengineering Services, Inc.



Colin M. Plante, E.I.
Geotechnical Engineer



William M. Peterlein, P.E.
President & Principal Engineer



Appendix A

Exploration Location Plan

LEGEND

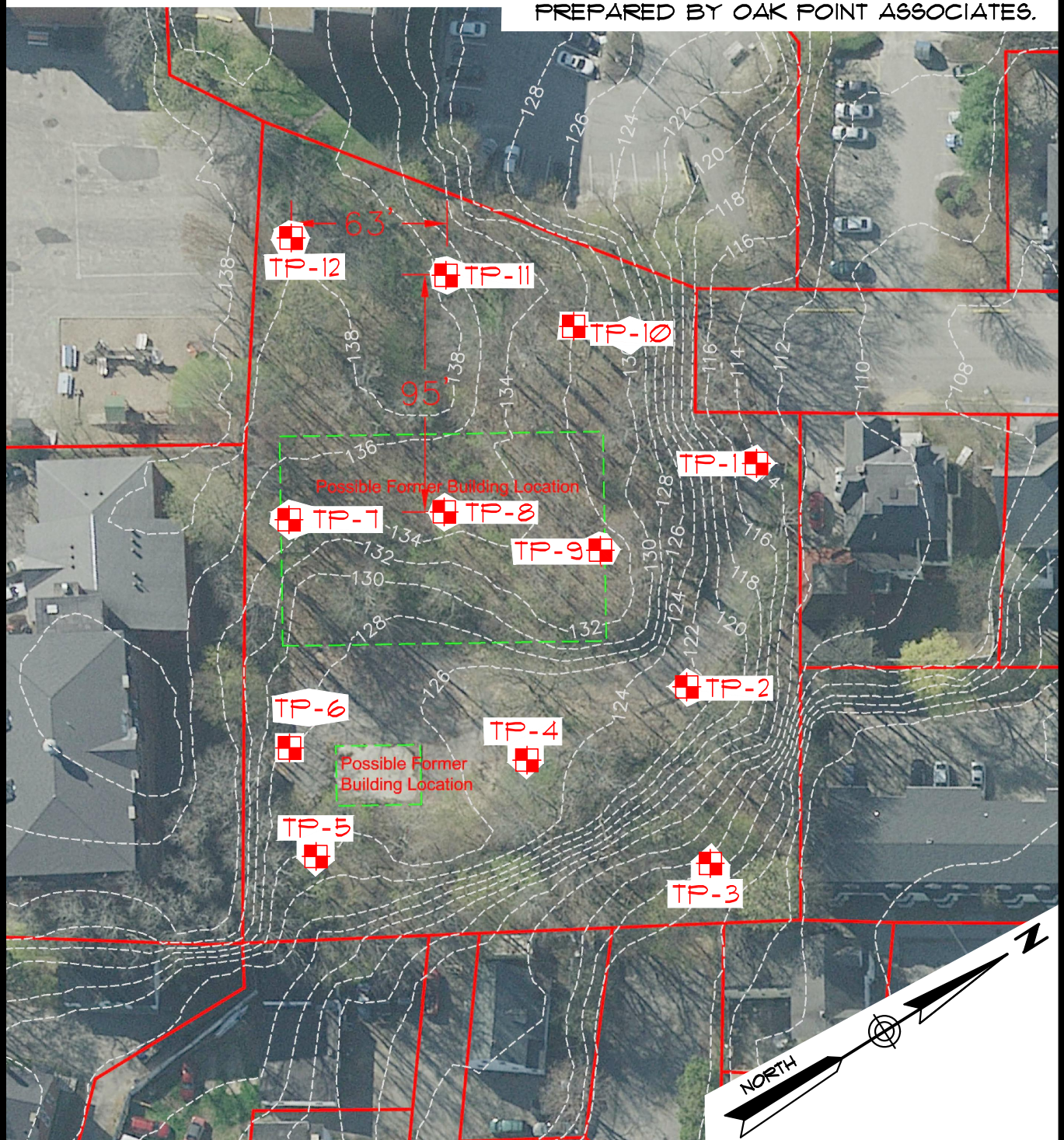


TP-1

SUMMIT TEST PIT
(MARCH 12, 2021)

PLAN REFERENCE

"ADAMS POINT HOUSING - EXISTING
CONDITIONS", DATED FEBRUARY 2021,
PREPARED BY OAK POINT ASSOCIATES.



TEST PIT LOCATION PLAN PROPOSED APARTMENTS

ADAMS STREET - BIDDEFORD, MAINE

PREPARED FOR

SOUTHERN MAINE AFFORDABLE HOUSING

145 LISBON ST. - SUITE 101
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-1161

SUMMIT
GEOENGINEERING SERVICES
www.summitgeoeng.com

DATE: 3-15-2021	DRAWN BY: KRF	CHECKED BY: WMP
JOB: 21070	SCALE: 1" = 60'	FILE: 21070 TP

Appendix B

Exploration Logs

		TEST PIT LOG		Test Pit # TP-1
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070 Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 114 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
	D brn Gravelly SILT, sm f Sand, tr roots, loose, moist, ML	TOPSOIL		
1	Brown Silty fine to medium SAND, some Gravel, compact, moist, SM	FILL		
2				
3				
4				
5				
6	Brick fragments seen throughout			
	Angular Cobbles with some Boulders and roots at 3.5 ft More Gravelly at 4 ft			
	Brick fragments and very large boulder at 5 ft			
	Hole caved-in frequently			
	End of Test Pit at 6 ft - No refusal			
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-2
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 122 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING		GEOLOGIC/GENERAL	
	D brn Silty f SAND, tr Grav and roots, compact, moist, SM		TOPSOIL	
1	Brown fine to medium SAND, some Silt and Gravel, loose, moist, SP		FILL	
2				
3				
4				
5				
	Metal pipe, trash, and brick fragments at 3 ft		FILL	
4	Food wrapper found, dated 2011			
5	1" gray Clayey SILT balls and some Cobbles at 5 ft			
6				
7				
	Roots to 6 ft		FILL	
8	Brown coarse SAND, with Gravel, few Boulders, compact, moist, SP			
9				
	End of Test Pit at 8 ft - Refusal on a dense stratum		PROBABLE BEDROCK	
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-3
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 107 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
	Forest Duff with many rootlets	TOPSOIL		
1	Brown Silty fine SAND, with Gravel, loose, moist, SM Cobbles at 1 ft	FILL		
2				
3				
	Many bricks, layered at 2.5 ft			
	End of Test Pit at 3 ft - Refusal on a dense stratum	PROBABLE BEDROCK		
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-4
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 125 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
1	Dark brown fine Sandy SILT, with Gravel, firm, moist, ML	FILL		
2	Cobbles and shredded cloth at 2 ft			
3	Brick fragments from 2 ft to 4 ft			
	Sandy SILT becomes more Gravelly from 2 ft to 4 ft			
4	Rubble from 2 ft to 4 ft			
5	Brown fine Sandy SILT, some Gravel, trace Clay, firm, moist, ML	 TP-4		
6				
7	Metal pipe, Cobbles, and rootlets at 6.5 ft			
8	End of Test Pit at 7 ft - Refusal on a dense stratum			
9				
10				
11				
12				
13				
14				
15				
16				
17				



		TEST PIT LOG		Test Pit # TP-5
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 126 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING		GEOLOGIC/GENERAL	
1	D brn f Sandy SILT, tr roots and trash, compact, moist, ML		TOPSOIL	
2	Brown Gravelly fine to medium SAND, trace Silt, some brick fragments, loose, moist, SW		FILL	
3				
4	Larger Gravel, few Cobbles, and rubble at 3 ft			
5				
6	Brown medium Sandy GRAVEL, trace Silt, loose, moist, GP		MARINE SHORELINE	
7	Roots to 7 ft			
8	Red brn f Sandy SILT, with Gravel, compact, moist, ML Brn co SAND, w/ Gravel and Cobbles, compact, moist, SP		PROBABLE BEDROCK	
9	End of Test Pit at 8.5 ft - Refusal on a dense stratum			
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-6
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 128 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
1	Forest Duff	TOPSOIL		
2	Brown Gravelly medium SAND, trace Silt, compact, moist, SP	FILL		
3	White Gravelly coarse SAND, loose, moist, SP			
4	Metal pipe at 3 ft			
5	Brown Gravelly medium SAND, trace Silt, some porcelain and brick, compact, moist, SP			
6		MARINE SHORELINE		
7	Light reddish brown fine Sandy SILT, soft, moist, ML			
8	Brown Gravelly coarse SAND, compact, moist, SP			
9	End of Test Pit at 8 ft - Refusal on a dense stratum			
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-7
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 135 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING		GEOLOGIC/GENERAL	
	Forest Duff		TOPSOIL	
1	Brown Silty fine SAND, some Gravel, with Rootlets, loose, moist, SM		FILL	
2	Larger Gravel and Cobbles at 1 ft			
3	Brick fragments and large metal piece at 3 ft			
4	End of Test Pit at 3.5 ft - Refusal on probable bedrock		PROBABLE BEDROCK	
5	Test pit was lengthened to observe the tendencies of the probable bedrock			
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit #	TP-8
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #:	21070
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 135 ft +/-		Groundwater:	None observed
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021			
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny		
Depth (ft)	DESCRIPTION				
	ENGINEERING		GEOLOGIC/GENERAL		
1	Dark/light brown Sandy SILT, trace Rootlets, loose, moist, ML		TOPSOIL		
2	End of Test Pit at 1 ft - Refusal on probable bedrock		PROBABLE BEDROCK		
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					



		TEST PIT LOG		Test Pit #	TP-9
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #:	21070
				Groundwater:	None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 132 ft +/-			
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021			
Summit Staff: C. Plante, E.I.		Date: 3/12/2021		Weather: Sunny	
Depth (ft)	DESCRIPTION				
	ENGINEERING		GEOLOGIC/GENERAL		
1	Forest Duff with Rootlets		TOPSOIL		
	Brown fine Sandy SILT, trace Gravel, loose, moist, ML		FILL		
2	Large Gravel and angular Cobbles at 2 ft				
3	End of Test Pit at 2.5 ft - Refusal on probable bedrock		PROBABLE BEDROCK		
4	Refusal on bedrock ranged from 2.5 ft to 3.5 ft (East to West)				
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

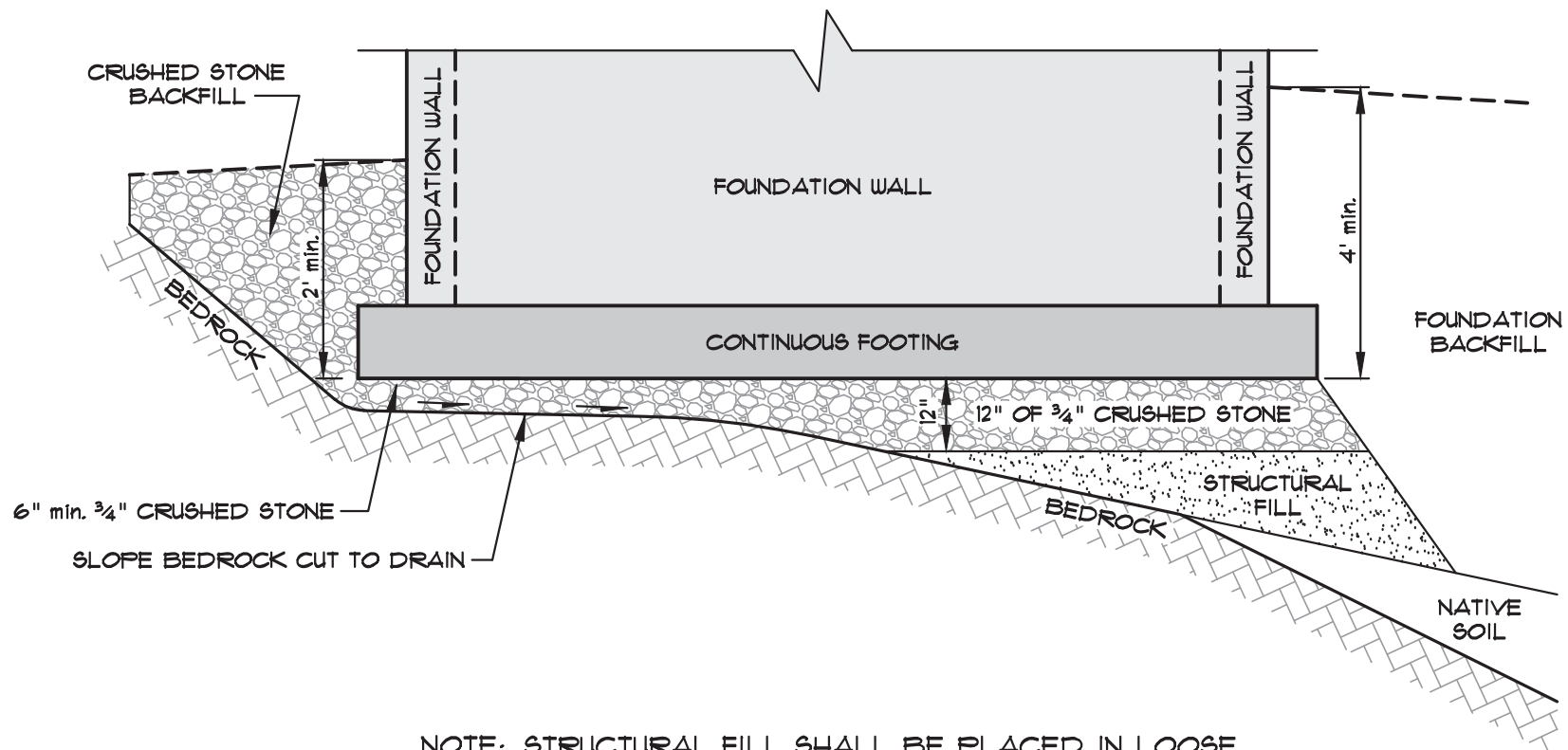
		TEST PIT LOG		Test Pit # TP-10
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 131 ft +/-		Groundwater: Rapid seepage at 3 ft
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING		GEOLOGIC/GENERAL	
1	Gray Clayey SILT, some Gravel, firm, moist, ML		FILL	
2				
3				
4	Brown fine Sandy SILT, soft, wet, ML		MARINE SHORELINE	
5				
6	Brown Gravelly medium SAND, compact, wet, SP Roots to 5 ft			
7	End of Test Pit at 6 ft - Refusal on a dense stratum		PROBABLE BEDROCK	
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-11
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 137 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
1	Dark brown fine Sandy SILT, with rootlets, loose, moist, ML	TOPSOIL		
2	Light brown fine Sandy SILT, with Gravel, soft, moist, ML	FILL		
3	Large Boulders at 1.5 ft			
4	End of Test Pit at 3.5 ft - Refusal on probable bedrock	PROBABLE BEDROCK		
5	Refusal on bedrock ranged from 0.5 ft to 3.5 ft (South to North)			
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

		TEST PIT LOG		Test Pit # TP-12
		Project: Proposed Apartment Complex Adams Street Biddeford, ME		Project #: 21070
				Groundwater: None observed
Contractor: Summit Geoengineering Services, Inc.		Ground Surface Elevation: 138 ft +/-		
Equipment: Kubota Mini Tracked Excavator		Reference: Adams Point Housing, Existing Conditions, 02/2021		
Summit Staff: C. Plante, E.I.		Date: 3/12/2021	Weather: Sunny	
Depth (ft)	DESCRIPTION			
	ENGINEERING	GEOLOGIC/GENERAL		
1	Dark brown fine Sandy SILT, with Rootlets, loose, moist, ML	TOPSOIL		
2	End of Test Pit at 1.5 ft - Refusal on probable bedrock	PROBABLE BEDROCK		
3	Refusal on bedrock ranged from 0.5 ft to 1.5 ft (South to North)			
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

Appendix C

Bedrock References



NOTE: STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS WITH A MAXIMUM THICKNESS OF 12" AND BE COMPACTED TO 95% OF ASTM D1557.

CONTINUOUS FOOTING ON BEDROCK & SOIL

DATE: FEB. 3, 2021
JOB: 19344
FILE: 19344 SLAB
CHECKED BY: WMP
NOT TO SCALE

FIGURE 5.4

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313



173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

**SLAB & FOOTING CROSS SECTION
RINGING POINT**

COOKSEY DRIVE, MOUNT DESERT ISLAND, ME
PREPARED FOR
RINGING POINT, LLC

GENERAL BLASTING RECOMMENDATIONS

Introduction

Blasting operations will be performed in general accordance with the applicable Maine Revised Statute Title 125 and Title 38, U.S. Department of the Interior Rules, the recommendations provided below, and a normal standard of care.

Blast Design

The blasting contractor shall submit a blasting plan to the Owner for approval prior to blasting operations. The blasting plan shall include a schedule, sketches of the drill patterns (hole spacing and depth), type and amount of explosives, number and sequence of delays, methods for minimizing flyrock, and any other information pertinent to demonstrating compliance with the applicable U.S. Department of the Interior Rules and the requirements of the applicable Statute requirements of 38 MRSA.

Notification

Oral notification to the abutters within one-half mile of the blast area shall be provided prior to blasting. Warning and all clear signals of different character or pattern that are audible within one-half mile from the point of the blast shall be given. The meaning of the signals shall be conveyed to the abutters at the time they are notified.

Pre-blast Surveys

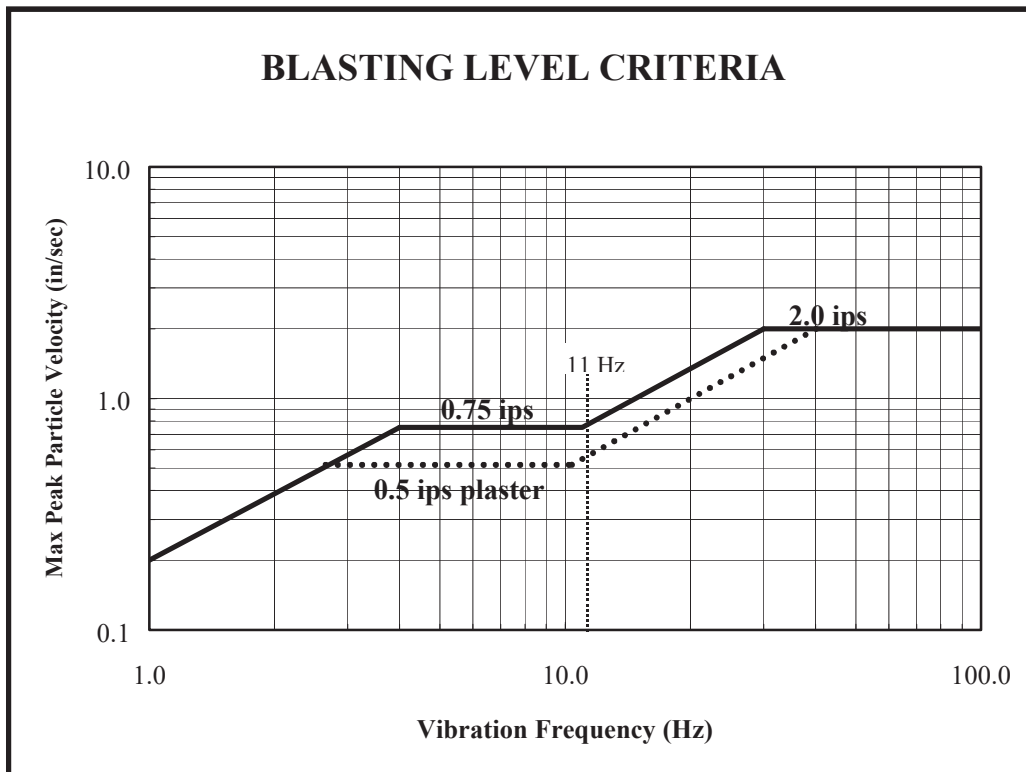
All blasting operations are the direct responsibility of the Blasting Contractor. Reports of damage to structures caused by blasting operations are the sole responsibility of the Blasting Contractor. Therefore, it is incumbent upon the Blasting Contractor to perform pre-blast surveys as they deem necessary.

Airblast Limits

Airblast overpressure shall not exceed the limits stipulated in 38 MRSA 490-Z(14)(H) at the nearest structure. This currently requires sound from blasting to not exceed 129 decibels peak at inhabited structures and 140 decibels peak at uninhabited structures.

Ground Vibration Limits

The maximum ground vibration at any structure shall not exceed the limits presented in the following chart:



REFERENCE: OSM alternative blasting criteria (Modified from figure B-1, Bureau of Mines, RI 8507)

The Blasting Contractor shall provide a seismographic record to the Owner for each blast event at the nearest off-site structure. The record shall include the date and time of the blast, peak and resultant particle velocities and associated frequencies, and the airblast overpressure.

Flyrock

Sufficient stemming, matting, or natural protective cover shall be provided to prevent flyrock from leaving property owned or under control of the operator or from entering protected natural resources or natural buffer strips.

Records

Records of blasts shall be recorded in accordance with Maine Statute 38 MRSA 490-Z(14)(L). The current requirements are as follows.

- Name of blasting company or blasting contractor
- Location, date and time of blast
- Name, signature and social security number of blaster
- Type of material blasted
- Number and spacing of holes and depth of burden or stemming
- Diameter and depth of holes
- Type of explosives used
- Total amount of explosives used
- Maximum amount of explosives used per delay period of 8 milliseconds or greater
- Maximum number of holes per delay period of 8 milliseconds or greater
- Method of firing and type of circuit
- Direction and distance in feet to the nearest dwelling, public building, school, church or commercial or institutional building neither owned nor controlled by the developer
- Weather conditions, including factors such as wind direction and cloud cover
- Height or length of stemming
- Amount of mats or other protection used
- Type of detonators used and delay periods used
- The exact location of each seismograph and the distance of each seismograph from the blast
- Seismographic readings
- Name and signature of the person operating each seismograph
- Names of the person and the firm analyzing the seismographic data

**MAXIMUM PARTICLE VELOCITY/DISTANCE CRITERIA
FOR BLASTING NEAR UNCURED CONCRETE**

Time From Batching (hr)	Non-Structural Concrete	Structural Concrete
0 – 4	4D	2D
4 – 24	1D	0.25D
24 – 72	1.5D	1D
72 – 168	3D	2D
168 – 240	8D	5D
Over 240	15D	10D

Distance (ft)	D (in/sec)
0 to 50	1.0
50 to 150	0.8
150 to 250	0.7
Over 250	0.6

NOTE: Allowable vibration levels are reduced with increasing distance since concrete can withstand higher vibration levels at higher frequencies. Vibration frequencies decrease as the distance from the blast increases because there is an attenuation of frequency with distance.

Reference: Wyllie, Duncan C. Foundations on Rock, 1st Ed, Chapman & Hall, London, 1992

10.Stormwater Narrative and Calculations

10. Stormwater Narrative and Calculations

Stormwater Narrative
Site Plan/Subdivision Review Application
Adams Point
69 Adams Street
Biddeford, Maine 04005

June 14, 2020

Stormwater flows for this project are required meet the requirements of the City of Biddeford Ordinance, and the post development flow rates must not exceed pre-development flow rates for the 25-year storm.

Stormwater erosion and sedimentation controls are required to meet the State of Maine Chapter 500 Stormwater Management Rules (permit by rule with basic standards). The permit by rule application process is a notification to the department and a two-week waiting period at which time the department will contact the owner to request more information.

Stormwater quantity controls are achieved by use of underground storage tanks with controlled outlets.

The site is located at 69 Adams Street in Biddeford, Maine. The development work associated with this project will take place on property currently owned by Southern Maine Affordable Housing and is adjacent to another property (Parish Place) that is also under the same ownership. The property totals approximately 1.44 acres in size and was previously developed with a large rooming house, driveway, parking area and the foundation of a carriage house. The rooming house was lost in a fire in 1995. Most of the site is now wooded, and the pavement and carriage house foundation remain. This development includes of the following:

Existing Developed Area:	0.22 AC
Proposed Total Developed Area:	<u>1.02 AC</u>
<i>Net increase in Developed Area:</i>	<i>0.80 AC</i>

Existing Impervious Area:	0.22 AC
Proposed Impervious Area:	<u>0.72 AC</u>
<i>Net Increase in Impervious Area:</i>	<i>0.50 AC</i>

The site is situated within a rural area and generally bounded on the north and south by residential development. The site itself is mostly open field. The site is generally sloping to the east at a slope of 3.5-4 percent.

Topography on this site is generally steeply sloping from a high point at the north-northwest portion of the site which generally flows to the east and southeast towards Adams and Washington Streets.

The drainage areas affected by this project are indicated on drawing WS101 (“Watershed Plans”), included in the plan set. As indicated on this drawing, there are five different discharge points within the project area:

DP1 consists of runoff primarily from project area that drains into an existing catch basin on the south side of Adams Street. The existing driveway and paved area as well as a portion of the roof from Parish Place drain into this analysis point. This catch basin has a 12-inch outlet and is connected to the combined 12-inch sewer line in the center of Adams Street.

DP2 consists of runoff from a small portion of the proposed site and a larger area from the adjacent parking and roof areas associated with existing multi-family developments to the north of Adams Street. The run-off from this sub catchment follows the curb line to a catch basin on the north side of Adams Street.

DP3 consists of runoff from a wooded and sloped portion at the southwest area of the site and off-site roofs and parking at Parish place and the rear of developed properties on Alfred and Washington Streets. Stormwater from this area flows into the curb line of Washington Street and into an existing catch basin.

DP4 consists of runoff from a wooded and sloped portion at the southeast area of the site and off-site roofs and parking of adjacent housing developments at the rear of Adams and Washington Streets. Stormwater from this area flows into the curb line of Washington Street and into an existing catch basin.

DP5 consists of runoff from the paved area at St James School to the north and the paved area at Parish Place on the east side of Birch Street. Stormwater from this area flows into an existing catch basin at parish place that discharges into a 10-inch pipe connected to the combined sewer on Birch Street.

In accordance with the Maine Stormwater Management Rules (Chapter 500), the project requires compliance with the Basic Standards. This will be achieved using Maine Erosion and Sedimentation Control Best Management Practices. The methods that will be used are shown in detail on the included drawings. They include the following:

- Sediment barriers placed on the down gradient of exposed soils
- Inlet protection on downstream structures
- Mulch or temporary seeding for temporary stabilization
- Erosion control blankets, netting, or riprap in erosion-prone areas (e.g. steep slopes and vegetated ditches)
- Pipe outlet protection (riprap) at storm drain outfalls
- Excavation dewatering (silt bags or sediment ponds) for excavations below the groundwater elevation

Pre- and post-development runoff from the site has been modeled using the HydroCAD Stormwater Modeling System. The HydroCAD program is based largely on hydrology techniques developed by the Soil Conservation Service, primarily TR-55. In the HydroCAD Stormwater Model, it was assumed that all land cover types were in “good” condition as defined in U.S. Department of Agriculture Soil Conservation Services (SCS) publications.

Pre- and Post-Development Peak Runoff Rates (ft³/s)

Discharge Point	2-Year Storm		10-Year Storm		25-Year Storm	
	Pre	Post	Pre	Post	Pre	Post
DP1	1.2	1.6	2.4	2.2	3.4	2.5
DP2	3.2	3.2	5.5	5.5	7.4	7.4
DP3	2.1	1.6	3.8	2.8	5.1	3.8
DP4	2.9	2.9	4.9	4.7	6.5	6.1
DP5	3.1	3.0	4.8	4.8	6.2	6.1
Sum	12.5	12.3	21.4	20	28.6	25.9

As indicated on the above table, post-development peak runoff rates for the sum of the discharge points are less than the pre-development rates for all storm events analyzed. There is a slight increase (0.2 ft³/s) in discharge point DP1 for the 2-year storm, because this is for a low flow storm, there is sufficient capacity in the system to accommodate the flow. The runoff from discharge point DPS is flows into a treatment pond at the existing middle school. The area of this watershed is very small compared to the drainage area flowing into the existing treatment area and will be absorbed by the treatment area to reduce the flow rate to at or below existing rates.

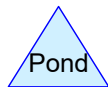
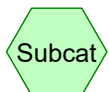
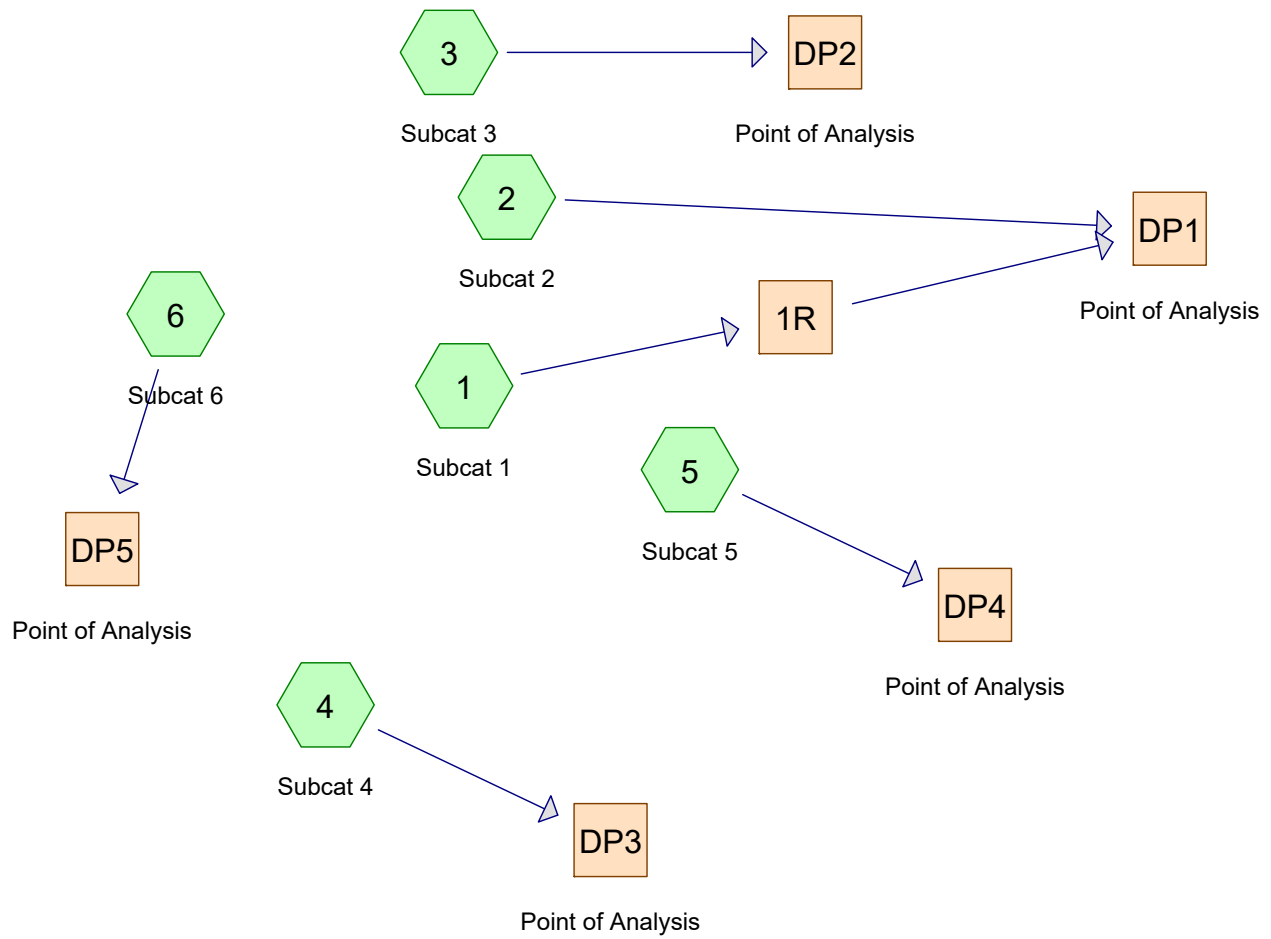


10.Stormwater Narrative and Calculations

a. Watershed Plans (Included in plan set)

10.Stormwater Narrative and Calculations

b. Pre-Developed Calculations



Routing Diagram for 22104.04-Pre
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22104.04-Pre*Type III 24-hr 2-Year Rainfall=3.30"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1Runoff Area=31,923 sf 29.28% Impervious Runoff Depth>1.34"
Flow Length=349' Tc=19.5 min CN=78 Runoff=0.77 cfs 3,567 cf**Subcatchment2: Subcat 2**Runoff Area=17,060 sf 31.45% Impervious Runoff Depth>1.41"
Flow Length=213' Tc=11.7 min CN=79 Runoff=0.53 cfs 2,002 cf**Subcatchment3: Subcat 3**Runoff Area=59,081 sf 53.86% Impervious Runoff Depth>1.92"
Flow Length=330' Tc=5.0 min CN=86 Runoff=3.17 cfs 9,456 cf**Subcatchment4: Subcat 4**Runoff Area=41,667 sf 49.72% Impervious Runoff Depth>1.84"
Flow Length=345' Tc=5.1 min CN=85 Runoff=2.14 cfs 6,394 cf**Subcatchment5: Subcat 5**Runoff Area=50,046 sf 63.70% Impervious Runoff Depth>2.09"
Flow Length=255' Tc=5.0 min CN=88 Runoff=2.90 cfs 8,697 cf**Subcatchment6: Subcat 6**Runoff Area=44,117 sf 82.97% Impervious Runoff Depth>2.64"
Flow Length=300' Tc=5.0 min CN=94 Runoff=3.11 cfs 9,702 cf**Reach 1R:**Inflow=0.77 cfs 3,567 cf
Outflow=0.77 cfs 3,567 cf**Reach DP1: Point of Analysis**Inflow=1.21 cfs 5,569 cf
Outflow=1.21 cfs 5,569 cf**Reach DP2: Point of Analysis**Inflow=3.17 cfs 9,456 cf
Outflow=3.17 cfs 9,456 cf**Reach DP3: Point of Analysis**Inflow=2.14 cfs 6,394 cf
Outflow=2.14 cfs 6,394 cf**Reach DP4: Point of Analysis**Inflow=2.90 cfs 8,697 cf
Outflow=2.90 cfs 8,697 cf**Reach DP5: Point of Analysis**Inflow=3.11 cfs 9,702 cf
Outflow=3.11 cfs 9,702 cf**Total Runoff Area = 243,894 sf Runoff Volume = 39,818 cf Average Runoff Depth = 1.96"**
44.35% Pervious = 108,164 sf 55.65% Impervious = 135,730 sf

22104.04-Pre

Type III 24-hr 10-Year Rainfall=4.90"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1Runoff Area=31,923 sf 29.28% Impervious Runoff Depth>2.62"
Flow Length=349' Tc=19.5 min CN=78 Runoff=1.54 cfs 6,960 cf**Subcatchment2: Subcat 2**Runoff Area=17,060 sf 31.45% Impervious Runoff Depth>2.71"
Flow Length=213' Tc=11.7 min CN=79 Runoff=1.03 cfs 3,852 cf**Subcatchment3: Subcat 3**Runoff Area=59,081 sf 53.86% Impervious Runoff Depth>3.37"
Flow Length=330' Tc=5.0 min CN=86 Runoff=5.49 cfs 16,597 cf**Subcatchment4: Subcat 4**Runoff Area=41,667 sf 49.72% Impervious Runoff Depth>3.27"
Flow Length=345' Tc=5.1 min CN=85 Runoff=3.76 cfs 11,364 cf**Subcatchment5: Subcat 5**Runoff Area=50,046 sf 63.70% Impervious Runoff Depth>3.57"
Flow Length=255' Tc=5.0 min CN=88 Runoff=4.88 cfs 14,893 cf**Subcatchment6: Subcat 6**Runoff Area=44,117 sf 82.97% Impervious Runoff Depth>4.21"
Flow Length=300' Tc=5.0 min CN=94 Runoff=4.82 cfs 15,464 cf**Reach 1R:**Inflow=1.54 cfs 6,960 cf
Outflow=1.54 cfs 6,960 cf**Reach DP1: Point of Analysis**Inflow=2.41 cfs 10,812 cf
Outflow=2.41 cfs 10,812 cf**Reach DP2: Point of Analysis**Inflow=5.49 cfs 16,597 cf
Outflow=5.49 cfs 16,597 cf**Reach DP3: Point of Analysis**Inflow=3.76 cfs 11,364 cf
Outflow=3.76 cfs 11,364 cf**Reach DP4: Point of Analysis**Inflow=4.88 cfs 14,893 cf
Outflow=4.88 cfs 14,893 cf**Reach DP5: Point of Analysis**Inflow=4.82 cfs 15,464 cf
Outflow=4.82 cfs 15,464 cf

Total Runoff Area = 243,894 sf Runoff Volume = 69,131 cf Average Runoff Depth = 3.40"
44.35% Pervious = 108,164 sf 55.65% Impervious = 135,730 sf

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1Runoff Area=31,923 sf 29.28% Impervious Runoff Depth>3.74"
Flow Length=349' Tc=19.5 min CN=78 Runoff=2.20 cfs 9,954 cf**Subcatchment2: Subcat 2**Runoff Area=17,060 sf 31.45% Impervious Runoff Depth>3.85"
Flow Length=213' Tc=11.7 min CN=79 Runoff=1.47 cfs 5,474 cf**Subcatchment3: Subcat 3**Runoff Area=59,081 sf 53.86% Impervious Runoff Depth>4.60"
Flow Length=330' Tc=5.0 min CN=86 Runoff=7.39 cfs 22,628 cf**Subcatchment4: Subcat 4**Runoff Area=41,667 sf 49.72% Impervious Runoff Depth>4.49"
Flow Length=345' Tc=5.1 min CN=85 Runoff=5.09 cfs 15,583 cf**Subcatchment5: Subcat 5**Runoff Area=50,046 sf 63.70% Impervious Runoff Depth>4.81"
Flow Length=255' Tc=5.0 min CN=88 Runoff=6.48 cfs 20,081 cf**Subcatchment6: Subcat 6**Runoff Area=44,117 sf 82.97% Impervious Runoff Depth>5.49"
Flow Length=300' Tc=5.0 min CN=94 Runoff=6.20 cfs 20,187 cf**Reach 1R:**Inflow=2.20 cfs 9,954 cf
Outflow=2.20 cfs 9,954 cf**Reach DP1: Point of Analysis**Inflow=3.44 cfs 15,428 cf
Outflow=3.44 cfs 15,428 cf**Reach DP2: Point of Analysis**Inflow=7.39 cfs 22,628 cf
Outflow=7.39 cfs 22,628 cf**Reach DP3: Point of Analysis**Inflow=5.09 cfs 15,583 cf
Outflow=5.09 cfs 15,583 cf**Reach DP4: Point of Analysis**Inflow=6.48 cfs 20,081 cf
Outflow=6.48 cfs 20,081 cf**Reach DP5: Point of Analysis**Inflow=6.20 cfs 20,187 cf
Outflow=6.20 cfs 20,187 cf

Total Runoff Area = 243,894 sf Runoff Volume = 93,907 cf Average Runoff Depth = 4.62"
44.35% Pervious = 108,164 sf 55.65% Impervious = 135,730 sf

22104.04-Pre

Type III 24-hr Custom Rainfall=3.30"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1Runoff Area=31,923 sf 29.28% Impervious Runoff Depth>1.34"
Flow Length=349' Tc=19.5 min CN=78 Runoff=0.77 cfs 3,567 cf**Subcatchment2: Subcat 2**Runoff Area=17,060 sf 31.45% Impervious Runoff Depth>1.41"
Flow Length=213' Tc=11.7 min CN=79 Runoff=0.53 cfs 2,002 cf**Subcatchment3: Subcat 3**Runoff Area=59,081 sf 53.86% Impervious Runoff Depth>1.92"
Flow Length=330' Tc=5.0 min CN=86 Runoff=3.17 cfs 9,456 cf**Subcatchment4: Subcat 4**Runoff Area=41,667 sf 49.72% Impervious Runoff Depth>1.84"
Flow Length=345' Tc=5.1 min CN=85 Runoff=2.14 cfs 6,394 cf**Subcatchment5: Subcat 5**Runoff Area=50,046 sf 63.70% Impervious Runoff Depth>2.09"
Flow Length=255' Tc=5.0 min CN=88 Runoff=2.90 cfs 8,697 cf**Subcatchment6: Subcat 6**Runoff Area=44,117 sf 82.97% Impervious Runoff Depth>2.64"
Flow Length=300' Tc=5.0 min CN=94 Runoff=3.11 cfs 9,702 cf**Reach 1R:**Inflow=0.77 cfs 3,567 cf
Outflow=0.77 cfs 3,567 cf**Reach DP1: Point of Analysis**Inflow=1.21 cfs 5,569 cf
Outflow=1.21 cfs 5,569 cf**Reach DP2: Point of Analysis**Inflow=3.17 cfs 9,456 cf
Outflow=3.17 cfs 9,456 cf**Reach DP3: Point of Analysis**Inflow=2.14 cfs 6,394 cf
Outflow=2.14 cfs 6,394 cf**Reach DP4: Point of Analysis**Inflow=2.90 cfs 8,697 cf
Outflow=2.90 cfs 8,697 cf**Reach DP5: Point of Analysis**Inflow=3.11 cfs 9,702 cf
Outflow=3.11 cfs 9,702 cfTotal Runoff Area = 243,894 sf Runoff Volume = 39,818 cf Average Runoff Depth = 1.96"
44.35% Pervious = 108,164 sf 55.65% Impervious = 135,730 sf

Summary for Subcatchment 1: Subcat 1

Runoff = 2.20 cfs @ 12.27 hrs, Volume= 9,954 cf, Depth> 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	9,348	98	Paved parking and Roofs, HSG C
*	764	74	Lawn Areas, HSG C
*	21,811	70	Woods, HSG C
	31,923	78	Weighted Average
	22,575		70.72% Pervious Area
	9,348		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0420	0.10		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.70"
1.5	115	0.0680	1.30		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
0.6	134	0.0360	3.85		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
19.5	349	Total			

Summary for Subcatchment 2: Subcat 2

Runoff = 1.47 cfs @ 12.16 hrs, Volume= 5,474 cf, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	5,366	98	Paved parking and Roofs, HSG C
*	1,417	74	Lawn Areas, HSG C
*	10,277	70	Woods, HSG C
	17,060	79	Weighted Average
	11,694		68.55% Pervious Area
	5,366		31.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	74	0.0700	0.11		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.70"
0.2	39	0.4100	3.20		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
0.4	100	0.0550	4.76		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
11.7	213	Total			

Summary for Subcatchment 3: Subcat 3

Runoff = 7.39 cfs @ 12.07 hrs, Volume= 22,628 cf, Depth> 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	31,821	98	Paved parking and Roofs, HSG C
*	17,064	74	Lawn Areas, HSG C
*	10,196	70	Woods, HSG C
	59,081	86	Weighted Average
	27,260		46.14% Pervious Area
	31,821		53.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	20	0.1640	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.3	30	0.0980	1.88		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	110	0.0890	6.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	85	0.0870	5.99		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.3	85	0.0430	4.21		Shallow Concentrated Flow, E-F Paved Kv= 20.3 fps
2.9	330	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4: Subcat 4

Runoff = 5.09 cfs @ 12.07 hrs, Volume= 15,583 cf, Depth> 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	20,716	98	Paved parking and Roofs, HSG C
*	9,620	74	Lawn Areas, HSG C
*	11,331	70	Woods, HSG C
	41,667	85	Weighted Average
	20,951		50.28% Pervious Area
	20,716		49.72% Impervious Area

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Type III 24-hr 25-Year Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	40	0.1230	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.1	10	0.0830	1.41		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	125	0.1090	6.70		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	50	0.0370	3.90		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.6	75	0.0760	1.93		Shallow Concentrated Flow, E-F Short Grass Pasture Kv= 7.0 fps
0.3	45	0.0120	2.22		Shallow Concentrated Flow, F-G Paved Kv= 20.3 fps
5.1	345	Total			

Summary for Subcatchment 5: Subcat 5

Runoff = 6.48 cfs @ 12.07 hrs, Volume= 20,081 cf, Depth> 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
* 31,877	98	Paved parking and Roofs, HSG C
* 8,054	74	Lawn Areas, HSG C
* 10,115	70	Woods, HSG C
50,046	88	Weighted Average
18,169		36.30% Pervious Area
31,877		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0240	1.28		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.70"
1.0	180	0.0220	3.01		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
2.0	255	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 6: Subcat 6

Runoff = 6.20 cfs @ 12.07 hrs, Volume= 20,187 cf, Depth> 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

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	Area (sf)	CN	Description
*	36,602	98	Paved parking and Roofs, HSG C
*	7,515	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	44,117	94	Weighted Average
	7,515		17.03% Pervious Area
	36,602		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	75	0.0110	0.94		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.70"
1.2	225	0.0240	3.14		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
2.5	300	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach 1R:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31,923 sf, 29.28% Impervious, Inflow Depth > 3.74" for 25-Year event
 Inflow = 2.20 cfs @ 12.27 hrs, Volume= 9,954 cf
 Outflow = 2.20 cfs @ 12.27 hrs, Volume= 9,954 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP1: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 48,983 sf, 30.04% Impervious, Inflow Depth > 3.78" for 25-Year event
 Inflow = 3.44 cfs @ 12.21 hrs, Volume= 15,428 cf
 Outflow = 3.44 cfs @ 12.21 hrs, Volume= 15,428 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP2: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59,081 sf, 53.86% Impervious, Inflow Depth > 4.60" for 25-Year event
 Inflow = 7.39 cfs @ 12.07 hrs, Volume= 22,628 cf
 Outflow = 7.39 cfs @ 12.07 hrs, Volume= 22,628 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP3: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 41,667 sf, 49.72% Impervious, Inflow Depth > 4.49" for 25-Year event
Inflow = 5.09 cfs @ 12.07 hrs, Volume= 15,583 cf
Outflow = 5.09 cfs @ 12.07 hrs, Volume= 15,583 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP4: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50,046 sf, 63.70% Impervious, Inflow Depth > 4.81" for 25-Year event
Inflow = 6.48 cfs @ 12.07 hrs, Volume= 20,081 cf
Outflow = 6.48 cfs @ 12.07 hrs, Volume= 20,081 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP5: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 44,117 sf, 82.97% Impervious, Inflow Depth > 5.49" for 25-Year event
Inflow = 6.20 cfs @ 12.07 hrs, Volume= 20,187 cf
Outflow = 6.20 cfs @ 12.07 hrs, Volume= 20,187 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Subcatchment 1: Subcat 1

Runoff = 0.77 cfs @ 12.28 hrs, Volume= 3,567 cf, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	9,348	98	Paved parking and Roofs, HSG C
*	764	74	Lawn Areas, HSG C
*	21,811	70	Woods, HSG C
	31,923	78	Weighted Average
	22,575		70.72% Pervious Area
	9,348		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0420	0.10		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.70"
1.5	115	0.0680	1.30		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
0.6	134	0.0360	3.85		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
19.5	349	Total			

Summary for Subcatchment 2: Subcat 2

Runoff = 0.53 cfs @ 12.17 hrs, Volume= 2,002 cf, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	5,366	98	Paved parking and Roofs, HSG C
*	1,417	74	Lawn Areas, HSG C
*	10,277	70	Woods, HSG C
	17,060	79	Weighted Average
	11,694		68.55% Pervious Area
	5,366		31.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	74	0.0700	0.11		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.70"
0.2	39	0.4100	3.20		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
0.4	100	0.0550	4.76		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
11.7	213	Total			

Summary for Subcatchment 3: Subcat 3

Runoff = 3.17 cfs @ 12.07 hrs, Volume= 9,456 cf, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	31,821	98	Paved parking and Roofs, HSG C
*	17,064	74	Lawn Areas, HSG C
*	10,196	70	Woods, HSG C
	59,081	86	Weighted Average
	27,260		46.14% Pervious Area
	31,821		53.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	20	0.1640	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.3	30	0.0980	1.88		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	110	0.0890	6.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	85	0.0870	5.99		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.3	85	0.0430	4.21		Shallow Concentrated Flow, E-F Paved Kv= 20.3 fps
2.9	330	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4: Subcat 4

Runoff = 2.14 cfs @ 12.08 hrs, Volume= 6,394 cf, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	20,716	98	Paved parking and Roofs, HSG C
*	9,620	74	Lawn Areas, HSG C
*	11,331	70	Woods, HSG C
	41,667	85	Weighted Average
	20,951		50.28% Pervious Area
	20,716		49.72% Impervious Area

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Type III 24-hr Custom Rainfall=3.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	40	0.1230	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.1	10	0.0830	1.41		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	125	0.1090	6.70		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	50	0.0370	3.90		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.6	75	0.0760	1.93		Shallow Concentrated Flow, E-F Short Grass Pasture Kv= 7.0 fps
0.3	45	0.0120	2.22		Shallow Concentrated Flow, F-G Paved Kv= 20.3 fps
5.1	345	Total			

Summary for Subcatchment 5: Subcat 5

Runoff = 2.90 cfs @ 12.07 hrs, Volume= 8,697 cf, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

Area (sf)	CN	Description
* 31,877	98	Paved parking and Roofs, HSG C
* 8,054	74	Lawn Areas, HSG C
* 10,115	70	Woods, HSG C
50,046	88	Weighted Average
18,169		36.30% Pervious Area
31,877		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0240	1.28		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.70"
1.0	180	0.0220	3.01		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
2.0	255	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 6: Subcat 6

Runoff = 3.11 cfs @ 12.07 hrs, Volume= 9,702 cf, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

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Type III 24-hr Custom Rainfall=3.30"

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	Area (sf)	CN	Description
*	36,602	98	Paved parking and Roofs, HSG C
*	7,515	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	44,117	94	Weighted Average
	7,515		17.03% Pervious Area
	36,602		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	75	0.0110	0.94		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.70"
1.2	225	0.0240	3.14		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
2.5	300	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach 1R:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31,923 sf, 29.28% Impervious, Inflow Depth > 1.34" for Custom event
 Inflow = 0.77 cfs @ 12.28 hrs, Volume= 3,567 cf
 Outflow = 0.77 cfs @ 12.28 hrs, Volume= 3,567 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP1: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 48,983 sf, 30.04% Impervious, Inflow Depth > 1.36" for Custom event
 Inflow = 1.21 cfs @ 12.23 hrs, Volume= 5,569 cf
 Outflow = 1.21 cfs @ 12.23 hrs, Volume= 5,569 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP2: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59,081 sf, 53.86% Impervious, Inflow Depth > 1.92" for Custom event
 Inflow = 3.17 cfs @ 12.07 hrs, Volume= 9,456 cf
 Outflow = 3.17 cfs @ 12.07 hrs, Volume= 9,456 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP3: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 41,667 sf, 49.72% Impervious, Inflow Depth > 1.84" for Custom event
Inflow = 2.14 cfs @ 12.08 hrs, Volume= 6,394 cf
Outflow = 2.14 cfs @ 12.08 hrs, Volume= 6,394 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP4: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50,046 sf, 63.70% Impervious, Inflow Depth > 2.09" for Custom event
Inflow = 2.90 cfs @ 12.07 hrs, Volume= 8,697 cf
Outflow = 2.90 cfs @ 12.07 hrs, Volume= 8,697 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP5: Point of Analysis

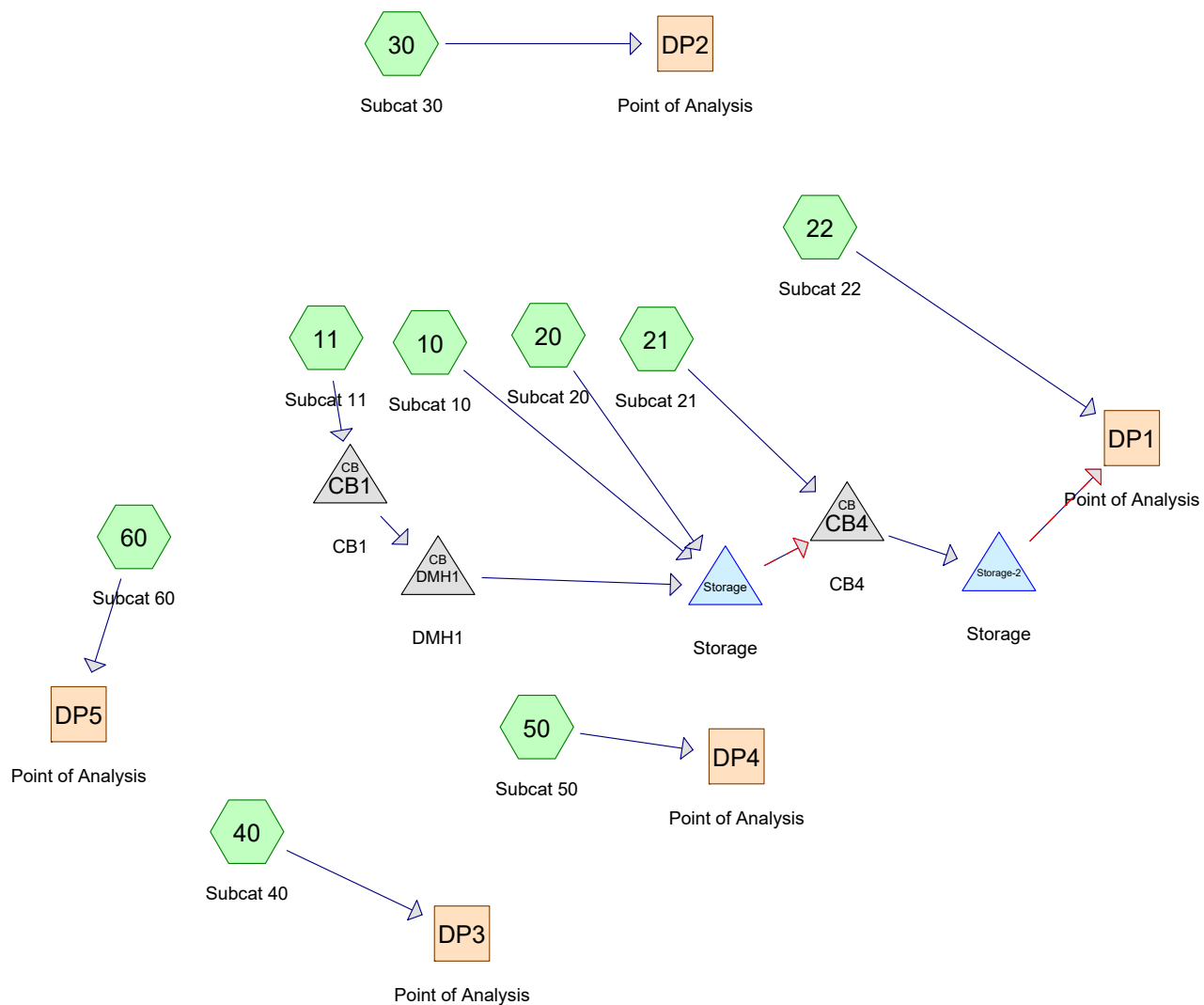
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 44,117 sf, 82.97% Impervious, Inflow Depth > 2.64" for Custom event
Inflow = 3.11 cfs @ 12.07 hrs, Volume= 9,702 cf
Outflow = 3.11 cfs @ 12.07 hrs, Volume= 9,702 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

10.Stormwater Narrative and Calculations

c. Post-Developed Calculations



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Type III 24-hr 2-Year Rainfall=3.30"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Subcat 10Runoff Area=31,930 sf 71.45% Impervious Runoff Depth>2.35"
Flow Length=98' Tc=5.0 min CN=91 Runoff=2.06 cfs 6,254 cf**Subcatchment11: Subcat 11**Runoff Area=7,459 sf 11.66% Impervious Runoff Depth>1.28"
Flow Length=92' Slope=0.0250 '/' Tc=13.3 min CN=77 Runoff=0.20 cfs 795 cf**Subcatchment20: Subcat 20**Runoff Area=9,031 sf 100.00% Impervious Runoff Depth>3.07"
Flow Length=32' Slope=0.0100 '/' Tc=5.0 min CN=98 Runoff=0.69 cfs 2,307 cf**Subcatchment21: Subcat 21**Runoff Area=10,633 sf 55.93% Impervious Runoff Depth>2.00"
Flow Length=154' Tc=5.2 min CN=87 Runoff=0.59 cfs 1,774 cf**Subcatchment22: Subcat 22**Runoff Area=6,441 sf 56.12% Impervious Runoff Depth>1.92"
Flow Length=176' Tc=5.0 min CN=86 Runoff=0.35 cfs 1,031 cf**Subcatchment30: Subcat 30**Runoff Area=57,888 sf 54.63% Impervious Runoff Depth>2.00"
Flow Length=330' Tc=5.0 min CN=87 Runoff=3.23 cfs 9,657 cf**Subcatchment40: Subcat 40**Runoff Area=30,536 sf 52.39% Impervious Runoff Depth>1.92"
Flow Length=345' Tc=5.1 min CN=86 Runoff=1.63 cfs 4,887 cf**Subcatchment50: Subcat 50**Runoff Area=45,857 sf 69.51% Impervious Runoff Depth>2.26"
Flow Length=255' Tc=5.0 min CN=90 Runoff=2.86 cfs 8,634 cf**Subcatchment60: Subcat 60**Runoff Area=44,117 sf 80.81% Impervious Runoff Depth>2.54"
Flow Length=300' Tc=5.0 min CN=93 Runoff=3.02 cfs 9,338 cf**Reach DP1: Point of Analysis**Inflow=1.60 cfs 12,069 cf
Outflow=1.60 cfs 12,069 cf**Reach DP2: Point of Analysis**Inflow=3.23 cfs 9,657 cf
Outflow=3.23 cfs 9,657 cf**Reach DP3: Point of Analysis**Inflow=1.63 cfs 4,887 cf
Outflow=1.63 cfs 4,887 cf**Reach DP4: Point of Analysis**Inflow=2.86 cfs 8,634 cf
Outflow=2.86 cfs 8,634 cf**Reach DP5: Point of Analysis**Inflow=3.02 cfs 9,338 cf
Outflow=3.02 cfs 9,338 cf**Pond CB1: CB1**Peak Elev=134.88' Inflow=0.20 cfs 795 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0752 '/' Outflow=0.20 cfs 795 cf**Pond CB4: CB4**Peak Elev=109.95' Inflow=1.97 cfs 11,087 cf
8.0" Round Culvert n=0.013 L=68.0' S=0.0100 '/' Outflow=1.97 cfs 11,087 cf

22104.04-Post*Type III 24-hr 2-Year Rainfall=3.30"*

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Pond DMH1: DMH1

Peak Elev=131.58' Inflow=0.20 cfs 795 cf
24.0" Round Culvert n=0.013 L=165.0' S=0.0655 '/' Outflow=0.20 cfs 795 cf

Pond Storage: Storage

Peak Elev=114.43' Storage=1,265 cf Inflow=2.87 cfs 9,356 cf
Primary=1.55 cfs 9,313 cf Secondary=0.00 cfs 0 cf Outflow=1.55 cfs 9,313 cf

Pond Storage-2: Storage

Peak Elev=106.64' Storage=1,188 cf Inflow=1.97 cfs 11,087 cf
Primary=1.49 cfs 11,038 cf Secondary=0.00 cfs 0 cf Outflow=1.49 cfs 11,038 cf

Total Runoff Area = 243,892 sf Runoff Volume = 44,677 cf Average Runoff Depth = 2.20"
35.45% Pervious = 86,462 sf 64.55% Impervious = 157,430 sf

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Type III 24-hr 10-Year Rainfall=4.90"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Subcat 10Runoff Area=31,930 sf 71.45% Impervious Runoff Depth>3.88"
Flow Length=98' Tc=5.0 min CN=91 Runoff=3.32 cfs 10,330 cf**Subcatchment11: Subcat 11**Runoff Area=7,459 sf 11.66% Impervious Runoff Depth>2.53"
Flow Length=92' Slope=0.0250 '/' Tc=13.3 min CN=77 Runoff=0.40 cfs 1,574 cf**Subcatchment20: Subcat 20**Runoff Area=9,031 sf 100.00% Impervious Runoff Depth>4.66"
Flow Length=32' Slope=0.0100 '/' Tc=5.0 min CN=98 Runoff=1.03 cfs 3,507 cf**Subcatchment21: Subcat 21**Runoff Area=10,633 sf 55.93% Impervious Runoff Depth>3.47"
Flow Length=154' Tc=5.2 min CN=87 Runoff=1.01 cfs 3,075 cf**Subcatchment22: Subcat 22**Runoff Area=6,441 sf 56.12% Impervious Runoff Depth>3.37"
Flow Length=176' Tc=5.0 min CN=86 Runoff=0.60 cfs 1,809 cf**Subcatchment30: Subcat 30**Runoff Area=57,888 sf 54.63% Impervious Runoff Depth>3.47"
Flow Length=330' Tc=5.0 min CN=87 Runoff=5.51 cfs 16,741 cf**Subcatchment40: Subcat 40**Runoff Area=30,536 sf 52.39% Impervious Runoff Depth>3.37"
Flow Length=345' Tc=5.1 min CN=86 Runoff=2.83 cfs 8,578 cf**Subcatchment50: Subcat 50**Runoff Area=45,857 sf 69.51% Impervious Runoff Depth>3.78"
Flow Length=255' Tc=5.0 min CN=90 Runoff=4.67 cfs 14,434 cf**Subcatchment60: Subcat 60**Runoff Area=44,117 sf 80.81% Impervious Runoff Depth>4.10"
Flow Length=300' Tc=5.0 min CN=93 Runoff=4.75 cfs 15,061 cf**Reach DP1: Point of Analysis**Inflow=2.16 cfs 20,181 cf
Outflow=2.16 cfs 20,181 cf**Reach DP2: Point of Analysis**Inflow=5.51 cfs 16,741 cf
Outflow=5.51 cfs 16,741 cf**Reach DP3: Point of Analysis**Inflow=2.83 cfs 8,578 cf
Outflow=2.83 cfs 8,578 cf**Reach DP4: Point of Analysis**Inflow=4.67 cfs 14,434 cf
Outflow=4.67 cfs 14,434 cf**Reach DP5: Point of Analysis**Inflow=4.75 cfs 15,061 cf
Outflow=4.75 cfs 15,061 cf**Pond CB1: CB1**Peak Elev=134.96' Inflow=0.40 cfs 1,574 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0752 '/' Outflow=0.40 cfs 1,574 cf**Pond CB4: CB4**Peak Elev=112.41' Inflow=2.76 cfs 18,432 cf
8.0" Round Culvert n=0.013 L=68.0' S=0.0100 '/' Outflow=2.76 cfs 18,432 cf

22104.04-Post*Type III 24-hr 10-Year Rainfall=4.90"*

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Pond DMH1: DMH1

Peak Elev=131.66' Inflow=0.40 cfs 1,574 cf
24.0" Round Culvert n=0.013 L=165.0' S=0.0655 '/' Outflow=0.40 cfs 1,574 cf

Pond Storage: Storage

Peak Elev=117.25' Storage=2,483 cf Inflow=4.61 cfs 15,411 cf
Primary=2.12 cfs 15,357 cf Secondary=0.00 cfs 0 cf Outflow=2.12 cfs 15,357 cf

Pond Storage-2: Storage

Peak Elev=108.80' Storage=2,121 cf Inflow=2.76 cfs 18,432 cf
Primary=2.04 cfs 18,372 cf Secondary=0.00 cfs 0 cf Outflow=2.04 cfs 18,372 cf

Total Runoff Area = 243,892 sf Runoff Volume = 75,109 cf Average Runoff Depth = 3.70"
35.45% Pervious = 86,462 sf 64.55% Impervious = 157,430 sf

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Type III 24-hr 25-Year Rainfall=6.20"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Subcat 10Runoff Area=31,930 sf 71.45% Impervious Runoff Depth>5.15"
Flow Length=98' Tc=5.0 min CN=91 Runoff=4.33 cfs 13,702 cf**Subcatchment11: Subcat 11**Runoff Area=7,459 sf 11.66% Impervious Runoff Depth>3.64"
Flow Length=92' Slope=0.0250 '/' Tc=13.3 min CN=77 Runoff=0.58 cfs 2,266 cf**Subcatchment20: Subcat 20**Runoff Area=9,031 sf 100.00% Impervious Runoff Depth>5.96"
Flow Length=32' Slope=0.0100 '/' Tc=5.0 min CN=98 Runoff=1.31 cfs 4,484 cf**Subcatchment21: Subcat 21**Runoff Area=10,633 sf 55.93% Impervious Runoff Depth>4.70"
Flow Length=154' Tc=5.2 min CN=87 Runoff=1.34 cfs 4,169 cf**Subcatchment22: Subcat 22**Runoff Area=6,441 sf 56.12% Impervious Runoff Depth>4.60"
Flow Length=176' Tc=5.0 min CN=86 Runoff=0.81 cfs 2,467 cf**Subcatchment30: Subcat 30**Runoff Area=57,888 sf 54.63% Impervious Runoff Depth>4.71"
Flow Length=330' Tc=5.0 min CN=87 Runoff=7.37 cfs 22,698 cf**Subcatchment40: Subcat 40**Runoff Area=30,536 sf 52.39% Impervious Runoff Depth>4.60"
Flow Length=345' Tc=5.1 min CN=86 Runoff=3.80 cfs 11,695 cf**Subcatchment50: Subcat 50**Runoff Area=45,857 sf 69.51% Impervious Runoff Depth>5.04"
Flow Length=255' Tc=5.0 min CN=90 Runoff=6.13 cfs 19,249 cf**Subcatchment60: Subcat 60**Runoff Area=44,117 sf 80.81% Impervious Runoff Depth>5.38"
Flow Length=300' Tc=5.0 min CN=93 Runoff=6.13 cfs 19,765 cf**Reach DP1: Point of Analysis**Inflow=2.48 cfs 26,957 cf
Outflow=2.48 cfs 26,957 cf**Reach DP2: Point of Analysis**Inflow=7.37 cfs 22,698 cf
Outflow=7.37 cfs 22,698 cf**Reach DP3: Point of Analysis**Inflow=3.80 cfs 11,695 cf
Outflow=3.80 cfs 11,695 cf**Reach DP4: Point of Analysis**Inflow=6.13 cfs 19,249 cf
Outflow=6.13 cfs 19,249 cf**Reach DP5: Point of Analysis**Inflow=6.13 cfs 19,765 cf
Outflow=6.13 cfs 19,765 cf**Pond CB1: CB1**Peak Elev=135.01' Inflow=0.58 cfs 2,266 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0752 '/' Outflow=0.58 cfs 2,266 cf**Pond CB4: CB4**Peak Elev=115.20' Inflow=3.17 cfs 24,558 cf
8.0" Round Culvert n=0.013 L=68.0' S=0.0100 '/' Outflow=3.17 cfs 24,558 cf

22104.04-Post*Type III 24-hr 25-Year Rainfall=6.20"*

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Pond DMH1: DMH1

Peak Elev=131.71' Inflow=0.58 cfs 2,266 cf
24.0" Round Culvert n=0.013 L=165.0' S=0.0655 '/' Outflow=0.58 cfs 2,266 cf

Pond Storage: Storage

Peak Elev=120.34' Storage=3,817 cf Inflow=6.03 cfs 20,451 cf
Primary=2.27 cfs 20,228 cf Secondary=0.36 cfs 162 cf Outflow=2.49 cfs 20,389 cf

Pond Storage-2: Storage

Peak Elev=110.10' Storage=2,683 cf Inflow=3.17 cfs 24,558 cf
Primary=2.31 cfs 24,473 cf Secondary=0.04 cfs 17 cf Outflow=2.34 cfs 24,490 cf

Total Runoff Area = 243,892 sf Runoff Volume = 100,494 cf Average Runoff Depth = 4.94"
35.45% Pervious = 86,462 sf 64.55% Impervious = 157,430 sf

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Type III 24-hr Custom Rainfall=3.30"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Subcat 10Runoff Area=31,930 sf 71.45% Impervious Runoff Depth>2.35"
Flow Length=98' Tc=5.0 min CN=91 Runoff=2.06 cfs 6,254 cf**Subcatchment11: Subcat 11**Runoff Area=7,459 sf 11.66% Impervious Runoff Depth>1.28"
Flow Length=92' Slope=0.0250 '/' Tc=13.3 min CN=77 Runoff=0.20 cfs 795 cf**Subcatchment20: Subcat 20**Runoff Area=9,031 sf 100.00% Impervious Runoff Depth>3.07"
Flow Length=32' Slope=0.0100 '/' Tc=5.0 min CN=98 Runoff=0.69 cfs 2,307 cf**Subcatchment21: Subcat 21**Runoff Area=10,633 sf 55.93% Impervious Runoff Depth>2.00"
Flow Length=154' Tc=5.2 min CN=87 Runoff=0.59 cfs 1,774 cf**Subcatchment22: Subcat 22**Runoff Area=6,441 sf 56.12% Impervious Runoff Depth>1.92"
Flow Length=176' Tc=5.0 min CN=86 Runoff=0.35 cfs 1,031 cf**Subcatchment30: Subcat 30**Runoff Area=57,888 sf 54.63% Impervious Runoff Depth>2.00"
Flow Length=330' Tc=5.0 min CN=87 Runoff=3.23 cfs 9,657 cf**Subcatchment40: Subcat 40**Runoff Area=30,536 sf 52.39% Impervious Runoff Depth>1.92"
Flow Length=345' Tc=5.1 min CN=86 Runoff=1.63 cfs 4,887 cf**Subcatchment50: Subcat 50**Runoff Area=45,857 sf 69.51% Impervious Runoff Depth>2.26"
Flow Length=255' Tc=5.0 min CN=90 Runoff=2.86 cfs 8,634 cf**Subcatchment60: Subcat 60**Runoff Area=44,117 sf 80.81% Impervious Runoff Depth>2.54"
Flow Length=300' Tc=5.0 min CN=93 Runoff=3.02 cfs 9,338 cf**Reach DP1: Point of Analysis**Inflow=1.60 cfs 12,069 cf
Outflow=1.60 cfs 12,069 cf**Reach DP2: Point of Analysis**Inflow=3.23 cfs 9,657 cf
Outflow=3.23 cfs 9,657 cf**Reach DP3: Point of Analysis**Inflow=1.63 cfs 4,887 cf
Outflow=1.63 cfs 4,887 cf**Reach DP4: Point of Analysis**Inflow=2.86 cfs 8,634 cf
Outflow=2.86 cfs 8,634 cf**Reach DP5: Point of Analysis**Inflow=3.02 cfs 9,338 cf
Outflow=3.02 cfs 9,338 cf**Pond CB1: CB1**Peak Elev=134.88' Inflow=0.20 cfs 795 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0752 '/' Outflow=0.20 cfs 795 cf**Pond CB4: CB4**Peak Elev=109.95' Inflow=1.97 cfs 11,087 cf
8.0" Round Culvert n=0.013 L=68.0' S=0.0100 '/' Outflow=1.97 cfs 11,087 cf

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Pond DMH1: DMH1

Peak Elev=131.58' Inflow=0.20 cfs 795 cf
24.0" Round Culvert n=0.013 L=165.0' S=0.0655 '/' Outflow=0.20 cfs 795 cf

Pond Storage: Storage

Peak Elev=114.43' Storage=1,265 cf Inflow=2.87 cfs 9,356 cf
Primary=1.55 cfs 9,313 cf Secondary=0.00 cfs 0 cf Outflow=1.55 cfs 9,313 cf

Pond Storage-2: Storage

Peak Elev=106.64' Storage=1,188 cf Inflow=1.97 cfs 11,087 cf
Primary=1.49 cfs 11,038 cf Secondary=0.00 cfs 0 cf Outflow=1.49 cfs 11,038 cf

Total Runoff Area = 243,892 sf Runoff Volume = 44,677 cf Average Runoff Depth = 2.20"
35.45% Pervious = 86,462 sf 64.55% Impervious = 157,430 sf

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 10: Subcat 10

Runoff = 4.33 cfs @ 12.07 hrs, Volume= 13,702 cf, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	22,814	98	Paved parking and Roofs, HSG C
*	6,827	74	Lawn Areas, HSG C
*	2,289	70	Woods, HSG C
	31,930	91	Weighted Average
	9,116		28.55% Pervious Area
	22,814		71.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	36	0.3130	0.26		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.70"
0.4	62	0.0180	2.72		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.7	98	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Subcat 11

Runoff = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	870	98	Paved parking and Roofs, HSG C
*	6,589	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	7,459	77	Weighted Average
	6,589		88.34% Pervious Area
	870		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	92	0.0250	0.12		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.70"

Summary for Subcatchment 20: Subcat 20

Runoff = 1.31 cfs @ 12.07 hrs, Volume= 4,484 cf, Depth> 5.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

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Type III 24-hr 25-Year Rainfall=6.20"

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	Area (sf)	CN	Description
*	9,031	98	Paved parking and Roofs, HSG C
*	0	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	9,031	98	Weighted Average
	9,031		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	32	0.0100	0.76		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.70"
0.7	32	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 21: Subcat 21

Runoff = 1.34 cfs @ 12.07 hrs, Volume= 4,169 cf, Depth> 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	5,947	98	Paved parking and Roofs, HSG C
*	2,386	74	Lawn Areas, HSG C
*	2,300	70	Woods, HSG C
	10,633	87	Weighted Average
	4,686		44.07% Pervious Area
	5,947		55.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	27	0.0278	0.09		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.0	7	0.0200	2.87		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
0.4	120	0.0580	4.89		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
5.2	154	Total			

Summary for Subcatchment 22: Subcat 22

Runoff = 0.81 cfs @ 12.07 hrs, Volume= 2,467 cf, Depth> 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

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Type III 24-hr 25-Year Rainfall=6.20"

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	Area (sf)	CN	Description
*	3,615	98	Paved parking and Roofs, HSG C
*	1,068	74	Lawn Areas, HSG C
*	1,758	70	Woods, HSG C
	6,441	86	Weighted Average
	2,826		43.88% Pervious Area
	3,615		56.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	61	0.3030	0.29		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.5	115	0.0400	4.06		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
4.0	176	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 30: Subcat 30

Runoff = 7.37 cfs @ 12.07 hrs, Volume= 22,698 cf, Depth> 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	31,627	98	Paved parking and Roofs, HSG C
*	21,245	74	Lawn Areas, HSG C
*	5,016	70	Woods, HSG C
	57,888	87	Weighted Average
	26,261		45.37% Pervious Area
	31,627		54.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	20	0.1640	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.3	30	0.0980	1.88		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	110	0.0890	6.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	85	0.0870	5.99		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.3	85	0.0430	4.21		Shallow Concentrated Flow, E-F Paved Kv= 20.3 fps
2.9	330	Total, Increased to minimum Tc = 5.0 min			

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 40: Subcat 40

Runoff = 3.80 cfs @ 12.07 hrs, Volume= 11,695 cf, Depth> 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	15,998	98	Paved parking and Roofs, HSG C
*	11,678	74	Lawn Areas, HSG C
*	2,860	70	Woods, HSG C
	30,536	86	Weighted Average
	14,538		47.61% Pervious Area
	15,998		52.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	40	0.1230	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.1	10	0.0830	1.41		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	125	0.1090	6.70		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	50	0.0370	3.90		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.6	75	0.0760	1.93		Shallow Concentrated Flow, E-F Short Grass Pasture Kv= 7.0 fps
0.3	45	0.0120	2.22		Shallow Concentrated Flow, F-G Paved Kv= 20.3 fps
5.1	345	Total			

Summary for Subcatchment 50: Subcat 50

Runoff = 6.13 cfs @ 12.07 hrs, Volume= 19,249 cf, Depth> 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

	Area (sf)	CN	Description
*	31,877	98	Paved parking and Roofs, HSG C
*	9,064	74	Lawn Areas, HSG C
*	4,916	70	Woods, HSG C
	45,857	90	Weighted Average
	13,980		30.49% Pervious Area
	31,877		69.51% Impervious Area

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Type III 24-hr 25-Year Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0240	1.28		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.70"
1.0	180	0.0220	3.01		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.0	255	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 60: Subcat 60

Runoff = 6.13 cfs @ 12.07 hrs, Volume= 19,765 cf, Depth> 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
* 35,651	98	Paved parking and Roofs, HSG C
* 8,466	74	Lawn Areas, HSG C
* 0	70	Woods, HSG C
44,117	93	Weighted Average
8,466		19.19% Pervious Area
35,651		80.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	75	0.0110	0.94		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.70"
1.2	225	0.0240	3.14		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.5	300	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach DP1: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 65,494 sf, 64.55% Impervious, Inflow Depth > 4.94" for 25-Year event
 Inflow = 2.48 cfs @ 12.10 hrs, Volume= 26,957 cf
 Outflow = 2.48 cfs @ 12.10 hrs, Volume= 26,957 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP2: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 57,888 sf, 54.63% Impervious, Inflow Depth > 4.71" for 25-Year event
 Inflow = 7.37 cfs @ 12.07 hrs, Volume= 22,698 cf
 Outflow = 7.37 cfs @ 12.07 hrs, Volume= 22,698 cf, Atten= 0%, Lag= 0.0 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP3: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30,536 sf, 52.39% Impervious, Inflow Depth > 4.60" for 25-Year event
 Inflow = 3.80 cfs @ 12.07 hrs, Volume= 11,695 cf
 Outflow = 3.80 cfs @ 12.07 hrs, Volume= 11,695 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP4: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 45,857 sf, 69.51% Impervious, Inflow Depth > 5.04" for 25-Year event
 Inflow = 6.13 cfs @ 12.07 hrs, Volume= 19,249 cf
 Outflow = 6.13 cfs @ 12.07 hrs, Volume= 19,249 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP5: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 44,117 sf, 80.81% Impervious, Inflow Depth > 5.38" for 25-Year event
 Inflow = 6.13 cfs @ 12.07 hrs, Volume= 19,765 cf
 Outflow = 6.13 cfs @ 12.07 hrs, Volume= 19,765 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Pond CB1: CB1

Inflow Area = 7,459 sf, 11.66% Impervious, Inflow Depth > 3.64" for 25-Year event
 Inflow = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf
 Outflow = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 135.01' @ 12.18 hrs

Flood Elev= 136.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	134.70'	24.0" Round Culvert L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.70' / 131.54' S= 0.0752 ' S= 0.0752 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.58 cfs @ 12.18 hrs HW=135.01' TW=131.71' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.58 cfs @ 1.89 fps)

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Summary for Pond CB4: CB4

Inflow Area = 59,053 sf, 65.47% Impervious, Inflow Depth > 4.99" for 25-Year event
 Inflow = 3.17 cfs @ 12.09 hrs, Volume= 24,558 cf
 Outflow = 3.17 cfs @ 12.09 hrs, Volume= 24,558 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.17 cfs @ 12.09 hrs, Volume= 24,558 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 115.20' @ 12.31 hrs

Flood Elev= 118.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.40'	8.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.40' / 106.72' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.17 cfs @ 12.09 hrs HW=114.00' TW=107.37' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.17 cfs @ 9.08 fps)**Summary for Pond DMH1: DMH1**

[58] Hint: Peaked 9.51' above defined flood level

Inflow Area = 7,459 sf, 11.66% Impervious, Inflow Depth > 3.64" for 25-Year event
 Inflow = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf
 Outflow = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.58 cfs @ 12.18 hrs, Volume= 2,266 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 131.71' @ 12.18 hrs

Flood Elev= 122.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.40'	24.0" Round Culvert L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 131.40' / 120.60' S= 0.0655 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.58 cfs @ 12.18 hrs HW=131.71' TW=119.75' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.58 cfs @ 1.89 fps)**Summary for Pond Storage: Storage**

Inflow Area = 48,420 sf, 67.57% Impervious, Inflow Depth > 5.07" for 25-Year event
 Inflow = 6.03 cfs @ 12.07 hrs, Volume= 20,451 cf
 Outflow = 2.49 cfs @ 12.30 hrs, Volume= 20,389 cf, Atten= 59%, Lag= 13.5 min
 Primary = 2.27 cfs @ 12.22 hrs, Volume= 20,228 cf
 Secondary = 0.36 cfs @ 12.30 hrs, Volume= 162 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

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Peak Elev= 120.34' @ 12.30 hrs Surf.Area= 432 sf Storage= 3,817 cf

Flood Elev= 122.68' Surf.Area= 432 sf Storage= 4,463 cf

Plug-Flow detention time= 15.5 min calculated for 20,381 cf (100% of inflow)

Center-of-Mass det. time= 13.6 min (789.6 - 776.1)

Volume	Invert	Avail.Storage	Storage Description
#1	111.50'	4,463 cf	9.00'W x 16.00'L x 10.33'H Prismatoid x 3

Device	Routing	Invert	Outlet Devices
#1	Primary	111.50'	6.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	120.00'	12.0" Round Culvert L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 120.00' / 111.60' S= 1.4000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.27 cfs @ 12.22 hrs HW=120.07' TW=114.29' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 2.27 cfs @ 11.58 fps)**Secondary OutFlow** Max=0.36 cfs @ 12.30 hrs HW=120.33' TW=115.19' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 0.36 cfs @ 1.55 fps)**Summary for Pond Storage-2: Storage**

Inflow Area = 59,053 sf, 65.47% Impervious, Inflow Depth > 4.99" for 25-Year event
 Inflow = 3.17 cfs @ 12.09 hrs, Volume= 24,558 cf
 Outflow = 2.34 cfs @ 12.58 hrs, Volume= 24,490 cf, Atten= 26%, Lag= 29.2 min
 Primary = 2.31 cfs @ 12.58 hrs, Volume= 24,473 cf
 Secondary = 0.04 cfs @ 12.58 hrs, Volume= 17 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 110.10' @ 12.58 hrs Surf.Area= 432 sf Storage= 2,683 cf

Flood Elev= 111.32' Surf.Area= 432 sf Storage= 3,210 cf

Plug-Flow detention time= 13.6 min calculated for 24,480 cf (100% of inflow)

Center-of-Mass det. time= 11.9 min (801.9 - 790.1)

Volume	Invert	Avail.Storage	Storage Description
#1	103.89'	3,240 cf	9.00'W x 16.00'L x 7.50'H Prismatoid x 3

Device	Routing	Invert	Outlet Devices
#1	Primary	103.89'	6.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	110.00'	12.0" Round Culvert L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.00' / 109.90' S= 0.0167 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.31 cfs @ 12.58 hrs HW=110.10' TW=0.00' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 2.31 cfs @ 11.76 fps)**Secondary OutFlow** Max=0.04 cfs @ 12.58 hrs HW=110.10' TW=0.00' (Dynamic Tailwater)↑**2=Culvert** (Inlet Controls 0.04 cfs @ 0.85 fps)

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Summary for Subcatchment 10: Subcat 10

Runoff = 2.06 cfs @ 12.07 hrs, Volume= 6,254 cf, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	22,814	98	Paved parking and Roofs, HSG C
*	6,827	74	Lawn Areas, HSG C
*	2,289	70	Woods, HSG C
	31,930	91	Weighted Average
	9,116		28.55% Pervious Area
	22,814		71.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	36	0.3130	0.26		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.70"
0.4	62	0.0180	2.72		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.7	98	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Subcat 11

Runoff = 0.20 cfs @ 12.19 hrs, Volume= 795 cf, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	870	98	Paved parking and Roofs, HSG C
*	6,589	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	7,459	77	Weighted Average
	6,589		88.34% Pervious Area
	870		11.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	92	0.0250	0.12		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.70"

Summary for Subcatchment 20: Subcat 20

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 2,307 cf, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

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	Area (sf)	CN	Description
*	9,031	98	Paved parking and Roofs, HSG C
*	0	74	Lawn Areas, HSG C
*	0	70	Woods, HSG C
	9,031	98	Weighted Average
	9,031		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	32	0.0100	0.76		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.70"
0.7	32	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 21: Subcat 21

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,774 cf, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	5,947	98	Paved parking and Roofs, HSG C
*	2,386	74	Lawn Areas, HSG C
*	2,300	70	Woods, HSG C
	10,633	87	Weighted Average
	4,686		44.07% Pervious Area
	5,947		55.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	27	0.0278	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.70"
0.0	7	0.0200	2.87		Shallow Concentrated Flow, BC
					Paved Kv= 20.3 fps
0.4	120	0.0580	4.89		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
5.2	154	Total			

Summary for Subcatchment 22: Subcat 22

Runoff = 0.35 cfs @ 12.07 hrs, Volume= 1,031 cf, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

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	Area (sf)	CN	Description
*	3,615	98	Paved parking and Roofs, HSG C
*	1,068	74	Lawn Areas, HSG C
*	1,758	70	Woods, HSG C
	6,441	86	Weighted Average
	2,826		43.88% Pervious Area
	3,615		56.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	61	0.3030	0.29		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.5	115	0.0400	4.06		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
4.0	176	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 30: Subcat 30

Runoff = 3.23 cfs @ 12.07 hrs, Volume= 9,657 cf, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	31,627	98	Paved parking and Roofs, HSG C
*	21,245	74	Lawn Areas, HSG C
*	5,016	70	Woods, HSG C
	57,888	87	Weighted Average
	26,261		45.37% Pervious Area
	31,627		54.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	20	0.1640	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.3	30	0.0980	1.88		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	110	0.0890	6.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	85	0.0870	5.99		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.3	85	0.0430	4.21		Shallow Concentrated Flow, E-F Paved Kv= 20.3 fps
2.9	330	Total, Increased to minimum Tc = 5.0 min			

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Summary for Subcatchment 40: Subcat 40

Runoff = 1.63 cfs @ 12.08 hrs, Volume= 4,887 cf, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	15,998	98	Paved parking and Roofs, HSG C
*	11,678	74	Lawn Areas, HSG C
*	2,860	70	Woods, HSG C
	30,536	86	Weighted Average
	14,538		47.61% Pervious Area
	15,998		52.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	40	0.1230	0.18		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.70"
0.1	10	0.0830	1.41		Sheet Flow, B-C Smooth surfaces n= 0.011 P2= 2.70"
0.3	125	0.1090	6.70		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
0.2	50	0.0370	3.90		Shallow Concentrated Flow, D-E Paved Kv= 20.3 fps
0.6	75	0.0760	1.93		Shallow Concentrated Flow, E-F Short Grass Pasture Kv= 7.0 fps
0.3	45	0.0120	2.22		Shallow Concentrated Flow, F-G Paved Kv= 20.3 fps
5.1	345	Total			

Summary for Subcatchment 50: Subcat 50

Runoff = 2.86 cfs @ 12.07 hrs, Volume= 8,634 cf, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

	Area (sf)	CN	Description
*	31,877	98	Paved parking and Roofs, HSG C
*	9,064	74	Lawn Areas, HSG C
*	4,916	70	Woods, HSG C
	45,857	90	Weighted Average
	13,980		30.49% Pervious Area
	31,877		69.51% Impervious Area

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Type III 24-hr Custom Rainfall=3.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0240	1.28		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.70"
1.0	180	0.0220	3.01		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.0	255	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 60: Subcat 60

Runoff = 3.02 cfs @ 12.07 hrs, Volume= 9,338 cf, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=3.30"

Area (sf)	CN	Description
* 35,651	98	Paved parking and Roofs, HSG C
* 8,466	74	Lawn Areas, HSG C
* 0	70	Woods, HSG C
44,117	93	Weighted Average
8,466		19.19% Pervious Area
35,651		80.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	75	0.0110	0.94		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.70"
1.2	225	0.0240	3.14		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.5	300	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach DP1: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 65,494 sf, 64.55% Impervious, Inflow Depth > 2.21" for Custom event
 Inflow = 1.60 cfs @ 12.38 hrs, Volume= 12,069 cf
 Outflow = 1.60 cfs @ 12.38 hrs, Volume= 12,069 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP2: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 57,888 sf, 54.63% Impervious, Inflow Depth > 2.00" for Custom event
 Inflow = 3.23 cfs @ 12.07 hrs, Volume= 9,657 cf
 Outflow = 3.23 cfs @ 12.07 hrs, Volume= 9,657 cf, Atten= 0%, Lag= 0.0 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP3: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30,536 sf, 52.39% Impervious, Inflow Depth > 1.92" for Custom event
 Inflow = 1.63 cfs @ 12.08 hrs, Volume= 4,887 cf
 Outflow = 1.63 cfs @ 12.08 hrs, Volume= 4,887 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP4: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 45,857 sf, 69.51% Impervious, Inflow Depth > 2.26" for Custom event
 Inflow = 2.86 cfs @ 12.07 hrs, Volume= 8,634 cf
 Outflow = 2.86 cfs @ 12.07 hrs, Volume= 8,634 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP5: Point of Analysis

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 44,117 sf, 80.81% Impervious, Inflow Depth > 2.54" for Custom event
 Inflow = 3.02 cfs @ 12.07 hrs, Volume= 9,338 cf
 Outflow = 3.02 cfs @ 12.07 hrs, Volume= 9,338 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Pond CB1: CB1

Inflow Area = 7,459 sf, 11.66% Impervious, Inflow Depth > 1.28" for Custom event
 Inflow = 0.20 cfs @ 12.19 hrs, Volume= 795 cf
 Outflow = 0.20 cfs @ 12.19 hrs, Volume= 795 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.20 cfs @ 12.19 hrs, Volume= 795 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 134.88' @ 12.19 hrs

Flood Elev= 136.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	134.70'	24.0" Round Culvert L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.70' / 131.54' S= 0.0752 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.20 cfs @ 12.19 hrs HW=134.88' TW=131.58' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.20 cfs @ 1.44 fps)

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Summary for Pond CB4: CB4

Inflow Area = 59,053 sf, 65.47% Impervious, Inflow Depth > 2.25" for Custom event
 Inflow = 1.97 cfs @ 12.12 hrs, Volume= 11,087 cf
 Outflow = 1.97 cfs @ 12.12 hrs, Volume= 11,087 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.97 cfs @ 12.12 hrs, Volume= 11,087 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 109.95' @ 12.12 hrs

Flood Elev= 118.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.40'	8.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.40' / 106.72' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.97 cfs @ 12.12 hrs HW=109.95' TW=105.64' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.97 cfs @ 5.65 fps)**Summary for Pond DMH1: DMH1**

[58] Hint: Peaked 9.38' above defined flood level

Inflow Area = 7,459 sf, 11.66% Impervious, Inflow Depth > 1.28" for Custom event
 Inflow = 0.20 cfs @ 12.19 hrs, Volume= 795 cf
 Outflow = 0.20 cfs @ 12.19 hrs, Volume= 795 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.20 cfs @ 12.19 hrs, Volume= 795 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 131.58' @ 12.19 hrs

Flood Elev= 122.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.40'	24.0" Round Culvert L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 131.40' / 120.60' S= 0.0655 ' S= 0.0655 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.20 cfs @ 12.19 hrs HW=131.58' TW=114.42' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.20 cfs @ 1.44 fps)**Summary for Pond Storage: Storage**

Inflow Area = 48,420 sf, 67.57% Impervious, Inflow Depth > 2.32" for Custom event
 Inflow = 2.87 cfs @ 12.07 hrs, Volume= 9,356 cf
 Outflow = 1.55 cfs @ 12.21 hrs, Volume= 9,313 cf, Atten= 46%, Lag= 7.9 min
 Primary = 1.55 cfs @ 12.21 hrs, Volume= 9,313 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

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Peak Elev= 114.43' @ 12.21 hrs Surf.Area= 432 sf Storage= 1,265 cf

Flood Elev= 122.68' Surf.Area= 432 sf Storage= 4,463 cf

Plug-Flow detention time= 12.9 min calculated for 9,313 cf (100% of inflow)

Center-of-Mass det. time= 10.0 min (803.3 - 793.4)

Volume	Invert	Avail.Storage	Storage Description
#1	111.50'	4,463 cf	9.00'W x 16.00'L x 10.33'H Prismaoid x 3

Device	Routing	Invert	Outlet Devices
#1	Primary	111.50'	6.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	120.00'	12.0" Round Culvert L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 120.00' / 111.60' S= 1.4000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.55 cfs @ 12.21 hrs HW=114.43' TW=109.65' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 1.55 cfs @ 7.88 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=111.50' TW=107.40' (Dynamic Tailwater)↑**2=Culvert** (Controls 0.00 cfs)**Summary for Pond Storage-2: Storage**

Inflow Area = 59,053 sf, 65.47% Impervious, Inflow Depth > 2.25" for Custom event
 Inflow = 1.97 cfs @ 12.12 hrs, Volume= 11,087 cf
 Outflow = 1.49 cfs @ 12.45 hrs, Volume= 11,038 cf, Atten= 24%, Lag= 19.8 min
 Primary = 1.49 cfs @ 12.45 hrs, Volume= 11,038 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 106.64' @ 12.45 hrs Surf.Area= 432 sf Storage= 1,188 cf

Flood Elev= 111.32' Surf.Area= 432 sf Storage= 3,210 cf

Plug-Flow detention time= 12.3 min calculated for 11,038 cf (100% of inflow)

Center-of-Mass det. time= 9.6 min (815.0 - 805.4)

Volume	Invert	Avail.Storage	Storage Description
#1	103.89'	3,240 cf	9.00'W x 16.00'L x 7.50'H Prismaoid x 3

Device	Routing	Invert	Outlet Devices
#1	Primary	103.89'	6.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	110.00'	12.0" Round Culvert L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.00' / 109.90' S= 0.0167 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.49 cfs @ 12.45 hrs HW=106.64' TW=0.00' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.61 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=103.89' TW=0.00' (Dynamic Tailwater)↑**2=Culvert** (Controls 0.00 cfs)

11.Stormwater Maintenance Plan

Stormwater Maintenance / Inspection Plan

This Maintenance Plan has been prepared for this specific site. Regular maintenance of the on-site stormwater facilities is required to ensure they are functioning as intended and to prevent re-suspension and transport of sediment to existing downstream watercourses.

Maintenance of the stormwater management system components will be the responsibility of the Southern Maine Affordable Housing. The person responsible for implementing the maintenance plan and coordinating maintenance procedures with contracted entities is as follows:

Guy Gagnon, Facilities Director
Southern Maine Affordable Housing
22 South Street
Biddeford, ME 04005
Phone: 207-415-2939
Email: ggagnonbha@maine.rr.com

Records of all stormwater facilities inspections and maintenance work accomplished must be kept on file and retained for a minimum period of five years. A sample maintenance log is attached.

During construction of the proposed treatment areas, inspection and maintenance of erosion and sedimentation control practices and stormwater treatment practices will be the responsibility of the contractor. Refer to the attached drawings for inspection and maintenance requirements during construction.

Facilities that will require regular maintenance after the project has been accepted by the owner are listed below along with a description of the required maintenance. The specified maintenance tasks and schedule is intended to identify the minimum requirements. Additional maintenance may be required based on site specific conditions.

Sweeping

Paved surfaces shall be swept or vacuumed at least annually in the spring to remove all winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

Roadways and Parking Surfaces			
	Spring	Fall or Yearly	After a Major Storm
Clear accumulated winter sand in parking lots and along walkways.	X		
Sweep pavement to remove sediment.	X		
Ensure that stormwater is not impeded by accumulations of material.	X		

Catch Basins

Catch basins shall be inspected annually for debris and the accumulation of sediments. Large debris and debris blocking inlet grates shall be removed immediately. Sediment accumulations shall be removed when sediment

reaches two thirds of the total volume of the sump. Vacuuming sediments from catch basins must be done by a vacuum truck. The removed material must be disposed of in accordance with Maine's Solid Waste Disposal Rules. Sump skimmers installed in basins located in paved areas to absorb hydrocarbons shall be inspected and replaced when saturated.

Catch Basin /Storage Systems				
	<u>Spring</u>	<u>Fall or Yearly</u>	<u>After a Major Storm</u>	<u>As Needed</u>
Inspect sump skimmer (catch basins in paved areas). Replace when saturated		<u>X</u>		
Inspect for accumulation of sediments		<u>X</u>		
Remove and legally dispose of accumulated sediments and debris from the bottom of the basin, inlet grates, inflow channels to the basin, and pipes between basins.				<u>X</u>
Remove floating debris and floating oils (using oil absorptive pads).	<u>X</u>	<u>X</u>		<u>X</u>
Inspect sumps annually and clean with vacuum pump when sediment occupies more than two thirds of the sump capacity. Clean drain lines when sediment occupies more than 20% of pipe diameter.	<u>X</u>	<u>X</u>		<u>X</u>

Vegetated Areas

Areas of maintained lawn are to be inspected regularly for signs of erosion and channelization. Areas where erosion is occurring or areas of sparse growth shall be replanted and stabilized.

Vegetated Areas			
	Spring	Fall or Yearly	After a Major Storm
Inspect all slopes and embankments.	X		
Replant bare areas or areas with sparse growth.	X		
A armor areas with rill erosions with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	X		

Ditches, Swales and Culverts				
	Spring	Fall or Yearly	After a Major Storm	As Needed
Inspect and remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.	X	X		X

Repair any erosion damage at the culvert's inlet and outlet.				X
Inspect after major rainfall event*. Repair erosion and sedimentation immediately			X	X

*A major storm event is classified as a rainfall total of 3.0 inches or more in a 24-hour period (a 2-year storm event).

Stormwater Maintenance/Erosion & Sediment Control

Maintenance Log

This sample Maintenance Log is intended to accompany the Stormwater Management Facilities Maintenance Plan. The contractor shall maintain this log (or a similar log) from the start of construction through acceptance of the facilities by the City. Following acceptance of the facilities, the City shall be responsible for maintenance and updating the maintenance log. This log shall be kept on file for a minimum of five years and shall be available for review by MDEP. A certified post-construction stormwater inspector shall perform all inspections. A list of these individuals can be found on the MDEP website.

The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and/or as described in the table below.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Roadways and Parking Surfaces	Clear accumulated winter sand in parking lots and along walkways.			
	Sweep pavement to remove sediment.			
	Ensure that stormwater is not impeded by accumulations of material.			
Catch Basins & Drain Lines	Inspect sump skimmers in catch basins in paved areas (annually in spring). Replace when saturated.			
	Inspect sumps (annually in spring). Clean with vacuum pump when sediment occupies more than two thirds of the sump capacity.			
	Inspect drain lines (annually in spring). Clean when sediment occupies more than 20% of pipe diameter.			
	Inspect drain line inlets/outlets (annually in spring). Remove accumulated sediments when needed.			
Vegetated Areas	Inspect all slopes and embankments (annually in spring).			
	Replant bare areas or areas with sparse growth			

	(annually in spring).			
	Armor areas with rill erosions with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows (annually in spring).			
Ditches, Swales and Culverts	Inspect after major rainfall event*. Repair debris, erosion and sedimentation immediately.			

Sample (continued...)

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Crushed Stone Drip Strip Soil Filter strip	Inspect Crushed Stone Drip Strip Soil Filter strip for sediment and debris build-up (semi-annually in spring and fall). Remove accumulated sediment and debris as needed .			
	Inspect drain down time (annually in spring). Aerate or replace top several inches of soil filter material when water ponds on the surface of the bed for more than 72 hours.			
Grassed Under-drained Soil Filter	Inspect grass filter strips (grassed underdrained soil filters) for sediment build-up (semi-annually in spring and fall). Remove accumulated sediment as needed			
	Mow grassed underdrained soil filters, with hand held string trimmers or push-mowers only, no more than two times per growing season. Maintain grass heights of no less than 6".			
	Inspect all slopes and embankments (annually in fall). Remove sediment as needed.			
	Inspect drain down time (annually in spring). Replace top several inches of soil filter material when water ponds on the surface of the bed for more than 72 hours.			
	Inspect drain down time (annually in spring). Aerate the top of the filter bed to reestablish the soil's filtration capacity if ponding exceeds 48 hours.			

*A major storm event is classified as a rainfall total of 3.0 inches or more in a 24-hour period (a 2-year storm event).



OAK POINT
ASSOCIATES

architecture
engineering
planning

June 14, 2021

Greg Tansley
Biddeford Planning Department
P.O. Box 586
205 Main Street
Biddeford, Maine 04005

Re: Site Plan Review Application
Adams Street Housing
69 Adams Street
Biddeford, Maine 04005

Dear Greg,

Please find enclosed the following submission items for the above referenced project:

Ten (10) Copies of Full-Size Site Plans

Ten (10) Copies of Site Plan Review Application and Supporting Materials:

1. Project Description and Photographs
2. Draft Contract Zone Agreement
3. Locus Deed
4. Winter Management Plan
5. Letter of Approval from Fire Department (submitted under separate cover)
6. Ability to serve letter from Maine Water Company
7. Ability to serve letter from Tom Milligan regarding sanitary sewer service
8. Traffic Impact Study
9. Geotechnical Report
10. Stormwater Narrative and Calculations
11. Stormwater Maintenance Plan
12. One (1) CD-ROM with electronic copy of plans and supporting materials

The Application fee and engineering deposit of \$4,800 has been previously submitted with the Concept Plan submission on April 14, 2021.

With regard to review comments provided by the board and staff, I have the following responses:

1. Provide a Winter Maintenance and Salt Management Plan. Winter Maintenance plan submitted.
2. Provide playground design for inclusion in stormwater analysis. Playground will be wood fiber safe surface with underdrains and has been modeled as turf in the analysis.
3. Identify amount of bicycle parking on site. There is parking for eight bicycles outside and additional bike storage inside the building.
4. Identify outdoor amenities for seating and shade. Benches, trees, and entrance canopy are shown on the landscaping plan.

5. Historic Preservation Commission (HPC) review and approval is required. Recommend having the project approved by the HPC before requesting final approval from the Planning Board. HPC review process is underway. One meeting was held and another is scheduled soon.
6. Consider installing EV charging infrastructure now rather than later to avoid future site construction and costs. Conduits for future EV charging are included on the Utility Plan.
7. Provide Site Lighting plan, including photometric analysis. Site Lighting Plan with photometric analysis is included in the plan set.
8. Concerns regarding the loss of trees on the Parish Place property to facilitate the utilities, pedestrian access to and from Birch Street, and a possible fire lane. Please provide a landscape plan to show how the area can be replanted. Landscape plan includes plantings between the property and Birch Street adjacent to the fire lane.
9. Mr. Di Matteo suggested revisiting the overall site layout to see if things could be shifted to be less impactful on neighboring properties regarding topography and distance to property lines. For example, sliding the parking areas northwest 10 feet or so away from the neighboring residential properties. One member of the Board encouraged you to review this prior to resubmitting to the Planning Board. We have reviewed this request and find that the road slope would increase from 7.7 percent to 9.5 percent. We feel the increased slope will pose a safety concern for winter travel and firefighting. In addition, pedestrian and bicycle travel would be more difficult. This change was not incorporated for these reasons.
10. You mentioned adding landscaping to above the parking lot retaining wall to the southeast. You also suggested that perhaps the retaining wall could be terraced to avoid one large, high wall. Please review this prior to submitting to the Planning Board. We reviewed this area and decided that it would be better to place plantings at the base of the wall to soften the impact rather than create additional disturbance near the property lines.
11. You indicated that the intersection of Jefferson and Adam's Street is identified as a High Crash Location (HCL). You noted that pedestrian safety may be an issue here as well. Please review and make recommendations for design to convert this intersection to a four-way stop should it be warranted. A four way stop at Jefferson and Adams Streets is proposed. This includes adding stop bars and stop signs on Jefferson Street.
12. Will the project have a sign? If so, review and approval by the HPC is required and sign location and details must be shown on Planning Board plans. There are no project signs proposed.
13. Will HVAC be located on the roof? If so, what, if anything, can be done to minimize potential noise impacts? There will be HVAC units on the roof. The units will be set back from the edge at least six to ten feet so the units cannot be seen and for worker safety reasons.
14. The parking requirements are 2 spaces for every 2+ BDRM Units, and 1 space for every Studio/1 BDRM. Please provide parking calculations per this standard and identify the number of spaces proposed for the purposes of calculating the required on-site parking spaces. There are 13 studio/1 bedroom units and 26 units with 2 or more bedrooms. This results in a parking count of 65.
15. The total parcel size is over 1.5 acres. Will the project trigger a Maine DEP Stormwater Permit when considering all on and off-site disturbance? This project will disturb slightly more than 1 acre and create less than 1 acre of impervious surface. We have corresponded with the Maine DEP regarding State stormwater permits and this project requires a stormwater permit by rule, which only requires Basic Standards (erosion control and NPDES notification).
16. This project requires a Contract Zone. We ask that applicant's for Contract Zones draft up the Findings of Fact and the Contract Zone Agreement for our review and adaptation. I have

Greg Tansley
June 14, 2021
Page 3

attached to this email an example of each from a recently approved Contract Zone for a residential project at the end of Barra Road. We will need similar documents from you for this project should it proceed to a recommendation back to the City Council for Contract Zone approval. Draft Contract Z agreements are included with this application.

Please contact me to let me know if you have any questions or comments.

A handwritten signature in blue ink, appearing to read 'Jacques L Gagnon Jr.', with a stylized, flowing script.

Jacques L Gagnon Jr., PE, LEED AP
Associate
Encl.

ADAMS POINT HOUSING

69 ADAMS STREET, BIDDEFORD, MAINE, 04005

LIST OF DRAWINGS

SHEET NUMBER	DISCIPLINE SHEET	TITLE
1	OF 19	G-001
2	OF 19	V-101
3	OF 19	CD101
4	OF 19	CS101
5	OF 18	CL101
6	OF 19	CU101
7	OF 19	CG101
8	OF 19	C-301
9	OF 19	C-501
10	OF 19	C-502
11	OF 19	C-503
12	OF 19	C-504
13	OF 19	L1.0
14	OF 19	L2.0
15	OF 19	A100
16	OF 19	A101
17	OF 19	A200
18	OF 19	E100
19	OF 19	WS101

NOTES

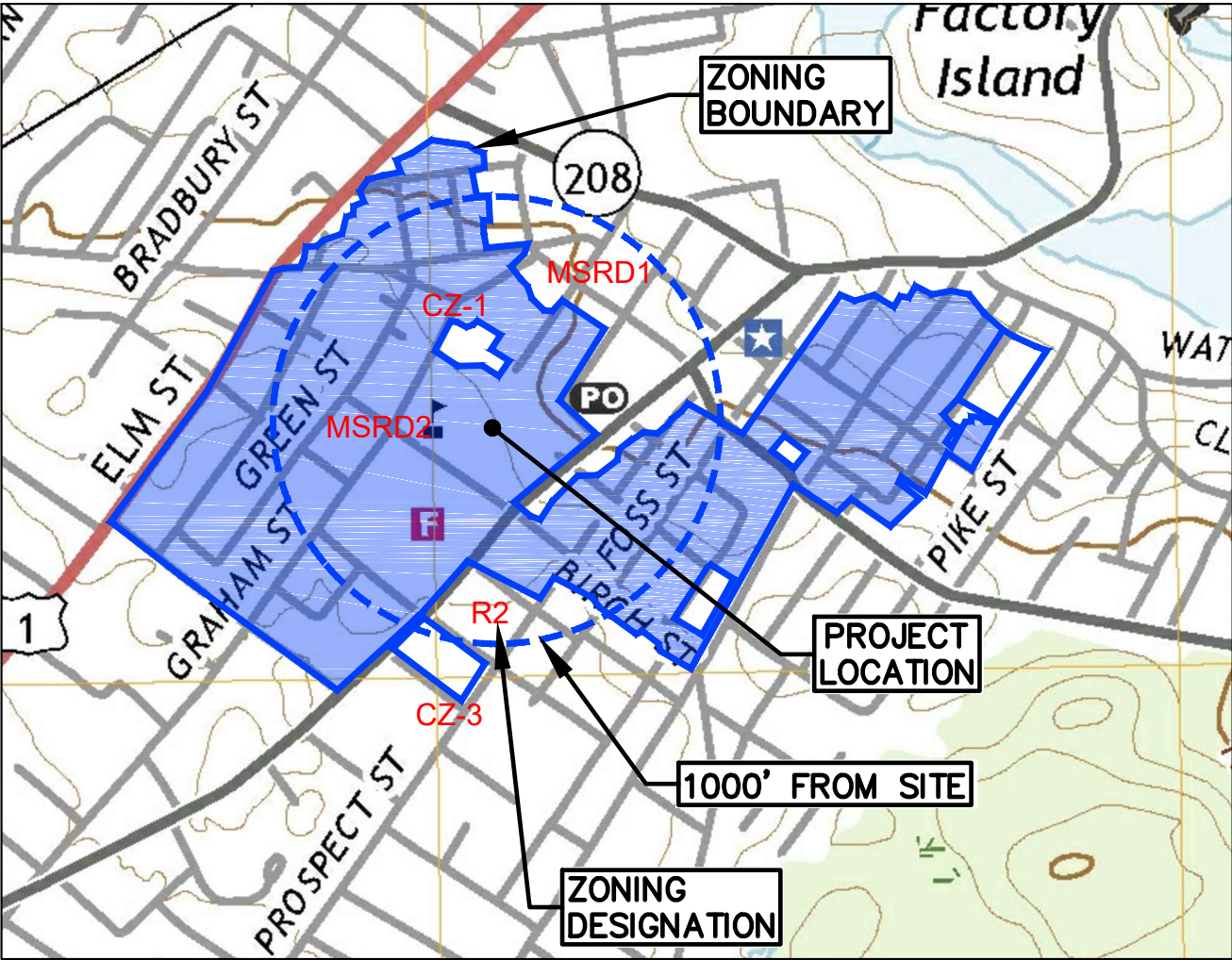
- THESE ARE GENERAL PROJECT NOTES THAT APPLY TO THE ENTIRE PROJECT INCLUDING EACH DISCIPLINE.
- ALL COMPONENTS ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
- VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT. PROCEED WITH THE WORK AFTER DISCREPANCIES HAVE BEEN RESOLVED.
- CONFORM TO STATE, NATIONAL AND OTHER CODES AND ORDINANCES WHICH ARE APPLICABLE TO THIS PROJECT, KNOWN PERMITS THAT HAVE BEEN OBTAINED BY THE OWNER INCLUDE:
 - CITY OF BIDDEFORD SITE PLAN REVIEW.
 - STATE OF MAINE STORMWATER PERMIT BY RULE.
- WORK FROM GIVEN DIMENSIONS AND LARGE SCALE DETAILS ONLY. DO NOT SCALE DRAWINGS.
- DO NOT PENETRATE NEW BEAMS, GIRDERS, WAFFLE SLABS OR OTHER STRUCTURAL MEMBERS UNLESS SHOWN OTHERWISE ON THE STRUCTURAL DRAWINGS.
- DURING THE ENTIRE CONTRACT PERIOD, MAINTAIN THE CONSTRUCTION SITE IN A SECURE, WEATHER TIGHT, NEAT, CLEAN AND SAFE CONDITION.
- DISPOSE OF AND/OR RECYCLE CONSTRUCTION DEBRIS FROM THE PROJECT AS REQUIRED BY THE CONTRACT AND STATE OF MAINE. OBTAIN DISPOSAL PERMITS WHICH ARE REQUIRED. DISPOSE OF CONSTRUCTION DEBRIS FROM THE PROJECT IN A STATE APPROVED LANDFILL.
- COMPLETE WORK IN COMPLIANCE WITH INDUSTRY STANDARDS AND PERFORM WORK IN A WORKMANLIKE PROFESSIONAL MANNER.
- UNLESS NOTED OTHERWISE, DIMENSIONS ARE TO FACE OF FRAMING.
- ELEVATIONS ARE BASED UPON NAVD 88.
- RESTORE SURFACES, SITE FEATURES AND LANDSCAPING THAT ARE DAMAGED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, AS ACCEPTABLE TO THE OWNER.
- DO NOT DIRECT VEHICLE OR EQUIPMENT EXHAUST TOWARDS THE BUILDINGS.
- HAND EXCAVATE WITHIN 5' OF EXISTING UNDERGROUND UTILITIES AND EXISTING FOUNDATION WALLS.
- CONTACT "DIGSAFE" AT 1-888-344-7233 AND OBTAIN A "DIGSAFE" PERMIT PRIOR TO COMMENCING EXCAVATION OPERATIONS. ADDITIONALLY CONTACT "OKTODIG" AT 1-866-658-6344 FOR NON-DIG SAFE MEMBERS WITHIN THE CITY OF BIDDEFORD.

LEGEND

---	EXISTING EDGE OF ASPHALT CONCRETE PAVEMENT
- - - - -	SAWCUT (SHEET CD101 ONLY)
- . - . -	REMOVALS (SHEET CD101 ONLY)
=====	EDGE OF ASPHALT CONCRETE PAVEMENT
=====	EXISTING BUILDING LINE
=====	BUILDING LINE
-----ESD(12")-----	EXISTING STORM DRAIN LINE (PIPE SIZE IF KNOWN)
-----SD(12")-----	STORM DRAIN LINE (PIPE SIZE INDICATED)
-----ESS(12")-----	EXISTING SANITARY SEWER LINE (PIPE SIZE IF KNOWN)
-----SS(6")-----	SANITARY SEWER LINE (PIPE SIZE INDICATED)
-----EW(12")-----	EXISTING WATER LINE (PIPE SIZE AND IF KNOWN)
-----W(4")-----	DOMESTIC WATER LINE (PIPE SIZE INDICATED)
-----EOE/C-----	EXISTING OVERHEAD ELECTRIC AND COMMUNICATION LINE
-----UE(5")-----	UNDERGROUND ELECTRIC CONDUIT (SIZE INDICATED).
-----UE(5")-----	UNDERGROUND ELECTRIC CONDUIT (SIZE INDICATED).
-----UC(4")-----	UNDERGROUND COMMUNICATIONS CONDUIT (SIZE INDICATED).
-----EUNG (4")-----	EXISTING UNDERGROUND NATURAL GAS (PIPE SIZE IF KNOWN).
-----UNG(4")-----	UNDERGROUND NATURAL GAS LINE (SIZE INDICATED).
-----Sf-----	SILT FENCE
-----166-----	EXISTING ELEVATION CONTOURS (DECIMAL FEET)
-----166-----	FINISH ELEVATION CONTOURS (DECIMAL FEET)
-----	UTILITY POINT OF CONNECTION
-----	EXISTING PIPE FLOW DIRECTION
-----	PIPE FLOW DIRECTION
-----	EXISTING SURFACE FLOW
-----	EXISTING PAD MOUNTED TRANSFORMER.
-----	EXISTING LIGHT POLE WITH CONCRETE FOUNDATION
-----	EXISTING WATER SHUT-OFF VALVE
-----	WATER SHUT-OFF VALVE
-----	FOUNDATION DRAIN CLEANOUT
-----	EXISTING TREELINE
-----	REMOVAL TREELINE
-----	TREELINE
-----164.58'E	EXISTING SPOT GRADE
-----165.75'F	FINISH SPOT GRADE
-----166.12'E/F	EXISTING AND FINISH SPOT GRADES (NO CHANGE IN GRADES)
-----164.12'F	FINISH SPOT GRADE
-----163.65'E	EXISTING SPOT GRADE
-----TP-1	EXISTING SOIL TEST PIT
-----	DETAIL NUMBER
-----	SHEET WHERE DETAIL IS DRAWN
-----	SHEETS WHERE DETAIL IS TAKEN
-----5/AE501	DETAIL NUMBER
-----	SHEET WHERE DETAIL IS DRAWN

ABBREVIATIONS

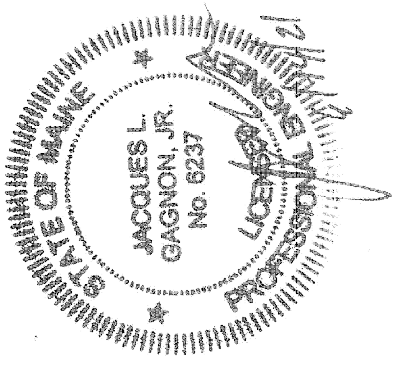
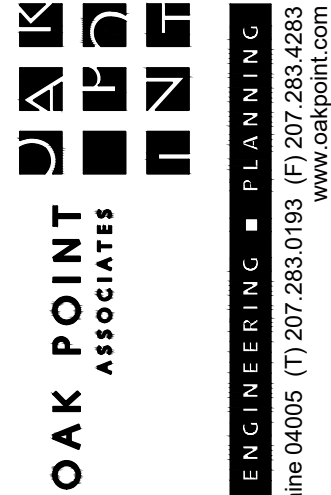
@	AT
&	AND
#	NUMBER
°	DEGREES
±	PLUS/MINUS
ACT	ACOUSTICAL CEILING TILE
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
BD	BOARD
CL	CENTERLINE
CONC	CONCRETE
DIA	DIAMETER
EPDM	ETHYLENE PROPYLENE DIENE TERPOLYMER
ELEV,EL	ELEVATION
EMERG	EMERGENCY
EQ	EQUAL
EXIST,E	EXISTING
F	FINISH
FDN	FOUNDATION
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISH FLOOR ELEVATION
FRT	FIRE RETARDANT TREATED
FT	FOOT, FEET
HDPE	HIGH DENSITY POLYETHYLENE
IN	INCH(ES)
INSUL	INSULATION
INV	INVERT
MAX	MAXIMUM
MIN	MINIMUM
mm	MILLIMETER(S)
MTL	METAL
N	NORTH
OC	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PLYWD	PLYWOOD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PT	PRESSURE TREATED
REINF	REINFORCED
SF	SQUARE FEET
SIM	SIMILAR
SQ	SQUARE
SS	STAINLESS STEEL
STL	STEEL
STRUCT	STRUCTURAL
SYS	SYSTEM
TBM	TEMPORARY BENCH MARK
TOS	TOP OF STEEL
TYP	TYPICAL
VIF	VERIFY IN FIELD
W/	WITH
WD	WOOD



VICINITY MAP
SCALE: 1"=800'



NOT FOR CONSTRUCTION



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

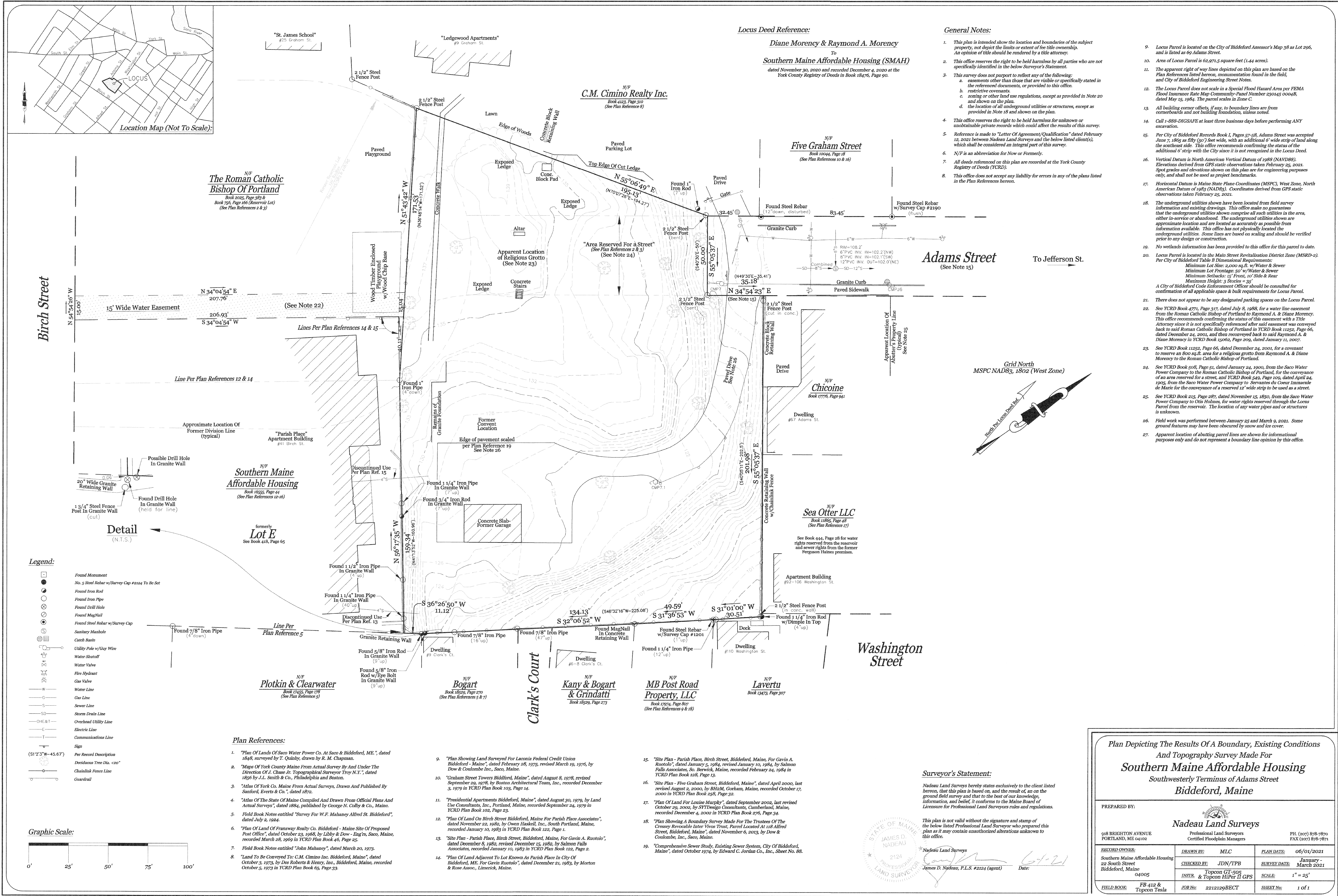
LIST OF
DRAWINGS,
MAPS, NOTES,
LEGEND AND
ABBREVIATIONS

SCALE: AS NOTED

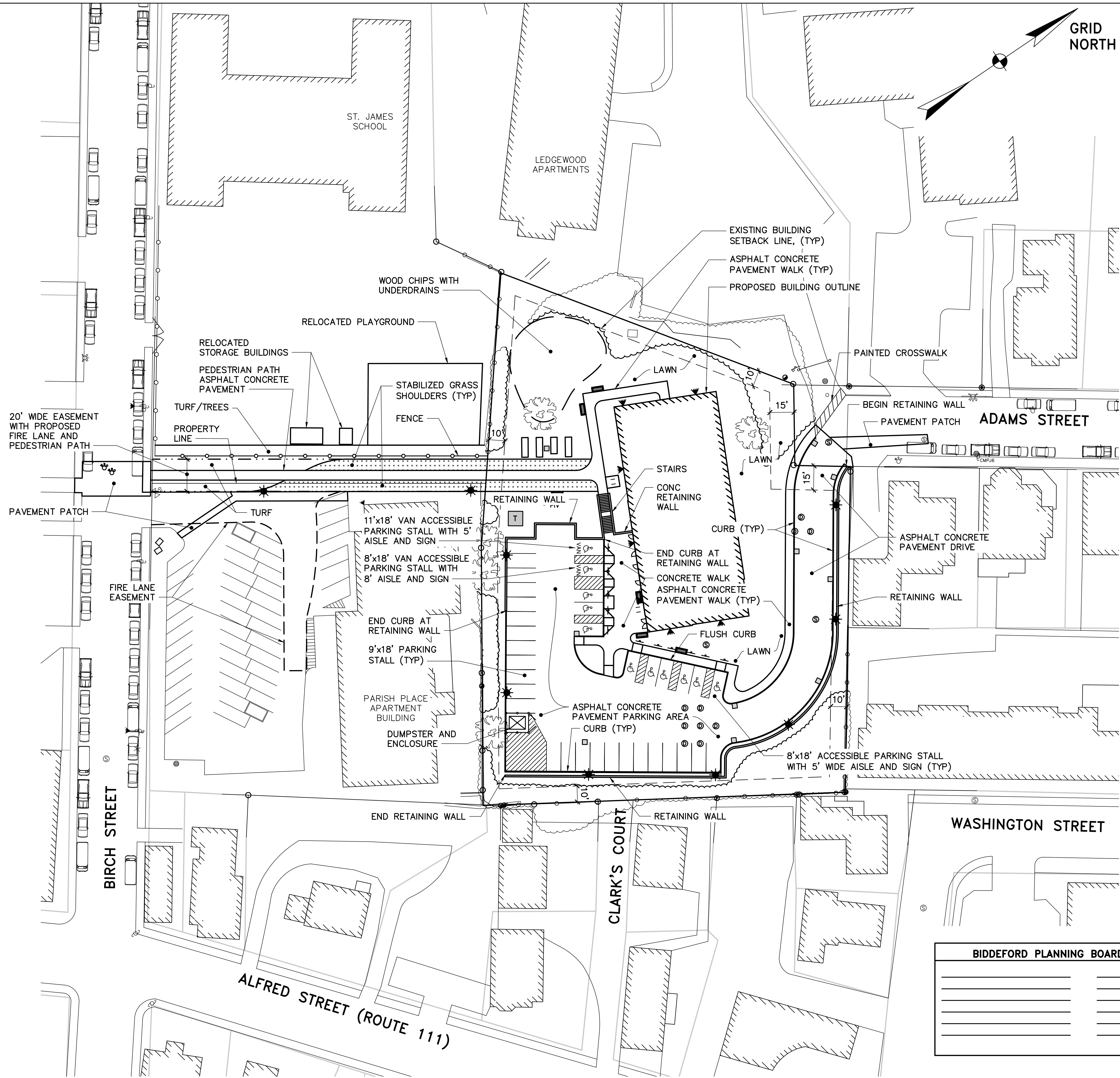
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DWG.: G-001

SHEET: 1 OF 19



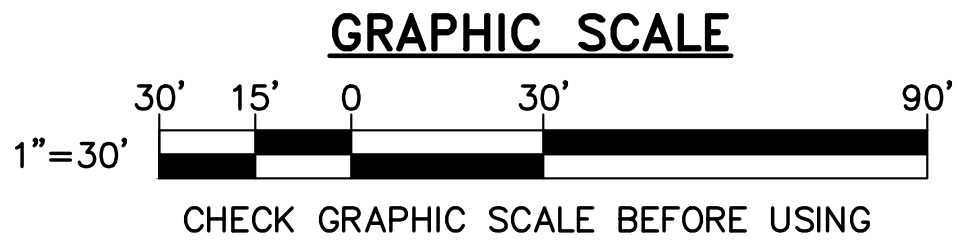
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NOTES:

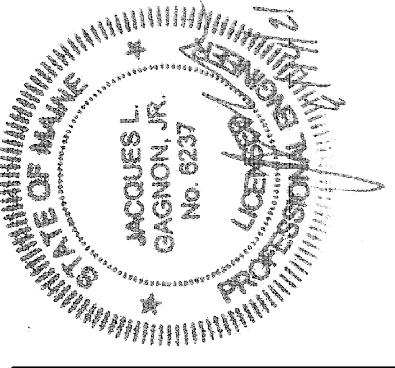
- PROPERTY INFORMATION
 - OWNER: SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
BIDDEFORD, MAINE 04005
 - LOCUS TAX MAP: MAP 38, LOT 290
 - DEED REFERENCE: BOOK 18476, PAGE 90 (EASEMENT: BOOK 15062, PAGE 209)
 - TOTAL PARCEL AREA (BASED ON BOUNDARY SURVEY REFERENCED IN NOTE 2, BELOW): 62,971.5 FT² (1.44 ACRES)
- INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
 - A PLAN ENTITLED "A PLAN DEPICTING THE RESULTS OF A BOUNDARY, EXISTING CONDITIONS AND TOPOGRAPHIC SURVEY MADE FOR SOUTHERN MAINE AFFORDABLE HOUSING, SOUTHWESTERLY TERMINUS OF ADAMS STREET, BIDDEFORD, MAINE". PREPARED BY NADEAU LAND SURVEYS, 918 BRIGHTON AVENUE, PORTLAND, ME, 04102, PLAN DATE 06/01/2021.
 - TOPOGRAPHIC SURVEY DATA INFORMATION FROM THE PLAN REFERENCE 2.a. ABOVE.
 - SUBSURFACE WATER AND GAS MAIN LOCATIONS FROM GEOGRAPHICAL INFORMATION SYSTEM DATABASE INFORMATION OBTAINED FROM MAINE WATER COMPANY AND UNITIL CO.
 - SUBSURFACE SEWER AND STORM DRAIN INFORMATION PROVIDED BY THE CITY OF BIDDEFORD, MAINE IN MAY, 2021 CONSISTING OF THE FOLLOWING:
 - GEOGRAPHIC INFORMATION SYSTEM INFORMATION.
 - A PLAN ENTITLED "GRAHAM STREET TOWERS", BIDDEFORD, MAINE, DRAWING 1 OF 2 BY BOSTON ARCHITECTURAL TEAM REVISED SEPT 19, 1978.
 - A PLAN ENTITLED "PARISH PLACE", BIRCH STREET, BIDDEFORD, MAINE, SHEET S1 BY SWIFT ENGINEERING AND SALMON FALLS ASSOCIATES DATED 1-5-84.
 - A PLAN ENTITLED "PLAN OF LAND FOR LOUISE MURPHY", SHEET S-100 BY SYTDESIGN CONSULTANTS DATED SEPT 2002.
 - PLAN ENTITLED "EXISTING SEWER SYSTEM" INCLUDED IN THE PROJECT ENTITLED "COMPREHENSIVE SEWER STUDY" BY EDWARD C. JORDAN CO, INC, DATED OCTOBER, 1974.
- ELEVATIONS INDICATED HEREON ARE BASED ON THE NAVD 88 VERTICAL DATUM.
- UTILITIES INDICATED HEREON ARE BASED ON FIELD RECONNAISSANCE AND INFORMATION PROVIDED BY THE CITY OF BIDDEFORD, MAINE WATER, UNITIL, AND PLAN REFERENCE 2.a.. THEY ARE SHOWN IN THEIR APPROXIMATE LOCATION. AT LEAST THREE (3) BUSINESS DAYS PRIOR TO COMMENCING WORK, DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES IN THE WORK AREA, INCLUDING UTILITIES IN HILL STREET, AND CONTACT THE FOLLOWING:
 - "DIGSAFE" AT 1-888-344-7233 TO OBTAIN A "DIGSAFE" PERMIT
 - "OK-TO-DIG" AT 1-866-658-6344
 - MAINE WATER AT 1-800-287-1643
 - CITY OF BIDDEFORD AT 207-282-1579 OR AT 207-282-1350
- REPORT DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD-IDENTIFIED UTILITY LOCATIONS TO THE OWNER PRIOR TO DISTURBING AREAS SURROUNDING THE EXISTING UNDERGROUND UTILITIES.
- ZONING INFORMATION:
 - ZONE: MSRD 2
 - FRONT YARD SETBACK: 15'
 - SIDE AND REAR YARD SETBACKS: 10'
 - MINIMUM LOT SIZE: 2,000 FT²
 - MINIMUM LOT FRONTAGE: 50'
 - MAXIMUM HEIGHT: 3 STORIES (35')
- TRAFFIC CONTROL NOTE: PREPARE AND SUBMIT A WRITTEN TRAFFIC CONTROL PLAN TO THE CITY OF BIDDEFORD FOR APPROVAL PRIOR TO ANY LANE CLOSURES OR WORK WITHIN THE RIGHT OF WAY.
- OBTAIN CITY OF BIDDEFORD STREET OPENING PERMIT PRIOR TO PERFORMING WORK IN THE RIGHT OF WAY.
- PRIOR TO BEGINNING EXCAVATION, PROVIDE PRODUCT INFORMATION SUBMITTALS FOR THE FOLLOWING PRODUCTS TO THE CITY OF BIDDEFORD ENGINEERING DEPARTMENT AND PUBLIC WORKS DEPARTMENT FOR REVIEW AND APPROVAL:
 - STORM DRAIN PIPING
 - STORM DRAIN LATERAL CONNECTION
 - DRAIN MANHOLE
 - SEWER LINE PIPING
- PRIOR TO BEGINNING EXCAVATION, COORDINATE WITH THE CITY OF BIDDEFORD PUBLIC WORKS DEPARTMENT FOR INSPECTIONS OF THE FOLLOWING ITEMS:
 - LATERAL CONNECTIONS TO THE EXISTING STORM DRAIN SYSTEM
 - STORM DRAIN LINE INSTALLATION WITHIN THE HILL STREET RIGHT OF WAY
 - CONNECTIONS TO THE EXISTING SANITARY SEWER STUB AT THE EDGE OF THE HILL STREET RIGHT OF WAY

NOTE:
SEE THE LANDSCAPE SHEET L1.0 FOR PLANTINGS,
SITE AMENITIES, AND GROUND COVERS.



1 SITE PLAN
SCALE: 1"=30'

BIDDEFORD PLANNING BOARD	



JLG
DEW
JLG

DESIGNED BY:
DRAWN BY:
CHECKED BY:

22104.04
PROJECT:

SOUTHERN MAINE
AFFORDABLE HOUSING

22 South Street
Biddeford, Maine, 04005

ADAMS POINT HOUSING

69 Adams Street
Biddeford, Maine, 04005

SITE
PLAN

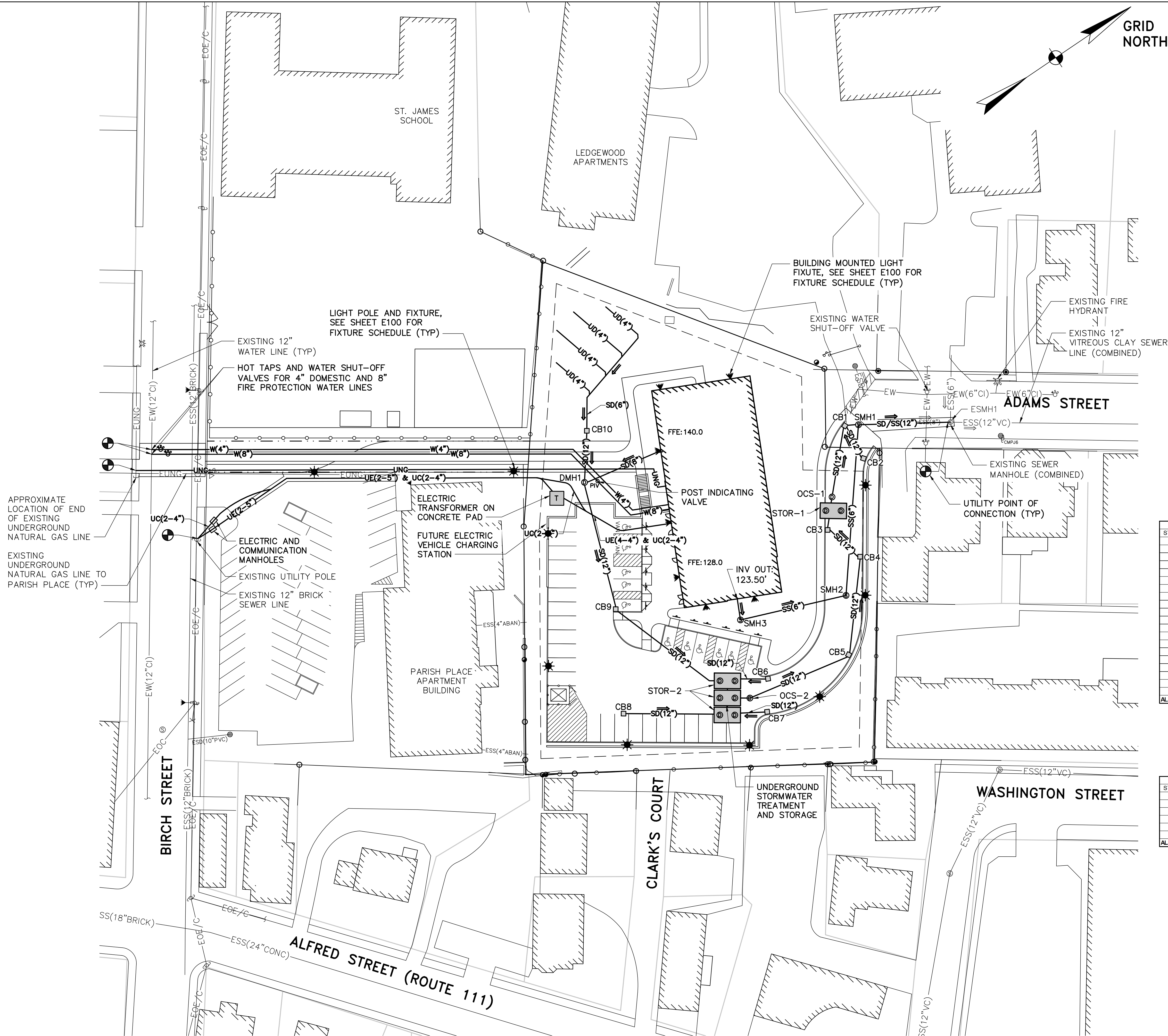
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DATE: 06-14-2021

DWG.: CS101

SHEET: 4 OF 19

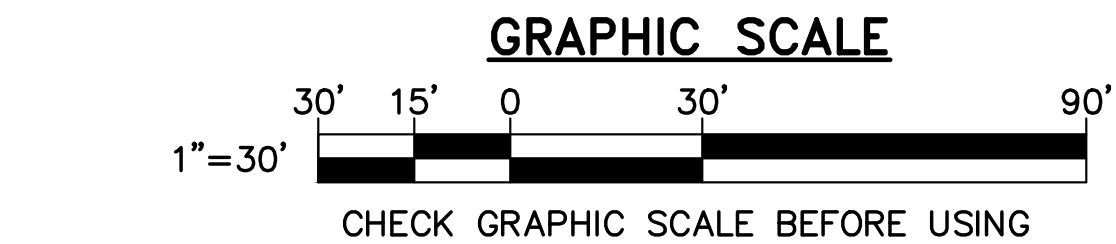
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DRAINAGE STRUCTURE SCHEDULE				
STRUCTURE	RIM	INVERT IN	INVERT OUT	NOTES
ECB1	106.27	-	102.56	12" LATERAL TO COMB SEWER
CB1	111.23	102.94	102.84	
CB2	112.28		108.28	
OCS-1	113.03	109.20	102.99	6" SEE DETAIL 1/C504
STOR-1	113.52	109.40	109.30	12" OVERFLOW
CB3	114.26	109.70	109.60	6" OUTLET
CB4	115.67	108.85	108.75	
CB5	120.20	110.62	110.52	
OCS-2	124.00	111.40	111.30	6" SEE DETAIL 1/C504
STOR-2	124.25	120.50	120.00	12" OVERFLOW
CB6	123.53	-	111.50	6" OUTLET
CB7	123.64	-	120.20	10"
CB8	125.41	-	121.41	10"
CB9	126.90	122.90	122.80	
DMH1	137.73	132.68	124.82	
CB10	137.00	-	133.00	

SANITARY SEWER STRUCTURE SCHEDULE				
STRUCTURE	RIM	INVERT IN	INVERT OUT	NOTES
ESMH1	108.20	102.10	102.00	8" EXIST IN, 12" OUT
		102.20		6" EXIST
		102.10		12" NEW
SMH1	111.22	105.76/102.79	102.69	6" IN, DROP, 12" OUT
SMH2	117.80	113.30	113.20	
SMH3	126.00	121.50	121.40	INV 123.50 AT BLDG FACE

ALL SANITARY SEWER LINES ARE 6-INCH DIAMETER UNLESS NOTED OTHERWISE



1 UTILITY PLAN
CU101 SCALE: 1"=30'

NOT FOR CONSTRUCTION



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

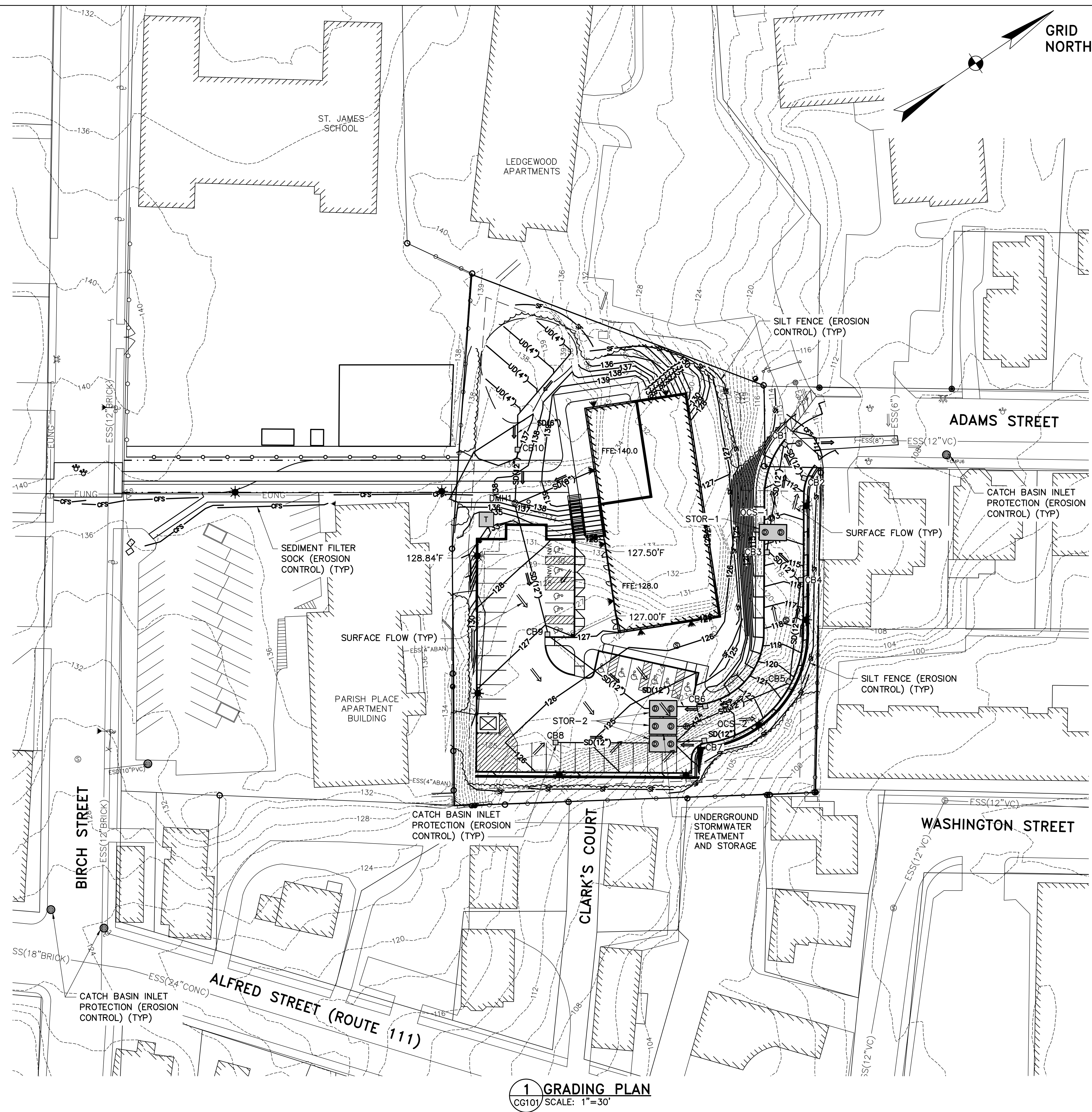
UTILITY
PLAN

SCALE: AS NOTED

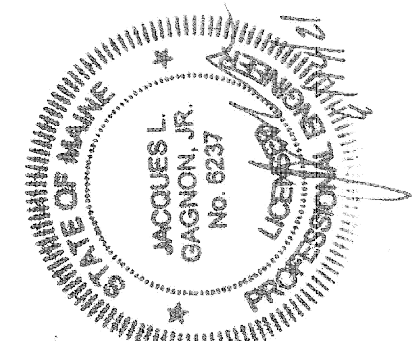
DATE: 06-14-2021

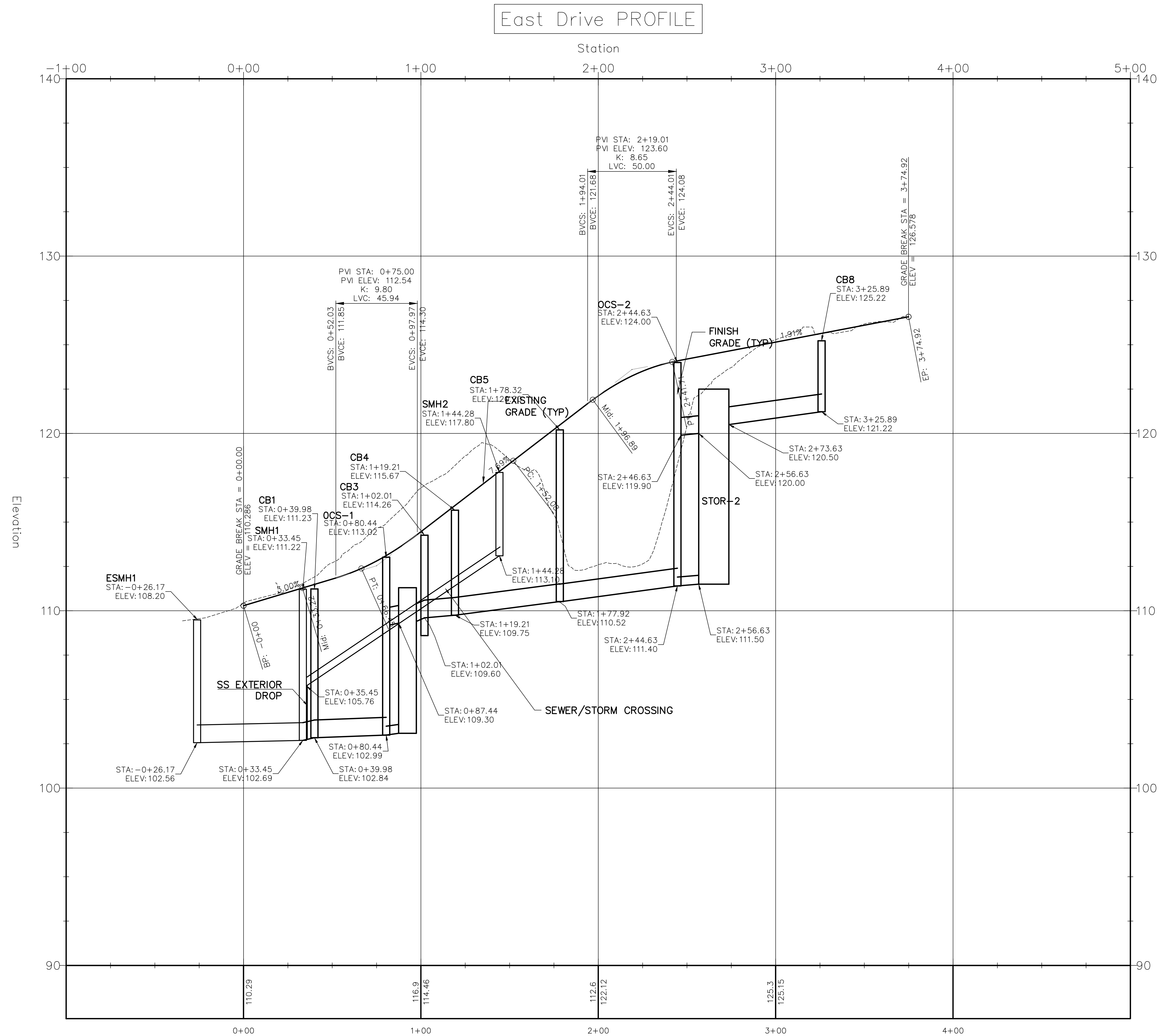
DWG.: CU101

SHEET: 6 OF 19



NOT FOR CONSTRUCTION





1 EAST DRIVE PROFILE
C-301 SCALE: 1"=30' HORIZ, 1"=3' VERT

GRAPHIC SCALES

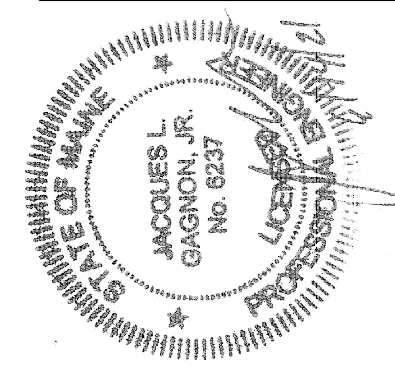
The image shows two horizontal graphic scales. The top scale is for 1" = 3'. It has a total length of 3 feet, divided into three 1-foot segments. The bottom scale is for 1" = 30'. It has a total length of 30 feet, divided into three 10-foot segments. Both scales are marked with alternating black and white segments.

1" = 3' 3' 0 3' 9'

1" = 30' 30' 15' 0 30' 90'

CHECK GRAPHIC SCALES BEFORE USING

NOT FOR CONSTRUCTION



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

**SOUTHERN MAINE
AFFORDABLE HOUSING**

ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

ROAD PROFILE

SCALE: AS NOTED

DATE: 06-14-2021

DWG.: **C-301**

SHEET: 8 OF **19**

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EROSION AND SEDIMENT CONTROL

A. GENERAL NOTES

1. DURING CONSTRUCTION AND THEREAFTER, IMPLEMENT EROSION CONTROL MEASURES AS INDICATED AND SPECIFIED. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION "MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" BY THE MAINE DEP.
2. IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND SEDIMENTATION FROM THE PROJECT SITE AS REQUIRED PURSUANT TO THE MAINE EROSION AND SEDIMENTATION CONTROL LAW.
3. LIMIT AREAS OF EXPOSED SOILS TO THOSE AREAS THAT WILL ACTIVELY BE WORKED. TEMPORARILY STABILIZE ANY AREA OF DISTURBED SOIL THAT REMAINS UNWORKED FOR MORE THAN 14 DAYS USING TEMPORARY MULCHING (IF THE SOIL WILL BE PERMANENTLY STABILIZED WITHIN 30 DAYS) OR TEMPORARY SEEDING AND MULCHING (IF THE SOIL WILL NOT BE PERMANENTLY STABILIZED WITHIN 30 DAYS). PERMANENTLY STABILIZE ANY AREA OF DISTURBED SOIL BROUGHT TO FINAL GRADE WITHIN 7 DAYS. DISTURBED SOILS DO NOT INCLUDE COMPACTED STRUCTURAL FILLS USED FOR ROADS, PARKING LOTS, AND BUILDING FOUNDATIONS.
4. TEMPORARY EROSION CONTROL MEASURES INCLUDE THE USE OF EROSION CONTROL DEVICES, TEMPORARY SEEDING AND MULCHING, CONSTRUCTION PHASING, AND PROVISIONS FOR STABILIZING INACTIVE AREAS. PERMANENT EROSION CONTROL MEASURES INCLUDE THE USE OF EROSION CONTROL BLANKETS, RIPRAP OUTLET PROTECTION, AND PERMANENT SEEDING AND MULCHING.
5. PROVIDE INLET PROTECTION FOR EACH CATCH BASIN ON THE SAME DAY THAT BACKFILL IS PLACED AROUND THE CATCH BASIN.
6. PROVIDE PLANTING SOIL, SEED, FERTILIZER AND MULCH ON ALL DISTURBED AREAS NOT OTHERWISE SPECIFIED. PERMANENT SEEDING SHALL BE ACCOMPLISHED BETWEEN THE DATES OF APRIL 15 AND SEPTEMBER 15. WATER ALL VEGETATED AREAS AS NECESSARY TO ESTABLISH A VIGOROUS GRASS.

B. INSPECTION AND MAINTENANCE

1. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE PARCEL AT LEAST ONCE A WEEK AND BEFORE AND AFTER EACH STORM EVENT, GREATER THAN 0.1 INCH, PRIOR TO COMPLETION OF PERMANENT STABILIZATION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES) STANDARDS AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THIS PERMIT, SHALL CONDUCT THE INSPECTION. THIS PERSON SHALL BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY, IMPLEMENTATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES SHALL BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
2. A LOG (REPORT) SHALL BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS SHALL INCLUDE: BMPs THAT NEED TO BE MAINTAINED; LOCATION(S) OF BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION; AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION. FOLLOW-UP TO CORRECT DEFICIENCIES OR ENHANCE CONTROLS SHALL ALSO BE INDICATED IN THE LOG AND DATED, INCLUDING WHAT ACTION WAS TAKEN AND WHEN.
3. MAINTAIN ALL EROSION CONTROL MEASURES FOR THE LIFE OF THE PROJECT AND UNTIL PERMANENT STABILIZATION OF THE ENTIRE SITE IS ESTABLISHED. PERMANENT STABILIZATION SHALL CONSIST OF AT LEAST 90%-PERCENT VEGETATION, PAVEMENT, GRAVEL BASE, OR RIPRAP.
4. SEDIMENT ACCUMULATIONS SHALL BE REMOVED FROM SILT FENCES, HAY BALE BARRIERS, AND STONE CHECK DAMS WHEN THE SEDIMENT DEPTH APPROACHES 6 INCHES, OR AS INDICATED ON DETAILS ON DRAWINGS C-501 AND C-502.
5. THE AREA OF THE DETENTION POND AND EMBANKMENTS SHALL BE INSPECTED WEEKLY AND AFTER EACH STORM EVENT. ALL EROSION AND AREAS OF EXPOSED SOILS SHALL BE PROMPTLY SEEDED AND MULCHED.
6. PROTECT ALL STABILIZED AREAS FROM EROSION AND IMMEDIATELY REPAIR / REVEGETATE ERODED AREAS.
7. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES WITHIN 30 DAYS AFTER THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

C. CONSTRUCTION DEWATERING

1. IF DEWATERING OF EXCAVATIONS ARE NECESSARY, UTILIZE BAG-TYPE DEWATERING SEDIMENT FILTERS. DEWATERING SEDIMENT FILTERS SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY WATER BODY OR WETLAND. SEE DETAIL 4/C-502.

D. SEQUENCE OF CONSTRUCTION

1. CONSTRUCTION SHALL BE PHASED TO DISTURB THE LEAST PRACTICAL AREA AT A TIME AND MINIMIZE DISRUPTION TO THE EXISTING SCHOOL. FOR APPROXIMATE CONSTRUCTION PHASE LIMITS, SEQUENCE AND TIMING. CONSTRUCTION IS EXPECTED TO BEGIN IN THE AND BE COMPLETED BY INITIAL OPERATIONS INCLUDE LAYOUT OF CLEARING LIMITS AND INSTALLATION OF SILT FENCE, EROSION CONTROL MIX AND CONSTRUCTION ENTRANCE / EXIT AS INDICATED ON REMOVALS SITE PLAN AND GRADING PLANS.
2. CLEAR TREES, GRUB OUT STUMPS, AND STRIP TOPSOIL. REMOVE ALL WOODY DEBRIS FROM THE PROJECT SITE. STOCKPILE TOPSOIL AS SHOWN ON REMOVALS SITE PLAN AND GRADING PLAN. PROVIDE SILT FENCE DOWNGRADE OF ALL STOCKPILES AND COVER STOCKPILES WITH MULCH.
3. COMMENCE LARGE-SCALE EARTH MOVING OPERATIONS AND INSTALL EROSION CONTROL BLANKETS AND STONE CHECK DAMS AS SWALES AND OTHER AREAS ARE ESTABLISHED. AS AREAS APPROACH FINISH GRADE, AND AFTER ESTABLISHMENT OF GRASS IN THE DETENTION BASIN, CONSTRUCT STORM DRAINAGE SYSTEM BEGINNING AT THE LOW POINT IN THE SYSTEM. PROVIDE CULVERT INLET AND OUTLET PROTECTION AS SOON AS PIPES ARE INSTALLED.
4. PERFORM GRADING AND SHAPING TO FILTER BED SUBGRADE FOR ALL GRASSED UNDERDRAIN SOIL FILTERS AND SAND FILTERS, AS DEPICTED ON GRADING PLANS. TREATMENT AREAS MAY BE USED AS STORMWATER AND SEDIMENTATION CONTROL TO FACILITATE CONSTRUCTION. AFTER TRIBUTARY AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE ANY ACCUMULATED SEDIMENT AND INSTALL UNDERDRAIN TO COMPLETE THE CONSTRUCTION OF THE FILTER BED.
5. CONTINUE WITH OTHER UTILITY (WATER, SEPTIC, ELECTRICAL, ETC.) AND BUILDING CONSTRUCTION. PROVIDE VEGETATION, TEMPORARY SEEDING, MULCHING, OR OTHER SURFACE TREATMENTS AS INDICATED IMMEDIATELY UPON ESTABLISHMENT OF FINISH GRADES.

ITEM	IMPLEMENTATION SCHEDULE
SILT FENCE / EROSION CONTROL MIX / SEDIMENT CONTROL FILTER SOCK	INSTALL AS FIRST ORDER OF WORK AND AS NECESSARY TO CONTROL EROSION FROM THE WORK AREA.
CONSTRUCTION ENTRANCE / EXIT	CONSTRUCT AFTER INSTALLING SILT FENCE AND PRIOR TO EARTHWORK OPERATIONS.
CATCH BASIN INLET PROTECTION	INSTALL SAME DAY THAT BACKFILL IS PLACED AROUND STRUCTURE.
STABILIZATION OF INACTIVE AREAS	MULCH AREAS THAT REMAIN UN-WORKED FOR MORE THAN 14 DAYS AND WILL BE STABILIZED WITHIN 30 DAYS.
SWALES, STEEP SLOPES	INSTALL RIPRAP OR EROSION CONTROL BLANKET/NETTING (AS INDICATED ON DRAWINGS) THE SAME DAY FINAL GRADE IS ESTABLISHED.
GRASS ESTABLISHMENT	SEED AND MULCH DISTURBED AREAS WITHIN 7 DAYS OF BEING BROUGHT TO FINAL GRADE.

F. DITCH AND CULVERT STABILIZATION

1. ANY SECTION OF DITCH, SWALE, OR CHANNEL BROUGHT TO FINAL GRADE SHALL BE STABILIZED WITH A RIPRAP LINING OR PROPERLY-INSTALLED EROSION CONTROL BLANKETS (USED OVER PERMANENT SEEDING) WITHIN 24 HOURS.
2. USE STONE CHECK DAMS AND TEMPORARY MULCHING IN ANY ROUGH-GRADED DITCH THAT WILL NOT BE FINAL GRADED AND PERMANENTLY STABILIZED WITHIN THE NEXT 7 DAYS. THE STONE CHECK DAMS AND MULCHING SHALL BE PUT IN PLACE WITHIN 48 HOURS OR PRIOR TO ANY RAINFALL.

F. SOIL STOCKPILE STABILIZATION

1. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR LESS THAN 30 DAYS SHALL BE COVERED WITH HAY MULCH (AT 90 LBS HAY/1000 SF) OR COVERED WITH A 4 MIL POLYETHYLENE SHEETING, WOVEN OR NON-WOVEN GEOTEXTILE FABRIC WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
2. POLYETHYLENE SHEETING OR GEOTEXTILE FABRIC SHALL BE CONTINUOUSLY ANCHORED ON ALL SIDES AND 12" TO 24" OVERLAP AT SEAMS IN THE DIRECTION OF THE RUNOFF. PROVIDE ADDITIONAL ANCHORS ON THE WINDY SIDE OF THE STOCKPILE.
2. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN LONGER THAN 30 DAYS SHALL BE SEEDED WITH A CONSERVATION MIX OF ANNUAL RYE GRASS (AT 0.9 LBS/1000 SF) AND HAY MULCHED (AT 90 LBS HAY/1000 SF) WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
3. ALL SOIL AND FILL STOCKPILES SHALL HAVE A SEDIMENT BARRIER (e.g. HAY-BALE BARRIER OR SILT FENCING) INSTALLED AROUND THE DOWNHILL EDGE OF THE STOCKPILE TO TRAP SEDIMENTS.

G. TEMPORARY SEEDING -- (DURING CONSTRUCTION AND PRIOR TO PERMANENT SEEDING) WITHIN 14 DAYS OF INACTIVITY OR 7 DAYS AFTER BEING BROUGHT TO FINISH GRADE.

1. BEDDING -- REMOVE STONES AND TRASH WITHIN SEEDING THE AREA. TILL THE SOIL TO A DEPTH OF ABOUT 3" TO PREPARE SEED BED AND MIX THE FERTILIZER INTO THE SOIL.
2. FERTILIZER -- FERTILIZER SHALL BE UNIFORMLY SPREAD OVER THE AREA PRIOR TO BEING TILLED INTO THE SOIL. A 10-10-10 MIX OF FERTILIZER SHALL BE APPLIED AT A RATE OF 300 POUNDS PER ACRE (OR 7 LBS/1,000 SF).
3. SEED MIXTURE -- USE ANY OF THE FOLLOWING IN UPLAND AREAS:

TEMPORARY SEEDING RATES			
SPECIES	PER ACRE	PER 1,000 SF	SEEDING DATES
WINTER RYE	112 LBS	2.6 LBS	8/15-10/1
OATS	80 LBS	1.8 LBS	4/1-7/1 & 8/15-9/15
ANNUAL RYE GRASS	40 LBS	0.9 LBS	4/1-7/1 WITH MULCH

4. MULCHING FOR TEMPORARY SEEDING -- WHERE IT IS IMPRACTICAL TO INCORPORATE FERTILIZER AND SEED INTO MOIST SOIL, THE SEEDED AREA SHALL BE MULCHED TO FACILITATE GERMINATION. MULCH IN THE FORM OF HAY OR STRAW SHALL BE APPLIED AT A RATE OF 70 TO 90 LBS PER 1,000 SF.
- H. MULCHING
- TEMPORARY MULCHING SHALL BE USED ON SLOPES, CHANNELS, OTHER EROSION PRONE AREAS, AND ALL EXPOSED SOILS THAT CANNOT RECEIVE PERMANENT COVER WITH 14 DAYS OF DISTURBANCE OR WITHIN 7 DAYS IN AREAS WITHIN 100' OF A NATURAL RESOURCE. MULCH SHALL ALSO BE USED FOLLOWING TEMPORARY AND PERMANENT SEEDING AS SPECIFIED. MULCH ANCHORS SHALL BE USED ON SLOPES GREATER THAN 5% IN FALL (PAST SEPTEMBER 15 AND OVER WINTER TO APRIL 15).

MULCHING RATES		
MULCH TYPE	RATE PER 1,000 SF	USE AND COMMENTS
HAY OR STRAW	70 TO 90 LBS *	MOLD FREE AND DRY, MAY BE USED WITH PLANTINGS.
	* DOUBLE THE RATE FOR OVER WINTER STABILIZATION	ANCHOR IN AREAS OF STRONG WIND AND SLOPES GREATER THAN 5%.
WOOD CHIPS OR BARK MULCH	3" THICK OR MORE	USE IN FLAT AREAS AND SHORT 4:1 SLOPES.
EROSION CONTROL BLANKETS / MATS	SEE DETAIL 6/C-502	DITCHES AND STEEP SLOPES.
EROSION CONTROL MIX	2" FOR SLOPES FLATTER THAN 3:1 OR 4" FOR SLOPES GREATER THAN 3:1. ADD AND ADDITIONAL 1/2" PER 20' OF SLOPE UP TO 100' IF SLOPE IS STEEPER THAN 3:1	FOR USE ON SLOPES LESS THAN 45%.

L. TEMPORARY EROSION CONTROL BLANKET SPECIFICATIONS

1. EXCELSIOR EROSION CONTROL BLANKET SHALL CONSIST OF A MACHINE PRODUCED MAT OF CURLED WOOD EXCELSIOR COVERED WITH EITHER A 3 BY 1 INCH WEAVE OF TWISTED CRAFT PAPER OR A 2 BY 1 INCH BIODEGRADABLE EXTRUDED PLASTIC MESH. THE BLANKET SHALL BE OF CONSISTENT THICKNESS WITH FIBERS EVENLY DISTRIBUTED THROUGHOUT. 80 PERCENT OF THE FIBERS SHALL BE OVER 6 INCHES IN LENGTH. MINIMUM WIDTH: 48 INCHES, MINIMUM WEIGHT: 0.8 POUNDS PER SQUARE YARD.
2. STRAW-COCONUT EROSION CONTROL BLANKET SHALL CONSIST OF A MACHINE PRODUCED BLANKET OF 70 PERCENT WHEAT STRAW AND 30 PERCENT COCONUT FIBER WITH PHOTODEGRADABLE NETTING ON BOTH SIDES AND SEWN TOGETHER WITH COTTON THREAD. MINIMUM WIDTH: 48 INCHES, MINIMUM WEIGHT: 0.75 POUNDS PER SQUARE YARD.

J. EXTENDED USE EROSION CONTROL BLANKET SPECIFICATION

1. JUTE EROSION CONTROL BLANKETS SHALL BE OF UNIFORM PLAIN WEAVE SINGLE JUTE YARN AVERAGING APPROXIMATELY 130 POUNDS PER SPINDLE OF 14,400 YARDS. THE YARN SHALL BE LOOSELY TWISTED AND WOVEN INTO 48 INCH WIDE BLANKETS WITH A MINIMUM AVERAGE WEIGHT OF 1.0 POUNDS PER SQUARE YARD.

K. OVER WINTER CONSTRUCTION -- (WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15)

ADDITIONAL STABILIZATION MEASURES SHALL BE PROVIDED BY NOVEMBER 1 FOR WINTER AND SPRING SNOW MELT IF THE CONSTRUCTION SITE IS NOT PERMANENTLY STABILIZED WITH PAVEMENT, GRAVEL ROAD BASE, 90% MATURE VEGETATION COVER, EROSION CONTROL MULCH OR RIPRAP. PERMANENT SEEDING SHOULD OCCUR BY AUGUST 15 (45 DAYS BEFORE THE FIRST KILLING FROST), OTHERWISE, OVER WINTER MULCHING IS REQUIRED.

1. DITCHES AND CHANNELS : CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS BY SEPTEMBER 1. CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS BY NOVEMBER 15.

IF THE CONTRACTOR FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED (75% COVER) BY NOVEMBER 15, THEN THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTION TO STABILIZE THE DITCH FOR WINTER AND SPRING:

- a. STONE RIPRAP LINING IN THE DITCH OR CHANNEL
- LINE THE DITCH OR CHANNEL WITH STONE RIPRAP BY NOVEMBER 15. USE ANGULAR D50 = 6" STONE FOR STONE RIPRAP OVER FILTER FABRIC. IF NECESSARY, THE CONTRACTOR SHALL REGRADE THE DITCH / CHANNEL PRIOR TO PLACING THE STONE RIPRAP LINING TO PREVENT THE STONE RIPRAP LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. VEGETATED AREAS WITH SLOPES OF 15% SLOPE OR LESS: SHOULD HAVE 90% GRASS COVER BY NOVEMBER 1st OR BE SEEDED WITH WINTER RYE AT 3 LBS PER 1,000 SF, MULCHED WITH HAY AT 75 LBS PER 1,000 SF, AND ANCHORED WITH NETTING OR, BY NOVEMBER 15th THE CONTRACTOR SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR WINTER AND SPRING:

- a. EROSION CONTROL BLANKET -- SEE DETAIL 6/C-502.
- b. EROSION CONTROL MIX -- THE MIX MUST BE WELL-GRADED WITH AN ORGANIC COMPONENT THAT IS BETWEEN 50 AND 100% OF DRY WEIGHT, AND THAT IS COMPOSED OF FIBROUS AND ELONGATED FRAGMENTS. THE MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE PRODUCT WITH NO LARGER ROCKS (>3") OR LARGE AMOUNTS OF FINES (SILTS AND CLAYS). IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING. THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS). APPLY A THICKNESS OF 2" ON 3:1 SLOPES OR LESS AND ADD AN ADDITIONAL 1/2" PER 20' OF SLOPE OR UP TO 4" FOR A 100' SLOPE.

- c. HAY MULCH -- APPLY AT A RATE OF 150 LBS PER 1,000 SF (3 TONS PER ACRE) AND ANCHORED WITH NETTING (PEG AND TWINE) OR A TRAKIFIER TO PREVENT MULCH DISPLACEMENT BEFORE FREEZING CONDITIONS. NO SOIL SHOULD BE VISIBLE THROUGH THE MULCH AND HAY MULCH CAN NOT BE APPLIED OVER SNOW.

3. VEGETATED SLOPES GREATER THAN 15% : SHOULD BE SEEDED AND MULCHED BY SEPTEMBER 1. IF A SLOPE IS NOT STABILIZED BY OCTOBER 15, THE SOIL MAY BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 SF AND PROTECTED WITH EROSION CONTROL BLANKETS. IF THE RYE FAILS TO GROW 3" OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 15, THE CONTRACTOR SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR WINTER AND SPRING:

- a. EROSION CONTROL BLANKET -- SEE DETAIL 6/C-502.
- b. EROSION CONTROL MIX -- THE MIX MUST BE WELL-GRADED WITH AN ORGANIC COMPONENT THAT IS BETWEEN 50 AND 100% OF DRY WEIGHT, AND THAT IS COMPOSED OF FIBROUS AND ELONGATED FRAGMENTS. THE MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE PRODUCT WITH NO LARGER ROCKS (>3") OR LARGE AMOUNTS OF FINES (SILTS AND CLAYS). IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING. THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS). APPLY A THICKNESS OF 4" ON GREATER THAN 3:1 AND AND IF SLOPES ARE GREATER THAN 60' LONG, 5" IS NEEDED.
- c. RIPRAP -- ANGULAR STONE WITH SIZE AND THICKNESS APPROPRIATE TO STABILIZE THE SLOPE.

4. SOIL STOCKPILES : SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY AT TWICE THE NORMAL RATE (150 LBS PER 1,000 SF), OR WITH 4" LAYER OF EROSION CONTROL MIX. DO NOT LEAVE STOCKPILES, EVEN OVER WINTER (EVEN MULCHED), WITHIN 100' OF OF A PROTECTED RESOURCE.

L. PERMANENT SEEDING -- (SEEDING DATES APRIL 15 TO AUGUST 15 ONLY)

1. PERMANENT SEEDING SHALL OCCUR BY AUGUST 15 (45 DAYS BEFORE THE FIRST KILLING FROST TO ALLOW FOR 90% STAND OF TURF TO ESTABLISH PRIOR TO NOVEMBER 1.
2. SITE PREPARATION -- INSTALL NEEDED SURFACE WATER CONTROL MEASURES PRIOR TO SEEDING. GRADE TO PERMIT USE OF CONVENTIONAL EQUIPMENT FOR SEED-BED PREPARATION. PROVIDE ADEQUATE DRAINAGE WHERE INTERNAL WATER MOVEMENT MAY CAUSE SEEPS OR SLIPPAGE BEFORE SEEDING IS WELL ESTABLISHED.
3. BEDDING -- STONES, TRASH, ROOTS, AND OTHER DEBRIS THAT WILL INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHALL BE REMOVED. WHERE FEASIBLE, THE SOIL SHALL BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL. WHEN PRACTICAL, PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE. PROVIDE THE BEST CONDITIONS POSSIBLE FOR SEEDING.

4. FERTILIZER -- LIME AND FERTILIZER SHALL BE APPLIED EVENLY OVER THE AREA PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHALL BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM SHALL BE APPLIED:

- a. GROUND LIMESTONE AT A RATE OF 138 LBS PER 1,000 SF (3 TONS PER ACRE) 10-20-20 FERTILIZER OR EQUIVALENT AT 18.4 LBS PER 1,000 SF (800 LBS PER ACRE) WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF 4" EITHER BEFORE OR DURING THE FINAL SEEDED PREPARATIONS.

5. SEED MIXTURE: SEE SPECIFICATIONS AND DRAWINGS FOR SEEDING MIXTURES AND LOCATIONS OF SEED MIXTURE TYPES.

M. RIPRAP SPECIFICATION

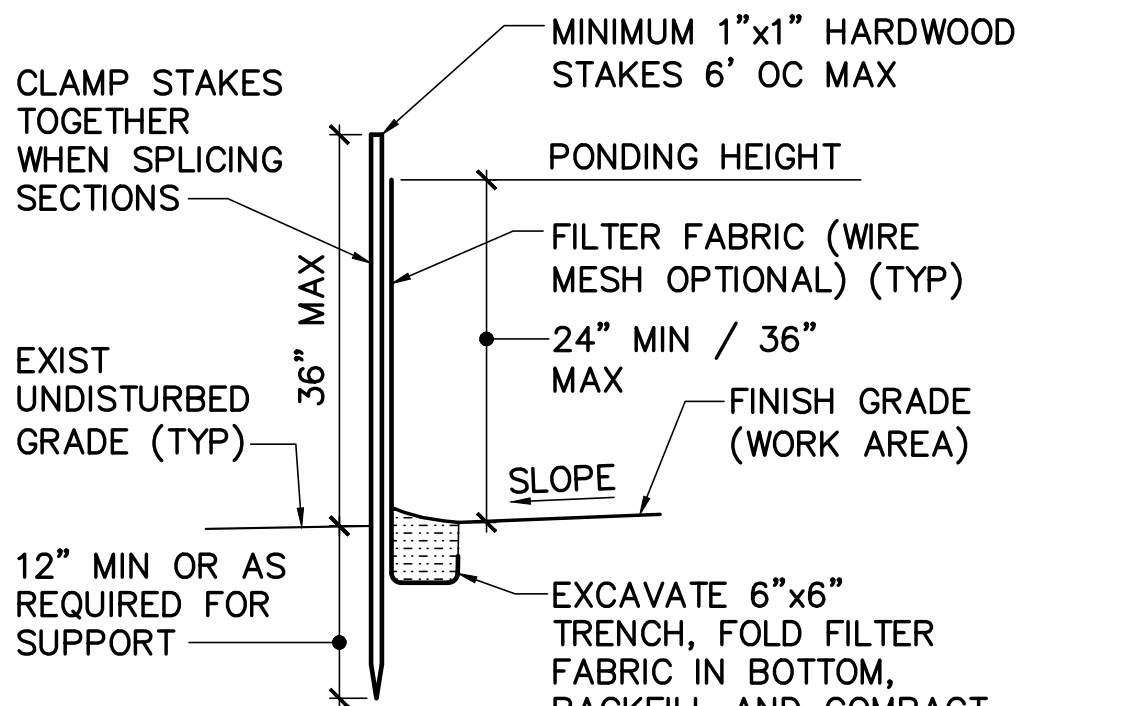
ALL RIPRAP AND STONE FOR CHECK DAMS AND STONE LININGS SHALL CONSIST OF SOUND, DURABLE ROCK WHICH WILL NOT DISINTEGRATE BY EXPOSURE TO WATER OR WEATHER. ANGULAR FIELD STONE, ROUGH QUARRY STONE OR BLASTED LEDGE ROCK MAY BE USED. THE MEDIAN STONE SIZE SHALL BE AS INDICATED. THE MAXIMUM STONE SIZE SHALL BE TWICE THE MEDIAN SIZE. INCLUDE ENOUGH SMALLER STONES TO FILL THE VOIDS IN THE LARGER STONES.

N. OFF-SITE VEHICLE TRACKING

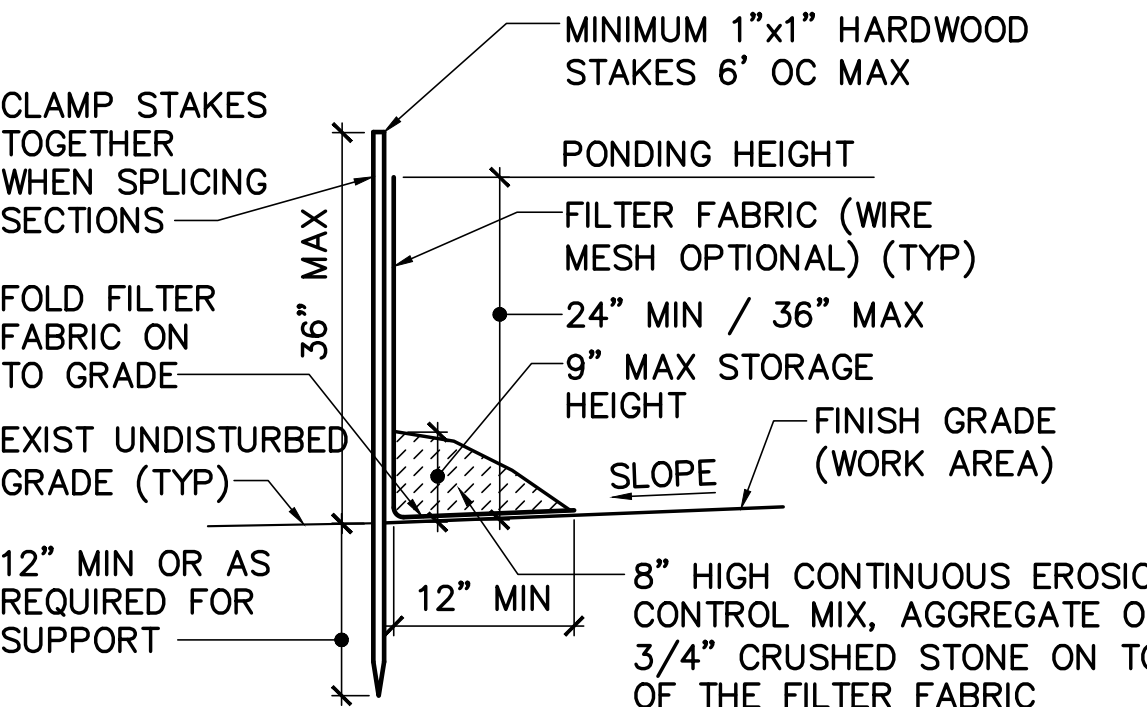
1. VEHICLE ACCESS TO THE CONSTRUCTION AREA SHALL UTILIZE A STABILIZED CONSTRUCTION ENTRANCE, SEE DETAIL ____/C-502.

O. HOUSEKEEPING

1. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE.
2. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS OR BY THE MANUFACTURER.
3. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.
4. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINER AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE. STORE ONLY SUFFICIENT AMOUNTS OF MATERIALS TO COMPLETE THE JOB.
5. DISPOSE OF NOT TO BE USED SURPLUS MATERIALS OFF SITE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND STATE AND FEDERAL CODES.
6. ALL CONSTRUCTION RELATED EQUIPMENT AND VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE LEAKAGE.
7. CONCRETE TRUCKS SHALL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.
8. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED METHODS. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE AND SHALL INCLUDE, BUT BE NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS. SPILLS OF TOXIC OR HAZARDOUS MATERIALS SHALL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY IMMEDIATELY REGARDLESS OF THE SIZE.



WITH TRENCHING



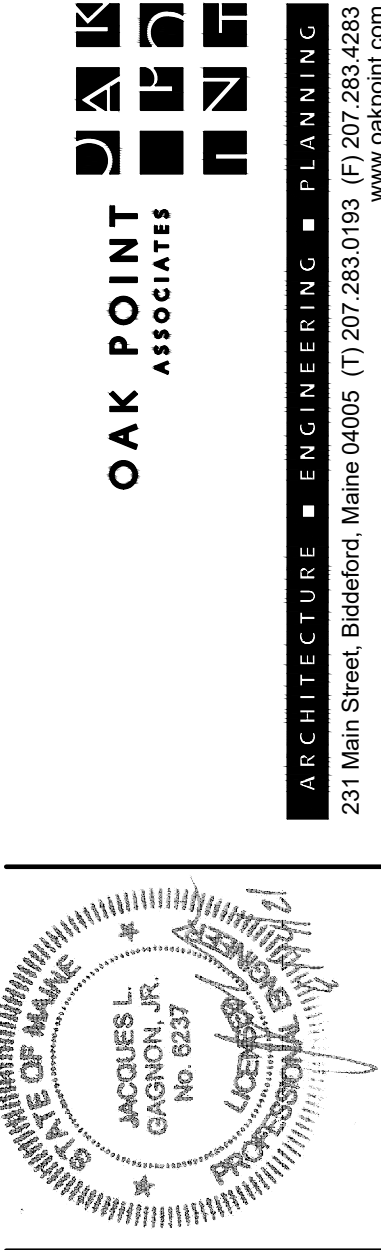
WITHOUT TRENCHING

SILT FENCE NOTES

1. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS EXCEED 6" IN DEPTH.
2. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL AND ALL NECESSARY REPAIRS/REPLACEMENT MADE IMMEDIATELY.
3. SILT FENCES SHALL BE REMOVED AFTER SATISFACTORY VEGETATIVE COVER IS ESTABLISHED. PROVIDE TOPSOIL, FINISH GRADE, SEED AND MULCH DISTURBED AREAS.
4. IN AREAS WHERE SILT FENCE CAN NOT BE TRENCHED SUCH AS FROZEN GROUND, BEDROCK, STONY SOIL, ROOTS OR NEAR A PROTECTED RESOURCE THE SILT FENCE SHALL BE ANCHORED USING THE "WITHOUT TRENCHING" METHOD SHOWN ABOVE.

1 TYP SILT FENCE DETAIL C-501/NOT TO SCALE

NOT FOR CONSTRUCTION



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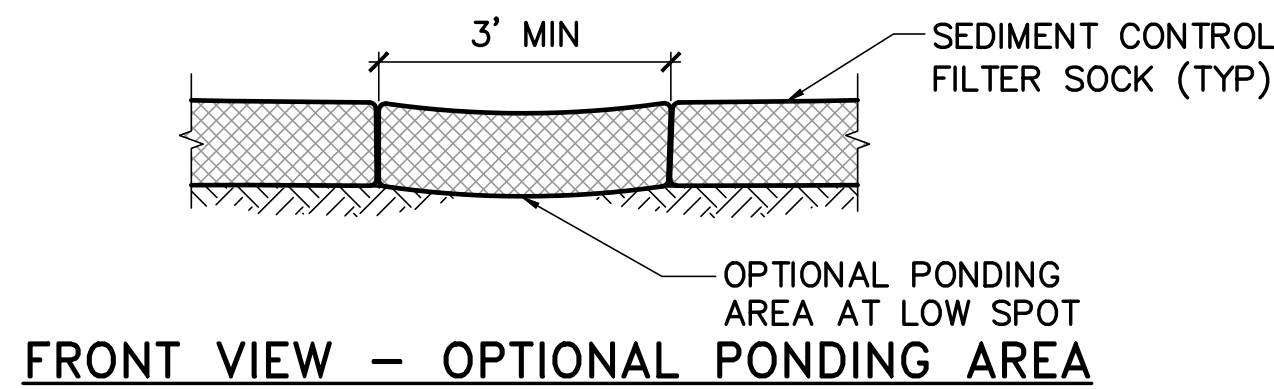
EROSION CONTROL NOTES AND DETAIL

SCALE: AS NOTED

DATE: 06-14-2021

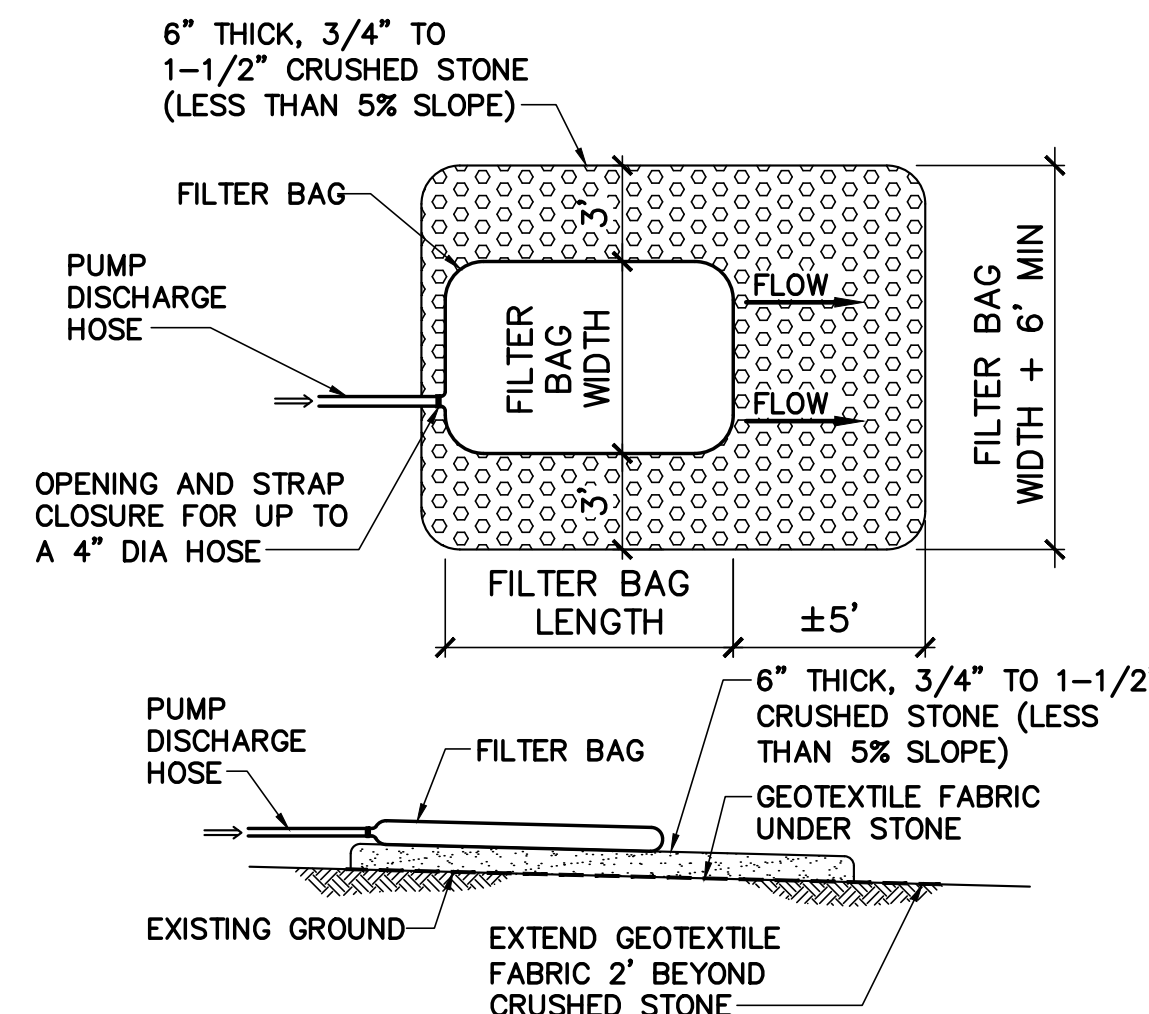
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SHEET: 9 OF 19

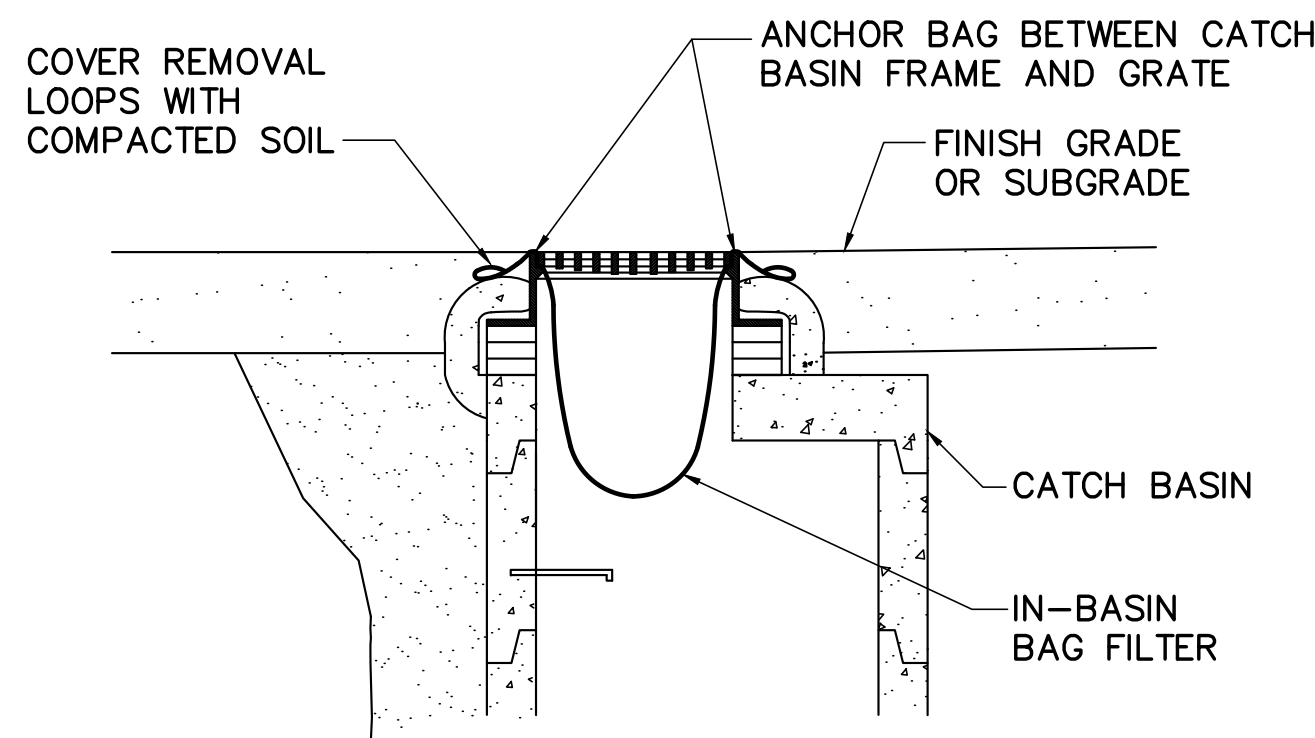


1. SEDIMENT CONTROL FILTER SOCKS SHALL BE MANUFACTURED FOR THE PURPOSE OF TEMPORARY SEDIMENT CONTROL AND INSTALLED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
2. REMOVE ROOTS, ROCKS, MOW OR FLATTEN GRASS TO MAINTAIN FULL CONTACT WITH GROUND AND FILTER SOCK.
3. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF THE FILTER SOCK HEIGHT.
4. SEDIMENT CONTROL FILTER SOCKS SHALL REMAIN IN PLACE UNTIL ALL AREAS ARE STABILIZED.
5. SECURE SEDIMENT CONTROL FILTER SOCKS WITH CONCRETE BLOCKS AND/OR WOOD STAKES IN LOCATIONS WHERE SOCK FAILS TO REMAIN IN PLACE DUE TO HYDRAULIC FORCE.
6. EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF WELL GRADED ORGANIC MATERIAL AND SHALL INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR OTHER PRODUCTS BASED ON A SIMILAR RAW SOURCE. SILT, CLAY, OR FINE SAND ARE NOT ACCEPTABLE IN THE FILTER SOCK EROSION CONTROL MIX.

C-502) NOT TO SCALE



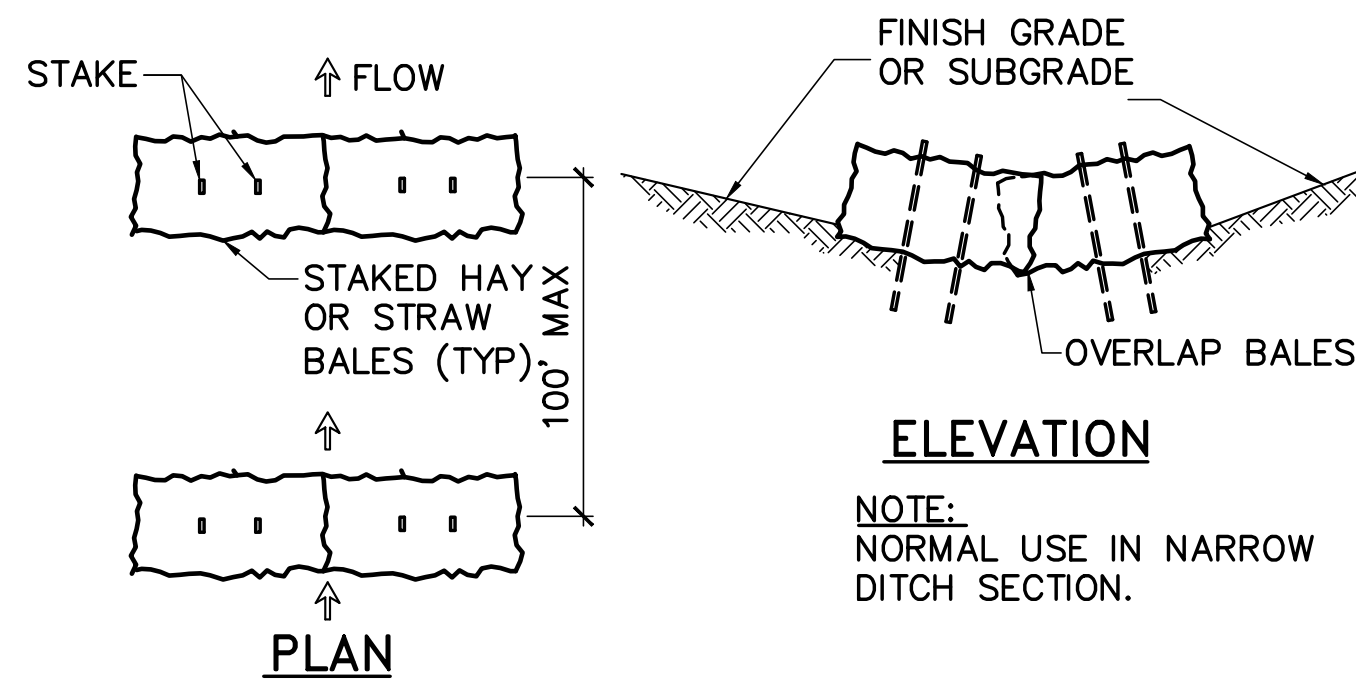
C-502) NOT TO SCALE



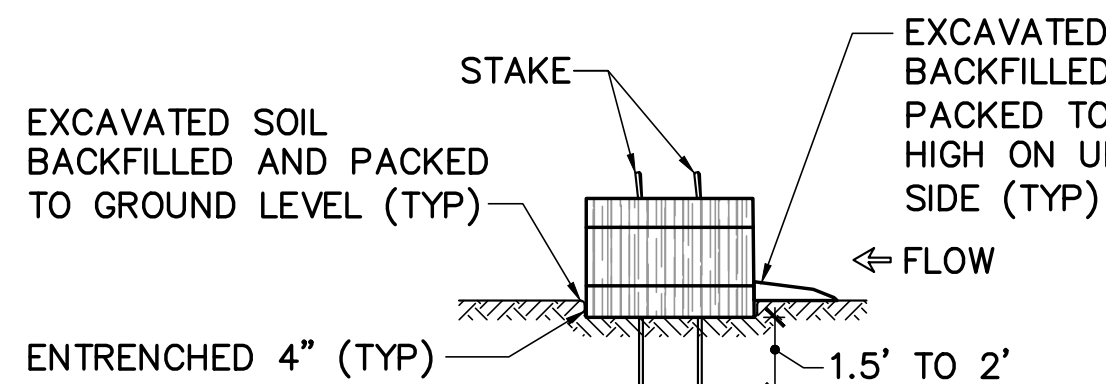
1. IN-BASIN BAG FILTERS SHALL BE A WOVEN POLYPROPYLENE WITH THE FOLLOWING MINIMUM PROPERTIES:

- a. GRAB TENSILE STRENGTH ACCORDING TO ASTM D4632: 300 LBS
- b. PUNCTURE RESISTANCE ACCORDING TO ASTM D4833: 120 LBS
- c. MULLEN BURST ACCORDING TO ASTM D3786: 800 PSI
- d. FLOW RATE ACCORDING TO ASTM D4491: 44 GAL/MIN/SF

C-502 NOT TO SCALE



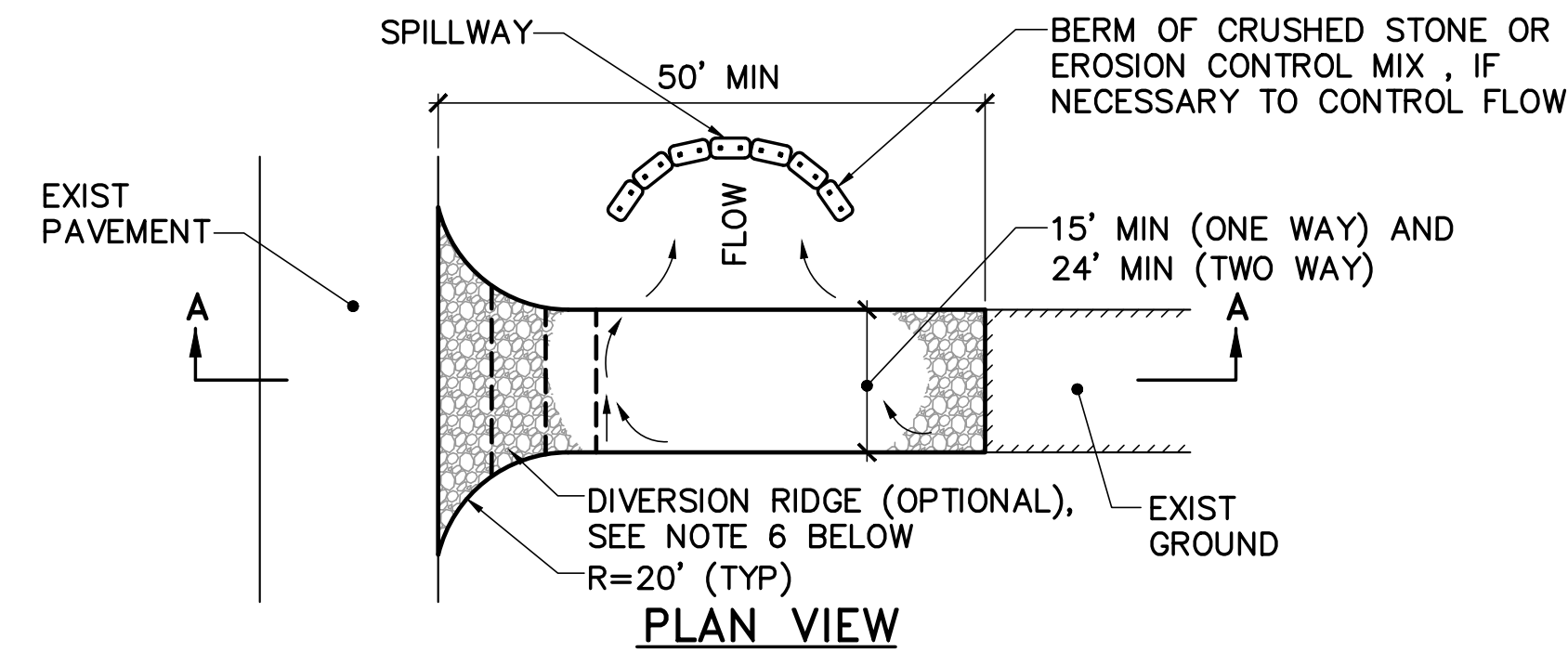
NOTE:
NORMAL USE IN NARROW
DITCH SECTION.



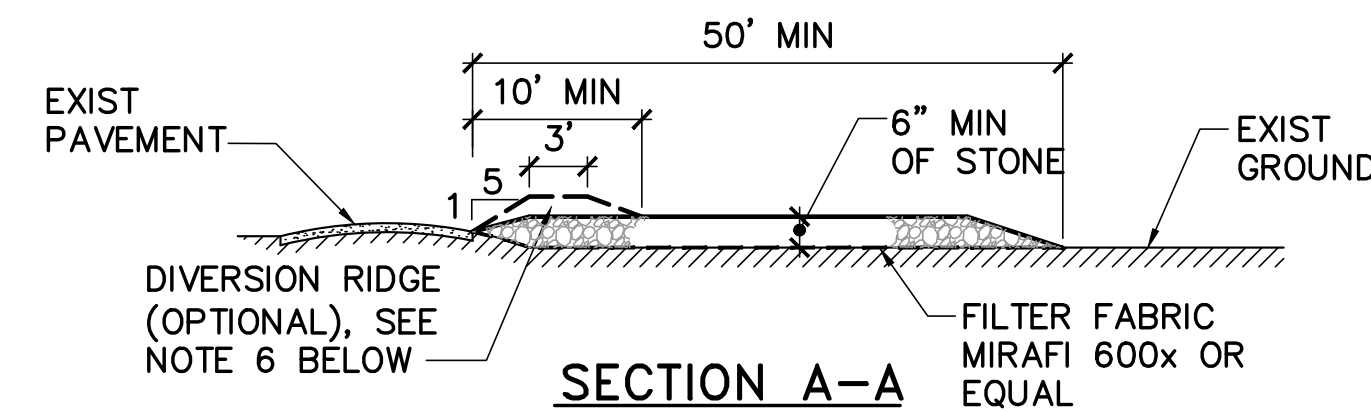
HAY BALE EROSION PROTECTION NOTES:

1. EACH BALE SHALL BE ENTRENCHED IN THE SOIL A MINIMUM OF 4".
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY A MINIMUM OF 2 STAKES DRIVEN THROUGH THE BALES 1.5' TO 2' INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER. THE BINDINGS ON THE BALES SHALL BE PARALLEL WITH THE GROUND.
3. FILL GAPS BETWEEN BALES BY CHINKING / WEDGING WITH HAY OR STRAW TO PREVENT WATER FLOW BETWEEN BALES.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE IMMEDIATELY AS NEEDED.
5. BALES ARE FOR USE AS SEDIMENT BARRIERS FOR SMALL DISTURBANCES WITH A SMALL WATERSHED, AND AS AN EMERGENCY MEASURE FOR CONTROLLING UNEXPECTED SEDIMENTATION.
6. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. BALES MAY BE USED AS SILT FENCE REINFORCEMENT AS NECESSARY. PLACE THE BALE IN CONTACT (THE LONG SIDE OF THE BALE) AND PARALLEL TO THE SILT FENCE ON THE DOWN SLOPE SIDE.

C-502) NOT TO SCALE

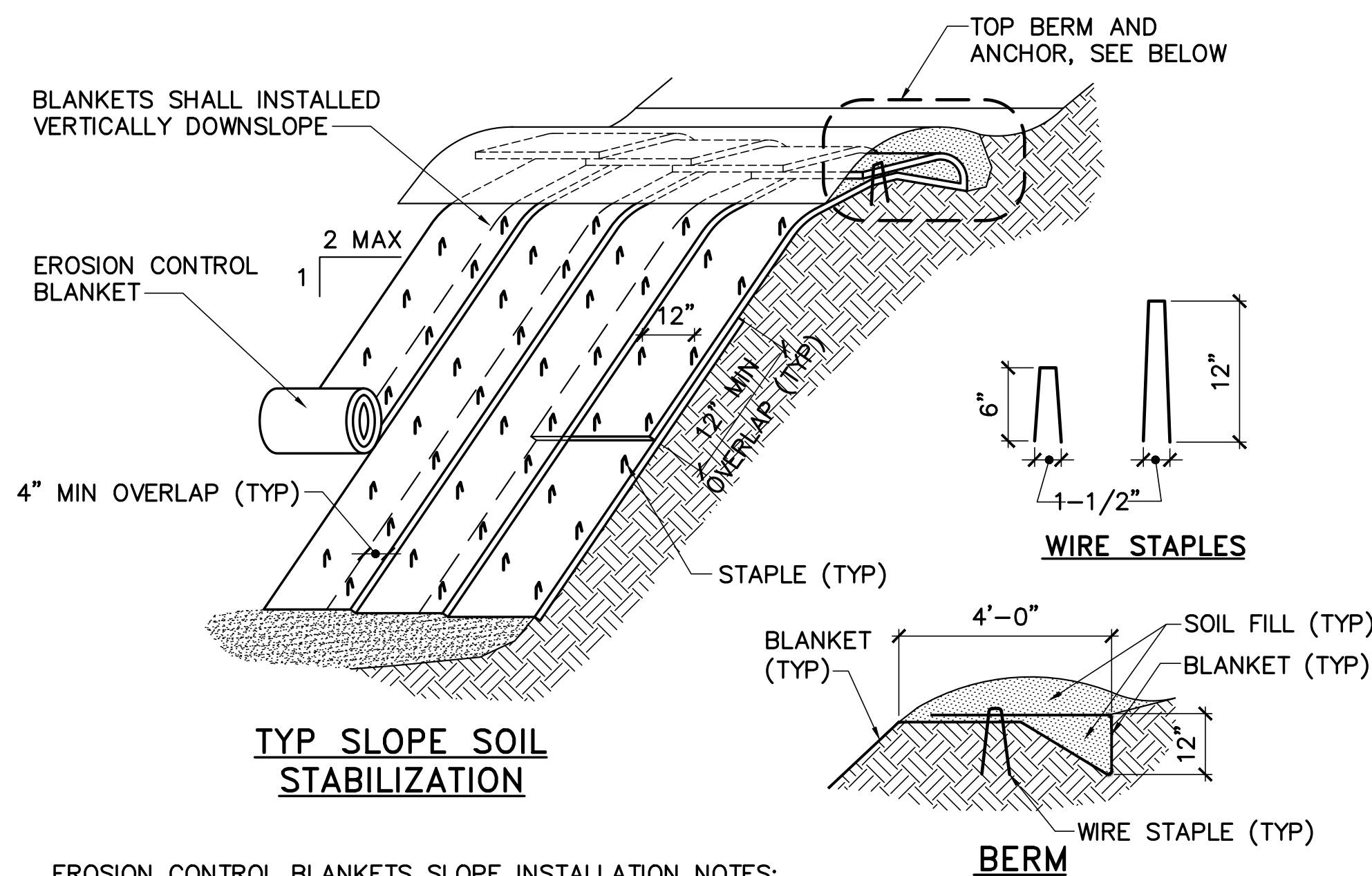


PLAN VIEW



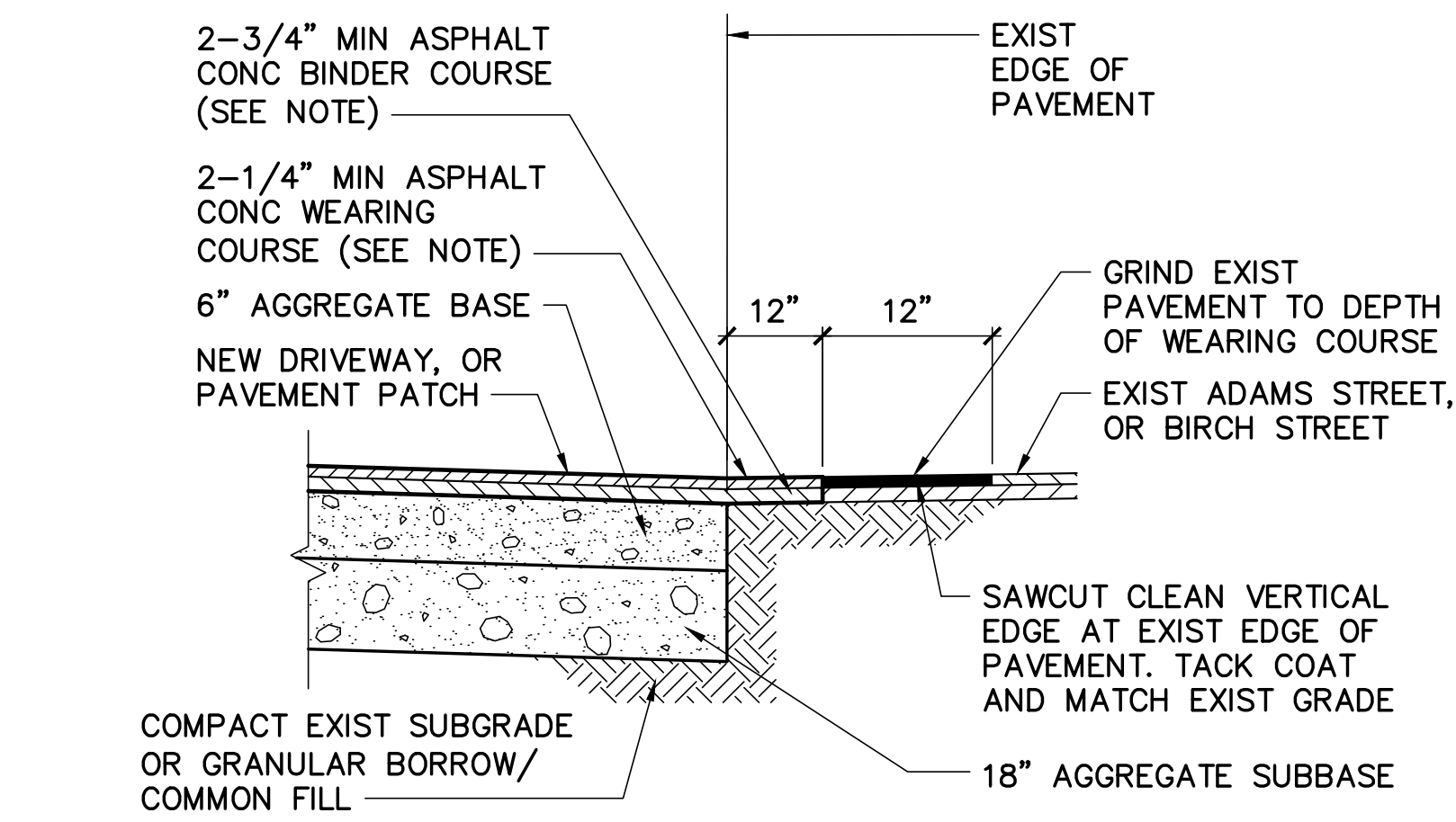
1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE / EXIT SHALL BE ANGULAR 2 TO 3 INCH STONE OR APPROPRIATE RECLAIMED CONCRETE MATERIAL.
2. THE LENGTH OF THE STABILIZED ENTRANCE / EXIT SHALL NOT BE LESS THAN 50 FEET.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE / EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE / EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 20 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE / EXIT SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A DIVERSION RIDGE WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE. IF THE ENTRANCE / EXIT SLOPES 5% OR MORE TOWARD THE EXISTING ROAD A DIVERSION RIDGE IS REQUIRED.
7. THE ENTRANCE / EXIT 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 RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE PERFORMED ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

(C-501) NOT TO SCALE



1. INSTALL BLANKETS AND WIRE STAPLES PER MANUFACTURER'S WRITTEN RECOMMENDATIONS. THE NUMBER OF WIRE STAPLES AND ROWS OF STAPLES PER EROSION CONTROL BLANKET MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND WIRE STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL, DO NOT STRETCH.

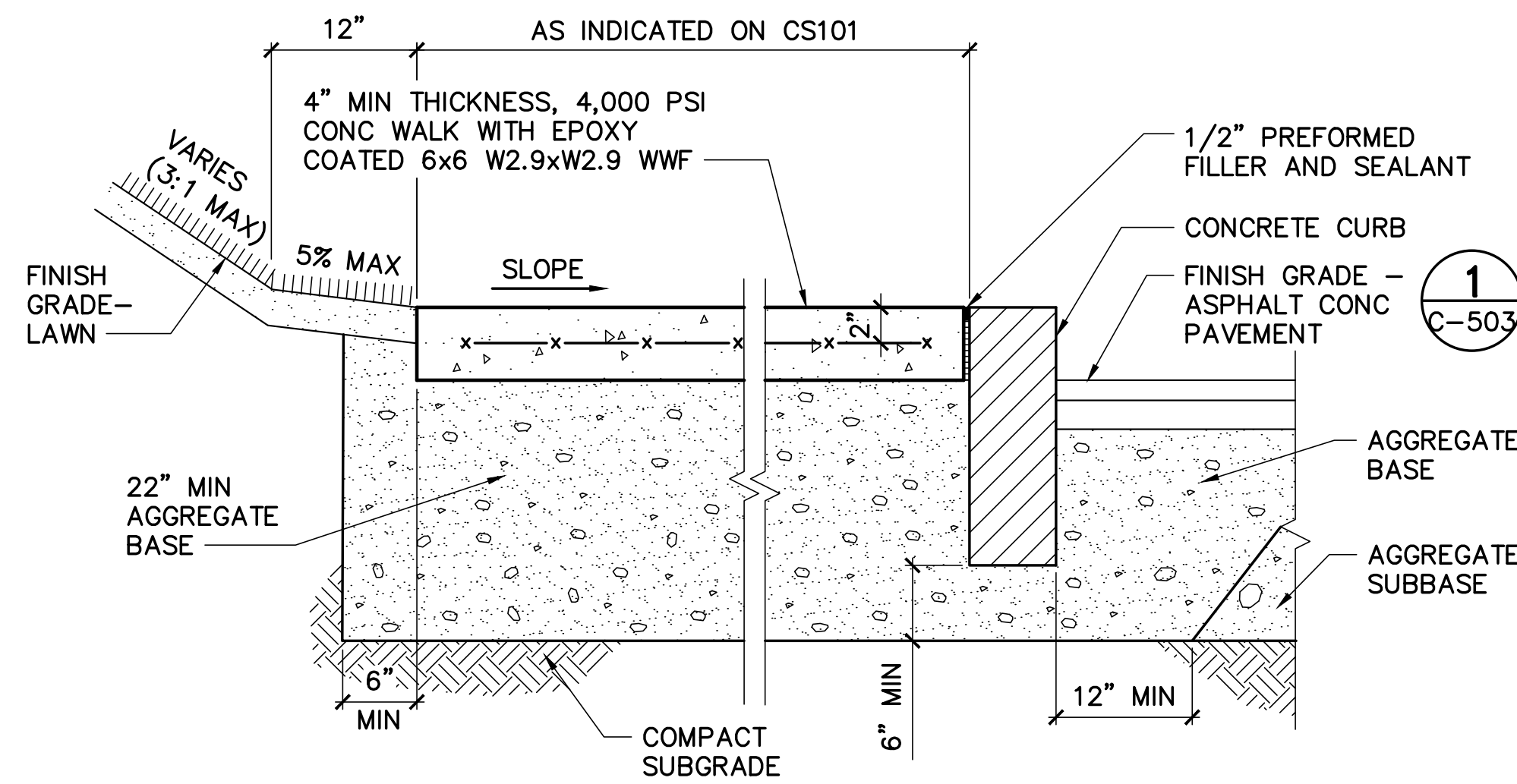
C-502) NOT TO SCALE



PAVEMENT NOTE:

1. TOTAL PAVEMENT THICKNESS SHALL MATCH EXISTING PAVEMENT THICKNESS IN ADAMS STREET, AND BIRCH STREET, AND SHALL BE 5" THICK MINIMUM.

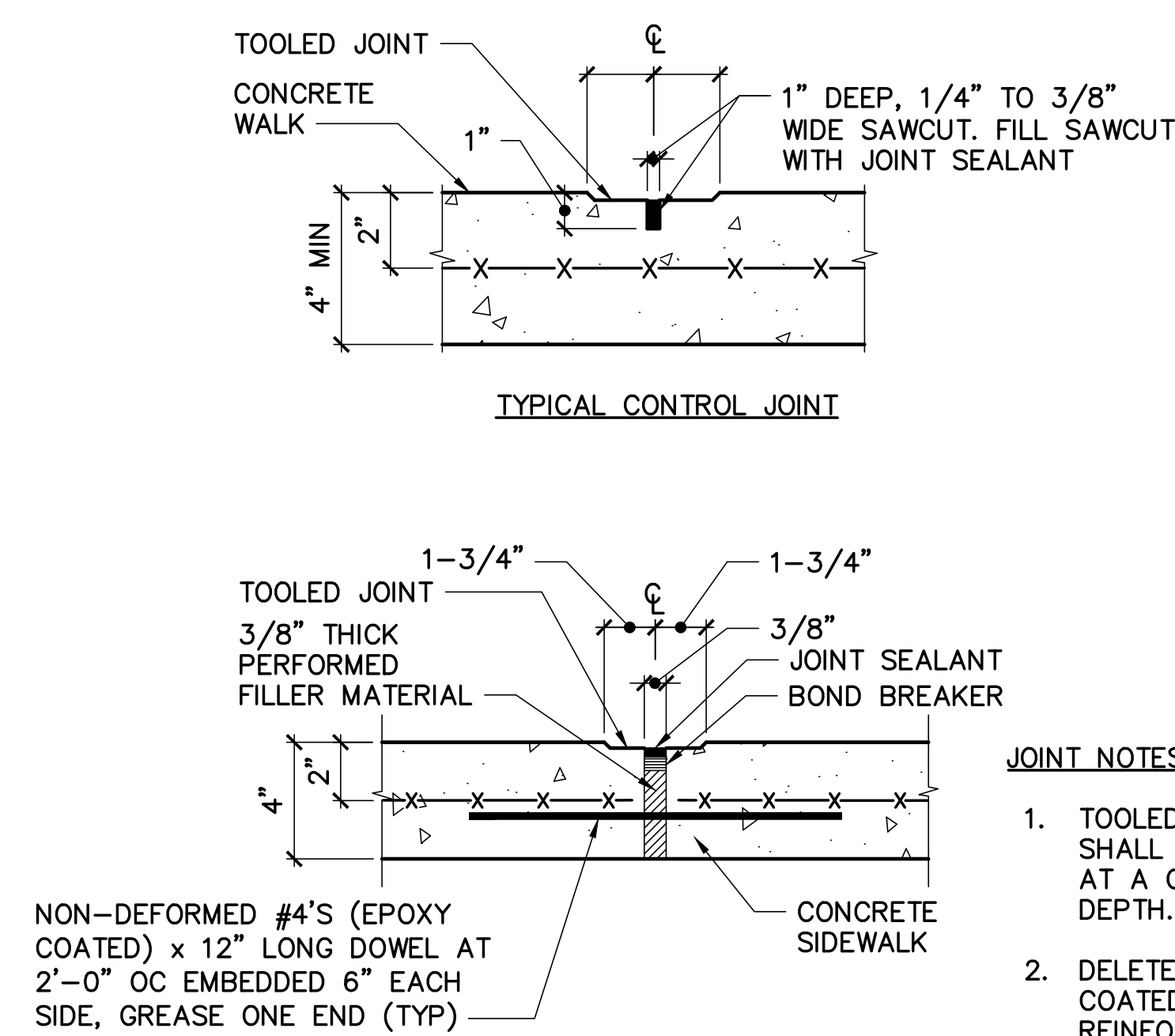
1 TYPICAL PAVED TRENCH PATCH/TRANSITION DETAIL
CS101 NOT TO SCALE



CONCRETE WALK NOTES:

1. MEDIUM BROOM FINISH PERPENDICULAR TO TRAVEL.
2. TOOLED CONTROL JOINTS AS INDICATED ON CS101. SEE DETAIL 3/C-503.
3. EXPANSION JOINTS AS INDICATED ON CS101. SEE DETAIL 3/C-503.

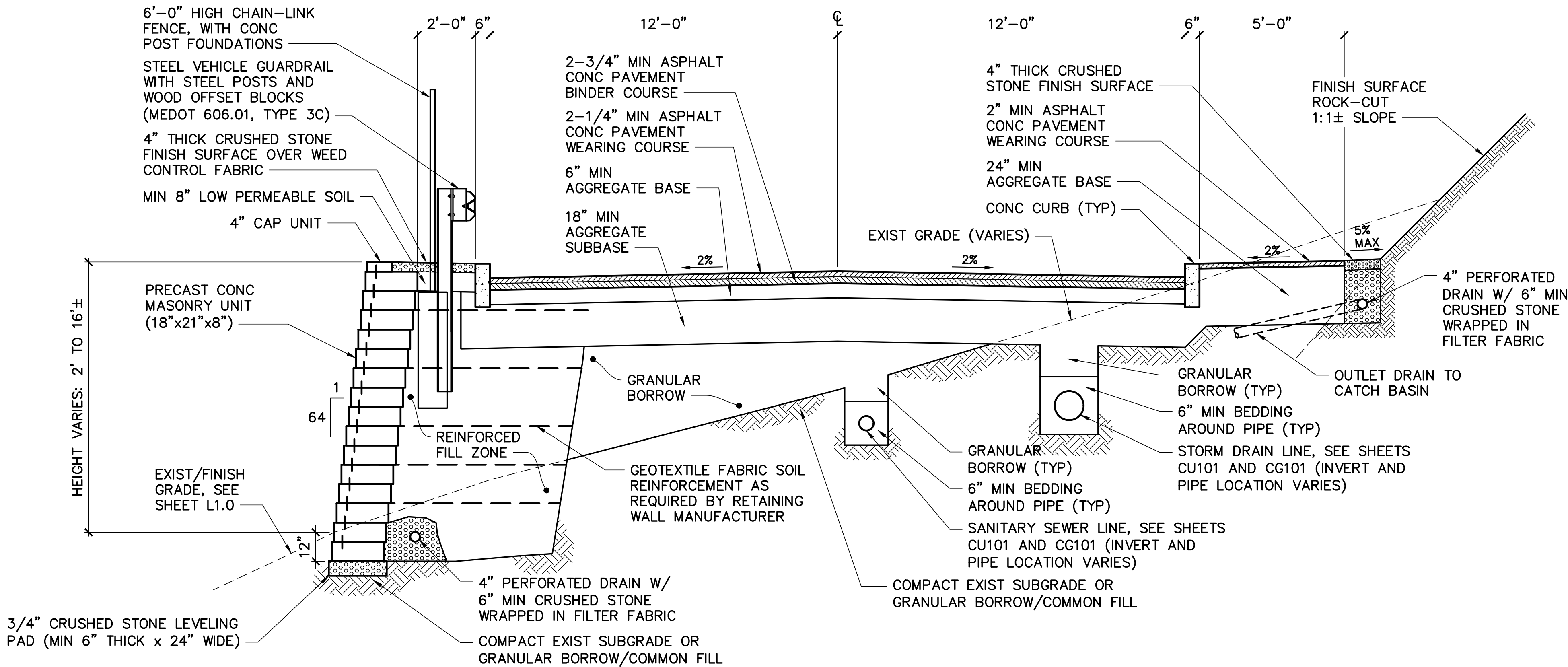
2 TYPICAL REINFORCED CONCRETE WALK DETAIL
CS101 NOT TO SCALE



JOINT NOTES:

1. TOOLED JOINT SURFACE SHALL BE SMOOTH AND AT A CONSTANT DEPTH.
2. DELETE #4 EPOXY COATED DOWEL AT REINFORCED CONCRETE WALK EXPANSION JOINTS ABUTTING THE BUILDING FOUNDATIONS AND RETAINING WALLS.

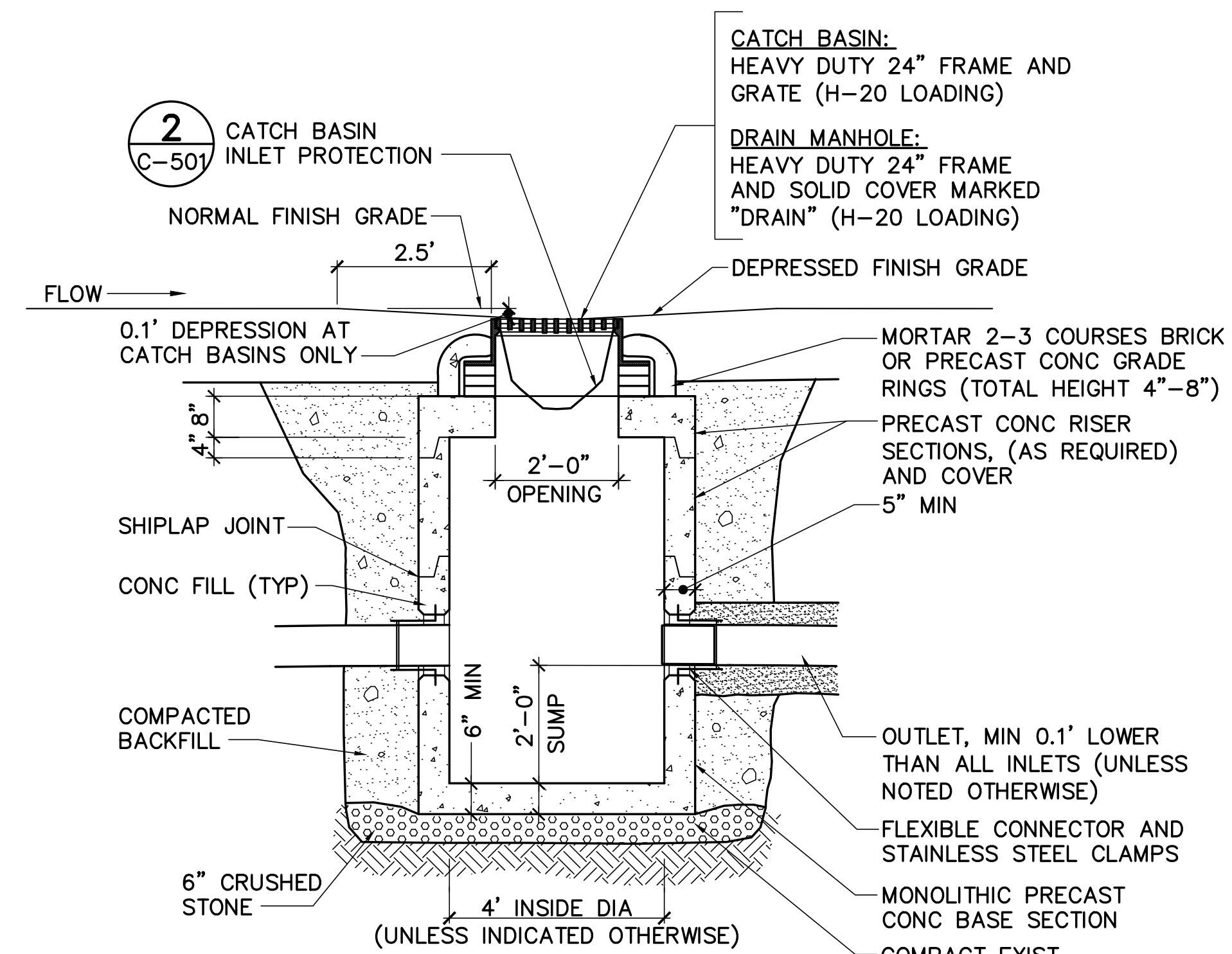
3 JOINT DETAILS
CS101 NOT TO SCALE



NOTES:

1. INSTALL PRECAST CONCRETE RETAINING WALLS IN CONFORMANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.
2. MASONRY UNITS SHALL BE MACHINE SPLIT FLAT FACE, COLOR - GREY.
3. PROVIDE DETECTABLE WARNING TAPE 12" BELOW FINISH GRADE RUNNING ALONG AND DIRECTLY OVER UTILITY LINES.

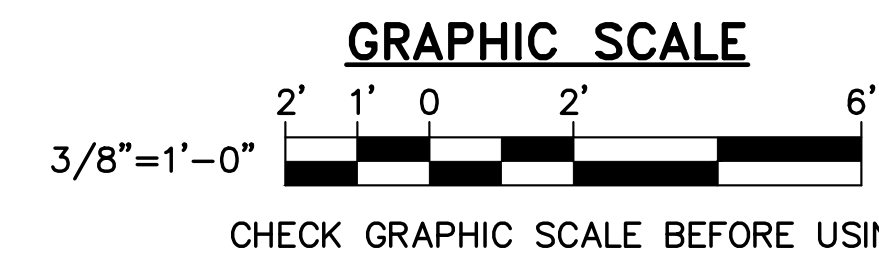
4 TYPICAL DRIVEWAY/WALK/RETAINING WALL SECTION
CS101, C-504 SCALE: 3/8"=1'-0"



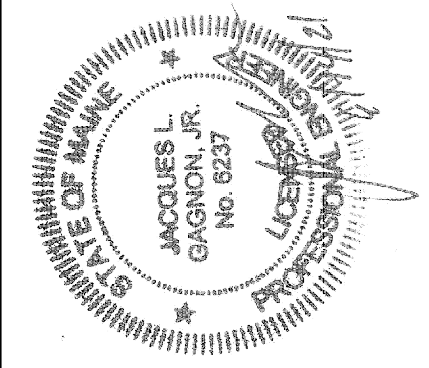
CATCH BASIN AND DRAIN MANHOLE NOTES:

1. CONCRETE SHALL BE MIN F'c=5,000 PSI.
2. PROVIDE REINFORCING TO ACHIEVE AASHTO HS-20 LOADING CLASSIFICATION (32,000 POUND AXLE LOAD).
3. CATCH BASIN GRATE SHALL BE 0.1' BELOW NORMAL FINISH GRADE.
4. CATCH BASINS SHALL CONFORM TO ASTM C478, UNLESS INDICATED OTHERWISE.
5. PROVIDE PIPE PENETRATIONS AS INDICATED ON PLANS.
6. SHIPLAP JOINTS SHALL HAVE 2 STRIPS OF 1" DIA BUTYL RUBBER SEALANT.
7. PROVIDE LOCK JOINT FLEXIBLE PIPE SLEEVES, CAST IN OR GASKET WITH EXPANSION SLEEVE.
8. EACH CASTING TO HAVE LIFTING HOLES CAST IN. PLUG LIFTING HOLES WITH GROUT AFTER PLACING MANHOLE.
9. DRAIN MANHOLE FRAME AND COVER SHALL BE FLUSH WITH FINISH GRADE.
10. SEE CU101 FOR DRAINAGE SCHEDULE.

5 TYP CATCH BASIN DETAIL
CS101, C-504 NOT TO SCALE (DRAIN MANHOLE SIMILAR)



NOT FOR CONSTRUCTION



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

SOUTHERN MAINE AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

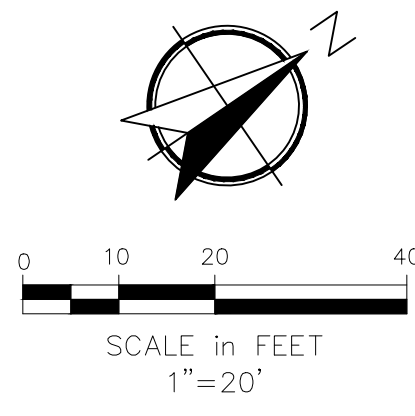
SITE DETAILS - 1

SCALE: AS NOTED

DATE: 06-14-2021

DWG.: **C-503**

SHEET: **11** OF **19**



- PLANTING NOTES:**
1. CONTRACTOR SHALL BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTING AND SHALL CONTINUE UNTIL FINAL ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF WATERING AND MAINTENANCE.
 2. CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THE PLAN. ANY DISCREPANCY BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THOSE REQUIRED ON THE PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL RENUMERATION. ANY DISCREPANCIES SHALL BE CLARIFIED WITH THE LANDSCAPE ARCHITECT PRIOR TO ORDERING PLANT MATERIAL.
 3. ALL MATERIALS SHALL CONFORM TO SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
 4. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THE ORIGINAL GRADES BEFORE DIGGING.
 5. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
 6. ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AT THE NURSERY AND AT THE SITE.
 7. ALL PLANT BEDS SHALL MEET MINIMUM TOPSOIL REQUIREMENTS (SEE SPECIFICATIONS).
 8. NO PLANT MATERIAL SHALL BE INSTALLED UNTIL GRUBBING, BED PREPARATION, AND FINISH GRADING HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
 9. ALL PLANTS BEDS AND TREE WELLS SHALL HAVE A MINIMUM OF 3" OF UNIFORMLY DISTRIBUTED, DARK, SHREDDED BARK MULCH.
 10. CONTRACTOR SHALL SUBMIT SOIL SAMPLE AND TEST OF TOPSOIL TO LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SOIL ADMIXTURE SHALL BE ADDED TO EXISTING SOIL (BY CONTRACTOR) IF DEEMED NECESSARY BY SOIL TEST RESULTS.
 11. ROUGH GRADING AND BED PREPARATION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANT INSTALLATION. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT 48 HOURS PRIOR TO REQUIRED SITE VISIT.
 12. ALL PLANTS SHALL BE BALLED AND WRAPPED OR CONTAINER GROWN AS SPECIFIED. ALL ROOT WRAPPING AND CONTAINER MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED AT THE TIME OF PLANTING.
 13. ALL BROAD LEAF EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESSICANT AT THE BEGINNING OF THEIR FIRST WINTER.
 14. ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 15. ALL PLANTS SHALL BE WATERED BY THE CONTRACTOR, AS NECESSARY TO INSURE HEALTH UNTIL FINAL ACCEPTANCE.
 16. CONTRACTOR SHALL STAKE TREES IF DEEMED NECESSARY BY THE LANDSCAPE ARCHITECT.
 17. THE LANDSCAPE CONTRACTOR SHALL PROVIDE PREPARED SOIL PLANTING MIX AS PER THE CONTRACT SPECIFICATIONS.
 18. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST AND PLANTING SPECIFICATIONS FOR SEASONAL REQUIREMENTS AND OTHER RESTRICTIONS RELATED TO THE TIME AND SEASON OF PLANTING.
 19. PLANTING SOIL MIX: 1 PART COMPOST, 8 PARTS TOPSOIL, 3 PARTS HUMUS. TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL, FREE FROM CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION, PH RANGE 5.0-7.0, AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT. SANDY LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

TEXTURAL CLASS	% OF TOTAL WEIGHT	AVERAGE %
SAND (0.05- 2.0 MM)	45 TO 75%	60%
SILT (0.002- 0.05 MM)	15 TO 35%	25%
CLAY (< 0.002 MM)	5 TO 25%	15%

PLANTING SCHEDULE

TREES

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
1	AC	Amelanchier canadensis	Native Shadbush	7-8' HT	B+B, CLUMP	X
3	AR1	Acer rubrum 'Karpick'	Red Maple	2-2.5"	B+B	X
1	AR2	Acer rubrum 'Northwood'	Red Maple	2-2.5"	B+B	X
4	GT	Gleditsia triacanthos 'Street Keeper'	Honeylocust	2-2.5"	B+B	
1	LT	Liriodendron tulipifera 'Little Volunteer'	Tulip tree	2-2.5"	B+B	X
2	PS1	Prunus sargentii	Sargent Cherry	2-2.5"	B+B	
3	PS2	Prunus sargentii 'Rancho' or 'Columaris'	Sargent Cherry	2-2.5"	B+B	

SHRUBS + PERENNIALS + VINES + GROUND COVERS

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
10	CS	Cornus sericea 'Farrow'	Red Twig Dogwood	4'-5'/#7		X
31	CP	Comptonia peregrina	Sweetfern	#7		X
40	DL	Diervilla lonicera	Northern Bush Honeysuckle	#5		X
33	FG	Fothergilla gardenii	Dwarf Bottlebrush Bush	#5		
2500 SF	GF	see spec on L2.0	Grass + Forbes mix (semi-shade blend)	1,450 SF PER LBS		X
23	HAP	Hydrangea anomala petiolaris	Climbing Hydrangea	4-5'/#10	15' O.C.	
8	MP	Myrica pensylvanica 'Bobee'	Northern Bayberry	3-4'/#7		X
77	RA	Rhus aromatica 'Gro-Low'	Fragrant Sumac	2.5'-3'/#7		X
21	RB	Rhododendron 'Boule-de-Neige'	Rhododendron	3' HT	B+B	
3	VC	Viburnum cassinoides	Witherod Viburnum	3-3.5' HT	B+B	X

NOT FOR CONSTRUCTION

OWNER:

SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

APPLICANT:

BIDDEFORD HOUSING AUTHORITY
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

ADAMS POINT
For Families

Project:

ADAMS POINT

Description:

Date:

Revisions:

SEAL: PATRICK J. CARROLL, NO. 127, LANDSCAPE ARCHITECT, STATE OF MAINE

Scale: as shown

Approved By: PC

Drawn By: MAP

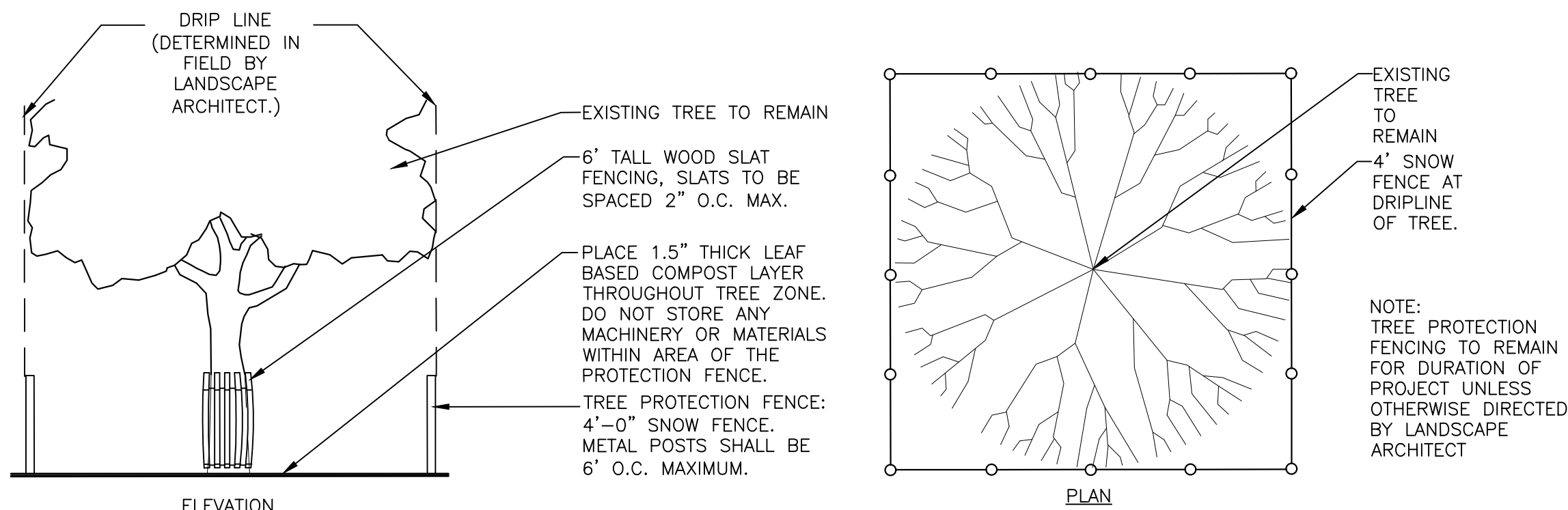
Phase: PLANNING BOARD APPLICATION

DATE: JUNE 14, 2021

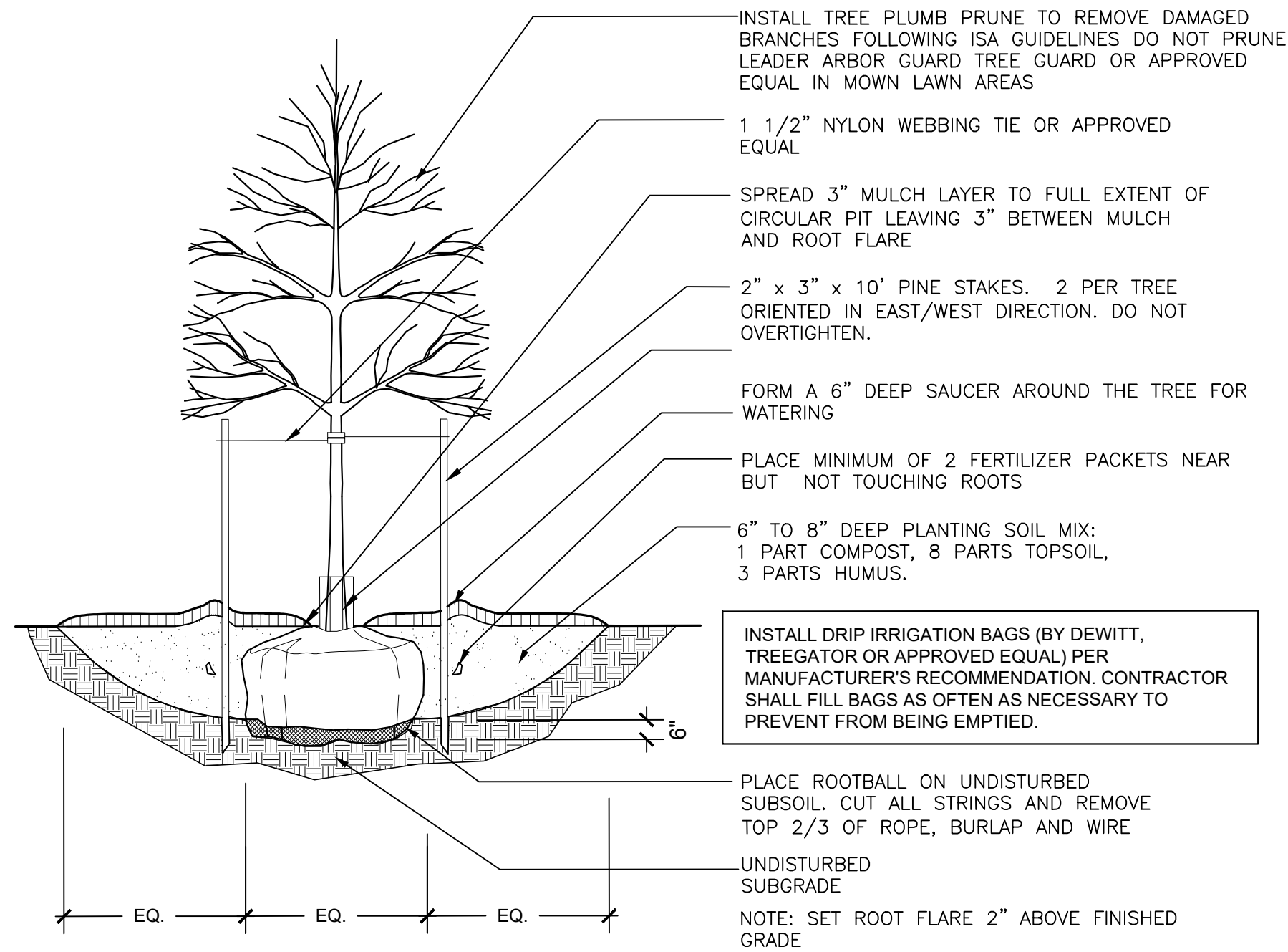
Sheet No:

LANDSCAPE ARCHITECTS
CARROLL ASSOCIATES
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0712

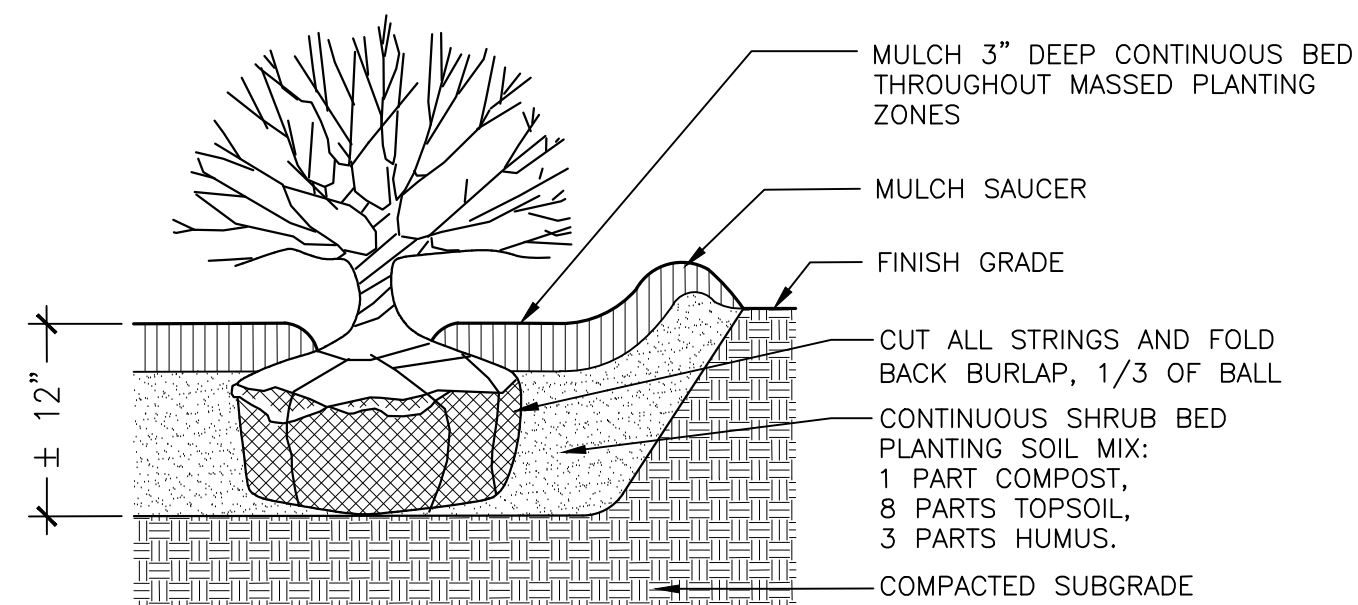
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1 TYPICAL TREE PROTECTION



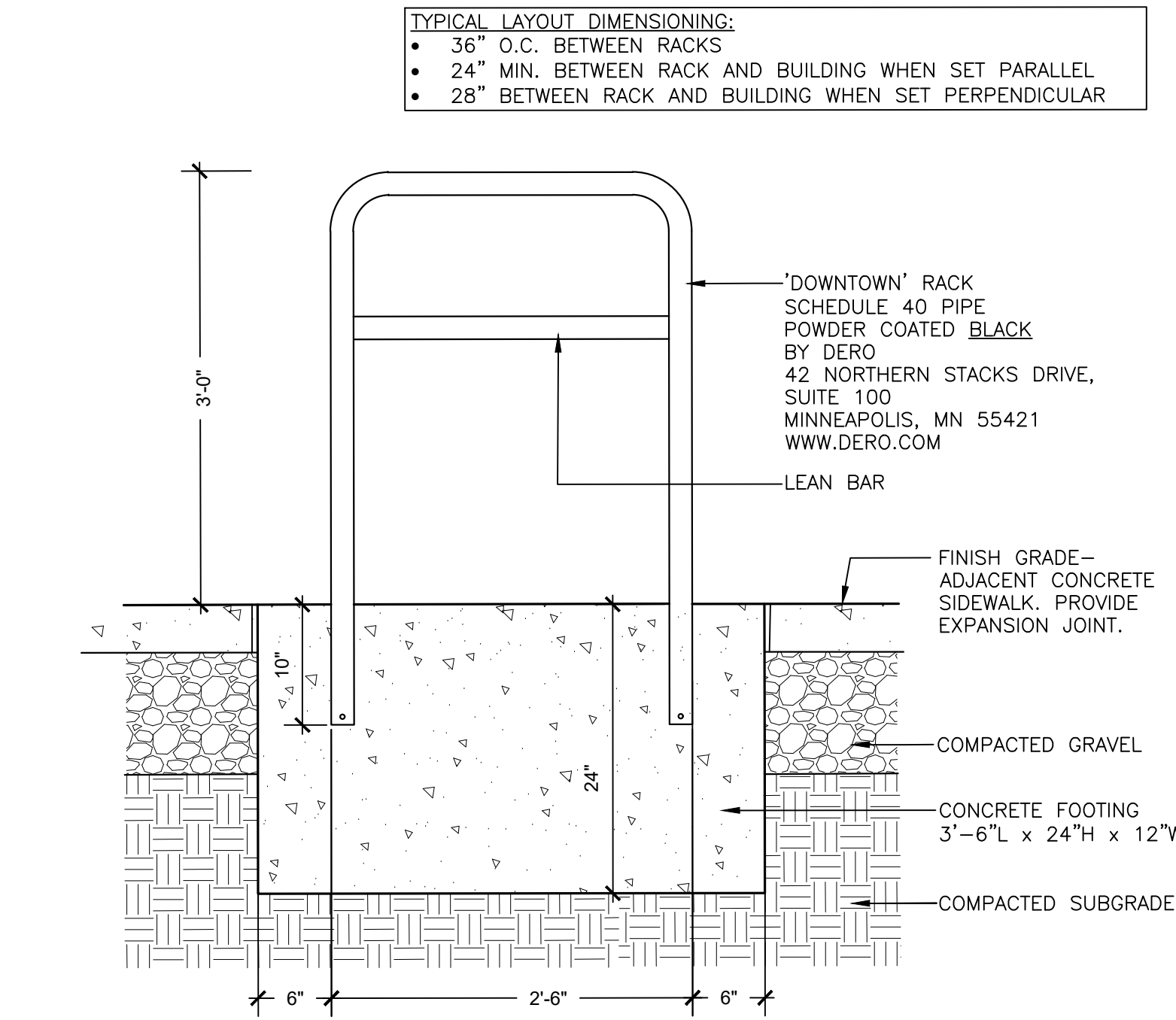
2 TYPICAL TREE PLANTING



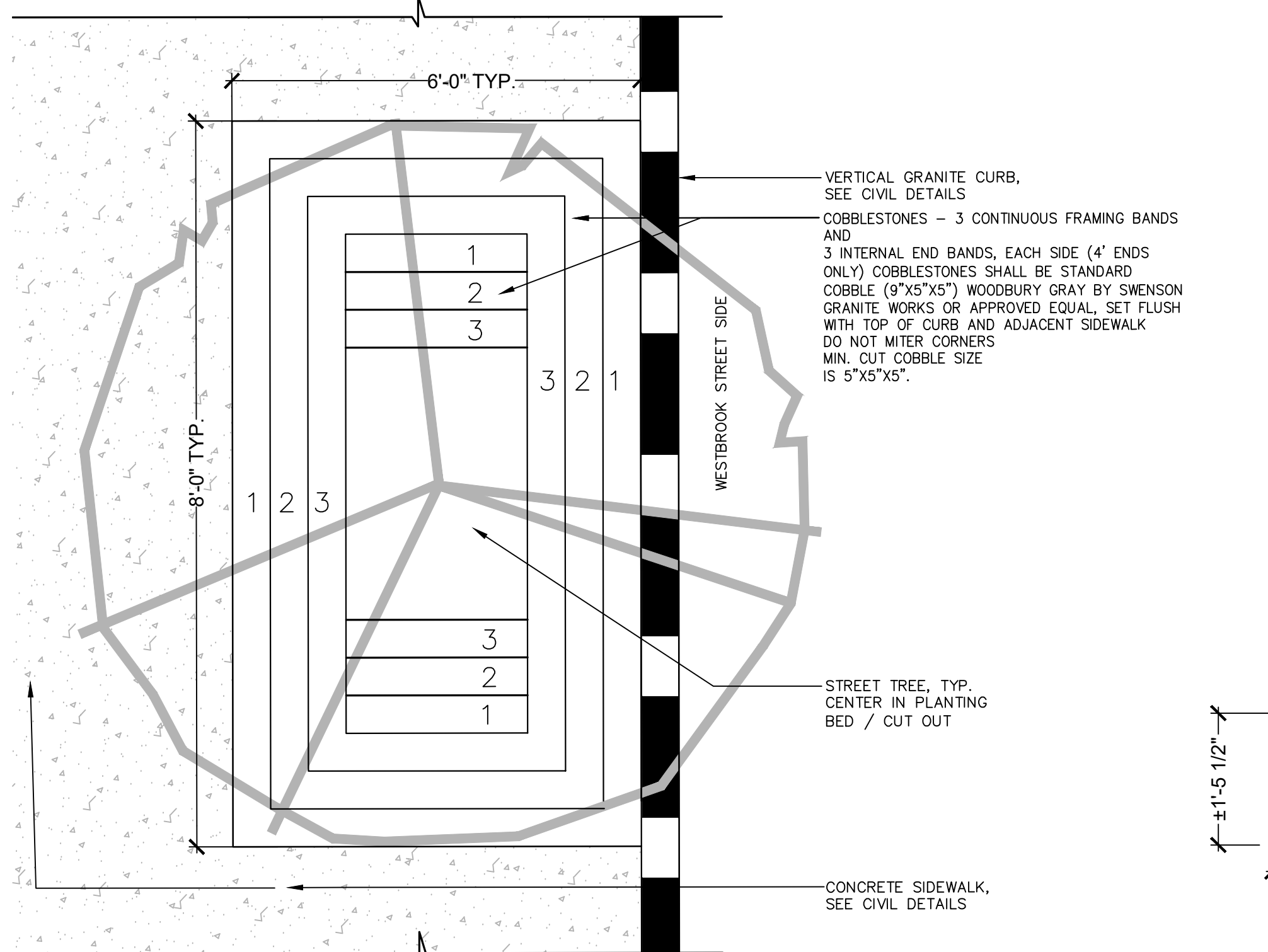
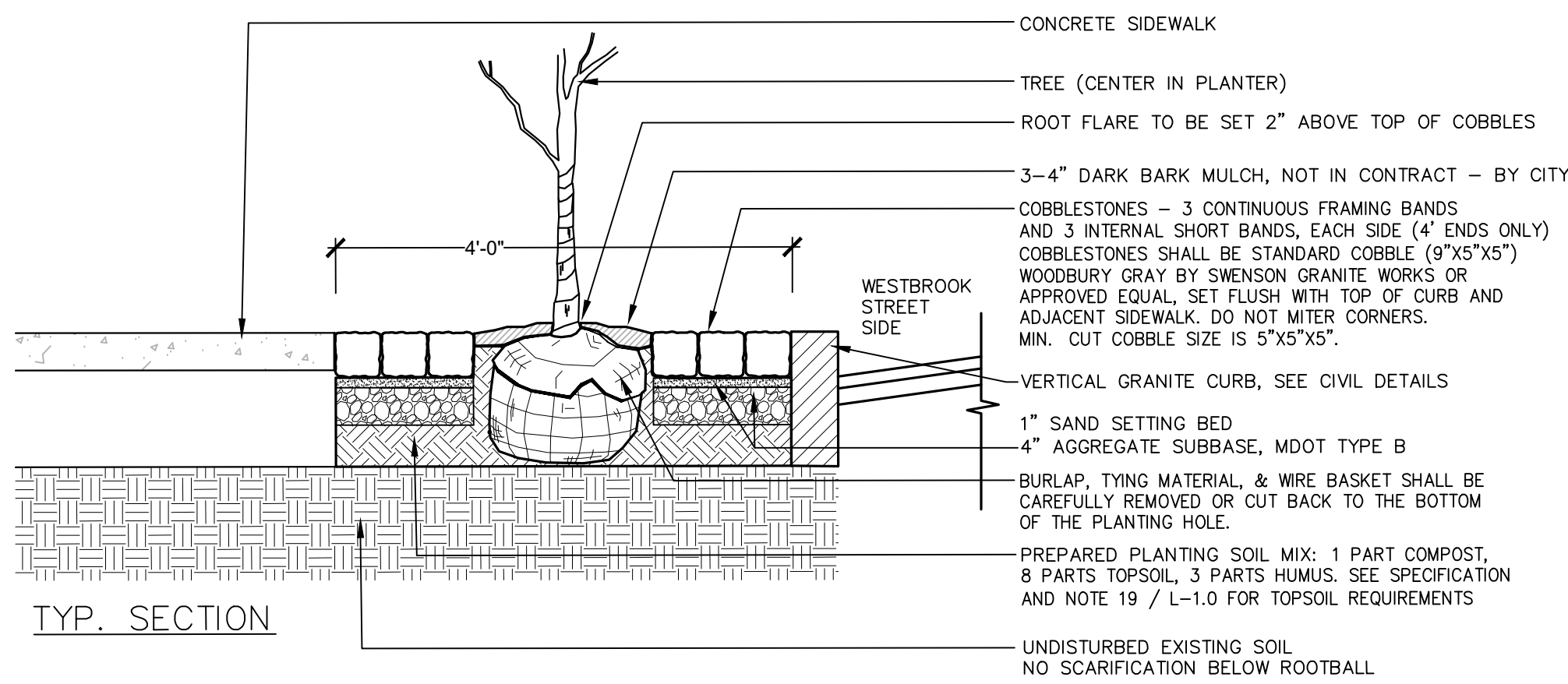
3 TYPICAL SHRUB PLANTING



5 TREE PIT



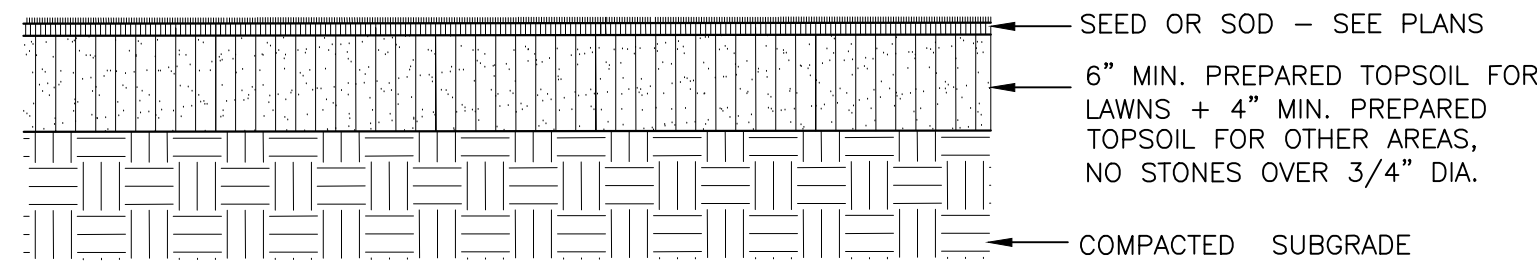
4 BIKE RACK



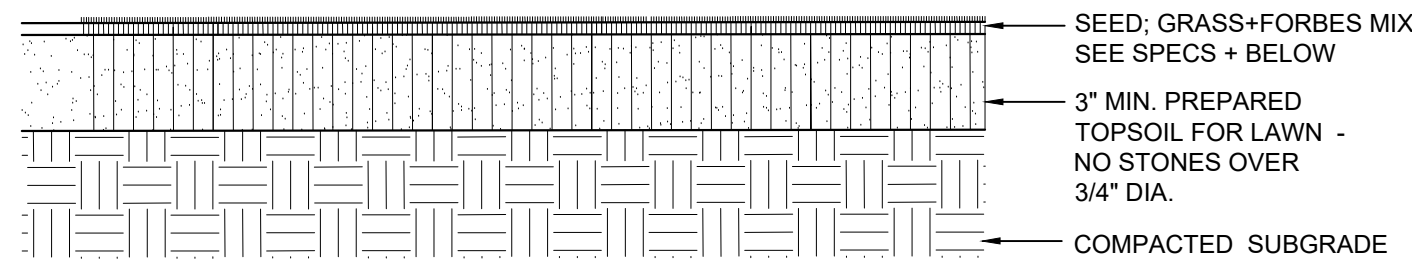
TYP. PLAN VIEW

TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL, FREE FROM CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION, PH RANGE 5.0-7.0, AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT. LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

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CLAY (< 0.002 MM)	5 TO 25%	15%



SEED MIX PLANTING (LAWN & OTHER AREAS)



SEED MIX PLANTING (NON-LAWN AREAS)

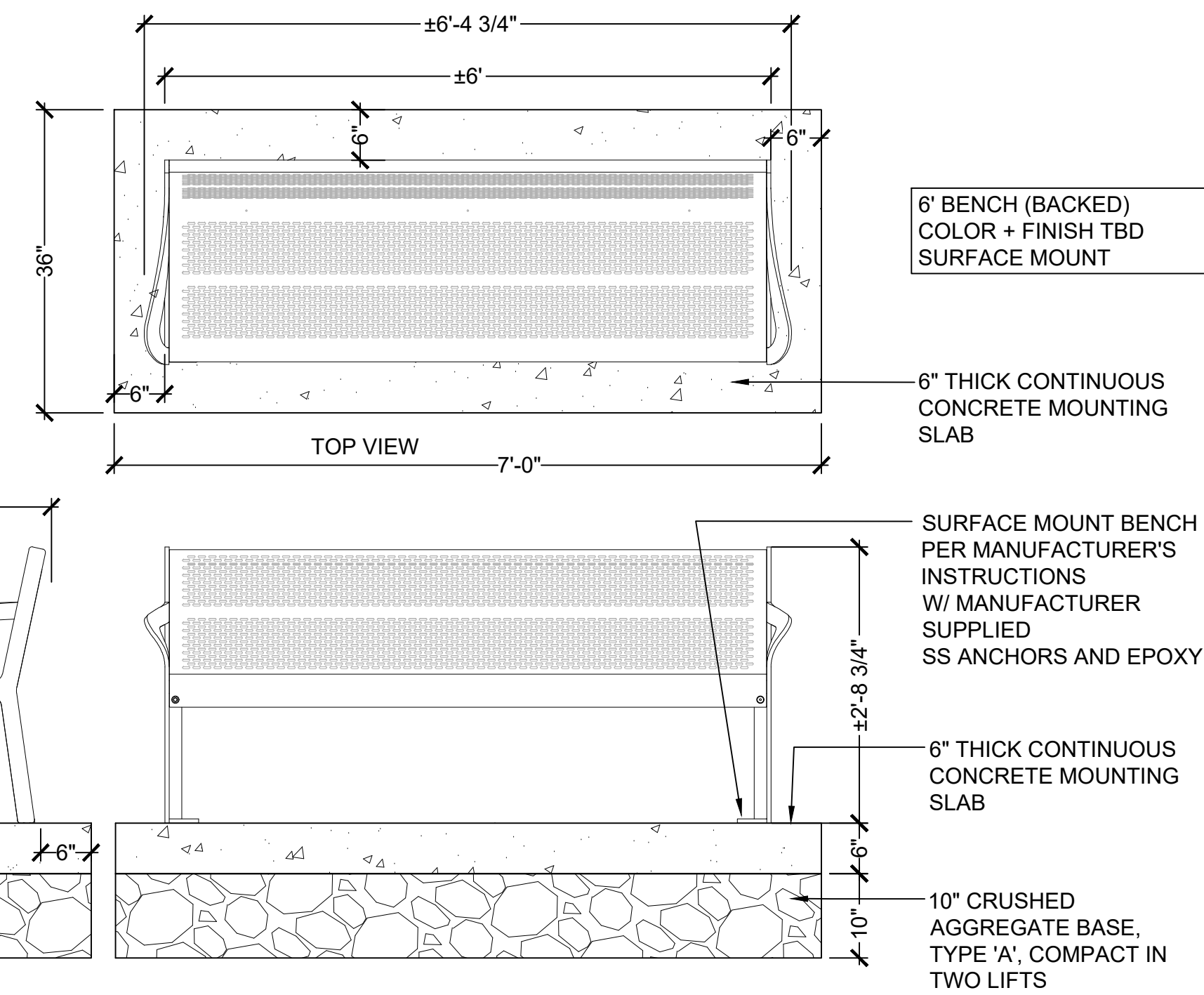
NEW ENGLAND WETLAND PLANTS, INC.

820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM
New England Semi-Shade Grass and Forbs Mix

Botanical Name	Common Name	Indicator
<i>Elymus virginicus</i>	Virginia Wild Rye	FACW-
<i>Elymus canadensis</i>	Canada Wild Rye	FACU+
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Chamaecrista fasciculata</i>	Partridge Pea	FACU
<i>Liars spicata</i>	Spiked Gayfeather/Marsh Blazing Star	FAC+
<i>Oenothera sensibilis</i>	Sensitive Fern	FACW
<i>Aster prenanthoides (Symphyotrichum prenanthoides)</i>	Zigzag Aster	FAC
<i>Eupatorium fistulosum (Eutrochium fistulosum)</i>	Hollow-Stem Joe Pye Weed	FACW
<i>Eupatorium perfoliatum</i>	Boneset	FACW
<i>Juncus tenuis</i>	Path Rush	FAC

PRICE PER LB. \$87.00 MIN. QUANTITY 1 LBS. TOTAL: \$87.00 APPLY: 30 LBS./ACRE: 1450 sq ft/lb
The New England Semi Shade Grass & Forbs Mix contains a broad spectrum of native grasses and forbs that will tolerate semi-shade and edge conditions. Always apply on clean bare soil. The mix may be applied by hydroseeding, by mechanical spreading, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper seed to soil contact. Best results are obtained with a Spring seeding. Late Spring and early Summer seeding will benefit with a light mulching of weed-free straw to conserve moisture. If conditions are drier than usual, watering will be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free seed bed is necessary for optimal results.
New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is bulk pound, FOB warehouse, Plus ST and applicable taxes.

6 SEEDING



7 BENCH

NOT FOR CONSTRUCTION

OWNER:

SOUTHERN
MAINE
AFFORDABLE
HOUSING
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE
04005

APPLICANT:

BIDDEFORD
HOUSING
AUTHORITY
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE
04005

ADAMS
POINT
For Families

Project:

Description:

Date:

Revisions:

Scale: as shown
Approved By: PC
Drawn By: MAP

LANDSCAPE
DETAILS

Phase:
PLANNING BOARD
APPLICATION

CARROLL ASSOCIATES
LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0712

Date:
JUNE 14, 2021

Sheet No:

L2.0

ADAMS POINT MULTI FAMILY HOUSING
69 Adams St. Biddeford, ME 04005

No.	Date	Description
B		Revision Schedule

JOB NO.
Project Number

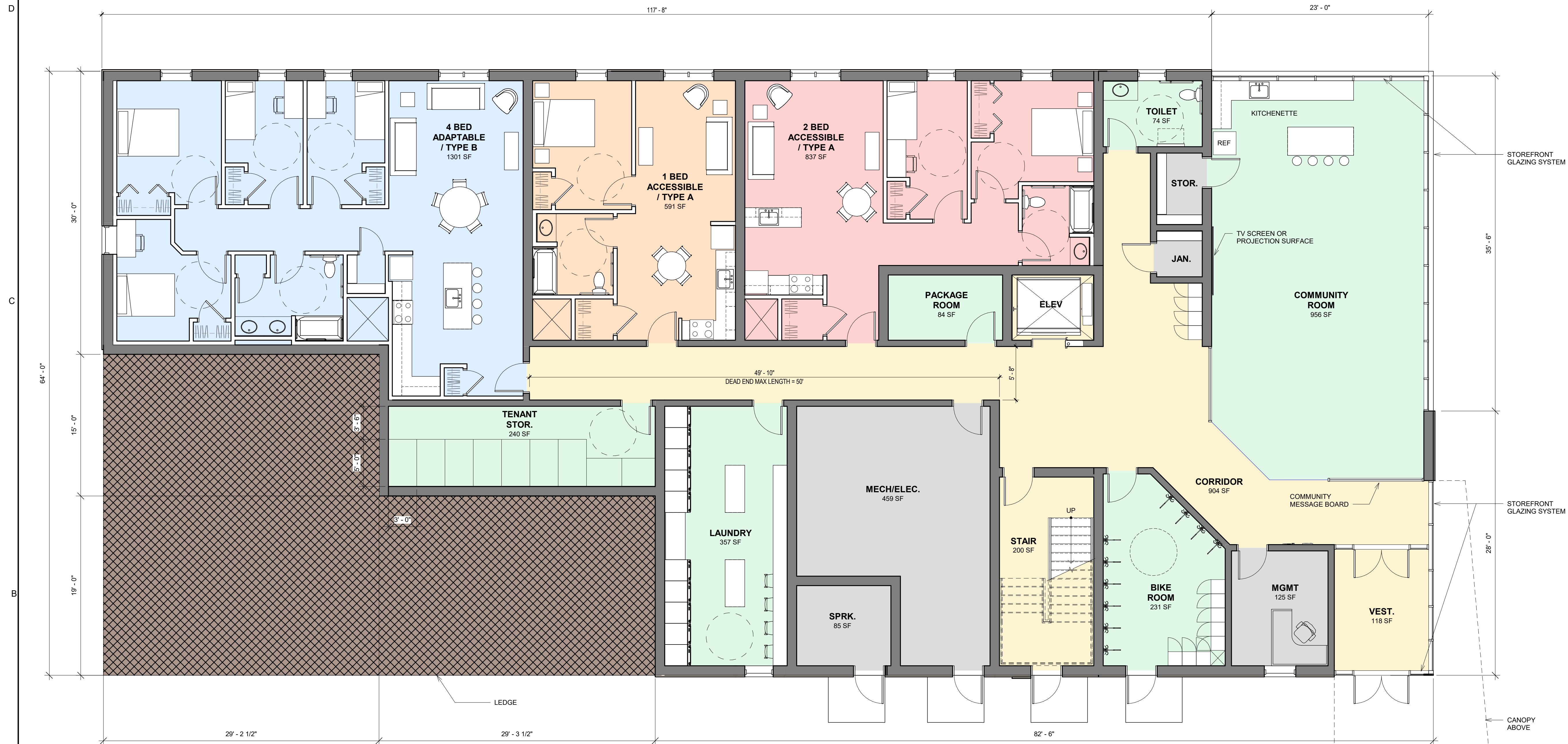
DRWN. CHK
Author Checker

SCALE:
3/16" = 1'-0"

ISSUE:
ISSUED FOR BID
04/02/2021

TITLE
Ground Floor Plan

SHEET
A100



1 GROUND FLOOR - CONCEPT
3/16" = 1'-0"

GROUND FLOOR PLAN SUMMARY

UNITS:
(1) - 4 BED ROOM UNIT
(1) - 2 BED ROOM UNIT
(1) - 1 BED ROOM UNIT

AREA:
FLOOR FOOTPRINT: 7,450sf
FLOOR PLATE (EXCLUDES STAIRS, ELEV.
AND MECHANICAL SHAFTS): 7,360sf

BUILDING INTERIOR FINISHES SUMMARY

FLOORING
CARPET:
• CORRIDORS
• MANAGEMENT OFFICE
VINYL SHEET FLOORING W/ BACKING:
• LAUNDRY, BATHROOMS
SOLID VINYL FLOOR TILE:
• THROUGHOUT LIVING UNITS
(EXCLUDING BATHROOMS)
LUXURY VINYL FLOORING:
• COMMUNITY ROOM
• MAIL ROOM
WALK-OFF MATT
• VESTIBULE
RUBBER
• STAIRS AND LANDINGS
SEALED CONC.
• MECH/ELEC.
• SPRINKLER ROOM
• JANITOR
• STORAGE SPACES

WALLS
PAINT:
• ASSUME SINGLE COLOR (ZERO-
VOC) THROUGHOUT LIVING UNITS
• ASSUME (2) COLORS FOR SHARED
SPACES
FIBERGLASS REINFORCED PLASTIC:
• JANITOR
• GRND FLR. TOIL.
• PACKAGE ROOM
COUNTERTOPS
LAMINATE:
• LIVING UNIT KITCHENS
QUARTZ:
• BATHROOMS

BUILDING PROGRAM LEGEND

- 1 BED UNIT
- 2 BED UNIT
- 4 BED UNIT
- BUILDING STORAGE
- BUILDING SUPPORT
- CIRCULATION
- MANAGEMENT
- SHARED SPACE

ADAMS POINT MULTI FAMILY HOUSING

69 Adams St. Biddeford, ME 04005

No.	Date	Description
B		Revision Schedule

JOB NO.
Project Number

DRWN. CHK
Author Checker

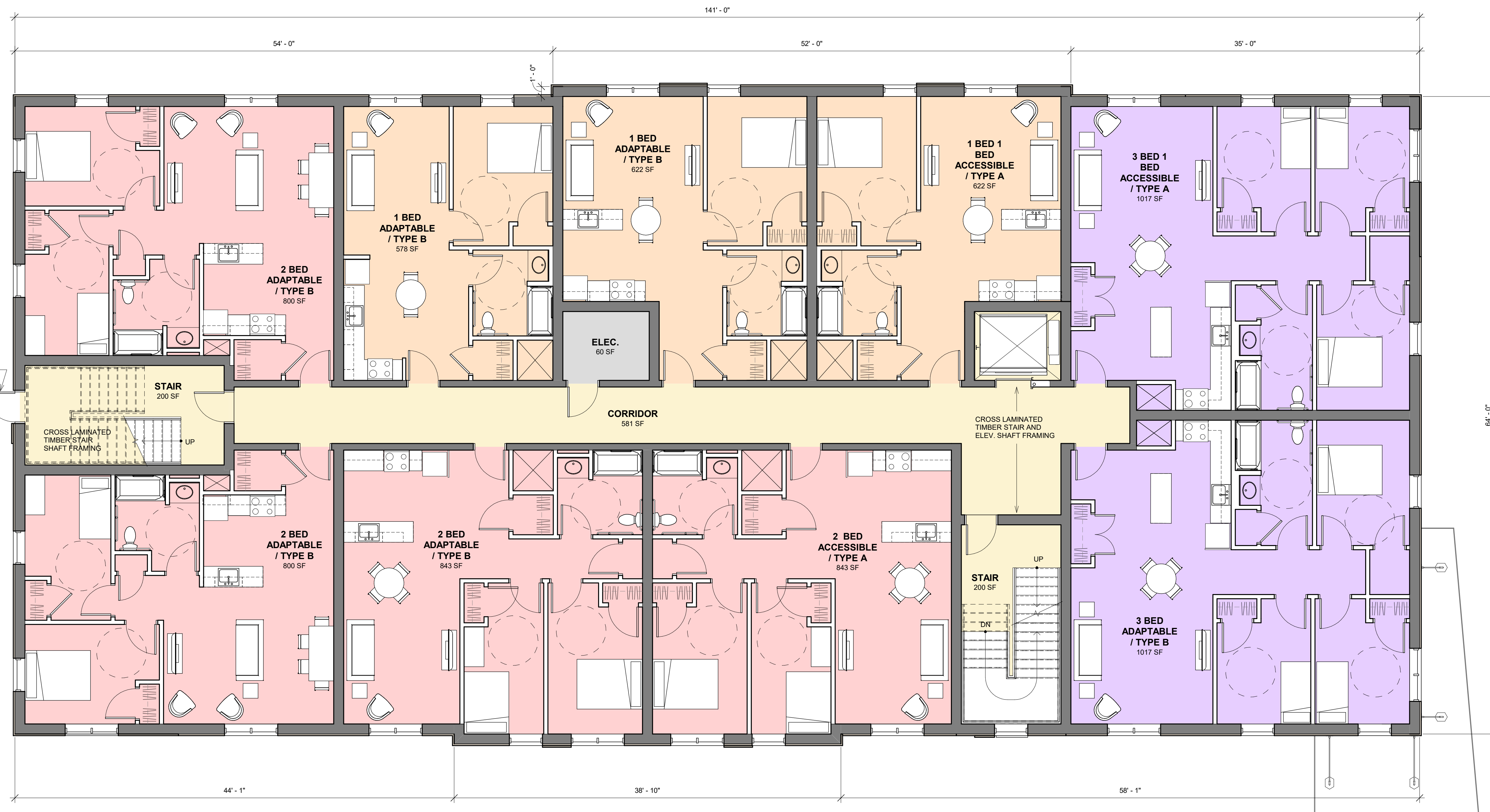
SCALE:
3/16" = 1'-0"

ISSUE:
ISSUED FOR BID
04/02/2021

TITLE
First Floor - 4th Floor
Plan

SHEET

A101



TYPICAL FLOOR PLAN 1ST THRU 4TH FLOORS

UNITS:
(2) - 3 BED ROOM UNITS
(4) - 2 BED ROOM UNITS
(3) - 1 BED ROOM UNITS
AREA:
FLOOR FOOTPRINT: 9,115sf
FLOOR PLATE (EXCLUDES STAIRS, ELEV.
AND MECHANICAL SHAFTS): 8,392sf

CANOPY OVER MAIN
ENTRY BELOW

BUILDING PROGRAM LEGEND

- 1 BED UNIT
- 2 BED UNIT
- 3 BED UNIT
- BUILDING SUPPORT
- CIRCULATION

1 TYPICAL FLOOR PLAN - CONCEPT
3/16" = 1'-0"



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



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



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



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

Revision Schedule		
No.	Date	Description

JOB NO.
Project Number

DRWN. CHK
Checker

SCALE:

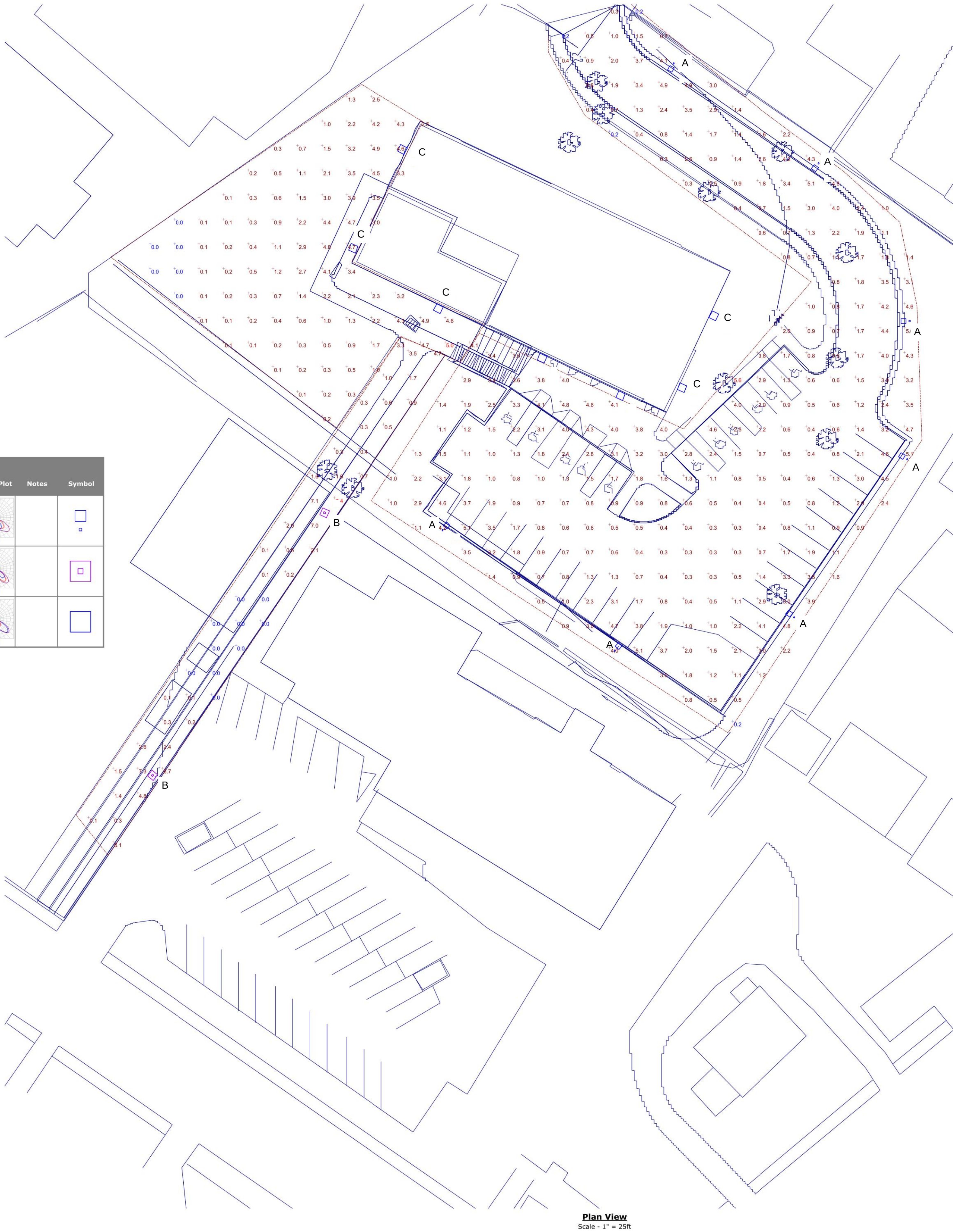
ISSUE
06/08/2021

TITLE
Exterior Elevations

SHEET
A200

File: V:\PROJECTS\ANY\K5\068944.000\09_DESIGN\DRAWINGS\01_SHEETS\E-100_068944.DWG
Saved: 6/11/2021 9:42:11 AM Plotted: 6/11/2021 9:43:20 AM Current User: Napora, Daniel LastSavedBy: 6930

Schedule															
Label	Image	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens per Lamp	Lumen Multiplier	LLF	Wattage	Efficiency	Distribution	Polar Plot
A		7	Sternberg Lighting	ML630-24L40T3-MDL014-SV1-BLOC	Medium size Millenia Arm Mount fixture, LEDII T3revB optic, Soft Vue 1 Flat	Luxeon 50-50	1	ML630-24L40T3-MDL014-SV1-BLOC.IES	6583	1	1	87.3	100%		
B		2	Sternberg Lighting	ML660-12L40T5-MDL018-SV1	ML660 Medium size Millenia, Post Top, Soft Vue 1 Flat, T5	4x per board	1	ML660-12L40T5-MDL018-SV1.IES	4791	1	1	59.3	100%		
C		7	Sternberg Lighting	ML630-16L40T4-MDL018-SV1	ML630 Medium Millenia Fixture, Luxeon 50-50 LED, T4, Soft Vue 1	Luxeon 40K	1	ML630-16L40T4-MDL018-SV1.IES	8411	1	1	75.1	100%		



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LANDSCAPE ARCHITECTURAL FIRM, TO ALTER IN ANY MANNER THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED. THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LANDSCAPE ARCHITECTURAL FIRM SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

ADAMS POINT HOUSING
69 ADAMS STREET,
BIDDEFORD, MAINE, 04005

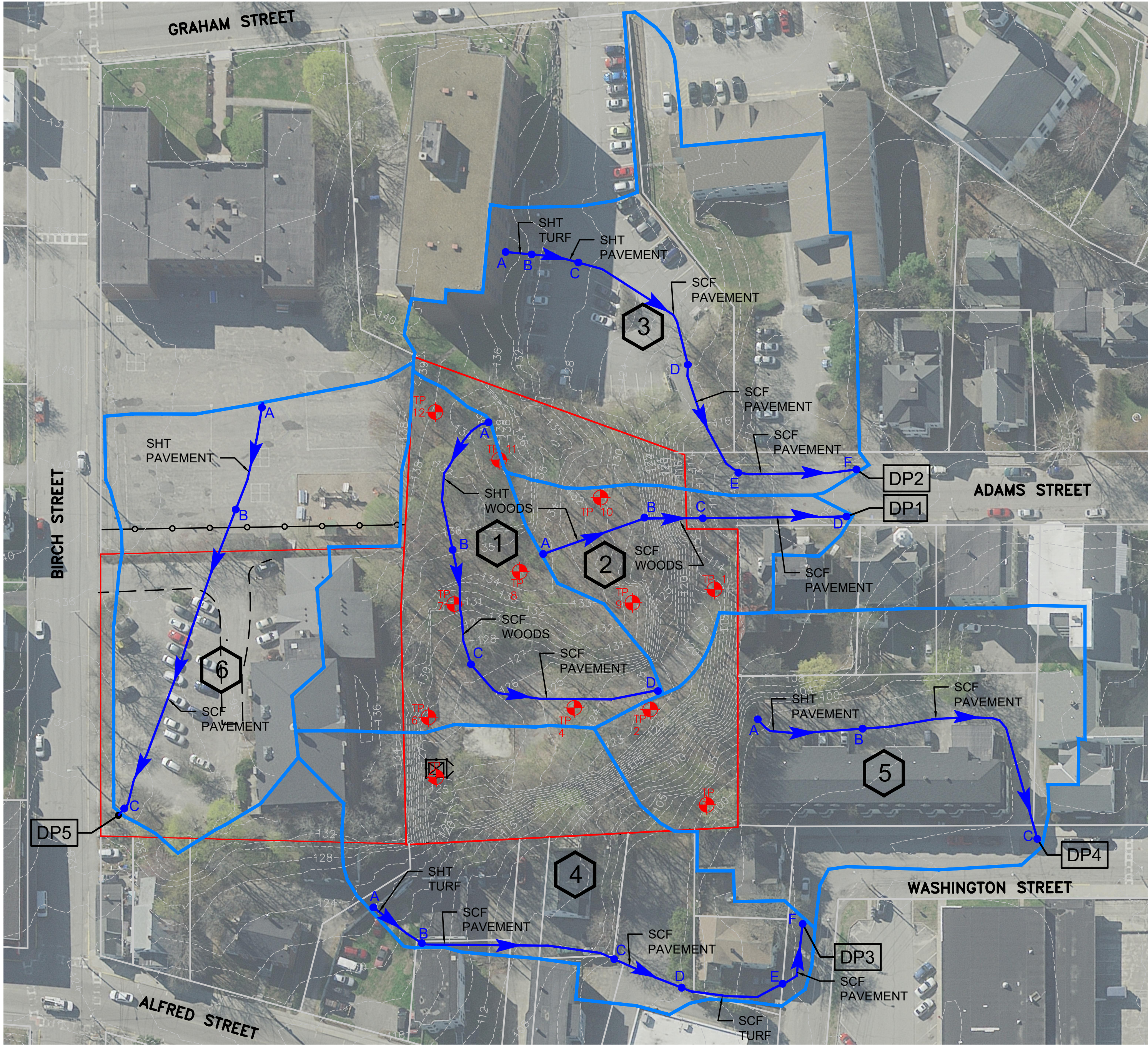
No.	Submittal / Revision	App'd.	By	Date

EXTERIOR
LIGHTING PLAN

Designed By: MA	Drawn By: DN	Checked By:
Issue Date: 06/10/2021	Project No: 068944	Scale:

Drawing No.:
E-100

C:\FILES\22104.04-WS101.dwg, 6/14/2021 10:35:00 AM

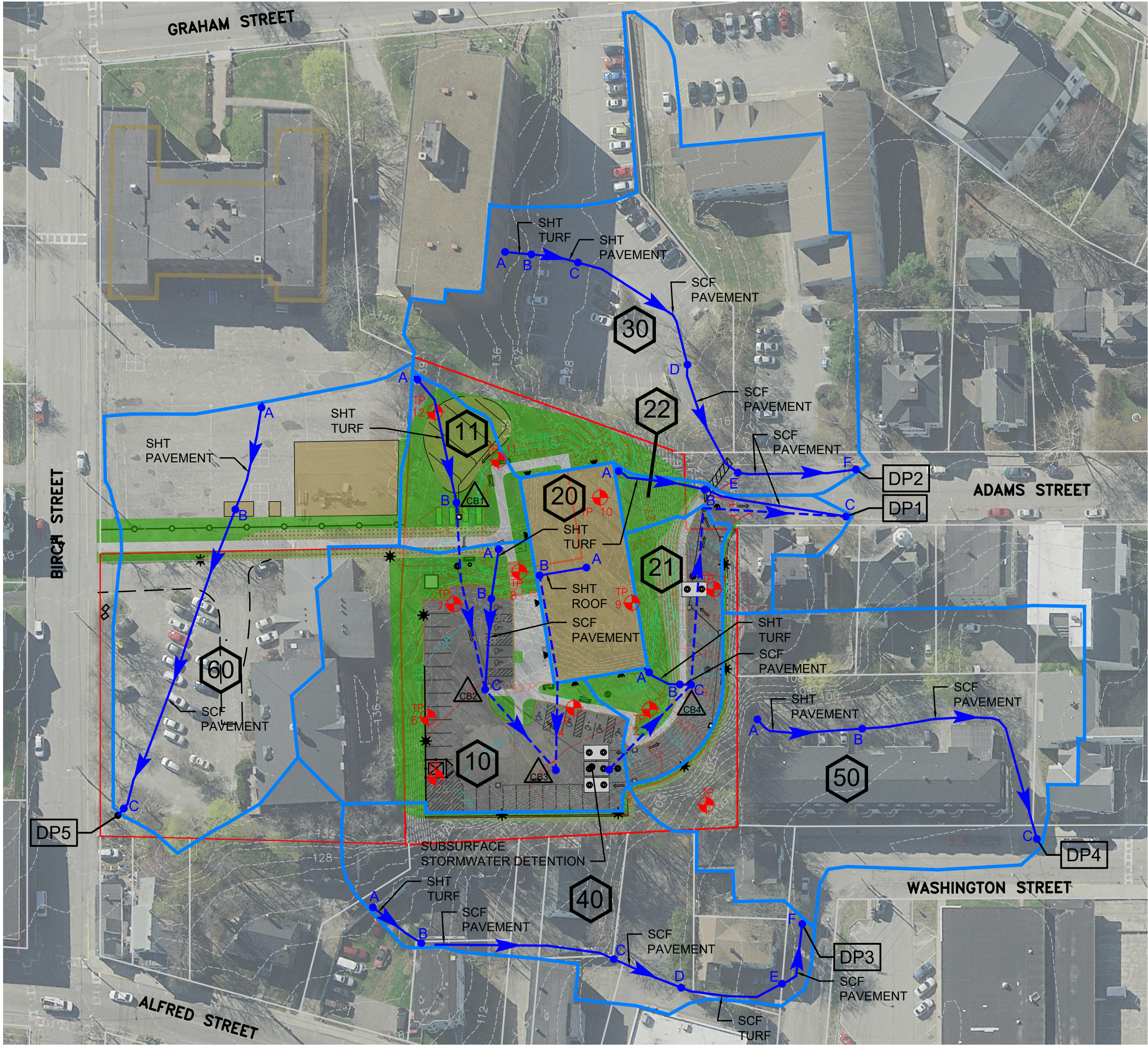


1 PRE-DEVELOPMENT WATERSHED PLAN
WS101 1"=50'

LEGEND

- 1 WATERSHED NUMBER
- A → B TIME OF CONCENTRATION FLOW PATH
- CATCH BASIN/REACH FLOW PATH
- WATERSHED BOUNDARY
- 405--- EXISTING CONTOUR LINE
- DP1 DISCHARGE POINT (POINT OF ANALYSIS)
- CB1 CATCH BASIN/POND ROUTING
- 1R REACH ROUTING
- SHT SHEET FLOW
- SCF SHALLOW CONCENTRATED FLOW
- CHAN CHANNEL FLOW
- PIPE PIPE FLOW

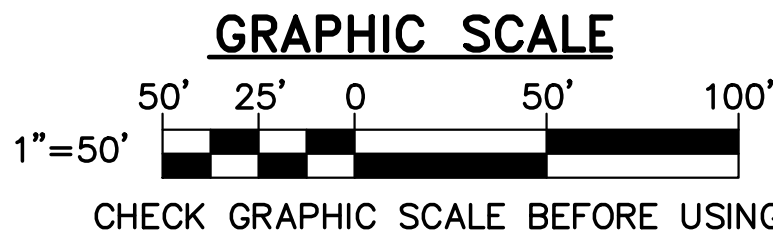
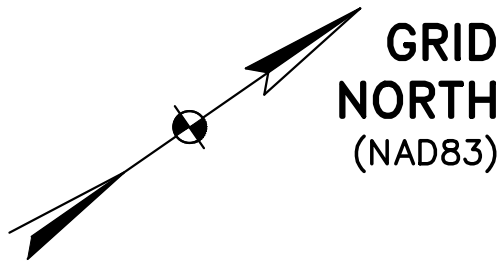
PRE- AND POST-DEVELOPMENT RUNOFF RATES (CFS)						
ANALYSIS POINT	2-YEAR		10-YEAR		25-YEAR	
	PRE	POST	PRE	POST	PRE	POST
DP1	1.2	1.6	2.4	2.2	3.4	2.5
DP2	3.2	3.2	5.5	5.5	7.4	7.4
DP3	2.1	1.6	3.8	2.8	5.1	3.8
DP4	2.9	2.9	4.9	4.7	6.5	6.1
DP5	3.1	3.0	4.8	4.8	6.2	6.1



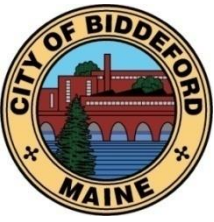
2 POST-DEVELOPMENT WATERSHED PLAN
WS101 1"=50'

NOTES:

1. THE SOILS FOR THE ENTIRE SITE ARE CLASSIFIED AS "URBAN" BASED ON A CLASS D MEDIUM INTENSITY SOIL SURVEY PERFORMED IN SPRING, 2021. FOR THE PURPOSES OF STORMWATER ANALYSIS, THE HYDROLOGIC SOIL GROUP IS ASSUMED TO BE "C."
2. ELEVATION INFORMATION SHOWN IS BASED ON GPS STATIC OBSERVATIONS TAKEN FEBRUARY 25, 2021. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988.



NOT FOR CONSTRUCTION



CITY OF BIDDEFORD

PLANNING DEPARTMENT

Greg Tansley, A.I.C.P.
205 Main Street
PO Box 586
Biddeford, ME 04005
(207) 284-9115

Greg.Tansley@Biddefordmaine.org

HISTORIC PRESERVATION COMMISSION REQUEST FOR CERTIFICATE OF APPROPRIATENESS

NOTICE OF DECISION

July 15, 2021

Applicant: CHA Consulting
Shane Dunn
49 Dartmouth St
Portland ME 04101
sdunn@chacompanies.com

File # 2021.10 HPC

Project Address: 69 Adams Street

Map/Lot: 38/290

Project Zone: MSRD-2

☐ Contributing ☒ Not Contributing ☐ N/A

Nature of Application:

The applicant proposes to construct a new 39-unit affordable residential building at 69 Adams Street. This project received preliminary review by this commission at its May 12, 2021 meeting.

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Findings:

	<i>SUBJECT</i>	<i>DATA/INFORMATION</i>
1.	Applicant:	CHA Consulting Shane Dunn 49 Dartmouth St Portland ME 04101 sdunn@chacompanies.com
2.	Owner of Property:	Southern Maine Affordable Housing 22 South St. Biddeford ME 04005 ggagnonbha@maine.rr.com
3.	Contractor/Developer:	CHA Consulting Shane Dunn 49 Dartmouth St Portland ME 04101 sdunn@chacompanies.com
6.	Project Agent/Architect:	CHA Consulting
5.	Project Location:	69 Adams St.
6.	Project Tax Map #/Lot #:	Tax Map 38, Lots 290
7.	Existing Zoning:	MSRD-2
8.	Overlay Zoning:	Biddeford Historic District.
9.	Contributing/Non-contributing:	N/A
10.	Existing Use:	None
11.	Proposed Use:	Residential
12.	Proposed Project:	New Construction
13.	Approvals Required:	Certificate of Appropriateness
14.	Uses in the Vicinity:	Residential, institutional
15.	Other Permits Obtained:	None
16.	Historic Preservation Commission Review History:	July 14, 2021 Meeting: The notice was posted on the city website on July 2, 2021. Abutter notices were also sent out to all abutters within 100' on July 7, 2021 – 17 notices were sent out.

Decision:

The Certificate of Appropriateness **is approved** by the Historic Preservation Commission at its July 14, 2021 meeting, conditioned on the materials and assertions presented and:

- 1. All permits must be obtained from Code Enforcement prior to beginning any work.**
- 2. All changes of materials presented at the July 14 meeting must go before the full Historic Preservation Commission for further review prior to installation..**
- 3. All rooftop HVAC screening must be set back as far as possible from the roof edge. The material(s) used for this screening must be reviewed by the full historic Preservation Commission prior to installation.**

Thank you for participating in the City of Biddeford's historic preservation efforts.

ON BEHALF OF THE HISTORIC PRESERVATION COMMISSION



Brad Favreau
Biddeford Economic Development Coordinator

CC: R. Fecteau, Code Enforcement Officer,
M. Fenton, Code enforcement Office,
S. Welton, Code Enforcement Office,
D. Charron, Code Enforcement Office Manager,
N. Whitten, Planning and Development,
File

City of Biddeford – Engineering Department

Project: 69 Adams Street

Subject: Final Submittal Comments

Date: 2021-06-25

- **Site Plan Checklist**
 - o Subdivision checked-off as required; not sure if this is true. New lot dimensions not identified on plans
- **Supporting Materials**
 - o Section 5 – Fire
 - Approval response not provided from Paul Labrecque; dimensions/specs not identified for firetruck model used for truck turn exhibit
 - o Section 10 – Stormwater
 - Watershed areas, individual land cover areas, curve numbers, and times of concentration not summarized for pre- and post-development conditions
 - According to the peak runoff summary table, there is a 0.4-CFS increase for the 2-year storm at DP-1 – whereas the body text states a 0.2-CFS increase
 - Storage pond routing confirmed; recommend adding invert elevation information for two storage facilities (Page 157 of 172) to design plans/sections
- **Sheet V-101**
 - o Information not provided for two grate inlets within Adams Street (one within right-of-way, one within adjacent neighbor driveway)
- **Sheet CD101**
 - o No inlet protection provided for grate inlet within adjacent neighbor's driveway on Adams Street
 - o Assume the 'right-to-disturb' within St. James School/Parish place property has been approved
- **Sheet CS101**
 - o Curb material not identified/called-out
 - o Retaining wall material not identified/called-out
 - o Fence material not identified/called-out
 - o Door not shown for building's west façade entrance
 - o Should three individual ADA parking ramps be consolidated into one continuous ramp?
 - o No crosswalk provided from the site's entrance sidewalk to Adams Street's easterly sidewalk
 - o Stops bars and signage not identified at Adams Street entrance
 - o 4" thick crushed stone surface behind sidewalk (per Detail 4/C-503) not identified on plan
- **Sheet CU101**
 - o New storm drainage connecting to existing combined sewer; this goes against all the city's efforts for CSO abatement
 - o Callout states 'underground stormwater treatment and storage'; is water quality treatment provided, or detention only?
 - o Storm and sanitary profiles only provided for piping within first 200-LF of the driveway; no utility profiles provided for CB7, CB6, CB9, DMH1, SMH3, and building connections
 - o 4" thick crushed stone surface behind sidewalk (per Detail 4/C-503) not identified on plan

- o Underdrain connection locations should be identified (i.e. retaining wall, sidewalk crushed stone)
- **Sheet CG101**
 - o No spot elevations or slope-percentage arrows provided, only contour labels
 - o No bottom-of-wall or top-of-wall spot elevations identified
 - o No grading information provided for concrete sidewalk to Birch Street
 - o Detailed inset grading plan recommended for ADA parking/accessible sidewalks to confirm compliancy
- **Sheet C-301**
 - o STOR-1 not labeled
- **Sheet C-503**
 - o Detail 4 – connection locations for sidewalk underdrain and retaining wall underdrain should be identified
- **Sheet C-504**
 - o Detail 1 – separate details/plans/sections should be provided for each individual detention system (STOR-1 and STOR-2) with proposed rim/invert/bottom elevations identified
 - o Manufacturer/model name identified or standard details provided
- **Sheet L1.0**
 - o Underground utilities should be turned on to identify any utility conflicts with proposed trees
- **Sheet WS101**
 - o Watershed areas, individual land cover areas, curve numbers, and times of concentration not identified/summarized for pre- and post-development conditions

Site Design Associates

Consulting Engineering and Land Planning

July 7, 2021

Mr. Greg Tansley
Via email

**RE: Adams Point Housing
69 Adams Street
Site Plan Application**

Dear Greg;

Per your request Site Design Associates has undertaken a review of the plans and documentation submitted in support of a site plan review application for the development of a five story, 39 unit multi-family housing project at 69 Adams Street in Biddeford.

Our comments are based on a review of civil plans and stormwater management narrative, the ordinance requirements, and standard engineering practice.

Based on our review we offer the following comments for your and the applicant's consideration:

A. General

As we indicated to you earlier, in our opinion the driveway should intersect the Adams Street right of way at 90 degrees, and the drive should not be constructed as an extension of Adam Street. We will defer to public works on this, but it seems it would better accommodate winter maintenance operations for both the drive and the street. As currently designed, the proposed curb extends into the Adams Street travel way, which is problematic from a maintenance and safety standpoint. A 90 degree intersection with stop control, defining both the drive into this site and the abutter's drive, would reduce the potential for conflicts with movements into and out of the abutters drive and with parking along Adams Street. Additionally, we believe that the drive as designed could encourage higher speeds around the somewhat blind corner onto Adams Street increasing the potential for conflicts with pedestrians, other vehicles, and parked cars.

B. Drawings

1. Sheet 4 of 19 – Site Plan
 - a. The pavement repair in Adams Street should be shown with a consistent width and saw cuts and butt joints called out on the drawing.
 - b. Tactile warnings and ramps should be shown at both ends of a formal crosswalk in the public right of way.

23 Whitney Way Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

- c. The existing power pole and guy wire on the easterly side of Adams Street will need to be relocated, which should be noted on the drawings.
- d. Will there be a concrete pad at the dumpster enclosure?
- e. Were details for the enclosure provided? We did not note any on the drawings.
- f. Where is the transition from concrete walks to bituminous pavement walks in front of the building?
- g. The plan appears to show multiple ramps for the accessible parking on the southerly side of the building. From a constructability and maintenance standpoint it may be easier to slope the entire length of the sidewalk rather than have separate ramps and grade changes.
- h. What do the four rectangles on the property northerly of the fire access represent?
- i. Are any railings or fences planned for the tops of the retaining walls around the parking lot?
- j. What does the square with two lines at the top of the stairs on the south side of the building represent
- k. What is planned for curbing material within the parking lot?

2. Sheet 6 of 19 – Utility Plan

- a. The slope of the sanitary sewer from SMH 1 to SMH 2 is approximately 12%. Have the flow velocities been checked to make sure they are not excessive?
- b. The drainage structure schedule indicates that all stormwater storage structure rims will be installed at the same level. Based on the grading plan elevations, this may not be possible.
- c. A riser and access for STOR 1 is shown in the curb line and should be relocated.

3. Sheet 7 of 19 – Grading Plan

- a. Wood chip area underdrain elevations should be provided.
- b. A 2 ft elevation differential is shown across the transformer pad.
- c. One of the trees to be protected is located within a few feet of the southerly wood chip underdrain and may be impacted by the installation of the drain.
- d. Based on the transformer location atop a parking lot retaining wall, and 3-4 ft below the fire access, how will it be accessed for service?
- e. How will the area between the stairway and the building be treated/stabilized? There is a five ft drop in the lower four feet of the slope.
- f. What does “F” signify when used with spot grades?
- g. The treatment of the steep slopes on the northwest and northeast sides of the buildings should be called out on the drawings.
- h. The grades of the accessible parking spaces exceed ADA requirements.
- i. Spot grades at the tops and bottoms of the various retaining walls would be helpful.

4. Sheet 11 of 19 – Site Details -1

- a. Typical sections should be provided for the parking lot, fire access, other retaining walls not associated with the access drive, and the wood chip area with underdrains.
- b. A detail should be provided for an outside drop manhole.
- c. There are potential savings if the access drive pavement and gravel buildups were reduced, along with the thickness of the aggregate under the proposed sidewalk. Reference could be made to the geotechnical report for appropriate material thicknesses.
- d. Another potential savings may be associated with the access drive width. The traffic report indicates that 33 proposed units would generate 180 trips per day. With 39 units currently proposed, that would translate to 212 trips per day, which is less than the 250 trip maximum threshold for a minor residential street. The standard for a minor residential street permits 11 ft travel lanes, as opposed to the 12 ft travel lanes shown. Once in the parking lot, 24 ft would be required.
- e. The foundation and wall drains should be shown along with outlet locations.
- f. The retaining wall detail should incorporate recommendations from the geotechnical report as necessary.
- g. In regards to note 1, a design prepared and sealed by a Maine Professional Engineer should be required.
- h. The detail calls for concrete curb, and as shown, it appears precast concrete curb is being specified. Slipform concrete curb may be a less expensive option.
- i. The drive detail shows the face of the guardrail six inches from the face of curb, which leaves very little room for snow removal.
- j. The trench patch detail shows the sawcut in the wrong location and should be revised.

5. Sheet 12 of 19 – Site Details -2

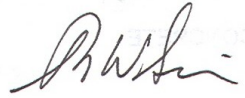
- a. We recommend that the relevant elevations of pipe inverts, top of structure, finished grade, etc. be shown on the storage detail.
- b. The detail shows 3 ft minimum and 5 ft maximum cover over the storage tanks, while the elevations provide for less than 2 ft of cover over the tanks.
- c. The dimensions for the tank depths conflict with the elevations provided and with the dimensions used in the stormwater modeling.
- d. No sumps are proposed in the bottoms of the tanks. In order to control sediment buildup and prevent trash from accumulating in the tanks, it would be advisable to provide 3 ft sumps and outlet traps in the catch basins directly contributing to the storage tanks.

6. Stormwater Management

- a. The modeling appears to include a three tank setup for STOR 1 (shown as storage 2 in the model) while the plans show one tank. If so, either the plan or the model needs to be revised.
- b. Storage invert elevations conflict with the elevations shown on the plans.
- c. We have attached copies of the DEP Checklists for stormwater review and ask that the applicant review the checklist and address any outstanding issues with the plans and the Inspection and Maintenance document as related to the basic standards. For example, a significant rainfall which would trigger an inspection is defined as 0.5" during construction and 1.0" post construction, which should be included in the document, separate forms should be provided for each engineered BMP, an inspection plan for during construction should be provided, etc.

If you or the applicant have any questions, or require additional information, please do not hesitate to contact me.

Sincerely,
Site Design Associates

A handwritten signature in black ink, appearing to read 'Tom Saucier', with a stylized flourish at the end.

Tom Saucier, P.E.
President



DEPARTMENT OF ENVIRONMENTAL PROTECTION

STORMWATER APPLICATION CHECKLIST

Applicant:		
Project Name:		
Town:		
Application Type:	☐ Stormwater	☐ Site Law
Watershed Name:		
Watershed Type:	☐ UIS	☐ Phosphorus
		☐ Neither

Project Area Information

	Existing to Remain ¹	New / Proposed	Total
Impervious (Im)			
Landscaped (Land)			
Developed (Dev) ²			

1- If area is not subject to treatment, provide reason and show in a separate column in the Water Quality Calc table.

2- Developed area = Impervious Area + Landscaped Area

A. BASIC STANDARD

1. Erosion and Sedimentation Controls (Appendix A, page 32 of Chapter 500:

<https://www.maine.gov/sos/cec/rules/06/096/096c500.docx>:)

- Guidance in Department [ESC BMP Manuals](#)

2. Inspection & Maintenance (Appendix B, page 37 of Chapter 500)

Construction Phase: Show on Plans the following:

- Responsibility for inspection and maintenance
- Construction schedule (how long will it take and in what sequence/critical path to build)
- Inspection frequency
- Scope of inspection
- Inspector qualifications
- Define storm event that triggers a wet weather inspection (0.5" of rain in 24 hours)
- Documentation (3 years minimum)

Post-Construction: Include in written I&M Plan the following:

- Responsibility for inspection and maintenance
- Inspection frequency for each BMP
- Inspection form for each BMP
- Inspector qualifications
- Define storm event that triggers a wet weather inspection (1" of rain in 24 hours)
- Documentation (5 years, minimum)
- Project is subject to Department 5-Year Recertification

3. Good Housekeeping (Appendix C, page 41 of Chapter 500)

- Show all seven elements on Plans.

B. GENERAL STANDARD

Must provide the following on WQ Treatment Plan: All BMPs with subcatchments including time of concentration (Tc) lines, flow lengths and flow types.

1. Soil Explorations (test pit completed by a certified soil scientist) at each proposed BMP

- Include test pit summary table on detail plan.
- If there is potential ledge, address in design.
- If shallow groundwater, address in design.

2. Treatment Standards (modify to fit project): Fill out the following table for the applicable standards that apply.

Applicable Standard	Section in Ch. 500	Required Treatment (Im / Dev)	Area Eligible		Area Treated		Provided Treatment %	
			Im	Dev	Im	Dev	Im	Dev
General Standard	4(C)(2)(a)(i)	95% / 80%						
Increased Runoff Treated ¹	4(C)(2)(a)(ii)	90% / 80% min						
% Parcel Developed ²	4(C)(2)(a)(iii)	90% / 75% min						
Redevelopment ³ (Dev Area)	4(C)(2)(d)	0% min (SW) 50% min (Site)						
Linear	4(C)(5)(c)	75% / 50% min						
Other: Offsite Treatment/Mitigation								
Project Total Area =								

1- If proposing to treat more than the first flush, state why meeting Ch. 500, § 4(C)(2)(a)(i) is not practicable.

2- Reduced % based on portion of parcel developed.

3- Include pollutant impact ranking calculations (current and proposed) and a figure showing the Redevelopment window.

3. Proposed BMPs: Please provide the following information on the Table below for EACH BMP.

BMPs Proposed	#	Pretreatment	Sizing calcs	Detail on Plans ¹	CPV Draindown Time	HydroCAD

1- BMP details (cross sections, elevation sections, plan view)

Link to Stormwater Design BMP Volumes I, II, III

<https://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html>

- Provide Construction Oversight Notes.
- If BMP is unlined, review and satisfy (Appendix E Sections 4(b) and 4(c), page 50 of Chapter 500).
- Treatment buffers (Appendix F, page 56 of Chapter 500): must provide sample deed restriction (Appendix G, page 64 of Chapter 500).
- Infiltration must satisfy Appendix D, page 44 of Chapter 500.
- Is conveyance designed to a 10-year, 24-hour storm?
- Is a drainage easement required for any areas to be flooded?
- Discharge to a public storm sewer system: Must provide authorization from the authority.

If proposing Proprietary BMPs, provide:

- Letter from vendor approving sizing and siting
<https://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html>.
- Executed 5-Year I&M Agreement with a provider approved by vendor.
- Narrative section and specific inspection forms in the written I&M Plan.
- Pervious pavement: Must provide Executed 5-Year I&M Agreement and vacuum equipment used.

C. PHOSPHORUS STANDARD

MUST provide on the WQ Treatment Plan: BMPs with subcatchments including time of concentration (Tc) lines, flow lengths and flow types;

Provide export calculations clearly showing distinct BMPs: Phosphorus Table Calculations

[Worksheet 4 july 2015.xlsx](#).

D. FLOODING STANDARD

1. Add pre- and post- peak flow rates table to post development plan for storms (2-, 10-, 25-year).
2. Is primary access road passable up to a 25-year, 24-hour storm?
3. If requesting a waiver of the Flooding Standard, must state justification for the waiver.
4. HydroCad or other runoff model
 - If post peak flow rate is > pre-peak flow, a waiver request will be needed with justification Ch. 500, § 4(F)(3)(a) or (b),
 - If discharging to wetland see Chap. 500, § 4(I).

This checklist has been designed by DEP stormwater engineers as a guidance tool to assist applicants and their consultants when preparing stormwater applications. Completing the checklist is recommended and valuable, but it is not a substitute for reviewing Ch. 500, and completing all the items on the checklist does not automatically mean all the Ch. 500 requirements have been satisfied. The contents of Ch. 500 should be reviewed carefully for the applicable requirements that apply to your proposed project.

I have reviewed this checklist and included in my submission all the required elements of this checklist that apply to the proposed project.

Maine Engineer of Record:

Signature

Date

Name (print)

Maine DEP Southern Maine Regional Office
Stormwater Review Checklist and Expectations
Updated November 27, 2019

Stormwater Application Checklist

The following elements are often missing from applications.

- State the watershed in which the project is located.
- Design
 - Make sure the areas in the Stormwater Treatment Table/Water Quality table match areas on the application form and in the narrative.
 - Submit an Excel version of the Stormwater Treatment Table/Water Quality table.
 - Include original test pit logs, signed/stamped by the CSS/LSE, showing total depth.
 - Do not submit applications with partial or incomplete designs.
 - If resubmitting a design, include summary of what elements changed and why.
 - If treating less than 95% of impervious area, include a statement justifying why that is “not practicable”.
 - If discharging to a public (municipal or DOT) system, include authorization letter.
 - Include calculations demonstrating 24-hour minimum detention time (e.g., storm hydrograph; dynamic WQV flow through an orifice).
- If using Redevelopment:
 - Don’t include undeveloped area in the footprint.
 - Don’t include areas that had coverage under a previous Stormwater or Site Law permit.
 - Make sure existing footprint area = proposed footprint area.
 - Focus treatment on areas with the highest pollutant load.
 - Submit the Excel version of the Redevelopment Calculation table.
- If using stormwater treatment buffers (forested or meadow):
 - Include calculations (see Chapter 500 Appendix F), logs for test pits, deed restriction language, and line table for each buffer;
 - Do not include areas delineated as wetland.
 - Do not include areas where subsurface wastewater disposal systems are located.
 - Do not include areas that are already receiving stormwater from other areas.
 - Make sure buffers are downhill of the area they’re treating.
- If using a proprietary system:
 - Ensure the design satisfies the requirements of the Department’s approval letter. (www.maine.gov/dep/land/stormwater/stormwaterbmps/)
 - Include the review/approval letter from the manufacturer, which should also state if they will be on-site for installation and if they will provide first year I&M.
 - Include the executed 5-year inspection and maintenance agreement.
- If proposing infiltration:
 - If it wasn’t discussed at the Pre-Application or Pre-Submission meeting, but is included in the application, the application may not be accepted.
 - No offsite runoff shall discharge to the infiltration system.
 - Show setback from all subsurface wastewater disposal systems, drinking water wells, and other infiltration systems.
 - Include registration form for Underground Injection Control program for chamber systems or infiltration basins (www.maine.gov/dep/water/wd/uic/classVregis.html)

- Document how you are satisfying each element in Chapter 500 Appendix D.
 - Subdivision Plans:
 - Include the wetland impact summary table.
 - Include reference to written I&M Plan appendix for stormwater treatment buffer deed restrictions.
 - Show drainage easements for all BMPs on the Subdivision Plan so a potential future lot owner knows what BMPs are on a lot.
 - Include a note to ensure that driveway culverts will be installed in swales to allow positive flow.
 - Written I&M Plan
 - Define what size storm event will trigger a wet weather inspection of your treatment BMPs. Typical: one inch of rain in 24 hours.
 - Include a specific inspection log for all engineered BMPs (underdrained soil filters, wet pond, bioretention filter cell, etc...), not just a row in a general log.
 - Attach a simple plan showing the location of all pretreatment BMPs, treatment BMPs, structures, swales, culverts, etc. so this information is available to entity that has post-construction I&M responsibility.
 - Attach deed restrictions for stormwater treatment buffers as an appendix.
-

The Department comments frequently on the following elements. This does **NOT** include all Chapter 500 requirements. Review www.maine.gov/sos/cec/rules/06/096/096c500.docx.

A. BASIC STANDARDS

Chapter 500, Appendix A: Erosion and Sedimentation Control

A written Erosion and Sedimentation Control (ESC) Report is not required, but ESC notes and details on plans should be comprehensive.

Temporary stabilization: Define "open area"; limit how much will be open at one time (no more than 10 acres), not just in the "Winter Construction" section.

Stockpiles

- Sediment barriers shall be installed downgradient of stockpiles.
- Stormwater shall be prevented from running onto stockpiles.

Sediment barriers

- Say that sediment barriers, erosion control measures, etc, will be installed before the start of construction.
- Provide current details for sediment barrier (silt fence), erosion control mix (ECM) berm, silt sock, catch basin inlet protection (paved and unpaved), etc.
- Show areas to be protected with sediment barriers on a plan.
- Show areas that will have double sediment barriers (slope, natural resources, etc)
- Include the narrative spec for ECM from Page 40 of the 2016 Revision to the 2003 Maine Erosion and Sediment Control BMPs Manual for Designers and Engineers.
- If ECM berms are used as a sediment barrier, say that they are prohibited at the base of a slope steeper than 8% or where there is flowing water *without the support of additional measures*, such as a silt fence.

Stabilized construction entrance

- Provide a current Stabilized Construction Entrance (SCE) detail.
- Show location(s) of the SCE on a plan.
- Say that tracked mud or sediment shall be removed prior to the next storm event.
- "Removed" = vacuum sweeping, not mechanical/broom sweeping sediment into ditches or structures.
- Avoid any reference to "washing" sediment off roads unless you have a sediment basin set up specifically for that.

Permanent stabilization: 90% coverage of seeded areas is the standard for "stabilized".

Winter construction

- Minimum inspection requirement: after each rainfall (defined in the application), snowstorm, or thawing, etc... and at least once a week.
- All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers.

Stormwater Channels:

- Include current details for vegetated swale, riprap swale, channel stabilization, riprap apron for pipe outlet, erosion control blankets (mats), stone check dams, etc.
- Show on the plan where these are required.

Sediment Basins

- Discuss how permanent BMPs will be used during construction: either not used to manage runoff during construction OR protected during construction (say how) and restored (say how) after construction for permanent use.
- Dewatering: include a current detail for a sediment filter basin or a geotextile filter bag.
- Show the location of the proposed dewatering area on a plan.

Steep slopes

- Be clear about how you will stabilize...
 - ...slopes less steep than 3:1.
 - ...slopes between 3:1 and 2:1
 - ...slopes that are 2:1.
- Add callouts to plans to show where stabilization measures will be required (e.g. "Stabilize 3:1 slope with Erosion Control Blanket").
- Prohibit slopes steeper than 1.5:1. If you absolutely can't avoid it, say why.
- For each method used, include a current detail that matches.

Other

- Please replace outdated references with the following:
 - For the *design* of ESC measures: the 2016 Revision to the 2003 Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers.
 - For the *installation* or *construction* of ESC measures: 2014 Revision to the 2003 Maine Erosion and Sediment Control Field Guide for Contractors.

Chapter 500, Appendix B: Inspection & Maintenance

Address both short-term (construction) and long-term (post-construction) inspection and maintenance (I&M) elements.

- Construction I&M elements must be on a plan sheet (they are intended for the contractor). They can also be in the written I&M Plan.
- Post-construction I&M elements must be in the written I&M Plan (they are intended for the owner).

The preparer of the written I&M plan shall be a Professional Engineer registered in the State of Maine, a Landscape Architect licensed in the State of Maine, or a Certified Professional in Erosion and Sedimentation Control. The I&M Plan shall identify the preparer's name, certification, and position (e.g., the P.E. works for the design engineer).

Construction Inspection & Maintenance

Responsibility

- Clearly identify who is responsible for inspection during construction.
- Clearly identify who is responsible maintenance of erosion and sedimentation control measures during construction.

Inspection Frequency

- State that construction inspections shall be performed at least once a week and before and after each significant rainfall event.
- Define what is considered a significant rainfall event for the application, for both construction and post-construction phases. Typical is a storm that produces more than 0.5 inch rainfall in a 24-hour period.

Maintenance and Corrective Action Timeline

- State that if a corrective action is required, it shall be started by the end of the next workday and completed within seven days or before the next storm event, whichever comes first.
- State that documentation of all corrective actions shall be maintained with the inspection forms.

Inspector qualifications: State that all construction inspections shall be conducted by someone with knowledge of erosion and stormwater control, including the standards and conditions in the permit.

Documentation: State that inspection forms and documentation of corrective actions during construction shall be maintained for a minimum of three years after permanent stabilization has been achieved.

Inspection scope: The scope of construction inspections shall include disturbed and impervious areas, material storage areas, and vehicle access points (ex: construction entrance) *in addition to* ESC measures.

Post-Construction Inspection & Maintenance

Attach to the written I&M Plan a simple plan that shows the location of all stormwater infrastructure including: each BMP including pretreatment; catch basins, drain manholes, and field inlets; culverts, pipes, and driveway culverts; stabilized pipe inlets and outlets; level spreaders; swales or ditches; riprap or stabilized slopes; emergency spillways; forebays, filter strips, or other pretreatment measure; meadow or forested buffers; drainage or maintenance easements; stabilized outlets; and any other element of the project approved by the Department.

Responsibility

- Clearly identify who is responsible for inspection of BMPs after construction.
- Clearly identify who is responsible maintenance of erosion and sedimentation control measures after construction.
- If the responsible entity will be a Homeowner's Association (HOA), applicant will maintain responsibility until the HOA is formed. Applicant needs to provide documentation that the HOA has been incorporated with the Secretary of State's office and that HOA has adopted bylaws that accept this responsibility.

Inspector qualifications: State that all post-construction inspections shall be conducted by someone with knowledge of stormwater treatment system structures, including the installed BMPs and the standards and conditions in the permit.

Documentation: State that post-construction I&M and corrective action records will be retained for a minimum of five years after permanent stabilization has been achieved.

Inspection Frequency and Scope

- Provide clear and specific scopes and inspection frequencies for all elements of the stormwater system.
- Include more frequent inspection of filtration BMPs during the first year specifically to ensure that the BMP drains between 24 and 48 hours.
- Prohibit snow from being pushed into or stored in any filtration, infiltration, or treatment BMP.
- Prohibit vehicles or heavy equipment from driving onto any filtration, infiltration, or treatment BMP.

Written I&M Plan

- Address routine maintenance activities, such as regular removal of winter sand from paved areas, inspection & cleaning of structures (like catch basins), inspection of vegetated areas, level spreaders, and stabilized pipe inlets and outlets. Include a sample "Inspection and Maintenance Log" template that can be used to document routine maintenance for the general stormwater elements.
- Include a separate detailed sample "Inspection and Maintenance Log" for each engineered BMP, such as grassed underdrained soil filter, wet pond, or infiltration basin. This log should include each detailed inspection element described in the I&M Plan text.
- If proprietary treatment technologies are included in the application, include the manufacturer's inspection and maintenance logs. Provide a copy of an executed

five-year inspection maintenance agreement for each proprietary treatment system.

Recertification: Include language about the 5-year Maine DEP recertification requirement that applies to this license.

Chapter 500, Appx C: Good Housekeeping

List all Good Housekeeping elements on a plan sheet so they are accessible to the contractor.

- Spill prevention
- Groundwater protection
- Fugitive sediment & dust
- Construction wastes & materials
- Excavation dewatering
- Authorized non-stormwater discharges: include the full language
- Unauthorized non-stormwater discharges: include the full language

B. GENERAL STANDARDS

Overall

- Clearly identify and explain any impervious areas that are pre-Stormwater Law and/or for which treatment requirements do not apply, and identify these in the Stormwater Treatment Table/Water Quality table.
- If you trigger the Urban Impaired Stream standard, say how you're meeting it.

Conveyance

- Provide calculations, in HydroCAD or longhand, to demonstrate that pipes, culverts, swales, etc... are capable of conveying the 10-year, 24-hour storm.

Soils

- Include logs from test pits and soil borings.
- Identify the certification (CSS, LSE) of the person who performed the explorations.
- Show the locations of test pits and soil borings on a site plan.
- Verify that explorations were completed to adequate depth at the location of each proposed treatment BMP (bottom of the practice= underdrain, not filter surface).
- Show the total depth of each exploration, and at what depth(s) ledge and/or groundwater were encountered.
- If a BMP will be "sitting in" groundwater, design a perimeter drain and show the outlet from that drain.
- Identify the design impacts from soil exploration, such as the need to line proposed filtration BMPs, if blasting may be required, and if dewatering will be required.

Stormwater Treatment Systems

- Sizing: verify that BMP sizing calculations match the treatment claimed in the Stormwater Treatment Table/Water Quality table. Describe how you are handling flow from offsite.
- Pretreatment: Show how it will be provided (forebay, stone strip, swale) for BMPs that need it. Make sure I&M Plan addresses all pretreatment elements. Include a detail for each pretreatment element.
- Design: Include details that match the HydroCAD (elevations of base, underdrain, outlet control structure, emergency overflow spillway) and other elements (soil type, impervious

liner, number and diameter of underdrain pipes). Show clearly what soil filter media option is proposed.

- Water Quality Volume: Department will verify calculations. Provide stage/storage output for wet ponds.
- Filter Area: Department will verify calculations.
- Detention Time: Department will verify calculations.
- Construction Oversight: Provide adequate assurance that oversight of the construction of all engineered BMPs will be provided.
- Infiltration: make sure you satisfy and include everything in Chapter 500 Appendix D.
- Protection from Winter Maintenance activities: if a BMP is located adjacent to a roadway or parking lot and is at risk for having snow plowed into it, show a barrier (e.g., guardrail, split rail fence, landscape boulders, significant plantings) on plans.
- Discharge: If BMP will discharge directly into a wetland, satisfy Chapter 500 Section 4.I. If discharge is within 25 feet of a wetland, provide a level spreader to ensure sheet flow.

C. FLOODING STANDARD

- Verify that model uses correct rainfall for the project area for 2-year, 10-year, and 25-year, 24-hour storms (Chapter 500 Appendix H).

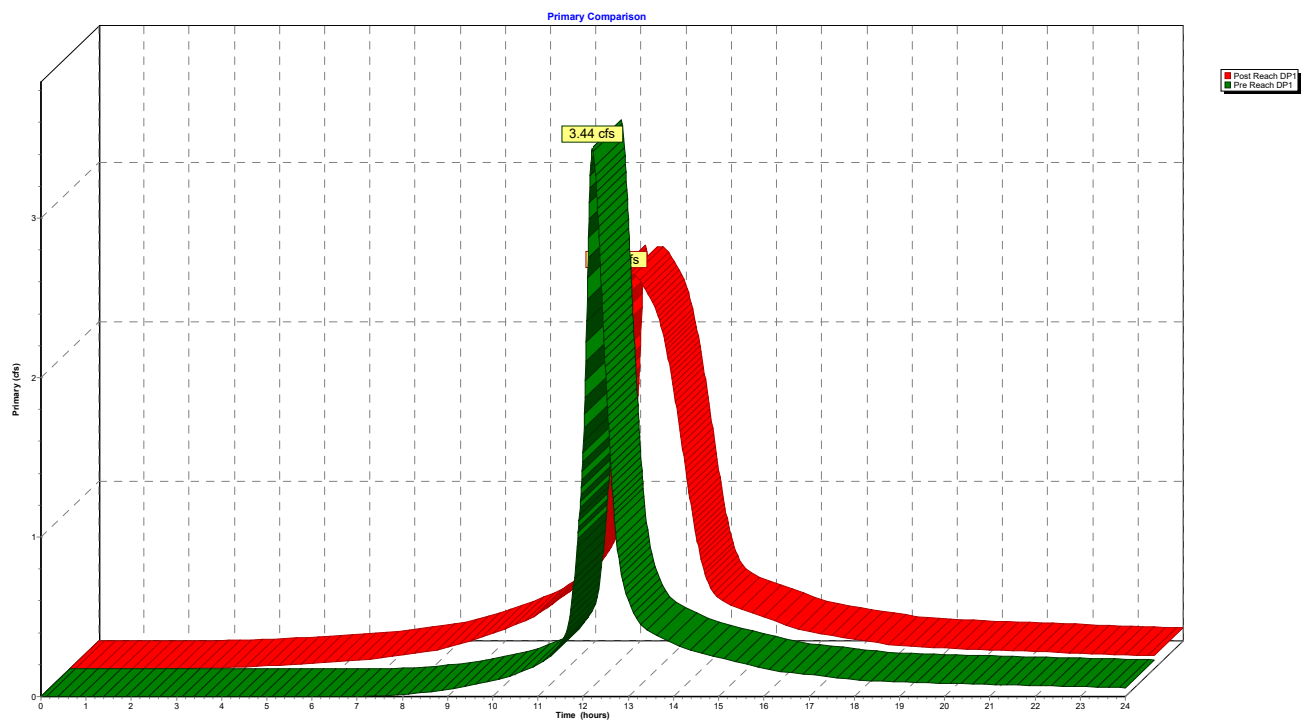
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Primary Comparison

Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)	Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)
0.00	0.00	0.00	2.65	0.00	0.00
0.05	0.00	0.00	2.70	0.00	0.00
0.10	0.00	0.00	2.75	0.00	0.00
0.15	0.00	0.00	2.80	0.00	0.00
0.20	0.00	0.00	2.85	0.00	0.00
0.25	0.00	0.00	2.90	0.00	0.00
0.30	0.00	0.00	2.95	0.00	0.00
0.35	0.00	0.00	3.00	0.00	0.00
0.40	0.00	0.00	3.05	0.00	0.00
0.45	0.00	0.00	3.10	0.01	0.00
0.50	0.00	0.00	3.15	0.01	0.00
0.55	0.00	0.00	3.20	0.01	0.00
0.60	0.00	0.00	3.25	0.01	0.00
0.65	0.00	0.00	3.30	0.01	0.00
0.70	0.00	0.00	3.35	0.01	0.00
0.75	0.00	0.00	3.40	0.01	0.00
0.80	0.00	0.00	3.45	0.01	0.00
0.85	0.00	0.00	3.50	0.01	0.00
0.90	0.00	0.00	3.55	0.01	0.00
0.95	0.00	0.00	3.60	0.01	0.00
1.00	0.00	0.00	3.65	0.01	0.00
1.05	0.00	0.00	3.70	0.01	0.00
1.10	0.00	0.00	3.75	0.01	0.00
1.15	0.00	0.00	3.80	0.01	0.00
1.20	0.00	0.00	3.85	0.01	0.00
1.25	0.00	0.00	3.90	0.01	0.00
1.30	0.00	0.00	3.95	0.01	0.00
1.35	0.00	0.00	4.00	0.01	0.00
1.40	0.00	0.00	4.05	0.01	0.00
1.45	0.00	0.00	4.10	0.01	0.00
1.50	0.00	0.00	4.15	0.01	0.00
1.55	0.00	0.00	4.20	0.02	0.00
1.60	0.00	0.00	4.25	0.02	0.00
1.65	0.00	0.00	4.30	0.02	0.00
1.70	0.00	0.00	4.35	0.02	0.00
1.75	0.00	0.00	4.40	0.02	0.00
1.80	0.00	0.00	4.45	0.02	0.00
1.85	0.00	0.00	4.50	0.02	0.00
1.90	0.00	0.00	4.55	0.02	0.00
1.95	0.00	0.00	4.60	0.02	0.00
2.00	0.00	0.00	4.65	0.02	0.00
2.05	0.00	0.00	4.70	0.02	0.00
2.10	0.00	0.00	4.75	0.02	0.00
2.15	0.00	0.00	4.80	0.02	0.00
2.20	0.00	0.00	4.85	0.02	0.00
2.25	0.00	0.00	4.90	0.03	0.00
2.30	0.00	0.00	4.95	0.03	0.00
2.35	0.00	0.00	5.00	0.03	0.00
2.40	0.00	0.00	5.05	0.03	0.00
2.45	0.00	0.00	5.10	0.03	0.00
2.50	0.00	0.00	5.15	0.03	0.00
2.55	0.00	0.00	5.20	0.03	0.00
2.60	0.00	0.00	5.25	0.03	0.00

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Primary Comparison (continued)

Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)	Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)
5.30	0.03	0.00	7.95	0.11	0.01
5.35	0.03	0.00	8.00	0.11	0.01
5.40	0.03	0.00	8.05	0.11	0.01
5.45	0.03	0.00	8.10	0.12	0.02
5.50	0.04	0.00	8.15	0.12	0.02
5.55	0.04	0.00	8.20	0.12	0.02
5.60	0.04	0.00	8.25	0.12	0.02
5.65	0.04	0.00	8.30	0.13	0.02
5.70	0.04	0.00	8.35	0.13	0.02
5.75	0.04	0.00	8.40	0.13	0.02
5.80	0.04	0.00	8.45	0.14	0.02
5.85	0.04	0.00	8.50	0.14	0.03
5.90	0.04	0.00	8.55	0.15	0.03
5.95	0.04	0.00	8.60	0.15	0.03
6.00	0.04	0.00	8.65	0.16	0.03
6.05	0.05	0.00	8.70	0.16	0.03
6.10	0.05	0.00	8.75	0.16	0.03
6.15	0.05	0.00	8.80	0.17	0.04
6.20	0.05	0.00	8.85	0.17	0.04
6.25	0.05	0.00	8.90	0.18	0.04
6.30	0.05	0.00	8.95	0.18	0.04
6.35	0.05	0.00	9.00	0.19	0.04
6.40	0.05	0.00	9.05	0.19	0.05
6.45	0.05	0.00	9.10	0.20	0.05
6.50	0.06	0.00	9.15	0.20	0.05
6.55	0.06	0.00	9.20	0.21	0.05
6.60	0.06	0.00	9.25	0.21	0.06
6.65	0.06	0.00	9.30	0.22	0.06
6.70	0.06	0.00	9.35	0.22	0.06
6.75	0.06	0.00	9.40	0.23	0.06
6.80	0.07	0.00	9.45	0.23	0.07
6.85	0.07	0.00	9.50	0.24	0.07
6.90	0.07	0.00	9.55	0.24	0.07
6.95	0.07	0.00	9.60	0.25	0.07
7.00	0.07	0.00	9.65	0.25	0.08
7.05	0.07	0.00	9.70	0.26	0.08
7.10	0.08	0.00	9.75	0.26	0.08
7.15	0.08	0.00	9.80	0.27	0.09
7.20	0.08	0.00	9.85	0.27	0.09
7.25	0.08	0.00	9.90	0.28	0.09
7.30	0.08	0.00	9.95	0.28	0.09
7.35	0.08	0.00	10.00	0.29	0.10
7.40	0.09	0.00	10.05	0.30	0.10
7.45	0.09	0.00	10.10	0.30	0.10
7.50	0.09	0.00	10.15	0.31	0.11
7.55	0.09	0.01	10.20	0.31	0.11
7.60	0.09	0.01	10.25	0.32	0.12
7.65	0.10	0.01	10.30	0.33	0.12
7.70	0.10	0.01	10.35	0.34	0.12
7.75	0.10	0.01	10.40	0.35	0.13
7.80	0.10	0.01	10.45	0.36	0.13
7.85	0.10	0.01	10.50	0.37	0.14
7.90	0.11	0.01	10.55	0.38	0.15

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Primary Comparison (continued)

Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)	Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)
10.60	0.39	0.15	13.25	1.93	0.46
10.65	0.40	0.16	13.30	1.86	0.44
10.70	0.41	0.16	13.35	1.77	0.43
10.75	0.42	0.17	13.40	1.68	0.42
10.80	0.43	0.18	13.45	1.59	0.41
10.85	0.44	0.18	13.50	1.50	0.40
10.90	0.45	0.19	13.55	1.40	0.39
10.95	0.46	0.19	13.60	1.30	0.39
11.00	0.47	0.20	13.65	1.21	0.38
11.05	0.48	0.21	13.70	1.11	0.37
11.10	0.49	0.21	13.75	1.02	0.36
11.15	0.51	0.22	13.80	0.93	0.36
11.20	0.52	0.23	13.85	0.85	0.35
11.25	0.55	0.25	13.90	0.78	0.34
11.30	0.57	0.26	13.95	0.71	0.34
11.35	0.59	0.28	14.00	0.65	0.33
11.40	0.62	0.30	14.05	0.60	0.32
11.45	0.65	0.31	14.10	0.56	0.32
11.50	0.68	0.34	14.15	0.52	0.31
11.55	0.71	0.36	14.20	0.50	0.30
11.60	0.76	0.38	14.25	0.47	0.30
11.65	0.83	0.43	14.30	0.46	0.29
11.70	0.93	0.50	14.35	0.44	0.29
11.75	1.04	0.60	14.40	0.43	0.29
11.80	1.17	0.73	14.45	0.42	0.28
11.85	1.30	0.89	14.50	0.42	0.28
11.90	1.45	1.07	14.55	0.41	0.28
11.95	1.62	1.27	14.60	0.40	0.27
12.00	1.93	1.53	14.65	0.40	0.27
12.05	2.33	1.98	14.70	0.39	0.27
12.10	2.48	2.62	14.75	0.39	0.26
12.15	2.41	3.19	14.80	0.38	0.26
12.20	2.37	3.44	14.85	0.38	0.26
12.25	2.40	3.38	14.90	0.37	0.25
12.30	2.44	3.17	14.95	0.37	0.25
12.35	2.47	2.88	15.00	0.36	0.25
12.40	2.48	2.57	15.05	0.36	0.24
12.45	2.47	2.28	15.10	0.35	0.24
12.50	2.46	2.02	15.15	0.35	0.24
12.55	2.46	1.76	15.20	0.34	0.23
12.60	2.44	1.51	15.25	0.34	0.23
12.65	2.42	1.28	15.30	0.33	0.23
12.70	2.39	1.10	15.35	0.33	0.22
12.75	2.37	0.95	15.40	0.32	0.22
12.80	2.35	0.84	15.45	0.32	0.21
12.85	2.32	0.76	15.50	0.31	0.21
12.90	2.30	0.70	15.55	0.30	0.21
12.95	2.26	0.65	15.60	0.30	0.20
13.00	2.23	0.60	15.65	0.29	0.20
13.05	2.18	0.56	15.70	0.29	0.20
13.10	2.13	0.53	15.75	0.28	0.19
13.15	2.07	0.50	15.80	0.28	0.19
13.20	2.01	0.48	15.85	0.27	0.19

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)	Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)
15.90	0.27	0.18	18.55	0.14	0.10
15.95	0.26	0.18	18.60	0.14	0.10
16.00	0.26	0.18	18.65	0.14	0.10
16.05	0.25	0.17	18.70	0.14	0.10
16.10	0.25	0.17	18.75	0.14	0.09
16.15	0.24	0.17	18.80	0.14	0.09
16.20	0.24	0.16	18.85	0.14	0.09
16.25	0.24	0.16	18.90	0.14	0.09
16.30	0.23	0.16	18.95	0.14	0.09
16.35	0.23	0.16	19.00	0.13	0.09
16.40	0.23	0.16	19.05	0.13	0.09
16.45	0.23	0.15	19.10	0.13	0.09
16.50	0.22	0.15	19.15	0.13	0.09
16.55	0.22	0.15	19.20	0.13	0.09
16.60	0.22	0.15	19.25	0.13	0.09
16.65	0.22	0.15	19.30	0.13	0.09
16.70	0.21	0.15	19.35	0.13	0.09
16.75	0.21	0.14	19.40	0.13	0.09
16.80	0.21	0.14	19.45	0.13	0.09
16.85	0.21	0.14	19.50	0.13	0.09
16.90	0.21	0.14	19.55	0.13	0.09
16.95	0.20	0.14	19.60	0.13	0.09
17.00	0.20	0.14	19.65	0.13	0.09
17.05	0.20	0.14	19.70	0.13	0.09
17.10	0.20	0.13	19.75	0.12	0.09
17.15	0.19	0.13	19.80	0.12	0.09
17.20	0.19	0.13	19.85	0.12	0.08
17.25	0.19	0.13	19.90	0.12	0.08
17.30	0.19	0.13	19.95	0.12	0.08
17.35	0.19	0.13	20.00	0.12	0.08
17.40	0.18	0.13	20.05	0.12	0.08
17.45	0.18	0.12	20.10	0.12	0.08
17.50	0.18	0.12	20.15	0.12	0.08
17.55	0.18	0.12	20.20	0.12	0.08
17.60	0.17	0.12	20.25	0.12	0.08
17.65	0.17	0.12	20.30	0.12	0.08
17.70	0.17	0.12	20.35	0.12	0.08
17.75	0.17	0.11	20.40	0.12	0.08
17.80	0.17	0.11	20.45	0.12	0.08
17.85	0.16	0.11	20.50	0.12	0.08
17.90	0.16	0.11	20.55	0.12	0.08
17.95	0.16	0.11	20.60	0.11	0.08
18.00	0.16	0.11	20.65	0.11	0.08
18.05	0.15	0.11	20.70	0.11	0.08
18.10	0.15	0.10	20.75	0.11	0.08
18.15	0.15	0.10	20.80	0.11	0.08
18.20	0.15	0.10	20.85	0.11	0.08
18.25	0.15	0.10	20.90	0.11	0.08
18.30	0.15	0.10	20.95	0.11	0.08
18.35	0.14	0.10	21.00	0.11	0.08
18.40	0.14	0.10	21.05	0.11	0.08
18.45	0.14	0.10	21.10	0.11	0.08
18.50	0.14	0.10	21.15	0.11	0.07

22104.04-Post*Type III 24-hr 25-Year Rainfall=6.20"*

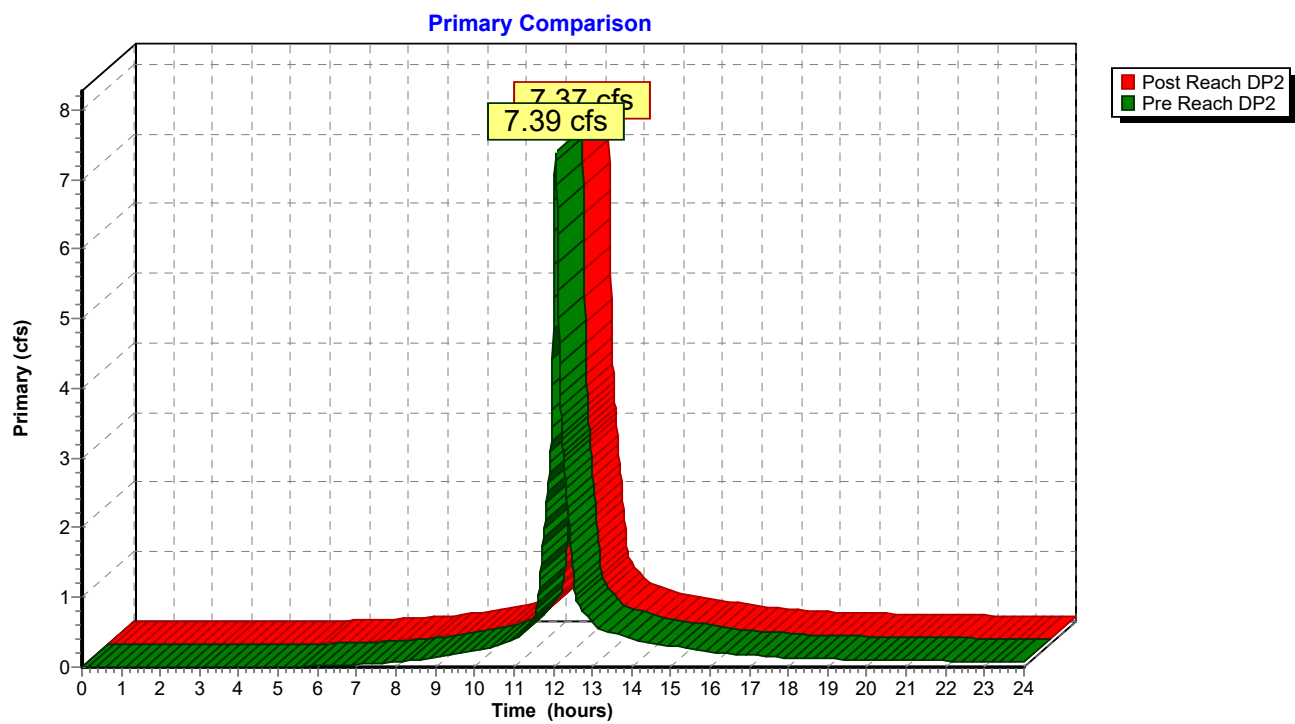
Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)	Time (hours)	Post Reach DP1 (cfs)	Pre Reach DP1 (cfs)
21.20	0.11	0.07	23.85	0.08	0.06
21.25	0.11	0.07	23.90	0.08	0.06
21.30	0.11	0.07	23.95	0.08	0.06
21.35	0.11	0.07	24.00	0.08	0.06
21.40	0.11	0.07			
21.45	0.11	0.07			
21.50	0.11	0.07			
21.55	0.11	0.07			
21.60	0.10	0.07			
21.65	0.10	0.07			
21.70	0.10	0.07			
21.75	0.10	0.07			
21.80	0.10	0.07			
21.85	0.10	0.07			
21.90	0.10	0.07			
21.95	0.10	0.07			
22.00	0.10	0.07			
22.05	0.10	0.07			
22.10	0.10	0.07			
22.15	0.10	0.07			
22.20	0.10	0.07			
22.25	0.10	0.07			
22.30	0.10	0.07			
22.35	0.10	0.07			
22.40	0.10	0.07			
22.45	0.10	0.07			
22.50	0.10	0.07			
22.55	0.09	0.07			
22.60	0.09	0.06			
22.65	0.09	0.06			
22.70	0.09	0.06			
22.75	0.09	0.06			
22.80	0.09	0.06			
22.85	0.09	0.06			
22.90	0.09	0.06			
22.95	0.09	0.06			
23.00	0.09	0.06			
23.05	0.09	0.06			
23.10	0.09	0.06			
23.15	0.09	0.06			
23.20	0.09	0.06			
23.25	0.09	0.06			
23.30	0.09	0.06			
23.35	0.09	0.06			
23.40	0.09	0.06			
23.45	0.09	0.06			
23.50	0.09	0.06			
23.55	0.08	0.06			
23.60	0.08	0.06			
23.65	0.08	0.06			
23.70	0.08	0.06			
23.75	0.08	0.06			
23.80	0.08	0.06			



22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison

Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)	Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)
0.00	0.00	0.00	2.65	0.00	0.00
0.05	0.00	0.00	2.70	0.00	0.00
0.10	0.00	0.00	2.75	0.00	0.00
0.15	0.00	0.00	2.80	0.00	0.00
0.20	0.00	0.00	2.85	0.00	0.00
0.25	0.00	0.00	2.90	0.00	0.00
0.30	0.00	0.00	2.95	0.00	0.00
0.35	0.00	0.00	3.00	0.00	0.00
0.40	0.00	0.00	3.05	0.00	0.00
0.45	0.00	0.00	3.10	0.00	0.00
0.50	0.00	0.00	3.15	0.00	0.00
0.55	0.00	0.00	3.20	0.00	0.00
0.60	0.00	0.00	3.25	0.00	0.00
0.65	0.00	0.00	3.30	0.00	0.00
0.70	0.00	0.00	3.35	0.00	0.00
0.75	0.00	0.00	3.40	0.00	0.00
0.80	0.00	0.00	3.45	0.00	0.00
0.85	0.00	0.00	3.50	0.00	0.00
0.90	0.00	0.00	3.55	0.00	0.00
0.95	0.00	0.00	3.60	0.00	0.00
1.00	0.00	0.00	3.65	0.00	0.00
1.05	0.00	0.00	3.70	0.00	0.00
1.10	0.00	0.00	3.75	0.00	0.00
1.15	0.00	0.00	3.80	0.00	0.00
1.20	0.00	0.00	3.85	0.00	0.00
1.25	0.00	0.00	3.90	0.00	0.00
1.30	0.00	0.00	3.95	0.00	0.00
1.35	0.00	0.00	4.00	0.00	0.00
1.40	0.00	0.00	4.05	0.00	0.00
1.45	0.00	0.00	4.10	0.00	0.00
1.50	0.00	0.00	4.15	0.00	0.00
1.55	0.00	0.00	4.20	0.00	0.00
1.60	0.00	0.00	4.25	0.00	0.00
1.65	0.00	0.00	4.30	0.00	0.00
1.70	0.00	0.00	4.35	0.00	0.00
1.75	0.00	0.00	4.40	0.00	0.00
1.80	0.00	0.00	4.45	0.00	0.00
1.85	0.00	0.00	4.50	0.00	0.00
1.90	0.00	0.00	4.55	0.00	0.00
1.95	0.00	0.00	4.60	0.00	0.00
2.00	0.00	0.00	4.65	0.00	0.00
2.05	0.00	0.00	4.70	0.00	0.00
2.10	0.00	0.00	4.75	0.00	0.00
2.15	0.00	0.00	4.80	0.00	0.00
2.20	0.00	0.00	4.85	0.01	0.00
2.25	0.00	0.00	4.90	0.01	0.00
2.30	0.00	0.00	4.95	0.01	0.00
2.35	0.00	0.00	5.00	0.01	0.00
2.40	0.00	0.00	5.05	0.01	0.00
2.45	0.00	0.00	5.10	0.01	0.00
2.50	0.00	0.00	5.15	0.01	0.00
2.55	0.00	0.00	5.20	0.01	0.01
2.60	0.00	0.00	5.25	0.01	0.01

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)	Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)
5.30	0.01	0.01	7.95	0.08	0.07
5.35	0.01	0.01	8.00	0.08	0.07
5.40	0.01	0.01	8.05	0.08	0.07
5.45	0.01	0.01	8.10	0.08	0.08
5.50	0.01	0.01	8.15	0.09	0.08
5.55	0.01	0.01	8.20	0.09	0.08
5.60	0.02	0.01	8.25	0.09	0.09
5.65	0.02	0.01	8.30	0.10	0.09
5.70	0.02	0.01	8.35	0.10	0.09
5.75	0.02	0.01	8.40	0.10	0.10
5.80	0.02	0.01	8.45	0.11	0.10
5.85	0.02	0.01	8.50	0.11	0.10
5.90	0.02	0.02	8.55	0.11	0.11
5.95	0.02	0.02	8.60	0.12	0.11
6.00	0.02	0.02	8.65	0.12	0.11
6.05	0.02	0.02	8.70	0.12	0.12
6.10	0.02	0.02	8.75	0.13	0.12
6.15	0.02	0.02	8.80	0.13	0.12
6.20	0.03	0.02	8.85	0.14	0.13
6.25	0.03	0.02	8.90	0.14	0.13
6.30	0.03	0.02	8.95	0.14	0.13
6.35	0.03	0.02	9.00	0.15	0.14
6.40	0.03	0.02	9.05	0.15	0.14
6.45	0.03	0.03	9.10	0.16	0.15
6.50	0.03	0.03	9.15	0.16	0.15
6.55	0.03	0.03	9.20	0.16	0.15
6.60	0.03	0.03	9.25	0.17	0.16
6.65	0.04	0.03	9.30	0.17	0.16
6.70	0.04	0.03	9.35	0.18	0.17
6.75	0.04	0.03	9.40	0.18	0.17
6.80	0.04	0.03	9.45	0.19	0.18
6.85	0.04	0.04	9.50	0.19	0.18
6.90	0.04	0.04	9.55	0.19	0.19
6.95	0.04	0.04	9.60	0.20	0.19
7.00	0.05	0.04	9.65	0.20	0.19
7.05	0.05	0.04	9.70	0.21	0.20
7.10	0.05	0.04	9.75	0.21	0.20
7.15	0.05	0.04	9.80	0.22	0.21
7.20	0.05	0.05	9.85	0.22	0.21
7.25	0.05	0.05	9.90	0.23	0.22
7.30	0.06	0.05	9.95	0.23	0.22
7.35	0.06	0.05	10.00	0.24	0.23
7.40	0.06	0.05	10.05	0.24	0.23
7.45	0.06	0.05	10.10	0.25	0.24
7.50	0.06	0.06	10.15	0.26	0.25
7.55	0.06	0.06	10.20	0.27	0.26
7.60	0.07	0.06	10.25	0.27	0.26
7.65	0.07	0.06	10.30	0.28	0.27
7.70	0.07	0.06	10.35	0.29	0.28
7.75	0.07	0.06	10.40	0.30	0.29
7.80	0.07	0.07	10.45	0.31	0.30
7.85	0.07	0.07	10.50	0.32	0.31
7.90	0.08	0.07	10.55	0.33	0.32

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)	Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)
10.60	0.34	0.33	13.25	0.54	0.54
10.65	0.34	0.33	13.30	0.53	0.53
10.70	0.35	0.34	13.35	0.52	0.52
10.75	0.36	0.35	13.40	0.51	0.51
10.80	0.37	0.36	13.45	0.50	0.50
10.85	0.38	0.37	13.50	0.49	0.50
10.90	0.39	0.38	13.55	0.48	0.49
10.95	0.40	0.39	13.60	0.47	0.48
11.00	0.41	0.40	13.65	0.46	0.47
11.05	0.42	0.41	13.70	0.45	0.46
11.10	0.44	0.43	13.75	0.44	0.45
11.15	0.47	0.46	13.80	0.43	0.44
11.20	0.50	0.49	13.85	0.43	0.43
11.25	0.53	0.52	13.90	0.42	0.42
11.30	0.56	0.55	13.95	0.41	0.41
11.35	0.60	0.59	14.00	0.40	0.40
11.40	0.63	0.62	14.05	0.39	0.39
11.45	0.66	0.65	14.10	0.38	0.39
11.50	0.70	0.69	14.15	0.38	0.38
11.55	0.75	0.74	14.20	0.37	0.38
11.60	0.92	0.90	14.25	0.37	0.37
11.65	1.18	1.16	14.30	0.36	0.37
11.70	1.47	1.45	14.35	0.36	0.36
11.75	1.78	1.76	14.40	0.36	0.36
11.80	2.10	2.08	14.45	0.35	0.35
11.85	2.43	2.41	14.50	0.35	0.35
11.90	2.76	2.75	14.55	0.34	0.35
11.95	3.24	3.23	14.60	0.34	0.34
12.00	4.85	4.85	14.65	0.33	0.34
12.05	7.05	7.06	14.70	0.33	0.33
12.10	6.91	6.93	14.75	0.32	0.33
12.15	4.98	5.01	14.80	0.32	0.32
12.20	3.70	3.73	14.85	0.32	0.32
12.25	3.15	3.17	14.90	0.31	0.31
12.30	2.77	2.79	14.95	0.31	0.31
12.35	2.43	2.45	15.00	0.30	0.31
12.40	2.10	2.12	15.05	0.30	0.30
12.45	1.77	1.79	15.10	0.29	0.30
12.50	1.44	1.45	15.15	0.29	0.29
12.55	1.12	1.13	15.20	0.28	0.29
12.60	0.94	0.95	15.25	0.28	0.28
12.65	0.88	0.88	15.30	0.28	0.28
12.70	0.83	0.84	15.35	0.27	0.27
12.75	0.80	0.80	15.40	0.27	0.27
12.80	0.76	0.77	15.45	0.26	0.26
12.85	0.73	0.73	15.50	0.26	0.26
12.90	0.69	0.70	15.55	0.25	0.26
12.95	0.66	0.66	15.60	0.25	0.25
13.00	0.62	0.63	15.65	0.24	0.25
13.05	0.59	0.59	15.70	0.24	0.24
13.10	0.57	0.57	15.75	0.23	0.24
13.15	0.55	0.56	15.80	0.23	0.23
13.20	0.54	0.55	15.85	0.23	0.23

Primary Comparison (continued)

Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)	Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)
15.90	0.22	0.22	18.55	0.12	0.12
15.95	0.22	0.22	18.60	0.12	0.12
16.00	0.21	0.21	18.65	0.12	0.12
16.05	0.21	0.21	18.70	0.12	0.12
16.10	0.20	0.21	18.75	0.12	0.12
16.15	0.20	0.21	18.80	0.12	0.12
16.20	0.20	0.20	18.85	0.12	0.12
16.25	0.20	0.20	18.90	0.12	0.12
16.30	0.20	0.20	18.95	0.12	0.12
16.35	0.19	0.20	19.00	0.12	0.12
16.40	0.19	0.20	19.05	0.12	0.12
16.45	0.19	0.19	19.10	0.11	0.12
16.50	0.19	0.19	19.15	0.11	0.12
16.55	0.19	0.19	19.20	0.11	0.12
16.60	0.18	0.19	19.25	0.11	0.11
16.65	0.18	0.19	19.30	0.11	0.11
16.70	0.18	0.18	19.35	0.11	0.11
16.75	0.18	0.18	19.40	0.11	0.11
16.80	0.18	0.18	19.45	0.11	0.11
16.85	0.18	0.18	19.50	0.11	0.11
16.90	0.17	0.18	19.55	0.11	0.11
16.95	0.17	0.17	19.60	0.11	0.11
17.00	0.17	0.17	19.65	0.11	0.11
17.05	0.17	0.17	19.70	0.11	0.11
17.10	0.17	0.17	19.75	0.11	0.11
17.15	0.16	0.17	19.80	0.11	0.11
17.20	0.16	0.16	19.85	0.11	0.11
17.25	0.16	0.16	19.90	0.11	0.11
17.30	0.16	0.16	19.95	0.10	0.11
17.35	0.16	0.16	20.00	0.10	0.11
17.40	0.15	0.16	20.05	0.10	0.10
17.45	0.15	0.15	20.10	0.10	0.10
17.50	0.15	0.15	20.15	0.10	0.10
17.55	0.15	0.15	20.20	0.10	0.10
17.60	0.15	0.15	20.25	0.10	0.10
17.65	0.14	0.15	20.30	0.10	0.10
17.70	0.14	0.14	20.35	0.10	0.10
17.75	0.14	0.14	20.40	0.10	0.10
17.80	0.14	0.14	20.45	0.10	0.10
17.85	0.14	0.14	20.50	0.10	0.10
17.90	0.13	0.14	20.55	0.10	0.10
17.95	0.13	0.13	20.60	0.10	0.10
18.00	0.13	0.13	20.65	0.10	0.10
18.05	0.13	0.13	20.70	0.10	0.10
18.10	0.13	0.13	20.75	0.10	0.10
18.15	0.13	0.13	20.80	0.10	0.10
18.20	0.13	0.13	20.85	0.10	0.10
18.25	0.12	0.13	20.90	0.10	0.10
18.30	0.12	0.13	20.95	0.10	0.10
18.35	0.12	0.13	21.00	0.10	0.10
18.40	0.12	0.12	21.05	0.09	0.10
18.45	0.12	0.12	21.10	0.09	0.10
18.50	0.12	0.12	21.15	0.09	0.10

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)	Time (hours)	Post Reach DP2 (cfs)	Pre Reach DP2 (cfs)
21.20	0.09	0.09	23.85	0.07	0.07
21.25	0.09	0.09	23.90	0.07	0.07
21.30	0.09	0.09	23.95	0.07	0.07
21.35	0.09	0.09	24.00	0.07	0.07
21.40	0.09	0.09			
21.45	0.09	0.09			
21.50	0.09	0.09			
21.55	0.09	0.09			
21.60	0.09	0.09			
21.65	0.09	0.09			
21.70	0.09	0.09			
21.75	0.09	0.09			
21.80	0.09	0.09			
21.85	0.09	0.09			
21.90	0.09	0.09			
21.95	0.09	0.09			
22.00	0.09	0.09			
22.05	0.09	0.09			
22.10	0.09	0.09			
22.15	0.08	0.09			
22.20	0.08	0.09			
22.25	0.08	0.09			
22.30	0.08	0.08			
22.35	0.08	0.08			
22.40	0.08	0.08			
22.45	0.08	0.08			
22.50	0.08	0.08			
22.55	0.08	0.08			
22.60	0.08	0.08			
22.65	0.08	0.08			
22.70	0.08	0.08			
22.75	0.08	0.08			
22.80	0.08	0.08			
22.85	0.08	0.08			
22.90	0.08	0.08			
22.95	0.08	0.08			
23.00	0.08	0.08			
23.05	0.08	0.08			
23.10	0.08	0.08			
23.15	0.08	0.08			
23.20	0.08	0.08			
23.25	0.08	0.08			
23.30	0.07	0.08			
23.35	0.07	0.08			
23.40	0.07	0.07			
23.45	0.07	0.07			
23.50	0.07	0.07			
23.55	0.07	0.07			
23.60	0.07	0.07			
23.65	0.07	0.07			
23.70	0.07	0.07			
23.75	0.07	0.07			
23.80	0.07	0.07			

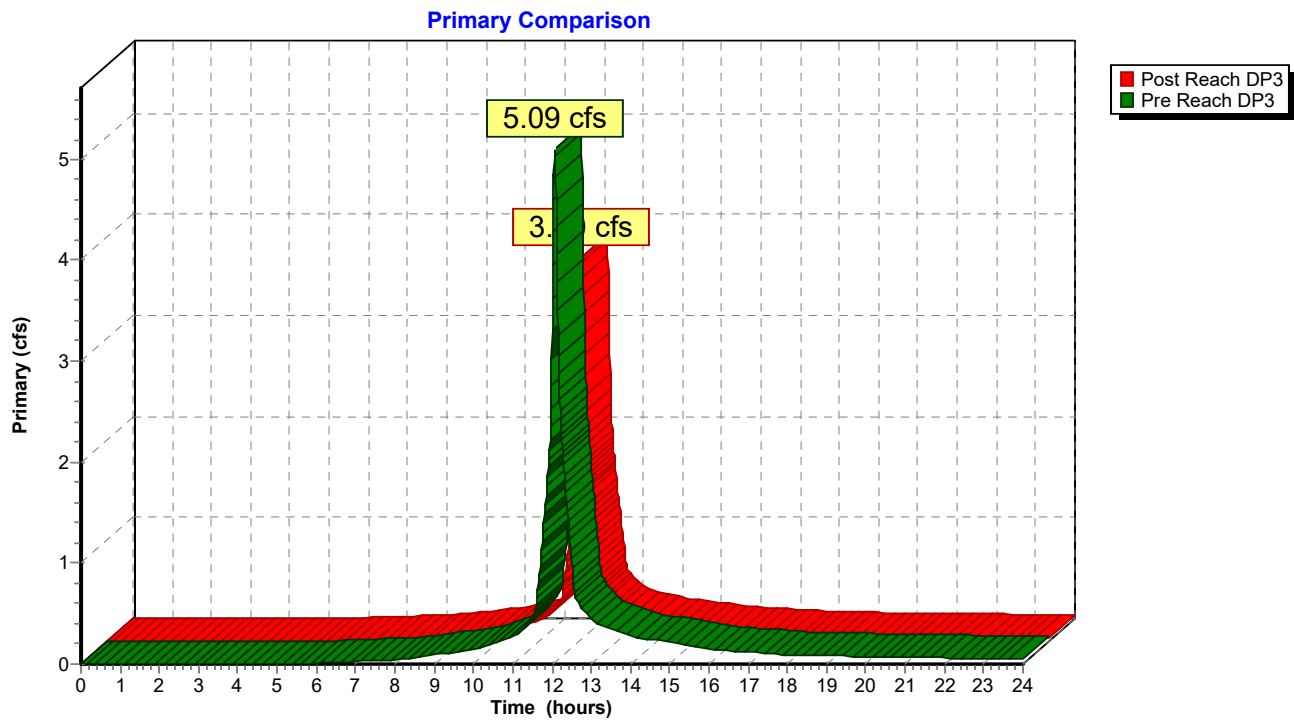
22104.04-Post

Prepared by {enter your company name here}

HydroCAD® 10.00-20 s/n 01227 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=6.20"

Printed 6/30/2021



22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison

Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)	Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)
0.00	0.00	0.00	2.65	0.00	0.00
0.05	0.00	0.00	2.70	0.00	0.00
0.10	0.00	0.00	2.75	0.00	0.00
0.15	0.00	0.00	2.80	0.00	0.00
0.20	0.00	0.00	2.85	0.00	0.00
0.25	0.00	0.00	2.90	0.00	0.00
0.30	0.00	0.00	2.95	0.00	0.00
0.35	0.00	0.00	3.00	0.00	0.00
0.40	0.00	0.00	3.05	0.00	0.00
0.45	0.00	0.00	3.10	0.00	0.00
0.50	0.00	0.00	3.15	0.00	0.00
0.55	0.00	0.00	3.20	0.00	0.00
0.60	0.00	0.00	3.25	0.00	0.00
0.65	0.00	0.00	3.30	0.00	0.00
0.70	0.00	0.00	3.35	0.00	0.00
0.75	0.00	0.00	3.40	0.00	0.00
0.80	0.00	0.00	3.45	0.00	0.00
0.85	0.00	0.00	3.50	0.00	0.00
0.90	0.00	0.00	3.55	0.00	0.00
0.95	0.00	0.00	3.60	0.00	0.00
1.00	0.00	0.00	3.65	0.00	0.00
1.05	0.00	0.00	3.70	0.00	0.00
1.10	0.00	0.00	3.75	0.00	0.00
1.15	0.00	0.00	3.80	0.00	0.00
1.20	0.00	0.00	3.85	0.00	0.00
1.25	0.00	0.00	3.90	0.00	0.00
1.30	0.00	0.00	3.95	0.00	0.00
1.35	0.00	0.00	4.00	0.00	0.00
1.40	0.00	0.00	4.05	0.00	0.00
1.45	0.00	0.00	4.10	0.00	0.00
1.50	0.00	0.00	4.15	0.00	0.00
1.55	0.00	0.00	4.20	0.00	0.00
1.60	0.00	0.00	4.25	0.00	0.00
1.65	0.00	0.00	4.30	0.00	0.00
1.70	0.00	0.00	4.35	0.00	0.00
1.75	0.00	0.00	4.40	0.00	0.00
1.80	0.00	0.00	4.45	0.00	0.00
1.85	0.00	0.00	4.50	0.00	0.00
1.90	0.00	0.00	4.55	0.00	0.00
1.95	0.00	0.00	4.60	0.00	0.00
2.00	0.00	0.00	4.65	0.00	0.00
2.05	0.00	0.00	4.70	0.00	0.00
2.10	0.00	0.00	4.75	0.00	0.00
2.15	0.00	0.00	4.80	0.00	0.00
2.20	0.00	0.00	4.85	0.00	0.00
2.25	0.00	0.00	4.90	0.00	0.00
2.30	0.00	0.00	4.95	0.00	0.00
2.35	0.00	0.00	5.00	0.00	0.00
2.40	0.00	0.00	5.05	0.00	0.00
2.45	0.00	0.00	5.10	0.00	0.00
2.50	0.00	0.00	5.15	0.00	0.00
2.55	0.00	0.00	5.20	0.00	0.00
2.60	0.00	0.00	5.25	0.00	0.00

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)	Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)
5.30	0.00	0.00	7.95	0.04	0.04
5.35	0.00	0.00	8.00	0.04	0.05
5.40	0.00	0.00	8.05	0.04	0.05
5.45	0.00	0.00	8.10	0.04	0.05
5.50	0.00	0.00	8.15	0.04	0.05
5.55	0.01	0.00	8.20	0.04	0.05
5.60	0.01	0.00	8.25	0.04	0.05
5.65	0.01	0.01	8.30	0.05	0.06
5.70	0.01	0.01	8.35	0.05	0.06
5.75	0.01	0.01	8.40	0.05	0.06
5.80	0.01	0.01	8.45	0.05	0.06
5.85	0.01	0.01	8.50	0.05	0.06
5.90	0.01	0.01	8.55	0.05	0.07
5.95	0.01	0.01	8.60	0.06	0.07
6.00	0.01	0.01	8.65	0.06	0.07
6.05	0.01	0.01	8.70	0.06	0.07
6.10	0.01	0.01	8.75	0.06	0.08
6.15	0.01	0.01	8.80	0.06	0.08
6.20	0.01	0.01	8.85	0.07	0.08
6.25	0.01	0.01	8.90	0.07	0.08
6.30	0.01	0.01	8.95	0.07	0.09
6.35	0.01	0.01	9.00	0.07	0.09
6.40	0.01	0.01	9.05	0.07	0.09
6.45	0.01	0.01	9.10	0.08	0.10
6.50	0.01	0.02	9.15	0.08	0.10
6.55	0.01	0.02	9.20	0.08	0.10
6.60	0.02	0.02	9.25	0.08	0.10
6.65	0.02	0.02	9.30	0.08	0.11
6.70	0.02	0.02	9.35	0.09	0.11
6.75	0.02	0.02	9.40	0.09	0.11
6.80	0.02	0.02	9.45	0.09	0.12
6.85	0.02	0.02	9.50	0.09	0.12
6.90	0.02	0.02	9.55	0.10	0.12
6.95	0.02	0.02	9.60	0.10	0.12
7.00	0.02	0.02	9.65	0.10	0.13
7.05	0.02	0.02	9.70	0.10	0.13
7.10	0.02	0.03	9.75	0.11	0.13
7.15	0.02	0.03	9.80	0.11	0.14
7.20	0.02	0.03	9.85	0.11	0.14
7.25	0.02	0.03	9.90	0.11	0.14
7.30	0.03	0.03	9.95	0.12	0.15
7.35	0.03	0.03	10.00	0.12	0.15
7.40	0.03	0.03	10.05	0.12	0.15
7.45	0.03	0.03	10.10	0.12	0.16
7.50	0.03	0.03	10.15	0.13	0.16
7.55	0.03	0.03	10.20	0.13	0.17
7.60	0.03	0.04	10.25	0.14	0.18
7.65	0.03	0.04	10.30	0.14	0.18
7.70	0.03	0.04	10.35	0.15	0.19
7.75	0.03	0.04	10.40	0.15	0.19
7.80	0.03	0.04	10.45	0.15	0.20
7.85	0.03	0.04	10.50	0.16	0.21
7.90	0.04	0.04	10.55	0.16	0.21

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)	Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)
10.60	0.17	0.22	13.25	0.28	0.38
10.65	0.17	0.22	13.30	0.28	0.37
10.70	0.18	0.23	13.35	0.27	0.37
10.75	0.18	0.24	13.40	0.27	0.36
10.80	0.19	0.24	13.45	0.26	0.35
10.85	0.19	0.25	13.50	0.26	0.35
10.90	0.20	0.26	13.55	0.25	0.34
10.95	0.20	0.26	13.60	0.25	0.33
11.00	0.21	0.27	13.65	0.24	0.33
11.05	0.21	0.28	13.70	0.24	0.32
11.10	0.22	0.29	13.75	0.23	0.31
11.15	0.24	0.31	13.80	0.23	0.31
11.20	0.25	0.33	13.85	0.22	0.30
11.25	0.27	0.35	13.90	0.22	0.29
11.30	0.29	0.37	13.95	0.21	0.29
11.35	0.30	0.40	14.00	0.21	0.28
11.40	0.32	0.42	14.05	0.20	0.27
11.45	0.34	0.44	14.10	0.20	0.27
11.50	0.35	0.47	14.15	0.20	0.27
11.55	0.38	0.50	14.20	0.19	0.26
11.60	0.46	0.61	14.25	0.19	0.26
11.65	0.60	0.79	14.30	0.19	0.26
11.70	0.75	0.99	14.35	0.19	0.25
11.75	0.91	1.20	14.40	0.19	0.25
11.80	1.07	1.42	14.45	0.18	0.25
11.85	1.24	1.64	14.50	0.18	0.24
11.90	1.41	1.88	14.55	0.18	0.24
11.95	1.66	2.21	14.60	0.18	0.24
12.00	2.48	3.30	14.65	0.17	0.24
12.05	3.62	4.84	14.70	0.17	0.23
12.10	3.59	4.81	14.75	0.17	0.23
12.15	2.62	3.51	14.80	0.17	0.23
12.20	1.94	2.61	14.85	0.16	0.22
12.25	1.65	2.22	14.90	0.16	0.22
12.30	1.45	1.95	14.95	0.16	0.22
12.35	1.27	1.71	15.00	0.16	0.21
12.40	1.10	1.48	15.05	0.16	0.21
12.45	0.93	1.25	15.10	0.15	0.21
12.50	0.75	1.02	15.15	0.15	0.20
12.55	0.59	0.79	15.20	0.15	0.20
12.60	0.49	0.67	15.25	0.15	0.20
12.65	0.46	0.62	15.30	0.14	0.19
12.70	0.44	0.59	15.35	0.14	0.19
12.75	0.42	0.56	15.40	0.14	0.19
12.80	0.40	0.54	15.45	0.14	0.19
12.85	0.38	0.51	15.50	0.13	0.18
12.90	0.36	0.49	15.55	0.13	0.18
12.95	0.34	0.46	15.60	0.13	0.18
13.00	0.33	0.44	15.65	0.13	0.17
13.05	0.31	0.41	15.70	0.13	0.17
13.10	0.30	0.40	15.75	0.12	0.17
13.15	0.29	0.39	15.80	0.12	0.16
13.20	0.28	0.38	15.85	0.12	0.16

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)	Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)
15.90	0.12	0.16	18.55	0.06	0.09
15.95	0.11	0.15	18.60	0.06	0.09
16.00	0.11	0.15	18.65	0.06	0.09
16.05	0.11	0.15	18.70	0.06	0.08
16.10	0.11	0.15	18.75	0.06	0.08
16.15	0.11	0.14	18.80	0.06	0.08
16.20	0.10	0.14	18.85	0.06	0.08
16.25	0.10	0.14	18.90	0.06	0.08
16.30	0.10	0.14	18.95	0.06	0.08
16.35	0.10	0.14	19.00	0.06	0.08
16.40	0.10	0.14	19.05	0.06	0.08
16.45	0.10	0.14	19.10	0.06	0.08
16.50	0.10	0.13	19.15	0.06	0.08
16.55	0.10	0.13	19.20	0.06	0.08
16.60	0.10	0.13	19.25	0.06	0.08
16.65	0.10	0.13	19.30	0.06	0.08
16.70	0.09	0.13	19.35	0.06	0.08
16.75	0.09	0.13	19.40	0.06	0.08
16.80	0.09	0.13	19.45	0.06	0.08
16.85	0.09	0.12	19.50	0.06	0.08
16.90	0.09	0.12	19.55	0.06	0.08
16.95	0.09	0.12	19.60	0.06	0.08
17.00	0.09	0.12	19.65	0.06	0.08
17.05	0.09	0.12	19.70	0.06	0.08
17.10	0.09	0.12	19.75	0.06	0.08
17.15	0.09	0.12	19.80	0.06	0.08
17.20	0.08	0.11	19.85	0.06	0.08
17.25	0.08	0.11	19.90	0.06	0.07
17.30	0.08	0.11	19.95	0.05	0.07
17.35	0.08	0.11	20.00	0.05	0.07
17.40	0.08	0.11	20.05	0.05	0.07
17.45	0.08	0.11	20.10	0.05	0.07
17.50	0.08	0.11	20.15	0.05	0.07
17.55	0.08	0.10	20.20	0.05	0.07
17.60	0.08	0.10	20.25	0.05	0.07
17.65	0.08	0.10	20.30	0.05	0.07
17.70	0.07	0.10	20.35	0.05	0.07
17.75	0.07	0.10	20.40	0.05	0.07
17.80	0.07	0.10	20.45	0.05	0.07
17.85	0.07	0.10	20.50	0.05	0.07
17.90	0.07	0.09	20.55	0.05	0.07
17.95	0.07	0.09	20.60	0.05	0.07
18.00	0.07	0.09	20.65	0.05	0.07
18.05	0.07	0.09	20.70	0.05	0.07
18.10	0.07	0.09	20.75	0.05	0.07
18.15	0.07	0.09	20.80	0.05	0.07
18.20	0.07	0.09	20.85	0.05	0.07
18.25	0.07	0.09	20.90	0.05	0.07
18.30	0.07	0.09	20.95	0.05	0.07
18.35	0.06	0.09	21.00	0.05	0.07
18.40	0.06	0.09	21.05	0.05	0.07
18.45	0.06	0.09	21.10	0.05	0.07
18.50	0.06	0.09	21.15	0.05	0.07

22104.04-Post*Type III 24-hr 25-Year Rainfall=6.20"*

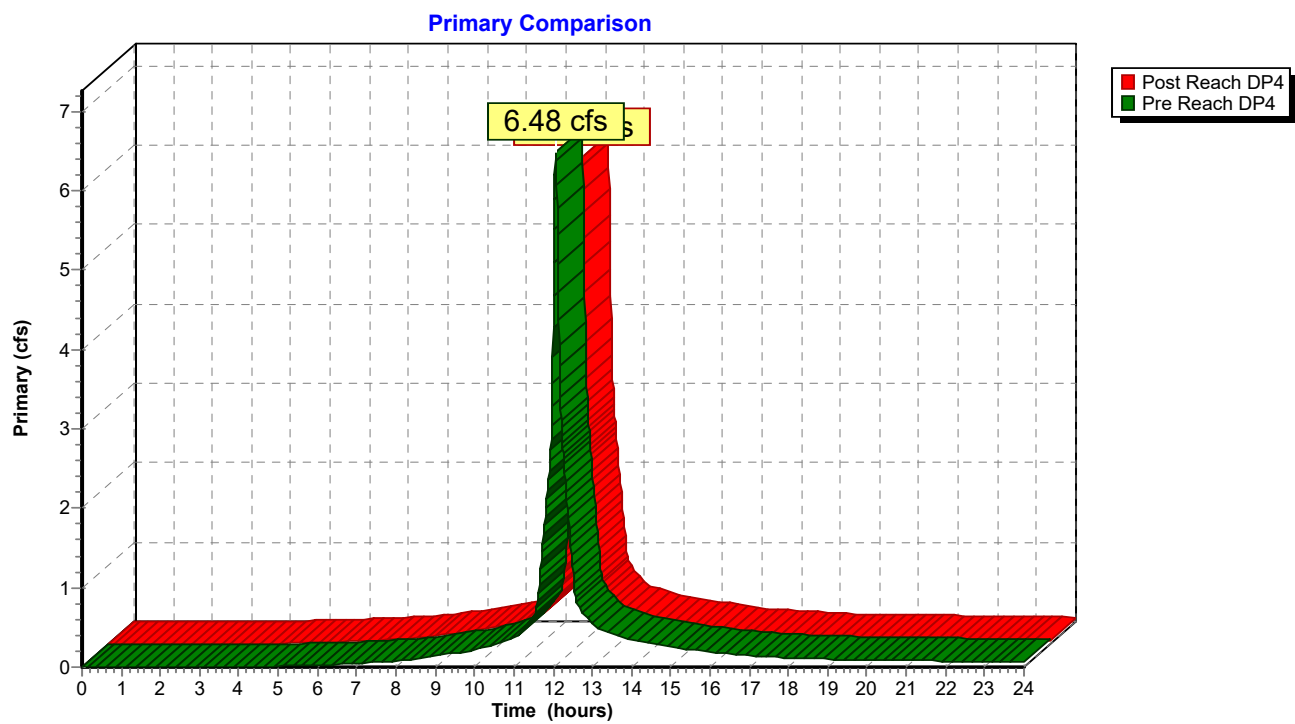
Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)	Time (hours)	Post Reach DP3 (cfs)	Pre Reach DP3 (cfs)
21.20	0.05	0.07	23.85	0.04	0.05
21.25	0.05	0.07	23.90	0.04	0.05
21.30	0.05	0.07	23.95	0.04	0.05
21.35	0.05	0.07	24.00	0.04	0.05
21.40	0.05	0.06			
21.45	0.05	0.06			
21.50	0.05	0.06			
21.55	0.05	0.06			
21.60	0.05	0.06			
21.65	0.05	0.06			
21.70	0.05	0.06			
21.75	0.05	0.06			
21.80	0.05	0.06			
21.85	0.05	0.06			
21.90	0.05	0.06			
21.95	0.05	0.06			
22.00	0.05	0.06			
22.05	0.04	0.06			
22.10	0.04	0.06			
22.15	0.04	0.06			
22.20	0.04	0.06			
22.25	0.04	0.06			
22.30	0.04	0.06			
22.35	0.04	0.06			
22.40	0.04	0.06			
22.45	0.04	0.06			
22.50	0.04	0.06			
22.55	0.04	0.06			
22.60	0.04	0.06			
22.65	0.04	0.06			
22.70	0.04	0.06			
22.75	0.04	0.06			
22.80	0.04	0.06			
22.85	0.04	0.06			
22.90	0.04	0.06			
22.95	0.04	0.06			
23.00	0.04	0.05			
23.05	0.04	0.05			
23.10	0.04	0.05			
23.15	0.04	0.05			
23.20	0.04	0.05			
23.25	0.04	0.05			
23.30	0.04	0.05			
23.35	0.04	0.05			
23.40	0.04	0.05			
23.45	0.04	0.05			
23.50	0.04	0.05			
23.55	0.04	0.05			
23.60	0.04	0.05			
23.65	0.04	0.05			
23.70	0.04	0.05			
23.75	0.04	0.05			
23.80	0.04	0.05			



22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison

Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)	Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)
0.00	0.00	0.00	2.65	0.00	0.00
0.05	0.00	0.00	2.70	0.00	0.00
0.10	0.00	0.00	2.75	0.00	0.00
0.15	0.00	0.00	2.80	0.00	0.00
0.20	0.00	0.00	2.85	0.00	0.00
0.25	0.00	0.00	2.90	0.00	0.00
0.30	0.00	0.00	2.95	0.00	0.00
0.35	0.00	0.00	3.00	0.00	0.00
0.40	0.00	0.00	3.05	0.00	0.00
0.45	0.00	0.00	3.10	0.00	0.00
0.50	0.00	0.00	3.15	0.00	0.00
0.55	0.00	0.00	3.20	0.00	0.00
0.60	0.00	0.00	3.25	0.00	0.00
0.65	0.00	0.00	3.30	0.00	0.00
0.70	0.00	0.00	3.35	0.00	0.00
0.75	0.00	0.00	3.40	0.00	0.00
0.80	0.00	0.00	3.45	0.00	0.00
0.85	0.00	0.00	3.50	0.00	0.00
0.90	0.00	0.00	3.55	0.00	0.00
0.95	0.00	0.00	3.60	0.00	0.00
1.00	0.00	0.00	3.65	0.00	0.00
1.05	0.00	0.00	3.70	0.00	0.00
1.10	0.00	0.00	3.75	0.00	0.00
1.15	0.00	0.00	3.80	0.00	0.00
1.20	0.00	0.00	3.85	0.00	0.00
1.25	0.00	0.00	3.90	0.00	0.00
1.30	0.00	0.00	3.95	0.00	0.00
1.35	0.00	0.00	4.00	0.01	0.00
1.40	0.00	0.00	4.05	0.01	0.00
1.45	0.00	0.00	4.10	0.01	0.00
1.50	0.00	0.00	4.15	0.01	0.00
1.55	0.00	0.00	4.20	0.01	0.00
1.60	0.00	0.00	4.25	0.01	0.00
1.65	0.00	0.00	4.30	0.01	0.00
1.70	0.00	0.00	4.35	0.01	0.00
1.75	0.00	0.00	4.40	0.01	0.00
1.80	0.00	0.00	4.45	0.01	0.00
1.85	0.00	0.00	4.50	0.01	0.00
1.90	0.00	0.00	4.55	0.01	0.00
1.95	0.00	0.00	4.60	0.01	0.01
2.00	0.00	0.00	4.65	0.01	0.01
2.05	0.00	0.00	4.70	0.01	0.01
2.10	0.00	0.00	4.75	0.01	0.01
2.15	0.00	0.00	4.80	0.02	0.01
2.20	0.00	0.00	4.85	0.02	0.01
2.25	0.00	0.00	4.90	0.02	0.01
2.30	0.00	0.00	4.95	0.02	0.01
2.35	0.00	0.00	5.00	0.02	0.01
2.40	0.00	0.00	5.05	0.02	0.01
2.45	0.00	0.00	5.10	0.02	0.01
2.50	0.00	0.00	5.15	0.02	0.01
2.55	0.00	0.00	5.20	0.02	0.01
2.60	0.00	0.00	5.25	0.02	0.01

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)	Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)
5.30	0.02	0.01	7.95	0.08	0.07
5.35	0.02	0.01	8.00	0.09	0.08
5.40	0.02	0.02	8.05	0.09	0.08
5.45	0.02	0.02	8.10	0.09	0.08
5.50	0.02	0.02	8.15	0.09	0.08
5.55	0.03	0.02	8.20	0.10	0.09
5.60	0.03	0.02	8.25	0.10	0.09
5.65	0.03	0.02	8.30	0.10	0.09
5.70	0.03	0.02	8.35	0.10	0.09
5.75	0.03	0.02	8.40	0.11	0.10
5.80	0.03	0.02	8.45	0.11	0.10
5.85	0.03	0.02	8.50	0.11	0.10
5.90	0.03	0.02	8.55	0.12	0.11
5.95	0.03	0.02	8.60	0.12	0.11
6.00	0.03	0.02	8.65	0.12	0.11
6.05	0.03	0.02	8.70	0.13	0.12
6.10	0.03	0.02	8.75	0.13	0.12
6.15	0.03	0.03	8.80	0.13	0.12
6.20	0.04	0.03	8.85	0.14	0.13
6.25	0.04	0.03	8.90	0.14	0.13
6.30	0.04	0.03	8.95	0.14	0.13
6.35	0.04	0.03	9.00	0.15	0.14
6.40	0.04	0.03	9.05	0.15	0.14
6.45	0.04	0.03	9.10	0.15	0.15
6.50	0.04	0.03	9.15	0.16	0.15
6.55	0.04	0.03	9.20	0.16	0.15
6.60	0.04	0.04	9.25	0.16	0.16
6.65	0.05	0.04	9.30	0.17	0.16
6.70	0.05	0.04	9.35	0.17	0.16
6.75	0.05	0.04	9.40	0.18	0.17
6.80	0.05	0.04	9.45	0.18	0.17
6.85	0.05	0.04	9.50	0.18	0.18
6.90	0.05	0.04	9.55	0.19	0.18
6.95	0.05	0.04	9.60	0.19	0.18
7.00	0.05	0.05	9.65	0.19	0.19
7.05	0.06	0.05	9.70	0.20	0.19
7.10	0.06	0.05	9.75	0.20	0.20
7.15	0.06	0.05	9.80	0.21	0.20
7.20	0.06	0.05	9.85	0.21	0.20
7.25	0.06	0.05	9.90	0.21	0.21
7.30	0.06	0.05	9.95	0.22	0.21
7.35	0.06	0.06	10.00	0.22	0.22
7.40	0.07	0.06	10.05	0.23	0.22
7.45	0.07	0.06	10.10	0.23	0.23
7.50	0.07	0.06	10.15	0.24	0.23
7.55	0.07	0.06	10.20	0.25	0.24
7.60	0.07	0.06	10.25	0.25	0.25
7.65	0.07	0.07	10.30	0.26	0.26
7.70	0.08	0.07	10.35	0.27	0.26
7.75	0.08	0.07	10.40	0.28	0.27
7.80	0.08	0.07	10.45	0.28	0.28
7.85	0.08	0.07	10.50	0.29	0.29
7.90	0.08	0.07	10.55	0.30	0.30

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)	Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)
10.60	0.31	0.30	13.25	0.44	0.47
10.65	0.31	0.31	13.30	0.43	0.46
10.70	0.32	0.32	13.35	0.42	0.45
10.75	0.33	0.33	13.40	0.41	0.44
10.80	0.34	0.34	13.45	0.41	0.44
10.85	0.34	0.35	13.50	0.40	0.43
10.90	0.35	0.35	13.55	0.39	0.42
10.95	0.36	0.36	13.60	0.38	0.41
11.00	0.37	0.37	13.65	0.38	0.40
11.05	0.38	0.38	13.70	0.37	0.40
11.10	0.40	0.40	13.75	0.36	0.39
11.15	0.42	0.42	13.80	0.35	0.38
11.20	0.45	0.45	13.85	0.35	0.37
11.25	0.47	0.48	13.90	0.34	0.36
11.30	0.50	0.51	13.95	0.33	0.36
11.35	0.53	0.54	14.00	0.32	0.35
11.40	0.55	0.56	14.05	0.32	0.34
11.45	0.58	0.59	14.10	0.31	0.33
11.50	0.61	0.62	14.15	0.31	0.33
11.55	0.65	0.67	14.20	0.30	0.33
11.60	0.80	0.82	14.25	0.30	0.32
11.65	1.02	1.05	14.30	0.30	0.32
11.70	1.27	1.31	14.35	0.29	0.31
11.75	1.53	1.58	14.40	0.29	0.31
11.80	1.80	1.86	14.45	0.28	0.31
11.85	2.07	2.15	14.50	0.28	0.30
11.90	2.35	2.45	14.55	0.28	0.30
11.95	2.74	2.87	14.60	0.27	0.29
12.00	4.08	4.28	14.65	0.27	0.29
12.05	5.88	6.21	14.70	0.27	0.29
12.10	5.73	6.07	14.75	0.26	0.28
12.15	4.11	4.37	14.80	0.26	0.28
12.20	3.05	3.25	14.85	0.26	0.27
12.25	2.59	2.76	14.90	0.25	0.27
12.30	2.27	2.43	14.95	0.25	0.27
12.35	1.99	2.13	15.00	0.24	0.26
12.40	1.72	1.84	15.05	0.24	0.26
12.45	1.45	1.55	15.10	0.24	0.26
12.50	1.17	1.26	15.15	0.23	0.25
12.55	0.91	0.98	15.20	0.23	0.25
12.60	0.77	0.82	15.25	0.23	0.24
12.65	0.71	0.76	15.30	0.22	0.24
12.70	0.68	0.73	15.35	0.22	0.24
12.75	0.65	0.70	15.40	0.22	0.23
12.80	0.62	0.67	15.45	0.21	0.23
12.85	0.59	0.63	15.50	0.21	0.22
12.90	0.56	0.60	15.55	0.20	0.22
12.95	0.53	0.57	15.60	0.20	0.22
13.00	0.51	0.54	15.65	0.20	0.21
13.05	0.48	0.51	15.70	0.19	0.21
13.10	0.46	0.49	15.75	0.19	0.20
13.15	0.45	0.48	15.80	0.19	0.20
13.20	0.44	0.48	15.85	0.18	0.20

Primary Comparison (continued)

Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)	Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)
15.90	0.18	0.19	18.55	0.10	0.11
15.95	0.18	0.19	18.60	0.10	0.11
16.00	0.17	0.18	18.65	0.10	0.10
16.05	0.17	0.18	18.70	0.10	0.10
16.10	0.17	0.18	18.75	0.10	0.10
16.15	0.16	0.18	18.80	0.10	0.10
16.20	0.16	0.17	18.85	0.10	0.10
16.25	0.16	0.17	18.90	0.09	0.10
16.30	0.16	0.17	18.95	0.09	0.10
16.35	0.16	0.17	19.00	0.09	0.10
16.40	0.16	0.17	19.05	0.09	0.10
16.45	0.15	0.17	19.10	0.09	0.10
16.50	0.15	0.16	19.15	0.09	0.10
16.55	0.15	0.16	19.20	0.09	0.10
16.60	0.15	0.16	19.25	0.09	0.10
16.65	0.15	0.16	19.30	0.09	0.10
16.70	0.15	0.16	19.35	0.09	0.10
16.75	0.14	0.16	19.40	0.09	0.10
16.80	0.14	0.15	19.45	0.09	0.10
16.85	0.14	0.15	19.50	0.09	0.10
16.90	0.14	0.15	19.55	0.09	0.10
16.95	0.14	0.15	19.60	0.09	0.09
17.00	0.14	0.15	19.65	0.09	0.09
17.05	0.14	0.15	19.70	0.09	0.09
17.10	0.13	0.14	19.75	0.09	0.09
17.15	0.13	0.14	19.80	0.09	0.09
17.20	0.13	0.14	19.85	0.09	0.09
17.25	0.13	0.14	19.90	0.08	0.09
17.30	0.13	0.14	19.95	0.08	0.09
17.35	0.13	0.14	20.00	0.08	0.09
17.40	0.12	0.13	20.05	0.08	0.09
17.45	0.12	0.13	20.10	0.08	0.09
17.50	0.12	0.13	20.15	0.08	0.09
17.55	0.12	0.13	20.20	0.08	0.09
17.60	0.12	0.13	20.25	0.08	0.09
17.65	0.12	0.13	20.30	0.08	0.09
17.70	0.11	0.12	20.35	0.08	0.09
17.75	0.11	0.12	20.40	0.08	0.09
17.80	0.11	0.12	20.45	0.08	0.09
17.85	0.11	0.12	20.50	0.08	0.09
17.90	0.11	0.12	20.55	0.08	0.09
17.95	0.11	0.11	20.60	0.08	0.09
18.00	0.10	0.11	20.65	0.08	0.09
18.05	0.10	0.11	20.70	0.08	0.09
18.10	0.10	0.11	20.75	0.08	0.08
18.15	0.10	0.11	20.80	0.08	0.08
18.20	0.10	0.11	20.85	0.08	0.08
18.25	0.10	0.11	20.90	0.08	0.08
18.30	0.10	0.11	20.95	0.08	0.08
18.35	0.10	0.11	21.00	0.08	0.08
18.40	0.10	0.11	21.05	0.08	0.08
18.45	0.10	0.11	21.10	0.08	0.08
18.50	0.10	0.11	21.15	0.08	0.08

22104.04-Pre

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison (continued)

Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)	Time (hours)	Post Reach DP4 (cfs)	Pre Reach DP4 (cfs)
21.20	0.08	0.08	23.85	0.06	0.06
21.25	0.07	0.08	23.90	0.06	0.06
21.30	0.07	0.08	23.95	0.06	0.06
21.35	0.07	0.08	24.00	0.06	0.06
21.40	0.07	0.08			
21.45	0.07	0.08			
21.50	0.07	0.08			
21.55	0.07	0.08			
21.60	0.07	0.08			
21.65	0.07	0.08			
21.70	0.07	0.08			
21.75	0.07	0.08			
21.80	0.07	0.08			
21.85	0.07	0.08			
21.90	0.07	0.08			
21.95	0.07	0.08			
22.00	0.07	0.08			
22.05	0.07	0.07			
22.10	0.07	0.07			
22.15	0.07	0.07			
22.20	0.07	0.07			
22.25	0.07	0.07			
22.30	0.07	0.07			
22.35	0.07	0.07			
22.40	0.07	0.07			
22.45	0.07	0.07			
22.50	0.07	0.07			
22.55	0.07	0.07			
22.60	0.07	0.07			
22.65	0.06	0.07			
22.70	0.06	0.07			
22.75	0.06	0.07			
22.80	0.06	0.07			
22.85	0.06	0.07			
22.90	0.06	0.07			
22.95	0.06	0.07			
23.00	0.06	0.07			
23.05	0.06	0.07			
23.10	0.06	0.07			
23.15	0.06	0.07			
23.20	0.06	0.07			
23.25	0.06	0.07			
23.30	0.06	0.06			
23.35	0.06	0.06			
23.40	0.06	0.06			
23.45	0.06	0.06			
23.50	0.06	0.06			
23.55	0.06	0.06			
23.60	0.06	0.06			
23.65	0.06	0.06			
23.70	0.06	0.06			
23.75	0.06	0.06			
23.80	0.06	0.06			

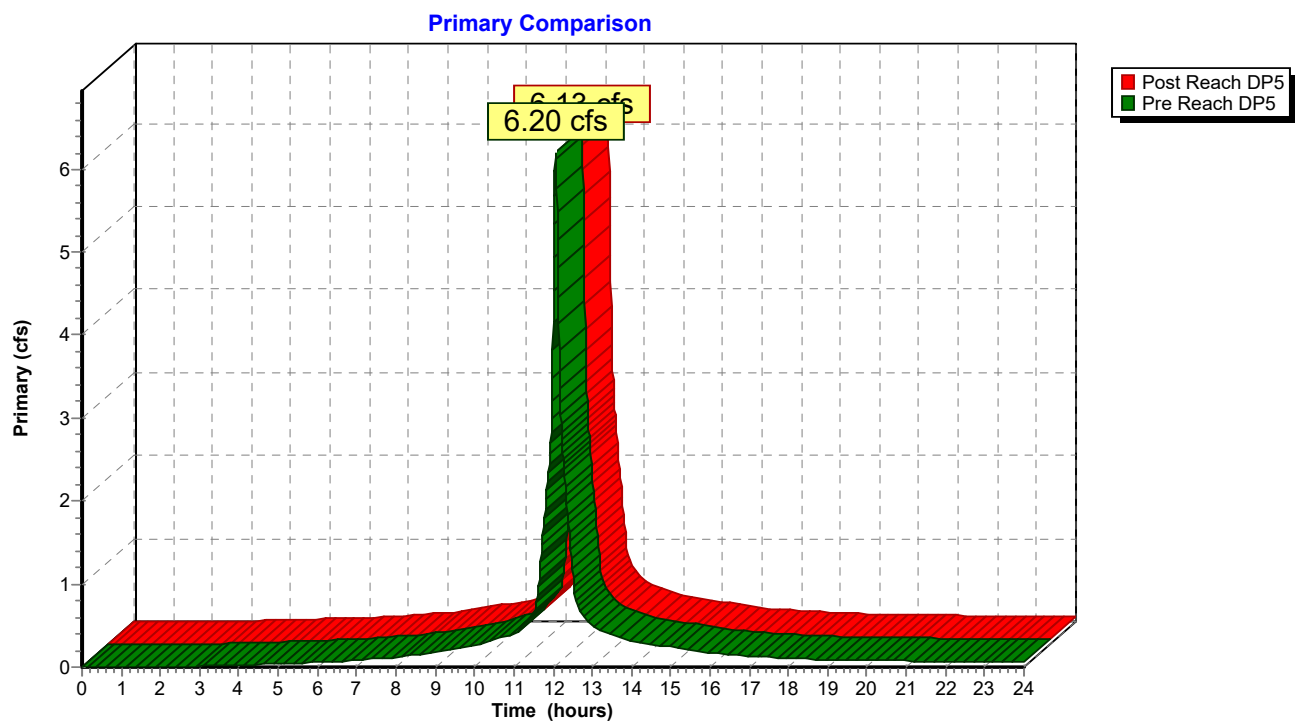
22104.04-Post

Prepared by {enter your company name here}

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Type III 24-hr 25-Year Rainfall=6.20"

Printed 6/30/2021



22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by {enter your company name here}

Printed 6/30/2021

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Primary Comparison

Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)	Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)
0.00	0.00	0.00	2.65	0.00	0.01
0.05	0.00	0.00	2.70	0.00	0.01
0.10	0.00	0.00	2.75	0.00	0.01
0.15	0.00	0.00	2.80	0.00	0.01
0.20	0.00	0.00	2.85	0.00	0.01
0.25	0.00	0.00	2.90	0.00	0.01
0.30	0.00	0.00	2.95	0.01	0.01
0.35	0.00	0.00	3.00	0.01	0.01
0.40	0.00	0.00	3.05	0.01	0.01
0.45	0.00	0.00	3.10	0.01	0.01
0.50	0.00	0.00	3.15	0.01	0.01
0.55	0.00	0.00	3.20	0.01	0.01
0.60	0.00	0.00	3.25	0.01	0.01
0.65	0.00	0.00	3.30	0.01	0.02
0.70	0.00	0.00	3.35	0.01	0.02
0.75	0.00	0.00	3.40	0.01	0.02
0.80	0.00	0.00	3.45	0.01	0.02
0.85	0.00	0.00	3.50	0.01	0.02
0.90	0.00	0.00	3.55	0.01	0.02
0.95	0.00	0.00	3.60	0.01	0.02
1.00	0.00	0.00	3.65	0.01	0.02
1.05	0.00	0.00	3.70	0.02	0.02
1.10	0.00	0.00	3.75	0.02	0.02
1.15	0.00	0.00	3.80	0.02	0.02
1.20	0.00	0.00	3.85	0.02	0.02
1.25	0.00	0.00	3.90	0.02	0.02
1.30	0.00	0.00	3.95	0.02	0.02
1.35	0.00	0.00	4.00	0.02	0.03
1.40	0.00	0.00	4.05	0.02	0.03
1.45	0.00	0.00	4.10	0.02	0.03
1.50	0.00	0.00	4.15	0.02	0.03
1.55	0.00	0.00	4.20	0.02	0.03
1.60	0.00	0.00	4.25	0.02	0.03
1.65	0.00	0.00	4.30	0.02	0.03
1.70	0.00	0.00	4.35	0.02	0.03
1.75	0.00	0.00	4.40	0.03	0.03
1.80	0.00	0.00	4.45	0.03	0.03
1.85	0.00	0.00	4.50	0.03	0.03
1.90	0.00	0.00	4.55	0.03	0.03
1.95	0.00	0.00	4.60	0.03	0.03
2.00	0.00	0.00	4.65	0.03	0.04
2.05	0.00	0.00	4.70	0.03	0.04
2.10	0.00	0.00	4.75	0.03	0.04
2.15	0.00	0.00	4.80	0.03	0.04
2.20	0.00	0.00	4.85	0.03	0.04
2.25	0.00	0.00	4.90	0.03	0.04
2.30	0.00	0.00	4.95	0.03	0.04
2.35	0.00	0.00	5.00	0.03	0.04
2.40	0.00	0.00	5.05	0.03	0.04
2.45	0.00	0.00	5.10	0.03	0.04
2.50	0.00	0.00	5.15	0.04	0.04
2.55	0.00	0.01	5.20	0.04	0.04
2.60	0.00	0.01	5.25	0.04	0.04

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

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Primary Comparison (continued)

Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)	Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)
5.30	0.04	0.04	7.95	0.11	0.11
5.35	0.04	0.05	8.00	0.11	0.12
5.40	0.04	0.05	8.05	0.11	0.12
5.45	0.04	0.05	8.10	0.11	0.12
5.50	0.04	0.05	8.15	0.11	0.12
5.55	0.04	0.05	8.20	0.12	0.13
5.60	0.04	0.05	8.25	0.12	0.13
5.65	0.04	0.05	8.30	0.12	0.13
5.70	0.04	0.05	8.35	0.13	0.14
5.75	0.04	0.05	8.40	0.13	0.14
5.80	0.05	0.05	8.45	0.13	0.14
5.85	0.05	0.05	8.50	0.14	0.15
5.90	0.05	0.05	8.55	0.14	0.15
5.95	0.05	0.05	8.60	0.14	0.15
6.00	0.05	0.06	8.65	0.15	0.16
6.05	0.05	0.06	8.70	0.15	0.16
6.10	0.05	0.06	8.75	0.15	0.17
6.15	0.05	0.06	8.80	0.16	0.17
6.20	0.05	0.06	8.85	0.16	0.17
6.25	0.05	0.06	8.90	0.17	0.18
6.30	0.05	0.06	8.95	0.17	0.18
6.35	0.06	0.06	9.00	0.17	0.18
6.40	0.06	0.07	9.05	0.18	0.19
6.45	0.06	0.07	9.10	0.18	0.19
6.50	0.06	0.07	9.15	0.18	0.19
6.55	0.06	0.07	9.20	0.19	0.20
6.60	0.06	0.07	9.25	0.19	0.20
6.65	0.06	0.07	9.30	0.19	0.21
6.70	0.07	0.07	9.35	0.20	0.21
6.75	0.07	0.08	9.40	0.20	0.21
6.80	0.07	0.08	9.45	0.21	0.22
6.85	0.07	0.08	9.50	0.21	0.22
6.90	0.07	0.08	9.55	0.21	0.22
6.95	0.07	0.08	9.60	0.22	0.23
7.00	0.07	0.08	9.65	0.22	0.23
7.05	0.08	0.08	9.70	0.22	0.24
7.10	0.08	0.09	9.75	0.23	0.24
7.15	0.08	0.09	9.80	0.23	0.24
7.20	0.08	0.09	9.85	0.24	0.25
7.25	0.08	0.09	9.90	0.24	0.25
7.30	0.08	0.09	9.95	0.24	0.26
7.35	0.09	0.09	10.00	0.25	0.26
7.40	0.09	0.10	10.05	0.25	0.26
7.45	0.09	0.10	10.10	0.26	0.27
7.50	0.09	0.10	10.15	0.27	0.28
7.55	0.09	0.10	10.20	0.27	0.28
7.60	0.09	0.10	10.25	0.28	0.29
7.65	0.10	0.10	10.30	0.29	0.30
7.70	0.10	0.11	10.35	0.29	0.31
7.75	0.10	0.11	10.40	0.30	0.31
7.80	0.10	0.11	10.45	0.31	0.32
7.85	0.10	0.11	10.50	0.32	0.33
7.90	0.10	0.11	10.55	0.32	0.34

22104.04-Post

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Primary Comparison (continued)

Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)	Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)
10.60	0.33	0.34	13.25	0.43	0.43
10.65	0.34	0.35	13.30	0.42	0.42
10.70	0.35	0.36	13.35	0.41	0.41
10.75	0.35	0.37	13.40	0.41	0.41
10.80	0.36	0.37	13.45	0.40	0.40
10.85	0.37	0.38	13.50	0.39	0.39
10.90	0.38	0.39	13.55	0.38	0.38
10.95	0.39	0.40	13.60	0.38	0.38
11.00	0.39	0.41	13.65	0.37	0.37
11.05	0.40	0.41	13.70	0.36	0.36
11.10	0.42	0.43	13.75	0.35	0.36
11.15	0.45	0.46	13.80	0.35	0.35
11.20	0.47	0.49	13.85	0.34	0.34
11.25	0.50	0.51	13.90	0.33	0.33
11.30	0.53	0.54	13.95	0.32	0.33
11.35	0.55	0.57	14.00	0.32	0.32
11.40	0.58	0.60	14.05	0.31	0.31
11.45	0.61	0.63	14.10	0.30	0.31
11.50	0.64	0.65	14.15	0.30	0.30
11.55	0.68	0.70	14.20	0.30	0.30
11.60	0.83	0.85	14.25	0.29	0.29
11.65	1.06	1.09	14.30	0.29	0.29
11.70	1.32	1.34	14.35	0.29	0.29
11.75	1.58	1.61	14.40	0.28	0.28
11.80	1.85	1.88	14.45	0.28	0.28
11.85	2.12	2.15	14.50	0.27	0.28
11.90	2.39	2.43	14.55	0.27	0.27
11.95	2.78	2.82	14.60	0.27	0.27
12.00	4.11	4.16	14.65	0.26	0.27
12.05	5.90	5.96	14.70	0.26	0.26
12.10	5.71	5.77	14.75	0.26	0.26
12.15	4.09	4.13	14.80	0.25	0.25
12.20	3.02	3.05	14.85	0.25	0.25
12.25	2.56	2.58	14.90	0.25	0.25
12.30	2.24	2.26	14.95	0.24	0.24
12.35	1.97	1.98	15.00	0.24	0.24
12.40	1.70	1.71	15.05	0.24	0.24
12.45	1.43	1.44	15.10	0.23	0.23
12.50	1.16	1.16	15.15	0.23	0.23
12.55	0.90	0.90	15.20	0.22	0.23
12.60	0.76	0.76	15.25	0.22	0.22
12.65	0.70	0.71	15.30	0.22	0.22
12.70	0.67	0.67	15.35	0.21	0.22
12.75	0.64	0.64	15.40	0.21	0.21
12.80	0.61	0.61	15.45	0.21	0.21
12.85	0.58	0.59	15.50	0.20	0.20
12.90	0.55	0.56	15.55	0.20	0.20
12.95	0.53	0.53	15.60	0.20	0.20
13.00	0.50	0.50	15.65	0.19	0.19
13.05	0.47	0.47	15.70	0.19	0.19
13.10	0.45	0.45	15.75	0.19	0.19
13.15	0.44	0.45	15.80	0.18	0.18
13.20	0.43	0.44	15.85	0.18	0.18

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

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Primary Comparison (continued)

Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)	Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)
15.90	0.17	0.18	18.55	0.10	0.10
15.95	0.17	0.17	18.60	0.10	0.10
16.00	0.17	0.17	18.65	0.09	0.09
16.05	0.16	0.16	18.70	0.09	0.09
16.10	0.16	0.16	18.75	0.09	0.09
16.15	0.16	0.16	18.80	0.09	0.09
16.20	0.16	0.16	18.85	0.09	0.09
16.25	0.16	0.16	18.90	0.09	0.09
16.30	0.16	0.16	18.95	0.09	0.09
16.35	0.15	0.15	19.00	0.09	0.09
16.40	0.15	0.15	19.05	0.09	0.09
16.45	0.15	0.15	19.10	0.09	0.09
16.50	0.15	0.15	19.15	0.09	0.09
16.55	0.15	0.15	19.20	0.09	0.09
16.60	0.15	0.15	19.25	0.09	0.09
16.65	0.14	0.14	19.30	0.09	0.09
16.70	0.14	0.14	19.35	0.09	0.09
16.75	0.14	0.14	19.40	0.09	0.09
16.80	0.14	0.14	19.45	0.09	0.09
16.85	0.14	0.14	19.50	0.09	0.09
16.90	0.14	0.14	19.55	0.09	0.09
16.95	0.14	0.14	19.60	0.09	0.09
17.00	0.13	0.13	19.65	0.09	0.09
17.05	0.13	0.13	19.70	0.08	0.09
17.10	0.13	0.13	19.75	0.08	0.08
17.15	0.13	0.13	19.80	0.08	0.08
17.20	0.13	0.13	19.85	0.08	0.08
17.25	0.13	0.13	19.90	0.08	0.08
17.30	0.12	0.12	19.95	0.08	0.08
17.35	0.12	0.12	20.00	0.08	0.08
17.40	0.12	0.12	20.05	0.08	0.08
17.45	0.12	0.12	20.10	0.08	0.08
17.50	0.12	0.12	20.15	0.08	0.08
17.55	0.12	0.12	20.20	0.08	0.08
17.60	0.11	0.12	20.25	0.08	0.08
17.65	0.11	0.11	20.30	0.08	0.08
17.70	0.11	0.11	20.35	0.08	0.08
17.75	0.11	0.11	20.40	0.08	0.08
17.80	0.11	0.11	20.45	0.08	0.08
17.85	0.11	0.11	20.50	0.08	0.08
17.90	0.11	0.11	20.55	0.08	0.08
17.95	0.10	0.10	20.60	0.08	0.08
18.00	0.10	0.10	20.65	0.08	0.08
18.05	0.10	0.10	20.70	0.08	0.08
18.10	0.10	0.10	20.75	0.08	0.08
18.15	0.10	0.10	20.80	0.08	0.08
18.20	0.10	0.10	20.85	0.08	0.08
18.25	0.10	0.10	20.90	0.08	0.08
18.30	0.10	0.10	20.95	0.08	0.08
18.35	0.10	0.10	21.00	0.07	0.08
18.40	0.10	0.10	21.05	0.07	0.07
18.45	0.10	0.10	21.10	0.07	0.07
18.50	0.10	0.10	21.15	0.07	0.07

22104.04-Post

Type III 24-hr 25-Year Rainfall=6.20"

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Primary Comparison (continued)

Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)	Time (hours)	Post Reach DP5 (cfs)	Pre Reach DP5 (cfs)
21.20	0.07	0.07	23.85	0.05	0.05
21.25	0.07	0.07	23.90	0.05	0.05
21.30	0.07	0.07	23.95	0.05	0.05
21.35	0.07	0.07	24.00	0.05	0.05
21.40	0.07	0.07			
21.45	0.07	0.07			
21.50	0.07	0.07			
21.55	0.07	0.07			
21.60	0.07	0.07			
21.65	0.07	0.07			
21.70	0.07	0.07			
21.75	0.07	0.07			
21.80	0.07	0.07			
21.85	0.07	0.07			
21.90	0.07	0.07			
21.95	0.07	0.07			
22.00	0.07	0.07			
22.05	0.07	0.07			
22.10	0.07	0.07			
22.15	0.07	0.07			
22.20	0.07	0.07			
22.25	0.07	0.07			
22.30	0.07	0.07			
22.35	0.07	0.07			
22.40	0.06	0.07			
22.45	0.06	0.06			
22.50	0.06	0.06			
22.55	0.06	0.06			
22.60	0.06	0.06			
22.65	0.06	0.06			
22.70	0.06	0.06			
22.75	0.06	0.06			
22.80	0.06	0.06			
22.85	0.06	0.06			
22.90	0.06	0.06			
22.95	0.06	0.06			
23.00	0.06	0.06			
23.05	0.06	0.06			
23.10	0.06	0.06			
23.15	0.06	0.06			
23.20	0.06	0.06			
23.25	0.06	0.06			
23.30	0.06	0.06			
23.35	0.06	0.06			
23.40	0.06	0.06			
23.45	0.06	0.06			
23.50	0.06	0.06			
23.55	0.06	0.06			
23.60	0.06	0.06			
23.65	0.06	0.06			
23.70	0.06	0.06			
23.75	0.06	0.06			
23.80	0.06	0.06			

July 19, 2021

Greg Tansley
Biddeford Planning Department
P.O. Box 586
205 Main Street
Biddeford, Maine 04005

Re: Site Plan Review Application
Adams Street Housing
69 Adams Street
Biddeford, Maine 04005

Dear Greg,

We have carefully reviewed the comments provided by your office and would like to summarize the proposed revisions prior to responding to each review comment:

Summary of proposed plan revisions:

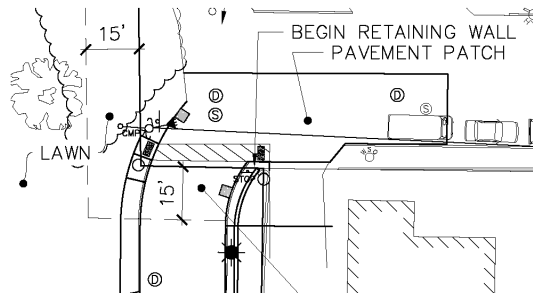
1. Revise driveway entrance to be subordinate to Adams Street including sidewalk crossing, tactile warning panels, stop sign, address sign, and streetlight relocation.
2. Provide dumpster enclosure detail and extend concrete pad in front of enclosure.
3. Bituminous walkway will transition to concrete at the parking lot.
4. Multiple curb cuts will be reviewed and consolidated, if possible. ADA parking grades will be reviewed for compliance.
5. Fence locations and types will be added to plan views, and additional details will be provided.
6. Final coordination and slopes of utility lines will be checked and altered if needed.
7. Stormwater calculations and design will be finalized and revised to keep post development flows to less than pre-development flows. Connection to the city combined system will be revised per Engineering Department recommendations. Underdrains, utility profiles, and spot grades will be added to the plan set.
8. Provide additional site details for drop manholes, stormwater structures, cast in place retaining walls, rock slope, Fire Lane, playground area, and Adams/Jefferson Stop signs. Possibly increase 2-foot area between parking curb and retaining wall.
9. A waiver of Article XI Site Plan Review, section 5.i.3 for paved access/parking/pedestrian surfaces from 30% to 37.6% is requested.

Below are responses to each review comment:

Site Design Associates

A. General

As we indicated to you earlier, in our opinion the driveway should intersect the Adams Street right of way at 90 degrees, and the drive should not be constructed as an extension of Adam Street. **Response: The driveway does essentially intersect Adams Street at 90 degrees, but does have a 30-foot radius to provide proper geometry for emergency vehicles. The sidewalk will be revised, and a stop sign will be provided to reduce speeds and increase safety.**



B. Drawings

1. Sheet 4 of 19 – Site Plan

- The pavement repair in Adams Street should be shown with a consistent width and saw cuts and butt joints called out on the drawing. **Response: Pavement patch will be revised to consistent width and saw-cut and milled joints will be shown.**
- Tactile warnings and ramps should be shown at both ends of a formal crosswalk in the public right of way. **Response: tactile warnings will be added to ramps in crosswalk within the public right of way.**
- The existing power pole and guy wire on the easterly side of Adams Street will need to be relocated, which should be noted on the drawings. **Response: Pole and guy wire will be relocated and noted as such.**
- Will there be a concrete pad at the dumpster enclosure? **Response: Yes, concrete pad will be provided and extended in front of the dumpster enclosure.**
- Were details for the enclosure provided? We did not note any on the drawings. **Response: Details for enclosure will be added to the plan set.**
- Where is the transition from concrete walks to bituminous pavement walks in front of the building? **Response: Transition from asphalt to concrete walks will be clarified.**
- The plan appears to show multiple ramps for the accessible parking on the southerly side of the building. From a constructability and maintenance standpoint it may be easier to slope the entire length of the sidewalk rather than have separate ramps and grade changes. **Response: The multiple ramps will be reviewed and consolidated if possible.**
- What do the four rectangles on the property northerly of the fire access represent? **Response: These are gardens, see drawing L1.0.**
- Are any railings or fences planned for the tops of the retaining walls around the parking lot? **Response: Yes, see detail 4 on C-503. Additional call outs and materials will be added to the drawings for the retaining wall on the northwest end of the parking lot.**
- What does the square with two lines at the top of the stairs on the south side of the building represent? **Response: They are bike racks, see drawing L1.0.**
- What is planned for curbing material within the parking lot? **Response: Slip formed concrete, additional notes to clarify intent will be added.**

2. Sheet 6 of 19 – Utility Plan

- a. The slope of the sanitary sewer from SMH 1 to SMH 2 is approximately 12%. Have the flow velocities been checked to make sure they are not excessive? **Response: Slopes and flow velocities will be reviewed and revised if necessary.**
- b. The drainage structure schedule indicates that all stormwater storage structure rims will be installed at the same level. Based on the grading plan elevations, this may not be possible. **Response: Rim elevations will be provided for each individual rim.**
- c. A riser and access for STOR 1 is shown in the curb line and should be relocated. **Response: manhole will be revised to be out of curb line.**

3. Sheet 7 of 19 – Grading Plan

- a. Wood chip area underdrain elevations should be provided. **Response: underdrain elevations will be added to the plan set.**
- b. A 2 ft elevation differential is shown across the transformer pad. **Response: Grades will be reviewed, and elevation differential will be reduced or eliminated.**
- c. One of the trees to be protected is located within a few feet of the southerly wood chip underdrain and may be impacted by the installation of the drain. **Response: Underdrains in this area will be revised to reduce or eliminate impact to the tree.**
- d. Based on the transformer location atop a parking lot retaining wall, and 3-4 ft below the fire access, how will it be accessed for service? **Response: The transformer can be accessed with a boom truck on the fire access lane. The 3-4 ft additional lift will not be an issue with the boom truck the transformer will be moved closer to the fire lane while meeting required setbacks.**
- e. How will the area between the stairway and the building be treated/stabilized? There is a five ft drop in the lower four feet of the slope. **Response: Slopes are 3:1 and is only 10-feet wide and 18-feet long. The area will be planted and mulched, see drawing L1.0.**
- f. What does “F” signify when used with spot grades? **Response: F means finish grade and is included the legend on sheet 1.**
- g. The treatment of the steep slopes on the northwest and northeast sides of the buildings should be called out on the drawings. **Response: The northwest side will be treated with topsoil and seed and erosion control blanket will be added to stabilize the area while the seed is becoming established. The northeast side of the building will be a rock slope.**
- h. The grades of the accessible parking spaces exceed ADA requirements. **Response: The grades will be reviewed and revised. The spaces on the south lot do meet ADA, and the grades on the east lot do exceed ADA requirements and will be revised.**
- i. Spot grades at the tops and bottoms of the various retaining walls would be helpful. **Response: Spot grades will be added.**

4. Sheet 11 of 19 – Site Details -1

- a. Typical sections should be provided for the parking lot, fire access, other retaining walls not associated with the access drive, and the wood chip area with underdrains. **Response: Details will be added for the items requested.**
- b. A detail should be provided for an outside drop manhole. **Response: Detail will be provided.**
- c. There are potential savings if the access drive pavement and gravel buildups were reduced, along with the thickness of the aggregate under the proposed sidewalk. Reference could be

made to the geotechnical report for appropriate material thicknesses. **Response: The geotechnical recommendations are minimums, and the section provided will provide a longer life. The sidewalk aggregate base thickness is intended to reduce frost action.**

d. Another potential savings may be associated with the access drive width. The traffic report indicates that 33 proposed units would generate 180 trips per day. With 39 units currently proposed, that would translate to 212 trips per day, which is less than the 250-trip maximum threshold for a minor residential street. The standard for a minor residential street permits 11 ft travel lanes, as opposed to the 12 ft travel lanes shown. Once in the parking lot, 24 ft would be required. **Response: We will consider the reduction, however, due to the curve in the driveway, geometric requirements for fire truck access and snow removal, it may not be desirable.**

e. The foundation and wall drains should be shown along with outlet locations. **Response: foundation drains will be added to the drawings.**

f. The retaining wall detail should incorporate recommendations from the geotechnical report as necessary. **Response: Recommendations from the geotechnical report will be incorporated.**

g. In regard to note 1, a design prepared and sealed by a Maine Professional Engineer should be required. **Response: Note will be added to require design of retaining wall by a Maine Professional Engineer.**

h. The detail calls for concrete curb, and as shown, it appears precast concrete curb is being specified. Slipform concrete curb may be a less expensive option. **Response: The intent was to use vertical slipform concrete. The curb and slipform profile will be added to the drawings.**

i. The drive detail shows the face of the guardrail six inches from the face of curb, which leaves very little room for snow removal. **Response: We will review and increase the distance if possible.**

j. The trench patch detail shows the sawcut in the wrong location and should be revised. **Response: Leader line will be corrected.**

5. Sheet 12 of 19 – Site Details -2

a. We recommend that the relevant elevations of pipe inverts, top of structure, finished grade, etc. be shown on the storage detail. **Response: It is preferable to only show the information in one location to avoid discrepancies, however, due to the complexity of this system, this information will be added to the detail.**

b. The detail shows 3 ft minimum and 5 ft maximum cover over the storage tanks, while the elevations provide for less than 2 ft of cover over the tanks. **Response: minimum and actual design depths will be coordinated.**

c. The dimensions for the tank depths conflict with the elevations provided and with the dimensions used in the stormwater modeling. **Response: Stormwater calculations do match for Storage-2. Calculations and drawings will be coordinated for Storage-1.**

d. No sumps are proposed in the bottoms of the tanks. In order to control sediment buildup and prevent trash from accumulating in the tanks, it would be advisable to provide 3 ft sumps and outlet traps in the catch basins directly contributing to the storage tanks. **Response: Deep sumps and outlet traps will be added to catch basins upstream of the storage tanks.**

6. Stormwater Management

a. The modeling appears to include a three-tank setup for STOR 1 (shown as storage 2 in the model) while the plans show one tank. If so, either the plan or the model needs to be revised.

Response: We have revised the calculations to reduce the 2-year developed condition at DP1 to be below existing flows. The result is one tank for STOR-1 and four tanks for STOR-2. Revised plans and calculations will be submitted.

b. Storage invert elevations conflict with the elevations shown on the plans. Response: Stormwater calculations do match for Storage-2. Calculations and drawings will be coordinated for Storage-1.

c. We have attached copies of the DEP Checklists for stormwater review and ask that the applicant review the checklist and address any outstanding issues with the plans and the Inspection and Maintenance document as related to the basic standards. For example, a significant rainfall which would trigger an inspection is defined as 0.5" during construction and 1.0" post construction, which should be included in the document, separate forms should be provided for each engineered BMP, an inspection plan for during construction should be provided, etc. Response: Inspection during construction is included in drawing C-501. Checklists will be reviewed and incorporated into the during construction and post construction forms and drawings.

City of Biddeford – Engineering Department

- Site Plan Checklist

- o Subdivision checked-off as required; not sure if this is true. New lot dimensions not identified on plans. Response: Leased dwelling units are not subject to subdivision review if municipal reviewing authority has determined that other review exists at least as stringent as subdivision review, sometimes multifamily housing is reviewed under local Site Plan Review Ordinance. Has the City of Biddeford made this determination?

- Supporting Materials

- o Section 5 Fire
 - Approval response not provided from Paul Labrecque; dimensions/specs not identified for firetruck model used for truck turn exhibit. Response: We have met with the Fire Department twice so far and a written response to comments was provided to the Fire Department on June 30 and we are awaiting a response. Paul Labrecque has officially retired now, and Deputy Duross has been contacted to follow up, but no response received at this time. We will continue to pursue this approval.
- o Section 10 Stormwater
 - Watershed areas, individual land cover areas, curve numbers, and times of concentration not summarized for pre- and post-development conditions. Response: This information is included in the stormwater calculations, and this information will be added to the summary within the narrative.
 - According to the peak runoff summary table, there is a 0.4-CFS increase for the 2-year storm at DP-1 – whereas the body text states a 0.2-CFS increase. Response: Calculations and design will be revised to reduce peak flows to below pre-developed conditions and the summary will be updated.

- Storage pond routing confirmed; recommend adding invert elevation information for two storage facilities (Page 157 of 172) to design plans/sections. **Response: Invert information is shown on CG101 and C-301. This information will also be added to the detail on C-504.**

- Sheet V-101

- Information not provided for two grate inlets within Adams Street (one within right-of-way, one within adjacent neighbor driveway). **Response: Rims and inverts have been measured and will be added to the plans.**

- Sheet CD101

- No inlet protection provided for grate inlet within adjacent neighbor's driveway on Adams Street. **Response: This basin is uphill from any disturbance and does not require inlet protection during construction.**
- Assume the 'right-to-disturb' within St. James School/Parish Place property has been approved. **Response: St James School has been contacted and easement negotiations are nearly complete, written intent to convey the easement will be provided. Parish Place is owned by the applicant, draft easements will be provided for both properties.**

- Sheet CS101

- Curb material not identified/called out. **Response: Material is slipform concrete and will be clarified on the drawings.**
- Retaining wall material not identified/called out. **Response: Materials are segmented concrete for the fill areas and cast in-place concrete for the cut areas and will be clarified on the drawings.**
- Fence material not identified/called out. **Response: Material is chain link fence and will be clarified on the drawings.**
- Door not shown for building's west façade entrance. **Response: Door will be added to the drawings.**
- Should three individual ADA parking ramps be consolidated into one continuous ramp? **Response: The multiple ramps will be reviewed and consolidated if possible.**
- No crosswalk provided from the site's entrance sidewalk to Adams Street's easterly sidewalk. **Response: In response to Site Design Associates a: General comment, the sidewalk has been revised to connect to the east side of Adams Street.**
- Stops bars and signage not identified at Adams Street entrance. **Response: In response to Site Design Associates General Comment A, a stop sign and stop bar will be added to the Adams Street Entrance.**
- 4" thick crushed stone surface behind sidewalk (per Detail 4/C-503) not identified on plan. **Response: Plan will be updated to show crushed stone behind sidewalk.**

- Sheet CU101

- New storm drainage connecting to existing combined sewer; this goes against all the city's efforts for CSO abatement. **Response: Per recommendation of Tom Milligan, the stormwater system will be constructed with two additional drain manholes and stubs to allow for future separation.**

- o Callout states 'underground stormwater treatment and storage'; is water quality treatment provided, or detention only? **Response: This system provides storage only as treatment is not required by the DEP. The note will be corrected.**
- o Storm and sanitary profiles only provided for piping within first 200-LF of the driveway; no utility profiles provided for CB7, CB6, CB9, DMH1, SMH3, and building connections. **Response: Additional profiles will be provided.**
- o 4" thick crushed stone surface behind sidewalk (per Detail 4/C-503) not identified on plan. **Response: The plan will be updated to show crushed stone behind sidewalk.**
underdrain connection locations should be identified (i.e. retaining wall, sidewalk crushed stone). **Response: Details will be added for the items requested.**

- Sheet CG101

- o No spot elevations or slope-percentage arrows provided, only contour labels. **Response: Spot grades and/or slope arrows will be added to the plan.**
- o No bottom-of-wall or top-of-wall spot elevations identified. **Response: Top and bottom of wall elevations will be provided.**
- o No grading information provided for concrete sidewalk to Birch Street. **Response: Grading changes in this area are minimal and drainage patterns will not be altered. Grading information will be added to the plan.**
- o Detailed inset grading plan recommended for ADA parking/accessible sidewalks to confirm compliancy. **Response: Grading plan for ADA parking will be provided.**

- Sheet C-301

- o STOR-1 not labeled. **Response: STOR-1 will be labeled.**

- Sheet C-503

- o Detail 4 – connection locations for sidewalk underdrain and retaining wall underdrain should be identified. **Response: Underdrain connections will be added.**

- Sheet C-504

- o Detail 1 – separate details/plans/sections should be provided for each individual detention system (STOR-1 and STOR-2) with proposed rim/invert/bottom elevations identified. **Response: Details for each storage system will be provided.**
- o Manufacturer/model name identified, or standard details provided. **Response: Basis of design product information will be added to the plans.**

- Sheet L1.0

- o Underground utilities should be turned on to identify any utility conflicts with proposed trees. **Response: Landscaping will be reviewed and coordinated with underground utilities.**

- Sheet WS101

- o Watershed areas, individual land cover areas, curve numbers, and times of concentration not identified/summarized for pre- and post-development conditions. **Response: This information is included in the stormwater calculations and will be added to the plan.**

LONG MEADOW PLANNING & LANDSCAPE ARCHITECTURE, LLC

1. Proposed sidewalk. At first glance it appears the proposed sidewalk along the entrance drive ends abruptly at Adams Street. With closer examination, the applicant may be assuming that simply terminating it at the public ROW is sufficient to connect with the public sidewalk. The Planning Board and the applicant should discuss the expectation here concerning pedestrian connections the two existing public sidewalks along Adams Street. Perhaps the applicant, in consultation with Public Works, should propose a design for appropriate crosswalks and sidewalk ramps within the ROW. **Has the applicant consulted with Public Works on the design of the intersection? See comment #9 below for more elaboration?** **Response:** The sidewalk ends at the existing emergency access driveway for Ledgewood Apartments where a painted crosswalk is proposed to connect to an existing sidewalk on the west side of Adams Street. We will revise the sidewalk to connect to the existing sidewalk on the east side of Adams Street with a stop sign to provide more area for snow storage, more reasonable grades, and safer exit speeds.
2. Parking design. It is assumed that the proposed number of parking spaces is based on the requested (March 18, 2021, letter from the applicant) parking requirement of .75 spaces per housing unit, rather than the 2 spaces per unit required. It is stated that this has been found to be the average for the other affordable housing developments the applicant manages. Considering the 33 dwelling units referenced in the 3/18 letter (the application includes 39 proposed units, the applicant should clarify), and the reduced ratio, 25 parking spaces would be required. This would include the required single van accessible handicap parking space. Is there a need for the 10 other accessible spaces proposed? **See comments #15 thru #18 below for more elaboration.** **Response:** 39 dwelling units are proposed and is included in the Draft Contract Zone Agreement. The need for 11 accessible parking spaces aligns with the number of accessible units. The larger number of accessible units is encouraged by Maine State Housing and provides additional funding for this affordable housing project. The current district standard is 2 parking spaces per dwelling unit. This number is higher than the typical demand created by affordable housing projects. Adams Point requests a minimum parking ratio of 0.75 spaces per dwelling unit. This standard has been found to be an appropriate average for affordable housing projects in a downtown setting. The following factors that are unique to this property support the reduced parking need:
 - a. There are 40 on-street parking spaces on Adams Street and 44 parking spaces on Birch Street. Birch Street on-street parking is currently not heavily used, and Adams Street parking demand will be greatly reduced when the existing courthouse is replaced with the new courthouse on Route 1.
 - b. There are two municipal parking lots within 1,000 feet of the project.
 - c. There is numerous business nearby that would allow employees to walk or bicycle to work.

- d. Public transportation is available. The Orange and Black bus line that can be accessed at the intersection of Birch and Alfred Streets.
 - e. Affordable family housing occupants tend to have one or less vehicles.
3. Site design. The applicant should discuss constraints of the site and the proposed building location. Has there been any consultation with the Fire Department that has been informed the current site design? With consideration of what appears to be a 17-foot-high wall in the vicinity of the first parking space to the left coming up the driveway, and the potential for less parking and need for closer fire access to the building, perhaps the location of new parking proposed as close as it is along the steep southeast slope of the property should be reconsidered. Other items that might be considered for discussion/elaboration include: the need for a vehicular drop-off and type of open space (see landscape plan) being proposed. **The applicant has stated in the cover letter that changes to the site design were considered but not incorporated. See comment #22 for more.** Response:
- a. The main constraints of the site include a 25-foot elevation rise from Adams Street, a 39-foot elevation rise from Washington Street and limited right of way access to Adams Street.
 - b. The fire department has been consulted several times and fire truck paths and staging locations have been shown on plans provided to the fire department. The Ladder truck chassis data was provided by the fire department, and a custom vehicle simulation was used to determine proper access for the ladder truck.
 - c. The parking spaces and maneuvering area is adequate for the intended use. Guard rails and fencing will be used to ensure safety. We will consider increasing the 2-foot distance between the curb and top of retaining wall.
 - d. Vehicular drop off is provided by the 40-foot-wide portion of the driveway near the main entrance. Striping will be added to clarify the intended drop off area.
 - e. The type of open space provided is mainly playground with several specimen trees to be saved. The landscape plan includes extensive plantings consisting of trees, shrubs, and groundcovers.
4. In addition to the general site development and subdivision standards, the applicant should review Section 47 Multifamily developments (Article VI Performance Standards under the Land Development Regulations (LDR)). The Planning Board should provide input early on one provision in particular, Sec.47.D.3 concerning the Board's discretion on requiring more than one street access for development containing more than 15 dwelling units. **The applicant has proposed emergency access via a proposed easement from Birch Street. See comment #10 below for more elaboration.** Response: The applicant has pursued gaining additional access to the site via Birch Street with the St James School, and the school is only willing to allow emergency access through their property. Due to grade differences between Birch and Adams Street, the presence of existing structures, and ledge at the top of the site, it is not possible to provide a continuous driveway connection between Birch and Adams Streets. We believe the emergency access from Birch Street meets the spirit of the ordinance.

5. The Board may want the applicant to elaborate on the building's architectural design and how it will appear among the neighboring buildings adjacent to the site and in the area. The Board should share their expectations on what architectural information is to be included in subsequent submittals. **The applicant has submitted architectural elevations.** Response: The architectural design is a modern design that fits within the neighborhood that has been developed with buildings with various types of types of architecture that was current when they were constructed. Examples of the different types of architecture in the areas include the Parish Place (1920) St James School (1922), Ledgewood Apartments (1974), and Five Graham Street (2002).
6. A parking plan with bicycle and pedestrian components is required for all development within the MSRD districts, per Sec. 49 Off-street parking and loading. **See comment #14 for more.** Response: Parking, pedestrian and bicycle components are shown on CS101 and L1.0. Adams Street and the driveway will be a shared bike lane which is appropriate for this location due to low speeds and the dead-end street.

LAND DEVELOPMNENT REGULATIONS

Under Article 4 Section 6 District regulations/land use/lot size requirements, multifamily along with nonresidential uses shall be subject to Site Plan (Article XI) Review. The following are performance standards that may be applicable for multifamily development:

Article 6 Section 47 Multifamily developments:

7. Subsection B Design requirements appear to have been met or will be met through the Building Permit application process, with the exception of the requirement for a group or common mailbox system located on site. The applicant should address the specifics of this item.
Response: Common
8. Subsection C Stormwater and drainage The applicant has submitted a Stormwater Report. See comments from the Engineering Peer-review letter prepared by Site Design Associates. **No response required.**
9. Subsection D Access, circulation, and parking. A Traffic Impact Study has been prepared and submitted for the Board's review. That applicant should review the proposed design of intersection of the site's driveway and Adams Street. As Site Design Associates has pointed out, the proposed driveway design has the effect of extending Adams Street into the site. The Board may want to consider changes that would make it clearer the extent of the public street. The proposed driveway is 24 feet wide, larger than the Adams Street travel way when excluding the on-street parking. Consideration should be given to providing for a traditional hammerhead-turn around at the end of Adams and a more modest driveway entrance to the development.
Response:
 - a. Adams Street is currently 36 feet wide curb to curb. This allows for two 11-foot travel lanes and 7-foot-wide parking on each side of the street. The full 36-foot width is

utilized for vehicle movements at intersections and existing driveways. While the new driveway is slightly wider than the travel lanes on Adams Street, the extra two feet is recommended due to the curves and curbing on the new driveway to provide proper room for emergency vehicles and snow removal.

- b. The existing right of way is 50 feet wide and 34 feet of frontage at the driveway entrance. There are very few options to creating a traditional hammer head or cul-de sac turn around. The new driveway in combination with the emergency access drive to Ledgewood Apartments essentially creates a hammerhead that can be used as a turn around. The new driveway improves area available for turn around maneuvers. Perhaps a sign at the end of the new driveway stating the address (69 Adams Street) and "NOT A THOUGH STREET" would clarify the end of the public way.

10. Subsection D.3. More than one street access. It appears the applicant is proposing a 20-foot-wide fire lane from Birch Street to the proposed building along the existing parking lot serving Parish Place (apartments currently owned and managed by the applicant). The applicant should clarify that the access to this proposed emergency access is via the existing parking lot entrance to the Parish Place apartments. If this is the case, a draft easement should be submitted for review prior to final approval. Installation of signage identifying the fire lane and prohibition of parking should be depicted on the plans. **Response: Drawing CS101 calls out the fire lane easement on both Parish Place and St James School properties. Draft easements will be provided for the final submission.**

Article 6 Section 49 Off-Street Parking and Loading: Subsection A.11 are standards pertinent to the MSRD District. The following provisions appear to be applicable to the proposed development.

11. (d) Exterior lighting shall not create glare onto the street or onto or into residential properties. Lighting fixtures shall be in concert with the existing historic lighting on Main Street. **A photometrics plan has been submitted. The plan should be revised to extend the limits to the property line and catalog cuts for the fixtures and poles need to be submitted for review in cut-off/dark sky compliance.** **Response: Boundaries of the light level values will be extended to the property line and reviewed for compliance.**
12. (f) Parking spaces shall be provided as required and made available for use prior to the issuance of the certificate of occupancy. **This should be reflected on the final plans. A note to require parking be available prior to occupancy certificate will be added to the plans.**
13. (g) The existing landscaping shall be preserved in its natural state wherever possible. Parking lots shall be landscaped with a continuous border of shrubbery along all lot lines. Large parking lots covering more than one quarter of an acre shall be proposed with a landscape plan stamped by a licensed landscape architect. The plan should include plantings in coordination with the City's arboretum, if possible. Except where screening is provided, parking areas should be designed and landscaped to avoid long, uninterrupted rows of vehicles. Parking lots containing more than 30 spaces shall be broken as by the use of landscaped islands, pedestrian and bicycle areas

and/or buildings. **A Landscape Plan has been prepared and submitted. See comment #24 for more. No response required.**

Article 6 Section 49 Off-Street Parking and Loading: Subsection C are standards that appear to be applicable to the proposed development.

14. (5) All new buildings or redevelopment of existing buildings in the MSRD districts shall include a parking plan with a bicycle and pedestrian circulation plan component. **The plans depict a total of four bicycle racks outside (two at each level) on the Landscape Plan and a dedicated storage room in the basement depicted on the building floor plans. The applicant should confirm the total capacity (interior/exterior) that is proposed for the development and include it as a plan note on the Site Plan.** **Response: Capacity will be confirmed and note added to the site plan.**

Table 6-49B Parking Space Requirements. The minimum required parking for a residential use is 2 spaces per dwelling unit, plus 5% more for multifamily developments. There is an intent by the City to allow for 1 parking space for 1-bedroom and studio dwellings. The proposed development provides for 39 dwelling units consisting of 13 one-bedroom apartments and 26 two-bedroom and larger apartments. The required parking calculates to be a total of 65 spaces ((26 x 2) + (13 x 1)), three spaces of which being accessible. The proposed number of parking spaces is 35, that includes 11 accessible spaces (narrative references 36). 1 for every 24 parking spaces is required to be ADA, which equates to 3 spaces for the proposed development.

15. The applicant should elaborate on the logistics and rationale behind providing only 24 standard (non-ADA) spaces for 39 apartments. Will parking spaces be designated? Is it the assumption that 11 out of the 39 apartments (28%) will require an ADA parking space? Is it assumed that people that don't have an ADA placard/license plate will park on the street if the other 24 spaces are occupied? Or will there be parking available on the adjacent Parish Place property? **Response: See response to comment 2. The ADA parking over and above the ADA requirements is driven by Maine State Housing requirements. Additional funding is available for providing the number of ADA spaces shown. The building has 11 ADA compliant units and 28 units that can be adapted to ADA requirements, it is anticipated that occupants of the ADA units will have ADA tags and utilize these spaces. Parish Place will not be utilized for additional parking for this project.**
16. In the draft contract zone, .75 parking spaces per unit is referenced as the parking space requirement proposed for the development. That equates to just less than 30 spaces, or 46% of the required 65 spaces. Planning should determine if the overall 54% reduction is reasonable (65 spaces reduced to 35) as well as the increase in ADA spaces. **Response: See response to Comment 2.**
17. Since the parking space reduction is proposed as part of the contract zone and not as a waiver, should the parking ratio be based on what is actually proposed, where 35 spaces equates to .9 parking spaces per unit. **Response: the contract Zone states 0.75 is the minimum, it can be changed to 0.85 deemed necessary.**

18. The final parking calculations should be depicted on the final plan. **Response: Final Parking Calculations will be added to the final plan.**

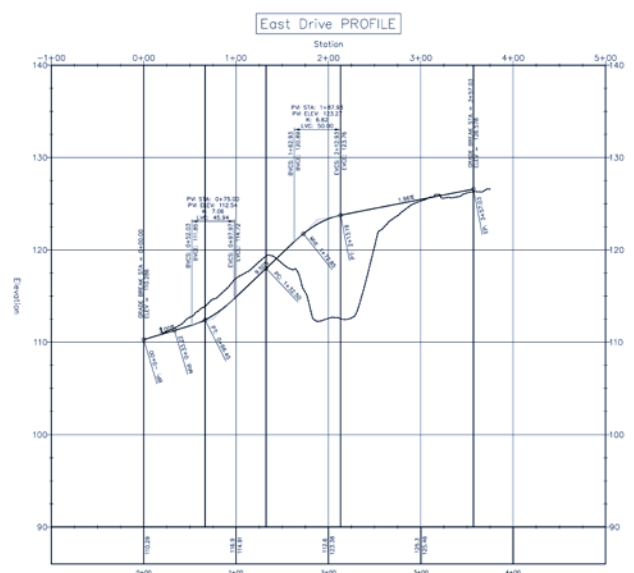
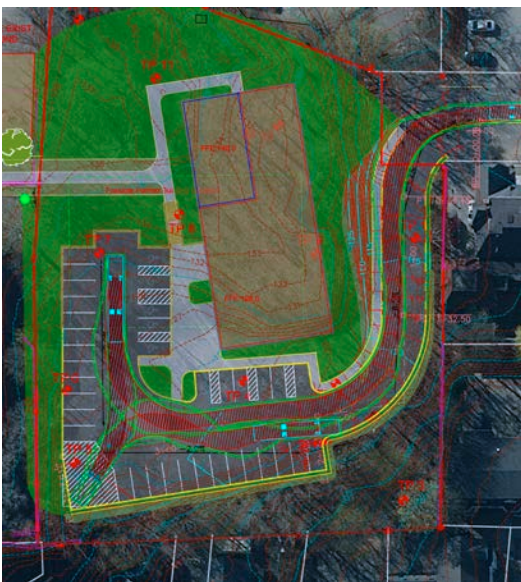
Site design criteria. There are a number of provisions/requirements that are applicable to the proposed development that would be easier to determine compliance with the aid of a narrative that specifically addresses the criteria under Sec. 5.B. of Article XI (part II) of the Land Development Regulations. The following are some comments from an initial review.

19. Sec. 5.B.4.a Design of buildings. The applicant has provided building elevations that depict proposed materials and colors. The Board should review and determine if it conforms to the ordinance. **Response: See Certificate of Appropriateness from Biddeford Historical Preservation Commission.**
20. Sec. 5.B.4.c Fire protection. Has the applicant reviewed the standards with the Fire Department? **Response: We have met with the Fire Department twice so far and a written response to comments was provided to the Fire Department on June 30 and we are awaiting a response. Paul Labrecque has officially retired now, and Deputy Duross has been contacted to follow up, and no response received at this time. We will continue to pursue this approval.**
21. Sec. 5.B.4.i Parking, loading, and protective buffers. Calculations and values for the non-vegetated areas should be provided and included in the Site Plan notes. **Response: The area of non-vegetated surface is 58.5%, the paved access/parking/pedestrian surface is 37.6%, and the natural areas and landscaped areas is 41.5% of the total area. Since the amount of paved access/parking and pedestrian surface has been minimized, and the unique nature of this site (large elevation rise), a waiver from 30% to 38% for paved/parking/pedestrian areas is respectfully requested.**

ADDITIONAL COMMENTS

22. A subdivision plan or combined subdivision site plan, needs to be prepared suitable for recording that documents the number of dwelling units created. **Response: A combined subdivision Site plan utilized for recording. The total number of units will be added to the site plan.**
23. Site design as it relates to elevations grades and driveway design and how that informs the location of parking and the proximity of a very high retaining wall (maxing out at 18') still remains to be an area that should require more reconsideration by the applicant. The reasons given for not perusing a steeper grade for the driveway does not appear to reflect the maximum grades allowed by the City's ordinance for roads and recommended by AASHTO for urban streets. The applicant should demonstrate the design changes, be it with the driveway assent or by lowering the Finished Floor Elevation of the building cannot be reasonably accommodated to address the height of the wall. **Response:**

- a. While this is not really considered a street, the City Ordinance does allow up to 14% slopes, but the intersection transition must be 3% for the first 75 feet and 25 feet added for every percentage over 8%. There is simply not enough distance between Adams Street right of way and the parking area (180' +/-) to have a 125-foot segment of 3% grade and any appreciable elevation gain (3.8') to access the upper portion of the site.
- b. The 9.9% grade was discussed with the fire department and was not recommended.
- c. The presence of ledge at the top of the site is a major impediment to lowering the building. The proposed plan was carefully designed to balance site access and rock removal.



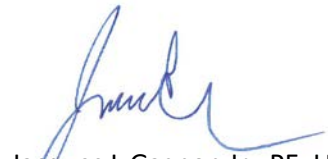
24. After consideration of methods to reduce the height of the wall, it is likely the height will still remain high in some locations and the potential safety issues associated with such structures, e.g. children climbing or falling off, should be considered. **Response: The retaining walls will have fences for safety. Access to the walls for climbing is not readily convenient due to the fences and shrub plantings at the base of the wall.**
25. The Landscape Plan provides for a varied and interesting plan palate. The applicant should clarify difference in screening needs between the development and Parish Place and the other abutting buildings in that there appears to be more of a robust design. It would appear that abutting properties along the new parking lot and driveway may require more than the proposed flowering wall climbing vine. These properties would likely benefit from a mix of evergreen and flowering trees and shrubs. **Response: We will review the plantings in this area and consider the recommended changes.**
26. The slope created between the northerly side of the building and the driveway, looks to be close to a 1:1 slope, should be reconsidered, and determine other ways to manage the slope. If required (perhaps reducing the driveway width as mentioned earlier could help) low walls that

terrace the slope and ornamentally planted, might be a more esthetic and safer solution. If a planting solution is favored, details on the slope stabilizing system that will be utilized and the manner to discourage/keep people from negotiating down it (from the building down to the drive). **Response: The northeast side of the building will be a rock slope. It is agreed that a fence or barrier is needed for safety at the top of the slope. The use of terraces will be explored and implemented if feasible.**

27. Existing sanitary sewer (ESS (4")) lines between the Parish Place and the site are noted on the plans to be abandoned, however are not identified on the removals plan as being removed. Please explain. **Response: Abandoned sewer line will be removed, and a note will be added to CD101.**
28. Proposed Easements. All easements, new and modified, should be shown on the plan and draft language provided prior to final approval. It appears there is proposed utilities and relocation of structures (shed/playground) that is depicted on the plans that is not supported by easements and/or permission from the abutting property. All utilities and access (emergency and otherwise) between Birch Street and the site need to be clarified in an easement document and clearly identified on the plans. **Response: Draft easements will be provided for the final submission.**
29. The Removals Plan does not appear to be complete when compared to existing features on the survey plan, e.g. "concrete stairs" and altar are not called out to be removed. **Response: additional removal notes will be added to CD101.**
30. All sidewalks/walkways should be concrete and not bituminous as proposed. **Response: It is unclear as to why this request is made. City sidewalk standards appear to allow bituminous walks. It is desired to have a bituminous walk adjacent to the driveway and transitions to concrete adjacent to the parking areas and near the building.**
31. Please elaborate on the different accessible access proposed for the two banks of handicap parking. In front of the building individual ramps are used while the other has a continuous ramp. The latter, with flush curb, needs to provide a different design to keep vehicles from encroaching on the access walk. **Response:**
- a. **The use of individual ramps at the parking in front of the building has received comments by other reviewers questioning the use of individual ramps. The use of a combined ramp of alternative access routes to the building will be explored.**
 - b. **The parking with a continuous ramp will be supplemented with parking stops to control encroachment into the sidewalk.**
32. After review with the Fire Department, identify a Fire Lane on the plans. **Response: Fire Lanes designations will be added to the plan.**

33. Provide a conceptual intersection design for Adams and Jefferson streets for review with City Staff. **Response: An intersection plan to show the new stop signs and stop bars will be provided.**
34. Review detail sheets and ensure all applicable details are included, e.g. stairways, ADA parking space and signage, dumpster enclosure (Wooden Privacy Enclosure w/gate), striping, etc...
Response: Details of requested site elements will be provided.

Please contact me to let me know if you have any questions or comments.

A handwritten signature in blue ink, appearing to read "J. Gagnon", with a stylized flourish extending to the right.

Jacques L Gagnon Jr., PE, LEED AP
Associate
Encl.

PLANNING
BOARD REPORT

July 15, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: Lebel Residence – Marc Lebel / 2538970 ONTARIO, INC
7 Bayberry Rd. (Tax Map 68 Lot 26)

Reconstruction of a Nonconforming Structure in the Shoreland Zone

Review Status: New Application

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Application form dated 6/10/2021
2. Cover letter by TMS Architects, dated 6/18/2021.
3. Plan exhibit locating adjacent building corners
4. Survey Plan entitled: *Standard Boundary Plan and Site Plan...7 Bayberry Road, Biddeford, Maine. Owned by 2538970 Ontario, Inc...* Prepared by Lower Village Survey Co., revised date 6/15/2021.
5. Plans entitled: *Proposed over existing Site Plan and Proposed Building, Drive and Walkway...7 Bayberry Road, Biddeford, Maine. Owned by 2538970 Ontario, Inc...* Prepared by TMS Architects, dated June 22, 2021.
6. Architectural plan set entitled: *Lebel Residence, 7 Bayberry Road, Biddeford, Maine.* Prepared by TMS Architects, date 6/8/2021; includes First Floor Plan & Door Schedules; Second Floor Plan; Basement and Roof Plans; and Elevations & Window Schedule.
7. Existing Condition Photographs, and Location Aerial Map

With review of the above information and the City's Land Development Regulations I offer the following comments on compliance with the Town's ordinances.

PROJECT DESCRIPTION

The project site is a developed lot located within the Shoreland Zone (Limited Residential) and Coastal Residential base zone. The applicant is seeking to replace the existing building, a nonconforming structure, with a new dwelling which requires the Planning Board to determine if the new location meets the setback from the shoreline *to the greatest practical extent*.

APPLICATION COMPLETENESS REVIEW

The application is before the Planning Board for reconstruction of a nonconforming building within the shoreland zone per Article XIV Shoreland Zoning Ordinance, Section 12.C.4 Reconstruction. As outlined in this provision, the Planning Board is required to determine to the greatest practical extent the distance the new structure can be located from the shoreline, as directed in Section 12.C.3 Relocation. A Boundary Survey that depicts the existing building and its distance from the shoreline (Highest Annual Tide) has been prepared and submitted.

When considering the sections above and Section 16 Administration, **the application submitted appears be complete.**

COMPLIANCE WITH THE CITY'S ORDINANCES

LAND USE REGULATIONS

Section 12.C.4 allows the reconstruction of a nonconforming structure in the Shoreland Zone when the Planning Board determines the new location is at a distance *to the greatest practical extent* from the Protected Resource. The existing building is within the 100 and 75 foot Limited Residential (LR) District Setback. When determining the greatest practical extent, the Board considers factors outlined in Section 12.C.3 and included below:

- *the size of the lot,*
- *the slope of the land,*
- *the potential for soil erosion,*
- *the location of other structures on the property and on adjacent properties,*
- *the location of the septic system and other on-site soils suitable for septic systems, and*
- *the type and amount of vegetation to be removed to accomplish the relocation.*

The applicant addresses each of the above factors in the submitted cover letter. It is suggested that due primarily to the property having no building envelope as a result of the minimum setbacks from the shoreline and the street ROW (25-foot setback), there is no suitable location other than close to the existing setback, 50 feet from HAT (Elev. 7.4 NAVD 88). The applicant has depicted a dashed red line dimensioned at 50.00' from the HAT on the *Standard Boundary Survey and Site Plan*.

ADDITIONAL COMMENTS

1. Based on the survey plan referenced above include the following:
 - a. Plan title: *Shoreland Zone Setback Requirement to the Greatest Practical Extent – Site Plan*
 - b. The setback line dimensioned at 50 feet needs to be clearly labeled as the *required setback to the greatest practical extent*.
 - c. Plan note that reads: *Purpose of this Plan: This plan depicts reconstruction of a non-conforming structure to meet the wetland setback requirement to the greatest practical extent, pursuant to Article XIV Shoreland Zoning Ordinance, Section 12.C.4 of the City of Biddeford's Land Development Regulations. The new building shall be no closer than 50 feet from the Highest Annual Tide (HAT), as denoted on this plan.*
 - d. The signatory block needs to be added and include *Note: this plan is signed by the City Planner on behalf of the Biddeford Planning Board and shall be deemed to have been signed by the individual members of the Planning Board evidencing approval of the final plans.*
2. Conditions of approval, when finalized, to be placed on the plan.

WAIVER REQUESTS

None requested.

CONCLUSION

The Planning Board should review Section 12.C.4 and 12.C.3 for the determination to locating a reconstructed nonconforming structure from the shoreline to the greatest practical extent and determine if it concurs with the required setback from the shoreline proposed. The applicant has reviewed the plans with the Code Enforcement Office and Mr. Fecteau is satisfied with the information submitted.

With the submittal of a site plan, as described in the comments above, to the City Planner for review and approval, the application appears to address the applicable provisions in the City's Shoreland Zoning Ordinance (Article XIV), and a conditional approval (conditioned to recommended plan revisions) appears to be in order. Suggested conditions of approval can be found in the draft Findings of Fact.

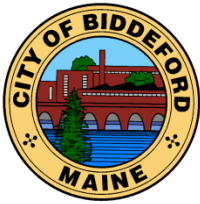
Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
Contract Planner for the City of Biddeford

cdimatteo@longmeadowpla.com
207.604.4245



CITY OF BIDDEFORD

Planning and Development Department

205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115

FINDINGS OF FACT AND CONCLUSIONS OF LAW RECONSTRUCTION OF A NONCONFORMING STRUCTURE WITHIN THE SHORELAND ZONE

Determination of the Required Setback to the Greatest Practical Extent

Pursuant to the provisions of the City of Biddeford Land Development Regulations Article XIV, Shoreland Zoning, the Biddeford Planning Board has considered the application by **Lebel/2538970 Ontario, Inc.**, including supportive data, public hearing testimony and related materials contained in the record. Based on Public Comment and Staff's review and recommendation, the Planning Board makes the following Findings of Fact and Conclusions of Law:

Findings of Fact:

1.	Applicant:	Marc Lebel/2538970 Ontario, Inc. 765 Westney RD. South Ajax Canada, ON L1S6W1
2.	Owner of Property:	2538970 ONTARIO, INC 765 Westney RD. South Ajax Canada, ON L1S6W1
3.	Agent:	TMS Architects 1 Cate Street Portsmouth NH 03801
4.	Surveyor:	Lower Village Survey Company 13 Western Ave. Kennebunk, ME 0406
4.	Project Location:	7 Bayberry Road Biddeford, ME 04005
5.	Project Tax Map #/Lot #:	Tax Map 68 Lot 26
6.	Lot Size:	11,506 SF +/- (area above the HAT)
7.	Base Zoning:	Coastal Residential
8.	Overlay Zoning:	Limited Residential (LR) Shoreland Zone
9.	Designations:	None identified.
10.	Existing Use:	Single-family dwelling
11.	Proposed Use:	Single family dwelling
12.	Floodplain Status:	Velocity 2 Flood Zone (Elev. 13'). Not a Flood hazard area within the redevelopment area
13.	Approvals Required:	Determination the Required Setback to the Greatest Practical Extent
14.	Uses in the Vicinity:	Single family dwelling
15.	Dimensional Requirements (Base Zone):	
	Min. Setback from R.O.W: 25 FT	Minimum Rear Setback: 25 FT

	Minimum Side Setback: 25 FT	Maximum Height: 3 stories / 35 FT
16.	Minimum Setback from the normal high-water line (Highest Annual Tide) of other water bodies, tributary streams, or the upland edge of a wetland: 100 FT. Reconstruction of a nonconforming structure located less than the required setback for a new structure is to be located to the greatest practical extent from the shoreline (HAT) as depicted on the approved plans (referenced below) and signed by the Planning Board considering all factors outlined in Section 12.C.3 and 12.C.4 of Article XIV (Shoreland Zoning Ordinance) of the City's Land Development Regulations and subject to the Board's Conditions of Approval.	
16.	Waivers Needed:	a. None
17.	Waivers Granted:	a. None
18.	Variances Needed for Approval:	None.
19.	Other Approvals Required:	Building Permit from the Biddeford Code Enforcement Office.
20.	Other Permits Obtained:	None.
21.	Other Non-City Permits Required:	None identified.
22.	LDR Attachment A: Fees Paid:	Yes
23.	Application Materials Submitted: 1. Application form dated 6/10/2021 2. Cover letter by TMS Architects, dated 6/18/2021. 3. Plan exhibit locating adjacent building corners 4. Survey Plan entitled: <i>Standard Boundary Plan and Site Plan...7 Bayberry Road, Biddeford, Maine. Owned by 2538970 Ontario, Inc...</i> Prepared by Lower Village Survey Co., revised date 6/15/2021. 5. Plans entitled: <i>Proposed over existing Site Plan and Proposed Building, Drive and Walkway...7 Bayberry Road, Biddeford, Maine. Owned by 2538970 Ontario, Inc...</i> Prepared by Lower Village Survey Co.??, 6. Architectural plan set entitled: <i>Lebel Residence, 7 Bayberry Road, Biddeford, Maine.</i> Prepared by TMS Architects, date 6/8/2021; includes First Floor Plan & Door Schedules; Second Floor Plan; Basement and Roof Plans; and Elevations & Window Schedule. 7. Existing Condition Photographs, and Location Aerial Map	
24.	Planning Board Review History:	
	Final review and approval of the required setback to the greatest practical extent on July 21, 2021.	

Conclusions of Law:

The Planning Board concludes based on the following that the proposed location of the nonconforming structure at 7 Bayberry Road, being no closer than 50 feet from Highest Annual Tide line, and as depicted on the approved plan for Marc Lebel/2538970 ONTARIO, INC, signed by the Planning Board (or its designee) on July XX, 2021, is in compliance with the required setback from the shoreline to the greatest practical extent.

1. Pursuant to the City's Land Use Regulations, Article XIV, Section 12.C, when considering the relocation, reconstruction or replacement of a nonconforming structure located less than the required setback from the shoreline, the Planning Board shall consider the following:
 - a. ***The size of the lot:*** Modest lot size and required minimum setbacks limits locating the structure further from the Highest Annual Tide (HAT) elevation than shown on the plan;
 - b. ***The slope of the land:*** The topography is modest in relief and does not limit the location of the structure;
 - c. ***The potential for soil erosion:*** This does not appear to be a limiting factor, however, proper silt fencing/materials will be used during the construction process for stabilizing the soil on the site.
 - d. ***The location of other structures on the property and on adjacent properties:*** There are no other structures on the property to remain and the structures located adjacent to the property do not limit the location of the structure.
 - e. ***The location of the septic system and other on-site soils suitable for septic systems:*** A new septic system is planned for between the building and the street, outside the 100-foot setback, which limits how far back from the shoreline the building can be located; and
 - f. ***The type and amount of vegetation to be removed to accomplish the relocation:*** The type and amount of vegetation likely to be removed is not significant with the exception for trees located at the southern portion of the lot, which would likely limit locating the structure further away from the shoreline in this direction.

Determination:

Based on the evidence available and the conclusions above, the Biddeford Planning Board approves the application with the following conditions:

Conditions of Approval:

1. **No new (reconstruction) structure is permitted closer to the shoreline as what is depicted on the approved plan entitled: *Shoreland Zone Setback Requirement to***

the Greatest Practical Extent – Site Plan, 7 Bayberry Road, Biddeford... Owned by 2538970 Ontario, Inc... Prepared by Lower Village Survey Co. with the revision date _____.

- 2. Standard Conditions of Approval Apply**
- 3. Prior to signing the final plan, a revised plan per staff's Board Report and Board comments shall be submitted to the City Planner for his review and approval.**
- 4. No portion of the structure shall be reconstructed within the City Right-Of-Way.**
- 5. The Code Enforcement Officer shall review and approve conformance to provisions of Article XIV of the Land Development Regulations (Shoreland Zoning Ordinance) that are required in addition to the Planning Board's approval of the required setback to the greatest practical extent.**
- 6. Trees removed in order to relocate a structure must be replanted with at least one native tree, three feet in height, for every tree removed. If more than five trees are planted, no one species of tree shall make up more than 50% of the number of trees planted. Replaced trees must be planted no further from the water or wetland than the trees that were removed. Other woody and herbaceous vegetation and ground cover that are removed or destroyed in order to relocate a structure must be reestablished. An area at least the same size as the area where vegetation and/or ground cover was disturbed, damaged, or removed must be reestablished within the setback area. The vegetation and/or ground cover must consist of similar native vegetation and/or ground cover that was disturbed, destroyed or removed.**
- 7. Where feasible, when a structure is relocated on a parcel, the original location of the structure shall be replanted with vegetation which may consist of grasses, shrubs, trees, or a combination thereof.**
- 8. Obtain all required permits from Maine Department of Environmental Protection and the Biddeford Code Enforcement Office.**
- 9. This approval shall expire one year from the date below if a substantial start is not made in construction. If a substantial start is made within one year of the date below, the applicant shall have one additional year to complete the project, thereafter this approval shall expire.**

Planning Board Chairman

Date

Lebel Residence

7 Bayberry Road
Biddeford ME, 04005

6-25-2021

RE: Planning Board Application Memo / Cover Page
(Revision #3 per City & Building Inspector Reviews)

Package Material:

1. Cover Page (this memo)
2. Planning Board Application Form
3. Existing Site Plan Conditions - Lower Village Survey
4. Updated Site Plans - TMS Architects
5. Updated Plans and Elevations - TMS Architects
6. Site Photos - TMS Architects
7. Application Fee
 1. \$150 Site Plan Review to City of Biddeford

TMS and the Owners of the above referenced property are requesting review of the project to allow the demolition of the existing house built in 1953 to make way for a new residential home. The new single family residence will allow for a much more efficient home using current materials and technologies.

We are requesting approval from the Planning Board based on **12.C.4:**

- 50.1' setback from the shoreline (HAT) where 49.58' is the current distance from HAT

12.C.4: Reconstruction or replacement. Any nonconforming structure which is located less than the required setback from a water body.

In determining whether the building reconstruction or replacement meets the setback to the greatest practical extent the Planning Board shall consider in addition to the criteria in Section 12.C.3.

- Relief from 25' required front setback where the average setback of this and adjacent properties is 14.64'. This relief is based on the greatest practical extent commentary.

Relocation: a non-conforming structure may be relocated within the boundaries of the parcel provided that the site of relocation conforms to all setback requirements to the greatest practical extent.

Practical Extents:

- **Size of the Lot:** 11,506 SF of which 3,012 SF is exposed ledge
 - Leaving 8,494 SF or a 33.2% covered site.
 - Utilizing the existing lawn area for the relocated house is most practical option for the lot.
 - Side setbacks will be observed in the proposed relocation
 - Front setback is less than required but uses the average of 4 adjacent house lots (and the subject parcel) to create an average front setback of 14.64' where 25' is required. We are proposing to use a 14.67' front setback.
- **Slope of the land:** Exposed ledge = 13% to 15%. Main lawn area = 1.8% to 2.3%
 - Proposed house relocation at the main lawn area (and where the existing house is located) is the best practical location for a new house.
- **Soil Erosion:** as the main lawn area is relatively flat and abuts the exposed ledge, erosion is not a factor in the project.
- **Location of other structures** on the property:
 - One shed within the east side yard setback to be completely removed.
 - This makes the non-conforming lot, more conforming.
- **Location of septic system:** Current septic is not fully known but is assumed to be between the existing house and the ocean. Relocating a new septic system under the driveway area between the house and the street is the best practical option but does affect the new house location distance from the street. See note on Size of Lot.
- **Vegetation to be removed:** Minimal existing vegetation to be removed along the west and east side yard setbacks and works with the proposed house location.
 - The larger trees on the east side are intended to remain and will be protected during construction.
 - The lower growth vegetation / shrubs adjacent to the existing house perimeter are to be removed for construction purposes.

Shannon C. Alther, AIA Principal

Additional Note:

12.C.1c,i: Structures located less than 75' but greater than 25' from normal high-water line, height of the structure shall not be made greater than 20' or height of the existing structure, whichever is greater. Existing structure is 23.06'. Propose new structure at 23.0'.

CITY OF BIDDEFORD, MAINE
PLANNING BOARD
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

APPLICATION FORM

Type of Application:

- | | | |
|---|--|--------------------------------------|
| ☒ Shoreland Zoning Permit | ☒ Site Plan Review | ☐ Extraction |
| ☐ Conditional Use Permit | ☐ Subdivision | ☐ Private Way |
| ☐ Other: _____ | | |

Applicant Information:

Applicant's Name: 2538970 ONTARIO, INC

Applicant's Mailing Address: 765 WESTNEY RD. SOUTH AJAX CANADA, ON L1S6W1

Applicant's Telephone: 905-424-2362

What is Applicant's legal interest in the property?

- ☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: 2538970 ONTARIO, INC

Owner's Address: 765 WESTNEY RD. SOUTH AJAX CANADA, ON L1S6W1

Owner's Telephone: 905-424-2362

Agent's Name: TMS Architects / Shannon Alther

Agent's Address: 1 Cate Street Portsmouth NH 03801

Telephone: 603-436-4274

Engineer/Surveyor: Lower Village Survey Company

Engineer/Surveyor's Address: 13 Western Ave Kennebunk Maine 04046

Telephone: 207-967- 3545

Project Location and Lot Information:

Street Address: 7 Bayberry Road

Tax Map: 68 Lot: 26

Current Zoning: CR Shoreland Zoning: OceanFront MDL-01

Size of lot: 0.2 ☒ acres ☐ s.f. Lot Frontage: 100'

Existing Use of Property: Single Family Residence

Property currently serviced by:

☒ City Road	☐ Private Road
☐ Public Sewer	☒ Septic System
☒ Public Water	☐ Private Well
☒ Public Trash	☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☒ Flat (0-3 % slope) ☐ Rolling (3-8% slope) ☒ Hilly (8-15% slope) ☐ Steep (15% + slope)
@ House location @ Ledge to Ocean

Are there any wetlands or waterbodies on the site? ☒ Yes ☐ No If yes, attach information

Do you plan to bring fill onto the lot? ☐ Yes ☒ No If yes, attach information

Description of proposed use of property:

Project/Proposed Use Description: New Single Family Residence in the same location as the existing house and using the same overall existing coverage percentage on the lot.

Property to be serviced by:

☒ City Road	☐ Private Road
☐ Public Sewer	☒ Septic System
☒ Public Water	☐ Private Well
☒ Public Trash	☐ Private Hauler

Is this project part of a larger project? ☐ Yes ☒ No

☒ If in a Shoreland Zone:

Percent of residential lot coverage (Max. 20%): _____

Percent of structure expansion (Max. 30%): _____

NA ☐ If Subdivision Review, number of lots proposed: _____NA ☐ If a Private Way is proposed, number of lots served: _____☐ If Site Plan Review, you must provide the following information:Total new square feet footprint of structures: 2,438 (New House)Total new square feet paving/parking: 382

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:☐ A. Letters of Approval☐ Fire Department - Contact Chief or Deputy Chief - 282-9986☐ Ability to Serve for Water Service – Maine Water - 282-1543NA ☐ Ability to Serve for Sewer Service- Engineering Dept (Sewer) - Tom Milligan 284-9118☐ Police Department - E-911 Road Name Designation - Contact Joanne Fisk - 282-5127☒ B. Letter to Planning Board describing project, waiver requests, proposed improvements, addressing permit requirements, etc.☒ C. Photographs of site.☒ D. Architectural renderings/drawings of proposed buildings, as required.☒ E. Engineered Plans, as required.

Fees (due at time of application):

Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

☐ Project proposed to have 1 acre or more of site disturbance:

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of applicant:

Shannon C. L. ...

Date: 6-10-2021

Signature of owner of property:

[Signature]

Date: 6-10-2021

**IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE).
CHECK WITH PLANNING STAFF FOR CLARIFICATION.**

CHECKLIST FOR ***SITE PLAN*** REQUIREMENTS

YES **NO**

- | | | |
|-------------------------------------|--------------------------|---|
| ☒ | ☐ | Be on sheet size of 24 by 36 inches. |
| ☒ | ☐ | The scale of said plan shall be not less than one inch equals 50 feet and shall be indicated on the plat by use of a bar scale. |
| ☒ | ☐ | The plan shall bear the date, title, north point. |
| ☒ | ☐ | The plan shall contain a location or vicinity sketch (suggested scale one inch equals 800 feet). |
| ☒ | ☐ | The plan shall contain the name and address of the developer and applicant. |
| ☒ | ☐ | All appropriate dimensional requirements. |
| ☒ | ☐ | Existing and proposed easements. |
| ☒ | ☐ | Plan of the site showing existing watercourses and water bodies, seasonal wet areas. |
| ☐ | ☐ | NA Plan of the site showing soil type and location of test borings. Lyman / Turnbridge / Dixfield Soils |
| ☒ | ☐ | Location of all existing and proposed utilities. |
| ☒ | ☐ | Topographic contours (every five percent for zero to three percent slope; or every two feet for steeper areas). |
| ☒ | ☐ | Plan should include preservation and supplementation of existing dominant vegetation. |
| ☒ | ☐ | Plan shall indicate which features are to be retained and which are to be removed or altered. |
| ☒ | ☐ | Location of stone walls, graveyards, fences, stands of trees, and other important unique natural areas and site features, including but not limited to floodplains, deer wintering areas, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, sand and gravel aquifers, and historic and/or archaeological resources, together with description of such features. |
| ☒ | ☐ | Plan view of all buildings with their use, size, location, and first-floor elevation in respect to grade. |
| ☒ | ☐ | Standard elevation view of existing and proposed buildings or structures on-site. |

YES NO

- ☒ ☐ Outline of any buildings located within 200 feet of such existing or proposed buildings or structures indicating their shape, size, location, heights and volume.
- ☒ ☐ Existing use of abutting properties shall be identified with approximate location of any structures thereon including access roads.
- ☒ ☐ Location, width, curbing, and paving of access ways, egress ways, and streets within the site for both pedestrian and vehicular use.
- ☒ ☐ The location of off-street parking and loading spaces with a layout of the parking indicated.
- ☐ ☐ **NA** The size and proposed location of water mains and sanitary sewerage facilities will all necessary engineering data.
- ☒ ☐ The size and location of all other existing and proposed public service connections including, without limitation, gas lines, power lines, telephone lines, and fire alarm connections and locations, indicating whether above or below ground.
- ☐ ☐ **NA** The type, nature, and composition of all solid, liquid, and gaseous waste, industrial or otherwise, and the location, type, and design criteria of the storage and disposal facilities dealing with such waste.
- ☒ ☐ A landscape plan and open space areas indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening; plus size, location, purpose and type of vegetation.
- ☐ ☐ **NA** A drainage plan including location, elevation, layout of catch basins and other surface and subsurface drainage features.
- ☐ ☐ **NA** Location, size and design of proposed signs and other advertising or instructional devices.
- ☒ ☐ Existing and proposed contours and finished grade elevations as well as the type, extent, and location of existing and proposed landscaping and open space areas which will be retained.
- ☒ ☐ Location and type of lighting for outdoor facilities.
- ☒ ☐ Lines of existing and proposed abutting streets showing width.
- ☒ ☐ Surveyed property lines showing their bearing and distances and monument locations.
- ☐ ☐ **NA** If subdivision is involved, the lines and names of all proposed streets, lanes, ways, or easements intended to be dedicated for public or private use.

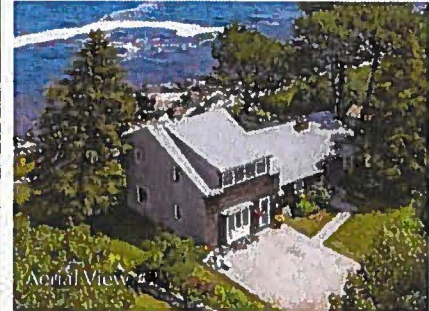
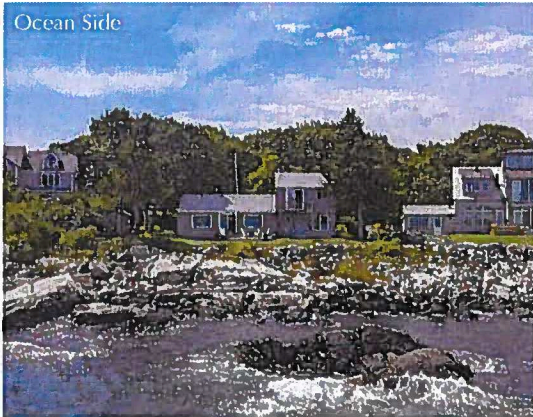
YES NO

- ☐ ☐ **NA** Provide copies of any covenants or restrictions that are intended to cover all or part of the land area to be developed.
- ☒ ☐ Indicate limits of the wetland areas on the property.
- ☐ ☐ **NA** Delineate existing zoning boundaries within 1,000 feet of the site.
- ☒ ☐ Stamp and signature of either a Maine licensed land surveyor, professional engineer, or architect responsible for said plan.
- ☒ ☐ Any other exhibits or data deemed necessary by the Planning Board to evaluate the proposed development for site plan review purposes.

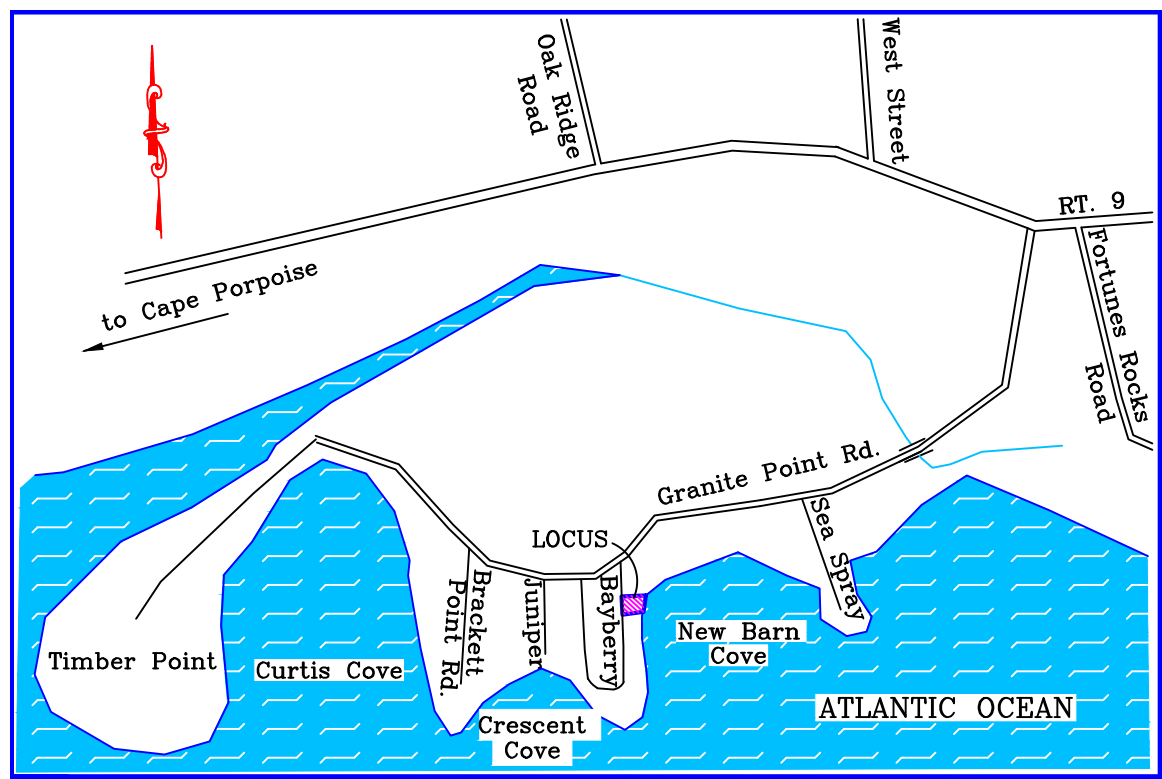
Lebel Residence

7 Bayberry Road
Biddeford ME, 04005
RE: Project Data

4-14-2021







LOCATION MAP (Not to Scale)

AVERAGE GRADE CALCULATIONS

Spot Elevations on Lowest (Northeast) Side of House:	
16.03'	
15.77'	
Total	$31.80 \div 2 = 15.90' = \text{Average Grade}$

LOT COVERAGE CALCULATIONS:

Total Area of Lot in Shoreland Zone (To Highest Annual Tide Line Shown)	11506 s.f.
Less Exposed Ledge Areas	3012 s.f.
Net Lot Area for Lot Coverage Calculation	8494 s.f.

Areas of Lot Coverage (Non-Vegetated Surfaces):

House to Overhangs	= 1672 s.f.
Shed to Overhangs	= 114 s.f.
Driveway	= 647 s.f.
Deck/Steps	= 269 s.f.
Board Timbers	= 31 s.f.
Misc. Hardscape	= 87 s.f.
Total Lot Coverage	= 2819 s.f.

Percent of Lot Coverage = $2819 \div 8494 = 33.19\%$

LOCUS DEED REFERENCE:

Deed Book 18057, Page 167
Owner of Record: 2538970 Ontario, Inc.

PLAN REFERENCES:

- "Bayberry Point, Section No. 3, Fortunes Rocks, Biddeford, ME., Owned by Jesse E. & Jeanette S. Rumery" dated January 28, 1956, by Libby & Dow, Engineers, recorded in York County Registry of Deeds in Plan Book 20, Page 64.
- "Plan Showing Land Conveyed to Roger H. & Grace C. Hildreth by Jesse E. & Jeanette S. Rumery, Bayberry Point, Biddeford, ME" dated June 9, 1959, by Libby & Dow, Engineers, recorded in York County Registry of Deeds in Plan Book 28, Page 8.
- "Plan Showing Neptune Point, Section No. 2, A Subdivision By: Earl Rumery, Biddeford, Maine" dated March 15, 1978, by Dow & Coulombe, Inc., recorded in York County Registry of Deeds in Plan Book 90, Page 45.
- "Standard Boundary Survey and Site Plan, 10 Bayberry Road, Biddeford, Maine, Owned by Vincent P. & Karen E. Petrini" dated December 2, 2016, by Lower Village Survey Co., LLC.
- "Flood Rate Insurance Map, City of Biddeford, Maine, York County, Community Panel Number 2301450011B, Effective Date: May 15, 1984, Federal Emergency Management Agency.

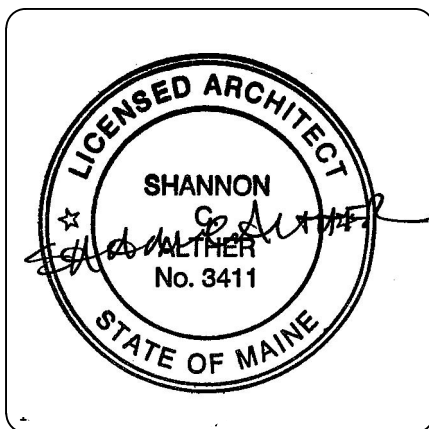
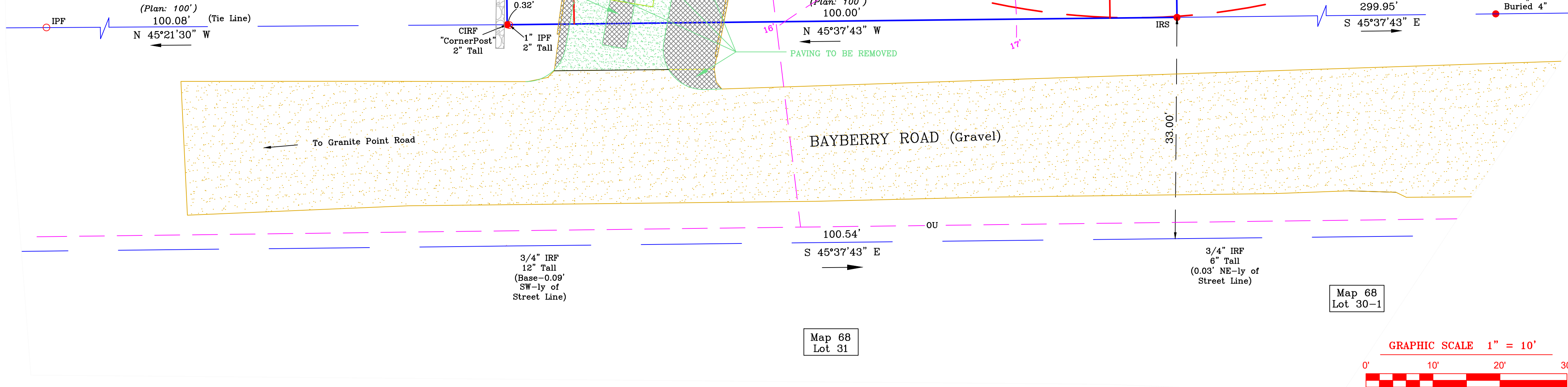
NOTES:

- The locus parcel is identified on the City of Biddeford Tax Assessors Map 68 as Lot 26 and is located in the Coastal Residential District and in the Limited Residential Shoreland Overlay District. Space and bulk standards are as follows:
Minimum Building Setbacks
From Major Right-of-Way = 40 feet
From Other Right-of-Way = 25 feet
From Side & Rear Lot Lines = 25 feet*
*Per Article V. Section 4.D. of the Revised Code of Ordinances, City of Biddeford: "Any residential structure in existence prior to December 20, 1990, may be expanded or added to as long as they meet minimum setbacks (from major access, 40 feet; from other streets, 25 feet; from side and rear property lines, 10 feet)."
Maximum Lot Coverage = 20%
Maximum Building Height = 35 feet
- The surveyed premises contains 11,506 sq. ft., (0.26 Acre) to Highest Annual Tide line shown.
- Elevations shown are in the North American Vertical Datum of 1988 (NAVD 88) based on RM 15 per Plan Ref. 5, a carriage bolt in utility pole No. J39 on west side of Fortunes Rocks Road at Elevation 12.40 NGVD 29.
- The locus parcel is located partially in Zone C and partially in Zone V2 (EI 13-NGVD29) per Plan Ref. 5.
- All bearings are based on Grid North, Maine State Plane Coordinate System, West Zone.
- The boundary of the locus parcel along Bayberry Road is the apparent right-of-way line based on Plans Ref. 1, 2, and 3 and monumentation found.
- The locus parcel is subject to and benefitted by covenants, conditions, and restrictions set forth in deed from Jesse E. and Jeannette S. Rumery to William G. and Helen S. Chace dated January 12, 1959, recorded in Book 1387, Page 365.
- The locus parcel was conveyed in the above-referenced deed from Rumery to Chace "together with a right-of-way for any and all purposes, in common with the owners of other lots shown on said [Plan Ref. 1], over the private streets and ways shown on said Plan, and also the right to pass and repass to and from the sand beach at 'New Barn Cove', so-called, over a right-of-way to be selected and designated by the grantors, their heirs and assigns."
- Prior to any construction activities the location of setback lines shown should be verified by the local code enforcement officer to determine compliance with all current applicable building requirements.
- The location of nearby property lines are shown as dashed lines. These lines are intended to show the approximate relationship to the locus parcel only.
- This plan has been prepared according to the Standards of Practice adopted by the State of Maine Board of Licensure for Professional Land Surveyors with the following exceptions:
 - No written report prepared
 - No new deed description prepared

LEGEND :

IRS ●	5/8" Rebar w/Survey Cap #2374 To Be Set
CIRF ●	Capped Iron Rod Found
IPF ○	Iron Pipe Found
IRF ●	Iron Rod Found
—	Property Line
—	Abutter Approximate Property Line
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♂	Corner Board of Building
CB	Now or Formerly
N/F	Deed Book & Page
Bk./Pg.	Lot No. Per Plan Ref. 1
④	Spot Grade
22.76 +	

- PURPLE LINES = APPROXIMATE EXISTING CONTOUR LINES BASED ON EXISTING SPOT ELEVATIONS
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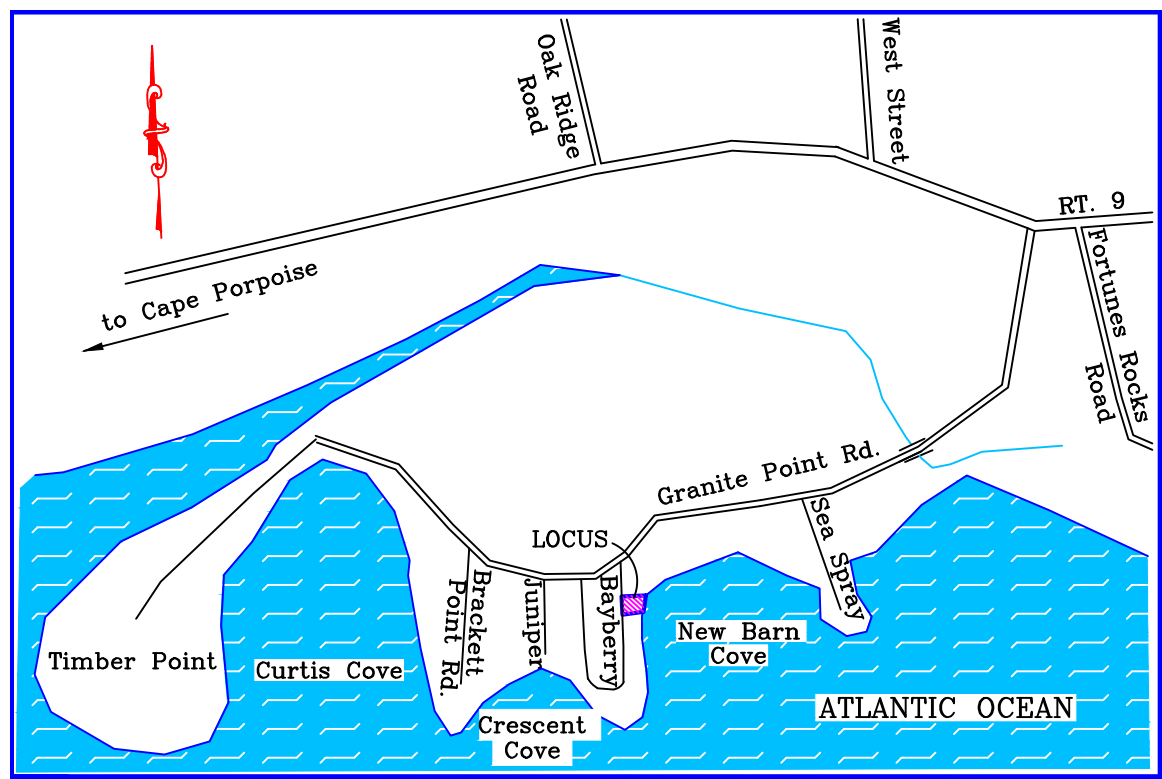


Proposed Plan on
Lower Village Base Map
TMS Architects
1 Cate Street
Portsmouth, NH 03801

PROPOSED OVER EXISTING SITE PLAN
7 BAYBERRY ROAD
BIDDEFORD, MAINE
OWNED BY
2538970 Ontario, Inc.

Mailing address: 765 Westney Road South, Ajax, Ontario, Canada L1S6W1

DATE: June 22, 2021 7 Bayberry Road JOB #119-84 ROTATION 45° Left FIELD BK: 487-79



LOCATION MAP (Not to Scale)

AVERAGE GRADE CALCULATIONS

Spot Elevations on Lowest (Northeast) Side of House:	
16.03'	
15.77'	
Total 31.80 ÷ 2 = 15.90' = Average Grade	

LOT COVERAGE CALCULATIONS:

Total Area of Lot in Shoreland Zone (To Highest Annual Tide Line Shown)	11506 s.f.
Less Exposed Ledge Areas	3012 s.f.
Net Lot Area for Lot Coverage Calculation	8494 s.f.

Areas of Lot Coverage (Non-Vegetated Surfaces):

House to Overhangs	= 1672 s.f.
Shed to Overhangs	= 114 s.f.
Driveway	= 647 s.f.
Deck/Steps	= 269 s.f.
Board Timbers	= 31 s.f.
Misc. Hardscape	= 87 s.f.
Total Lot Coverage	= 2819 s.f.

Percent of Lot Coverage = $2819 \div 8494 = 33.19\%$

LOCUS DEED REFERENCE:

Deed Book 18057, Page 167
Owner of Record: 2538970 Ontario, Inc.

PLAN REFERENCES:

- "Bayberry Point, Section No. 3, Fortunes Rocks, Biddeford, ME., Owned by Jesse E. & Jeanette S. Rumery" dated January 28, 1956, by Libby & Dow, Engineers, recorded in York County Registry of Deeds in Plan Book 20, Page 64.
- "Plan Showing Land Conveyed to Roger H. & Grace C. Hildreth by Jesse E. & Jeanette S. Rumery, Bayberry Point, Biddeford, ME" dated June 9, 1959, by Libby & Dow, Engineers, recorded in York County Registry of Deeds in Plan Book 28, Page 8.
- "Plan Showing Neptune Point, Section No. 2, A Subdivision By: Earl Rumery, Biddeford, Maine" dated March 15, 1978, by Dow & Coulombe, Inc., recorded in York County Registry of Deeds in Plan Book 90, Page 45.
- "Standard Boundary Survey and Site Plan, 10 Bayberry Road, Biddeford, Maine, Owned by Vincent P. & Karen E. Petrini" dated December 2, 2016, by Lower Village Survey Co., LLC.
- "Flood Rate Insurance Map, City of Biddeford, Maine, York County, Community Panel Number 2301450011B, Effective Date: May 15, 1984, Federal Emergency Management Agency.

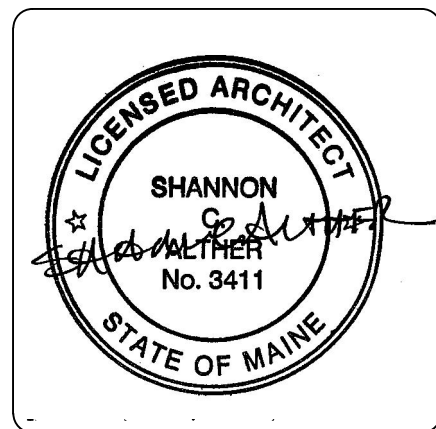
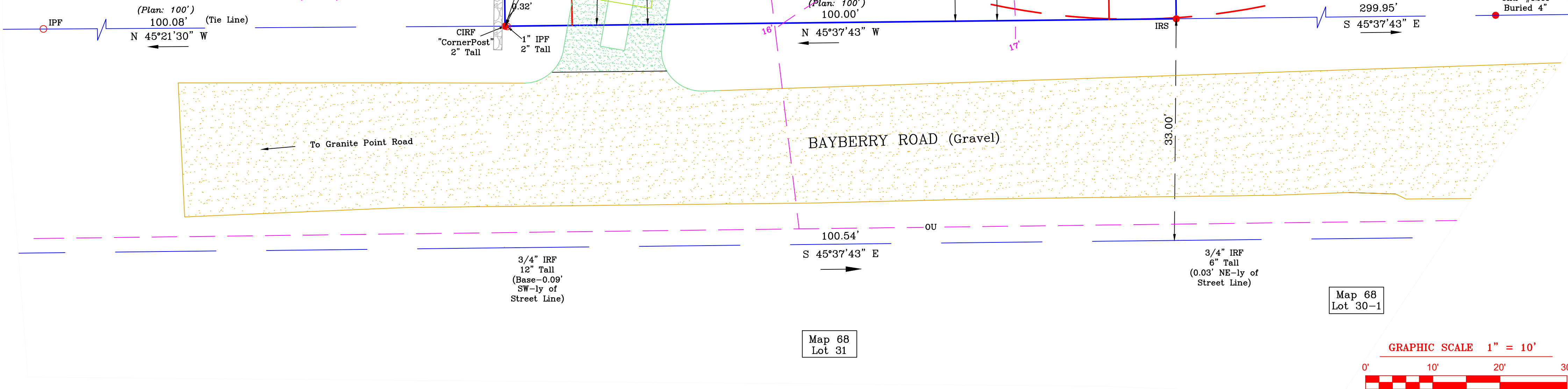
NOTES:

- The locus parcel is identified on the City of Biddeford Tax Assessors Map 68 as Lot 26 and is located in the Coastal Residential District and in the Limited Residential Shoreland Overlay District. Space and bulk standards are as follows:
Minimum Building Setbacks
From Major Right-of-Way = 40 feet
From Other Right-of-Way = 25 feet
From Side & Rear Lot Lines = 25 feet*
*Per Article V. Section 4.D. of the Revised Code of Ordinances, City of Biddeford: "Any residential structure in existence prior to December 20, 1990, may be expanded or added to as long as they meet minimum setbacks (from major access, 40 feet; from other streets, 25 feet; from side and rear property lines, 10 feet)."
Maximum Lot Coverage = 20%
Maximum Building Height = 35 feet
- The surveyed premises contains 11,506 sq. ft., (0.26 Acre) to Highest Annual Tide line shown.
- Elevations shown are in the North American Vertical Datum of 1988 (NAVD 88) based on RM 15 per Plan Ref. 5, a carriage bolt in utility pole No. J39 on west side of Fortunes Rocks Road at Elevation 12.40 NGVD 29.
- The locus parcel is located partially in Zone C and partially in Zone V2 (EI 13-NGVD29) per Plan Ref. 5.
- All bearings are based on Grid North, Maine State Plane Coordinate System, West Zone.
- The boundary of the locus parcel along Bayberry Road is the apparent right-of-way line based on Plans Ref. 1, 2, and 3 and monumentation found.
- The locus parcel is subject to and benefitted by covenants, conditions, and restrictions set forth in deed from Jesse E. and Jeannette S. Rumery to William G. and Helen S. Chace dated January 12, 1959, recorded in Book 1387, Page 365.
- The locus parcel was conveyed in the above-referenced deed from Rumery to Chace "together with a right-of-way for any and all purposes, in common with the owners of other lots shown on said [Plan Ref. 1], over the private streets and ways shown on said Plan, and also the right to pass and repass to and from the sand beach at 'New Barn Cove', so-called, over a right-of-way to be selected and designated by the grantors, their heirs and assigns."
- Prior to any construction activities the location of setback lines shown should be verified by the local code enforcement officer to determine compliance with all current applicable building requirements.
- The location of nearby property lines are shown as dashed lines. These lines are intended to show the approximate relationship to the locus parcel only.
- This plan has been prepared according to the Standards of Practice adopted by the State of Maine Board of Licensure for Professional Land Surveyors with the following exceptions:
 - No written report prepared
 - No new deed description prepared

LEGEND :

IRS ●	5/8" Rebar w/Survey Cap #2374 To Be Set
CIRF ●	Capped Iron Rod Found
IPF ○	Iron Pipe Found
IRF ●	Iron Rod Found
—	Property Line
—	Abutter Approximate Property Line
—	Overhead Utilities
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