City of Biddeford
Planning Board
March 17, 2021 6:00 PM Zoom: Mar 17, 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 Minutes from Planning Board of March 3, 2021
   PB Minutes 030321-DRAFT.pdf
5. **UNFINISHED BUSINESS**
   5.A. 2021.04 Site Plan/Subdivision-Traffic Study Consideration- Tom Watson & Co., LLC for the redevelopment at 1 Gooch Street & 59 Elm Street (Tax Map 40, Lot 56) in the MSRD 3 & General District Shoreland Overlay Zone.
   2021.04 1 Gooch Street Traffic Memo-signed.pdf
   6. Traffic Overview.pdf
6. **NEW BUSINESS**
   6.A. 2021.07 Public Hearing and take comments regarding a request by the owner (Five Star Holdings) to change the zoning for 1 Enterprise Drive (Tax Map 17, Lot 7-3), part of 451 Alfred Street (Tax Map 17, Lot 7-2) and part of 457 Alfred Street (Tax Map 17, Lot 7) from Industrial-3 (I-3) to Industrial-1 (I-1).

   5 Star Application.pdf
   5 Star Odor Mitigation Plan.pdf
   5 Star OH Plan- 457 Alfred Street.pdf
   6.B. 2021.08 Conceptual Subdivision Review submission for E & R Development Corp. to

construct an 18-lot residential subdivision project to be accessed through Winding Creek Lane (Tax Map 8, Lot 3-1 & Portion of Lot 3) in the R1-A Zone.

Application Package.pdf
Sketch Plan.pdf
2021.08 Board Report - Winding Creek Sketch Plan[2].pdf

6.C. 2020.11 Final Site Plan Review for Westfield, Inc. to create multiple office/storage/commercial spaces at 20 Pomerleau Street (Tax Map 2, Lot 81) in the I-3 zone.

1 2020.11 Board Report - Final Site Plan (Westfield Inc)rv.pdf
2 2020.11 Westfield Inc FOF Draft.pdf
3 Pomerleau Street Planset 2021-01-29.pdf
4 Site Plan (Rev.6) - Final.pdf
5 Tansley Landscape Memo.pdf
6 Gould Canam preliminary drawings December 10, 2020.pdf
7 Gould Siding Selections.pdf
8 Gould Rendering Feb 22 2021.pdf
9 Pomerleau Street Stormwater Report - January 2021.pdf
10 Pomerleau Street Comment Response Memo 2021-01-29.pdf
11 Westfield Sewer Ability to Serve.pdf
12 Westfield - Pomerleau Street Final Saucier Comments 020921 - ADDRESSED.pdf

7. OTHER 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: **March 3, 2021**
Time: **6:00 PM**
Location: **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: Chair William Southwick, Sean Tarpey, Bruce Benway, Spiros Droggitis, Roch Angers, Alexa Plotkin (Alternate Voting Member), Michael Cantara (Alternate Voting Member).
2. **Adjustments to the Agenda**
3. **Planner's Business**
4. **Consent Agenda**
   5.A. Approval of Planning Board Meeting Minutes of February 17, 2021
   MOTIONS:
   - **Benway-MOTION: To approve Meeting Minutes for February 17, 2021 once typographical errors are corrected.**
   - **Angers-SECOND**
   - **Chair Southwick-Roll Call for Vote-Unanimous Approval (4-0) all in favor (Tarpey, Benway, Angers & Droggitis)**
5. **Unfinished Business**
6. **New Business**
   6.A. 2020.42 Conditional Use Permit to reoccupy space as a place of worship for Biddeford Christian Ministries at 12 St. Mary's Street (Tax Map 38, Lot 28) in the MSRD 2 Zone.
   - **Consulting Planner Chris DiMatteo did a brief summary of the project. He explained that it is the same proposal that was brought to the Board before but the permit expired so they have to re-apply.**
   - **No one from the applicant's team came to speak on the project.**
   - **Mr. Benway asked if there was the possibility of this facility being used as a temporary shelter.**
   - **Planner Tansley answered that if the applicant wanted to use the facility as a shelter they would have to come back to the Board for a Conditional Use Permit.**
   - **Mr. Cantara asked if they still have to go back to Planning Board if it is only being used on a temporary basis in the case of an emergency.**

- **Planner Tansley was not sure about that.**
- **Mr. Cantara said he was thinking in the case of extremely cold temperatures, a hurricane, or someone who needs shelter for 2 or 3 days due to being down on their luck. Do they still have to go back to Planning Board?**
- **Planner Tansley said he doubts that in a case like that they would have to go back to Planning Board unless they want to formalize this use.**
- **Mr. Cantara continued that he is familiar with the site, not to mention the landscape needs to be freshened up. They have unhealthy trees and the grass is very overgrown. These facts were not addressed on the plans.**
- **Mr. DiMatteo commented that this is a Change of Use request; there are no requests for renovations, which did not trigger required site improvements.**
- **Mr. Cantara said that it is a shame to leave dying and diseased trees unattended. They should be good neighbors and take care of these issues.**
- **Mr. Benway asked if it would be the CEO to address safety issues.**
- **Planner Tansley answered that if there were a safety hazard it would be addressed by either Public Works or Codes Enforcement.**
- **Mr. Angers asked Mr. DiMatteo if he took the pictures that are in the packet Mr. DiMatteo answered that he did not.**
- **Mr. Angers asked if anyone knew of the condition on the inside. He was under the understanding that the Codes Enforcement Officer served the owners with a Cease and Desist Order a year and a half ago. He would like to know how old the photos are that were submitted. He is concerned about making a decision without knowing the true condition of the interior. He said there is a fence falling down he looked at the building and worried about the safety of kids. The outside of the building is in great disrepair, the grass has not been cut in 2 years, there are junk cars in the yard and the Board is considering giving them a parking easement. Two bikes have been hooked to the fence for a year and a half. These are small things but the building is beautiful and needs to be taken care of. He is leery of giving approval. He wants a better plan with more direction and wants to know what it looks like on the inside.**
- **Mr. Droggitis commented that there is no sprinkler system or fire alarm system and wants to know if this is common in churches. The Maine State Fire Marshall suggested heat detection and fire alarms. He feels Mr. Anger's suggestions are worthwhile.**
- **Mr. Benway asked Mr. DiMatteo if the Board delays decision is this an impediment to the owner moving forward with his plans.**
- **Mr. DiMatteo answered that getting more information is part of the process.**
- **Planner Tansley then spoke to the public and asked if there was anyone out there representing the applicant to please raise their hand. There continued to be no representation for the applicant.**
- **Mr. Benway asked if it is appropriate for the Board to table the application to address the concerns of the Board. They should give a list of concerns on behalf of the Board to the applicant.**

- **Planner Tansley answered that the Planning Board is not to be concerned with the interior; he will circle back to the CEO on the Cease & Desist.**

MOTIONS

- **Mr. Benway-Motion-To table the item to allow the applicant to address the outstanding issues identified by Staff and the Board.**
- **Mr. Angers-Second**
- **Chair Southwick-Roll Call for Vote-Unanimous Approval 4-0 (Benway, Droggitis, Angers, & Tarpey)**

6.B. 2021.02 Conditional Use Permit for Retail Medical Marijuana (Caregiver Storefront) for Blossom Retail, LLC at 45 Boulder Way (Tax Map 2, Lot 56) in the I-3 Zone.

- **Mr. DiMatteo did a brief summary of the project.**
- **Elizabeth Baldacci the Business Manager for Blossom, LLC and David Carr Jr. Owner of Blossom, LLC represented for the application.**
- **Ms. Baldacci gave a thorough presentation on the business and permit request.**
- **Mr. Benway asked if there would be security cameras outside.**
- **Mr. Carr answered that there would be.**
- **Mr. Cantara asked if the applications with the Fire and Police Departments have been documented.**
- **Ms. Baldacci answered that they have documentation that they have applied to the State Fire Marshall and will provide documentation regarding the City Fire and Police Departments upon application.**
- **Mr. Cantara confirmed that the Planning Board would receive a certified letter from each department.**
- **Mr. Carr answered that yes they would.**
- **Chair Southwick asked if there is any certifications for the employees.**
- **Mr. Carr answered that all employees must go through a background check and receive Caregiver Assistance Certification from the State**

MOTIONS

- **Mr. Benway-Motion-to approve the Conditional Use Permit for Blossom Retail, LLC at 45 Boulder Way, Tax Map 2, Lot 56, for a Medical Marijuana Caregiver Storefront and to approve the Findings of Fact and Conclusions of Law based on the conditions recommended by Staff in the Planning Board Draft Findings of Fact and Conclusions of Law dated March 3, 2021.**
- **Mr. Angers-Second**
- **Chair Southwick-Roll Call for Vote-Unanimous Approval 4-0 (Benway, Droggitis, Angers, & Tarpey)**

6.C. 2021.04 Site Plan/Subdivision Concept Plan Review-Tom Watson & Co., LLC for the redevelopment at 1 Gooch Street & 59 Elm Street (Tax Map 40, Lot 56) in the MSRD 3 & General District Shoreland Overlay Zone.

- **Mr. DiMatteo introduced the project.**
- **Representing the applicant were:**
  John Laliberte-Tom Watson & Co.

Peter Heil-Acorn Engineering
Mike Barton-Tom Watson & Co.
Zach Stevens-Acorn Engineering
William Savage Acorn Engineering

- **Peter Heil introduced the project; he spoke about the utilities all being underground.**
- **Chair Southwick asked if the pass thru under the tracks is developable.**
- **Mr. Heil answered that the property is owned by the railroad and the City; no improvements are scheduled for it at this time.**
- **Mr. Angers spoke on how this property is the gateway to the City if you are coming in from Saco. He would like to see landscaping in front of the building. He would also like to see something done about the City owned property. He suggested this group take it over and make it a pocket park for the area. He asked about the parking lot and the warehouse, if they intend to look at it, He wondered if it would stop their project.**
- **Mr. Benway mentioned that he grew up in OOB and remembers when the Saco Lowell was still in business, it is the gateway, something special and should be appreciated.**
- **Mr. Tarpey asked where the moving vans will come in to drop off and if there is an elevator.**
- **Mr. Heil showed them a bump out on the plans which is the area for drop off & delivery. There will be 2 elevators in the lobby.**
- **Mr. Droggitis asked about the storage facility on the first two floors, he wanted to know if this was for tenant's storage.**
- **Mr. Heil answered that it is for the public and if a tenant would like a unit, they are welcome to rent it.**
- **Mr. Cantara wanted to echo that landscaping the property would be good, if they could make the site eye-catching especially with the amount of green & open space he encourages them to be creative. The building has a lot of history and he encourages the applicant to affix to the building a plaque showing the history of the building and its importance in the industrial revolution. He asked them how they plan to protect the Saco River.**
- **Mr. Heil does not anticipate any disturbance to the river. They will be removing telephone poles on Gooch Street all the while using construction fencing. They will be using the fencing while they scrape and re-asphalt the street.**
- **Mr. Cantara asked if Gooch Street was public or private. Mr. Heil answered that it is private and they plan to keep it that way.**
- **Mr. Cantara went on to encourage the applicants to create a public transportation shelter. He then asked of the 81 one Bedroom and 16 two Bedroom units will they all be the market rate or will any of them be affordable.**
- **Mr. Laliberte said they have considered this and the rates are to be determined, they are not set in stone.**
- **Mr. Cantara asked if it would be possible for them to consider making some of the units traditional affordable housing.**
- **Mr. Laliberte said there would be no restriction of rates it will be market rate.**

- **Mr. Tarpey mentioned that it is fine to have a bus stop but what if you want to go in the other direction. Have they done a Traffic Study?**
- **Mr. Heil said not at this point we have not triggered the need for a Traffic Study.**
- **Mr. Tarpey answered that they must have come close.**
- **Mr. Heil said no the determining factor is 100 we are only at 50.**
- **Mr. Tarpey said this is part of a larger parcel, which was recently subdivided.**
- **Mr. Heil said even though it is all owned by the same group, it is technically 2 separate properties.**
- **Ms. Plotkin said she would not vote against it without open space where there is other open space in the area.**
- **Chair Southwick commented that it is a unique project with storage & residential space surrounded by residential spaces, talk up encouraging walking & biking, have you considered transferring some of the storage into bike space.**
- **Mr. Heil said they are proposing bicycle space as part of the amenities.**
- **Chair Southwick asked Planner Tansley if it would be appropriate to take comments from the public on this project now. Greg said it would be.**
- **Chrystina Gastelum said she was pleased to see makers space she wonders if the City would provide a waiver for parking requirements where they may not need an auto, and create more green space. She asked about a recreation garden and green space on the roof using plantings that are native and pollinator friendly. She would like to see car share and charging stations. They need to look at pedestrian crossing especially in dusk and dark; they need better lighting and other ways to make the area more walkable. A Traffic Study would help with the walkability. The sidewalk ends going across the river, so in order to get across Route 1 safely, you need to cross the street.**
- **Mr. Anger said he doesn't see affordable housing being considered but he hopes they will reconsider, as it is a need. He loves the idea of a plaque. There is a lot of history in that building. He remembers his father and Godfather working there; it was as big part of Biddeford. He also thinks they should relook at the Traffic Study. He hopes they do not put in high fencing to hide the project, as it is a welcome to Biddeford spot. Charging stations will be useful as the country transitions to electric cars.**
- **Chair Southwick said this is a huge investment have you thought about aesthetic upgrades behind the building.**
- **Mr. Heil said none at this time.**
- **Mr. Laliberte said they were waiting to see what the garage does to the site as the building has quite a presence.**
- **Chair Southwick told them he just wanted to raise the point.**
- **Ms. Plotkin brought up if we watch this item on the Council meeting; affordable housing was discussed and deemed not necessary for this project.**
- **Mr. Cantara appreciates Ms. Plotkin's comments but as due diligence is important for the Council, it is also important for the Planning Board. He feels he needs to raise the issue. The issue is difficult, but needs to be mentioned. Asking the applicant to review this is for the good as things change.**

- **Mr. Heil said that Mr. Angers mentioned fencing, they are not proposing fencing, there will be at least 1 car charging station and conduits for additional stations. He then asked how the Board would like the next submission handled.**
- **Mr. DiMatteo said that whether they do a 2 or 3 step process is up to the Board. The intent of the applicant is to move things along. The Board can direct the applicant to obtain any studies they want. The Board has to make it clear to the applicant what they want.**
- **Chair Southwick asked the Board if they had other conditions or wishes.**
- **Mr. Tarpey replied that this project is exciting, big & complex. The documents have been supplied but they still do not know what is between the building and the Saco River. They do not know what's going to happen with the parking lot & building. He would like to do more research. He worries about parking and traffic; he doesn't feel like the Board should rush. He feels like he has more work to do.**
- **Chair Southwick noted that the MDOT wouldn't address issues ahead of time based on speculation. They wait for problems.**
- **Planner Tansley replied that a Development Traffic Movement Permit would not trigger a traffic study; however, the Board can request one. If the Board wants to require a traffic study, now is the time to tell them whether DOT is involved or not.**
- **Mr. Heil told the Board the same applicants own other buildings on Gooch Street. As these buildings are developed it would trigger a traffic study. They are going to improve the parking lot to make sure the entire area looks beautiful. Future development is restrictive on that lot due to the Saco River.**
- **Mike Barton (Owner's Rep) said that they have engaged with other utilities and that they have removed a significant quantity of electrical wiring overhead because parcels are owned by the same entity. They have streamlined with CMP to put them underground. This improvement in itself is big. Traffic, we don't know what is coming; part of Gooch Street is wider for possible traffic routing. Comments are well received, they are providing additional lighting for the next submission, the same way they did for Riverdam.**
- **Mr. Benway commented that he would like the applicant to recognize the historic significance and recognize the workers as it was not an easy job**

MOTIONS

- **Mr. Benway-<u>Motion</u> to determine the proposed project is a major subdivision (5 or more units).**
- **Mr. Angers-<u>Second</u>**
- **Chair Southwick-Roll Call for Vote-Unanimous Approval 4-0 (Benway, Droggitis, Angers, & Tarpey)**

- **Mr. Laliberte told the Board he grew up in Saco, his father grew up in Biddeford. The Project Manager, Scott Joslin, loves history and began removing a freight elevator in another of their structures. Scott found great relics and they will pay homage to the history of the site. Affordable housing was not intentionally skirted as a question. It was considered; in 2016, they ran into roadblocks with financing due to affordable**

housing. These windows do not have enough R-value, not all bedrooms will have a window, and the building is not a great fit for affordable housing. The applicants own and operate several houses in Portland and do not want to seem insensitive. They are very excited about this project.

6.D. 2021.12 Discussion/Schedule Public Hearing LDR Attachment A. Fees and Charges Proposed Amendments.

- **Planner Tansley began the discussion saying that they have discussed this review for years. The last time they made any changes to the fees was in 2005. The fees should be reasonable and true to cover the fee costs. They have looked at the fees of surrounding communities and ran through the Bureau of Labor analysis. The analysis should that from January 2005-January 2021 there is an average of 30% increase if you take into consideration inflation. The increases people will see are between 30% & 40% with the average being 40%. He said the staff is getting a better handle on the cost of doing business as Mr. DiMatteo keeps good track of his time where as Planner Tansley never had to keep track of his time. The proposed changes have been run by Director Eddy and he is comfortable with them. If the Board wants him to walk them through it, he will do that or he can take questions and comments and when it is ready it will be presented to the City Council. It was determined that all members of the Planning Board had looked at the proposed fee increase.**
- **Mr. Benway feels the proposed fees are too low and he proposes they discount fees for the developers who are participating in affordable housing in the City of Biddeford.**
- **Mr. Cantara said the review might inform the public.**
- **Mr. Benway told him that is what Public Hearings are for. He then asked if this is in the City budget.**
- **Planner Tansley answered that yes it is in the budget.**
- **Mr. Benway replied that he thought it may be in the budget and they need to get behind this while the City is still working on the budget.**
- **Mr. Angers asked if they reduce fees for affordable housing, it goes to a Public Hearing and then onto the City Council. He asked if they could add some verbiage for affordable housing, he wants to hear what the public has to say.**
- **Mr. Cantara said he supports adding affordable housing.**
- **Mr. Benway suggested a reduction of 25-30% for affordable housing, there is still a review process. 25% is common but giving a 30% reduction shows people the City's interest in affordable housing and it shows that the City thought about it.**
- **Mr. Droggitis asked if we would raise fees to the public to offset the other reduction.**
- **Mr. Benway said it is a drive to create revenues that if you look at inflationary rate 5 years out, he can't see them reviewing the fees again every year. He said in the 90's it was a different Council but they increased fees regularly and aggressively.**
- **Chair Southwick reminded the Board that the fees are not being reviewed to make a profit but to cover costs. He wants the Board to remember that if they reduce rates for affordable housing the City ends up subsidizing it. Is the cost of the fees and incentive to do affordable housing? Will it drive what you are trying to accomplish?**

He feels this needs deeper consideration to stimulate the developers to create affordable housing.

- **Planner Tansley said that he would talk to Director Eddy to come up with options to discuss before the public hearing.**
- **Mr. Angers told the Board that Westbrook & South Portland may have done something for affordable housing,**
- **Planner Tansley will get back to every one of the 17th.**
- **Mr. Cantara asked how much time is needed for the Public Hearing.**
- **Planner Tansley told him we need 3 days to set it up and it needs to be in the paper 15 days prior to the meeting.**
- **Chair Southwick asked if Planner Tansley would ask Director Eddy to set aside some funds to offset for affordable housing.**
- **Planner Tansley said he is not sure that is possible, but he will ask about diverting funds from the general fund to a special fund.**
- **Mr. Benway said that is considered a sinking fund; the Council may not be interested.**
- **Mr. Droggitis said it would be good if the public can see it.**
- **Planner Tansley said that April 1st there will be a Public Hearing for Review of Fees, and then they realized it would be March 31st.**

MOTIONS

- **Mr. Benway-Motion to schedule a Public Hearing for March 31, 2021 for the proposed fees and charges amendment as proposed by staff or as amended by the Board.**
- **Mr. Angers-Second**
- **Chair Southwick-Roll Call for Vote-Unanimous Approval 4-0 (Benway, Droggitis, Angers, & Tarpey)**

7. Other Business

7.A. Planning Board Discussion of Schedule through June 30, 2021.

- **Planner Tansley showed the proposed schedule, which he said, has already changed. The plan is to go out to the end of the fiscal year.**
- **This is subject to change and already populated.**
- **Planner Tansley thanked the Planning Board for all their hard work.**
- **Mr. Angers brought forward that if someone of the staff or Board notices the Board is being crushed they can meet on the off weeks. He doesn't want to be rushed and he doesn't want the others to be rushed so he is willing to step up.**
- **Planner Tansley thanked Mr. Angers for his flexibility.**
- **Chair Southwick said these are not idle times, he agrees with Mr. Angers they do have wiggle room but he doesn't want people to think just because they don't have a meeting that they aren't doing anything.**

MOTIONS

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

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

Meeting was adjourned at 8:58 pm.

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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.

2021.04

CITY OF BIDDEFORD
PLANNING DEPARTMENT

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PLANNING BOARD MEMORANDUM

TO: William Southwick, Chair & the Biddeford Planning Board

FROM: Greg Tansley, A.I.C.P., City Planner

DATE: March 12, 2021

RE: 2021.04 1 Gooch Street Redevelopment – Traffic Study Consideration

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On March 3, 2021 the Planning Board reviewed the conceptual Redevelopment Plans for the former Saco-Lowell Building located at 1 Gooch Street. During its review, myself and Chris DiMatteo advised the Board that Biddeford may require the applicant provide a Traffic Study, regardless of whether or not Maine DOT required one. The meeting was quite full and the discussion moved around quite a bit, and the Board did not circle back to specifically address this, leaving staff confused as to the wishes of the Board on this matter.

In order to try to provide best guidance to Staff and the applicant, we are asking the Planning Board to decide whether or not a traffic study for this project should be required. We have included the Traffic Overview section of the applicant's submission for general information related to traffic.

Section 6: Traffic Overview

The proposed mixed-use redevelopment of the existing 6 story building at 1 Gooch Street includes 96 residential units and 320 self-storage units with surface parking. Access to the surface parking lot will be available from Gooch Street, with additional pedestrian access from Elm Street. The overarching goal of the project is to provide housing stock in proximity to services and work which will lower the demand on individual automobile needs.

The preliminary trip generation for the proposed project has been estimated using the Institute of Transportation Engineers (ITE) "Trip Generation" 10th Edition publication. The land uses utilized in the calculations include: Multifamily housing (mid-rise) apartments (LUC 221) and Mini-Warehouse (LUC 151). Accordingly, the preliminary trip analysis yields a PM peak hour increase of approximately 50 trips and an AM peak hour increase of approximately 42 trips. As the project is not expected to generate over 100 peak hour trips, a Traffic Movement Permit (TMP) from the Maine Department of Transportation (MDOT) is not required.

Overall, a moderate traffic increase is expected for this project due to the change in use of the site. Upon initial analysis, the surrounding street system is equipped to handle the increases and does not currently suffer from congestion.

In accordance with the City's Land Development Regulations, Performance Standards for off-street parking and loading, Table 6-49B: Parking space requirements, the project parking demand requires 1 space for every 50 units of self-storage and 1 space per dwelling unit (with the residential spaces designed exclusively for, and occupancy restricted to each unit), resulting in a total of 103 spaces required ((1 space/50 units x 320 self-storage units) + (1 space/D.U. x 96 D.U.) = 103 spaces). The project proposes to construct surface parking with 106 parking spaces to serve the development.

Multifamily Housing (Mid-Rise)
(221)

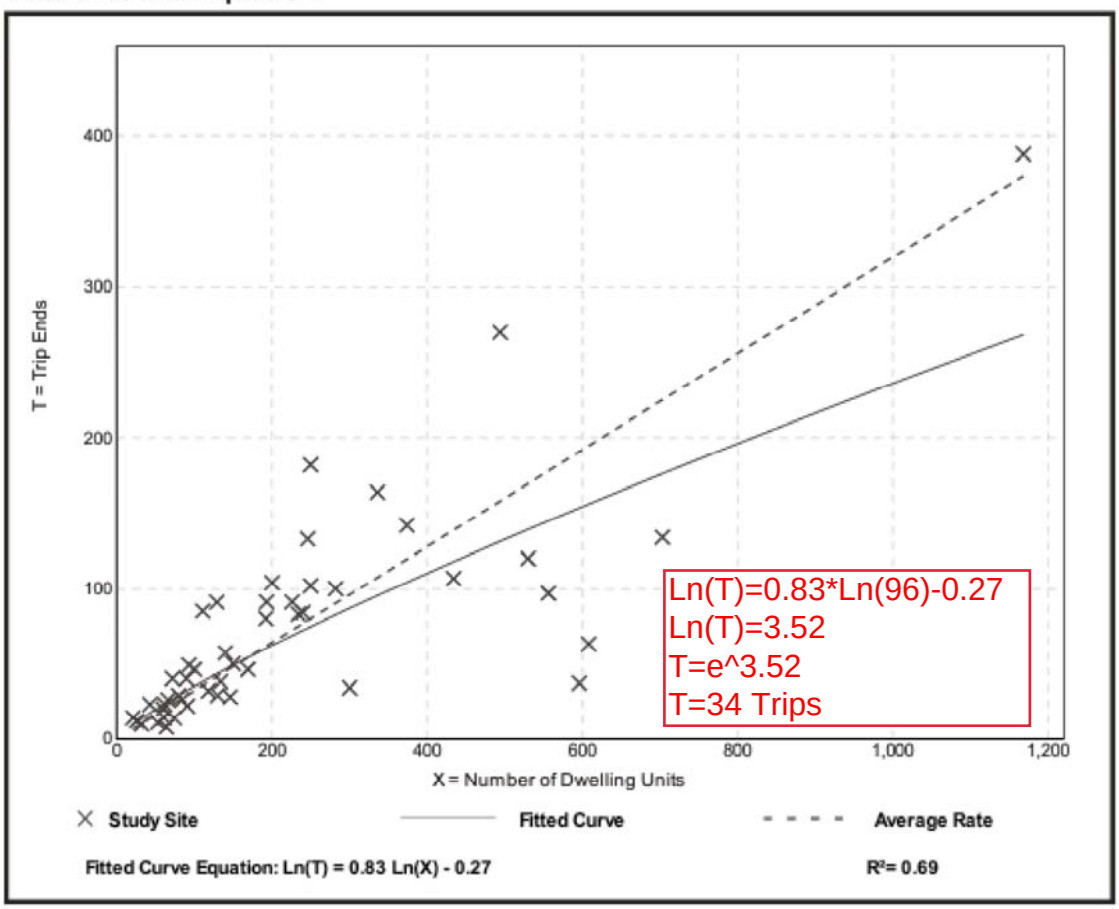
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 48
Avg. Num. of Dwelling Units: 225
Directional Distribution: 27% entering, 73% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.06 - 0.77	0.17

Data Plot and Equation



Multifamily Housing (Mid-Rise)
(221)

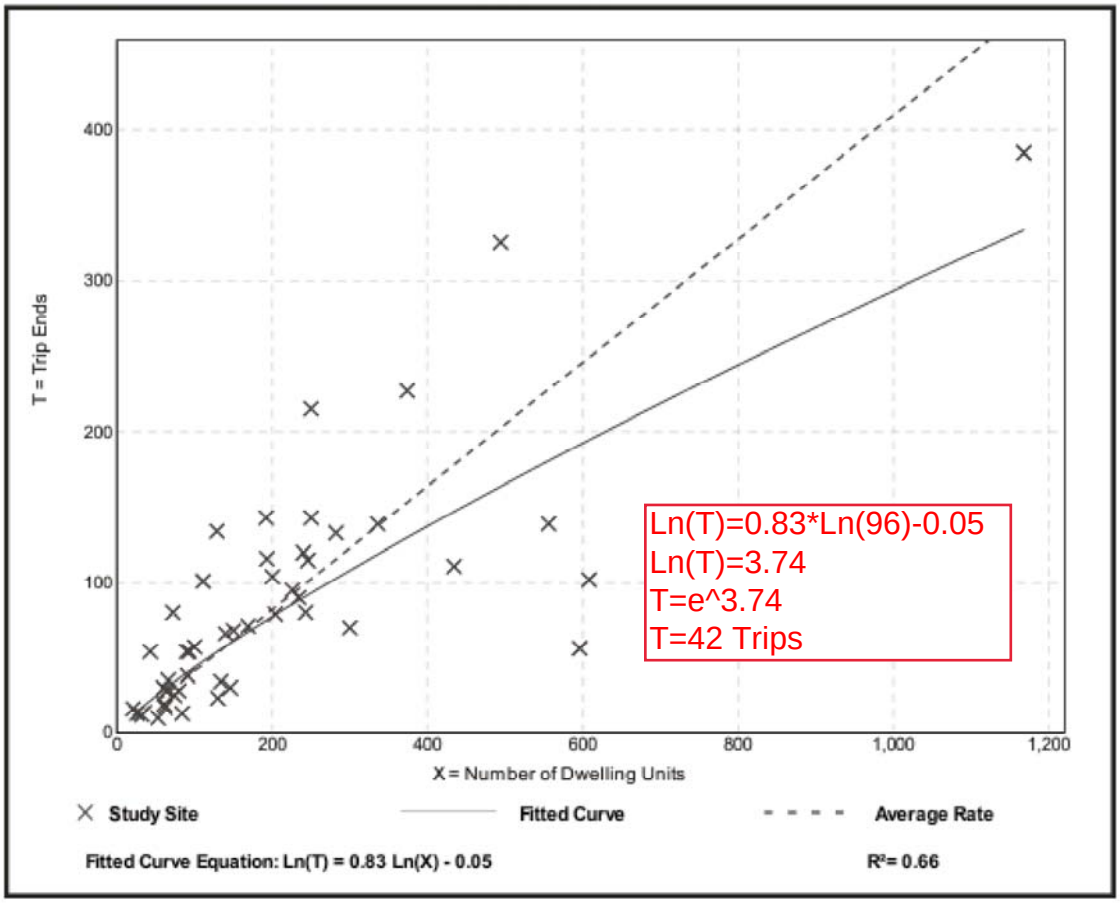
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 47
Avg. Num. of Dwelling Units: 211
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.09 - 1.26	0.22

Data Plot and Equation



Mini-Warehouse
(151)

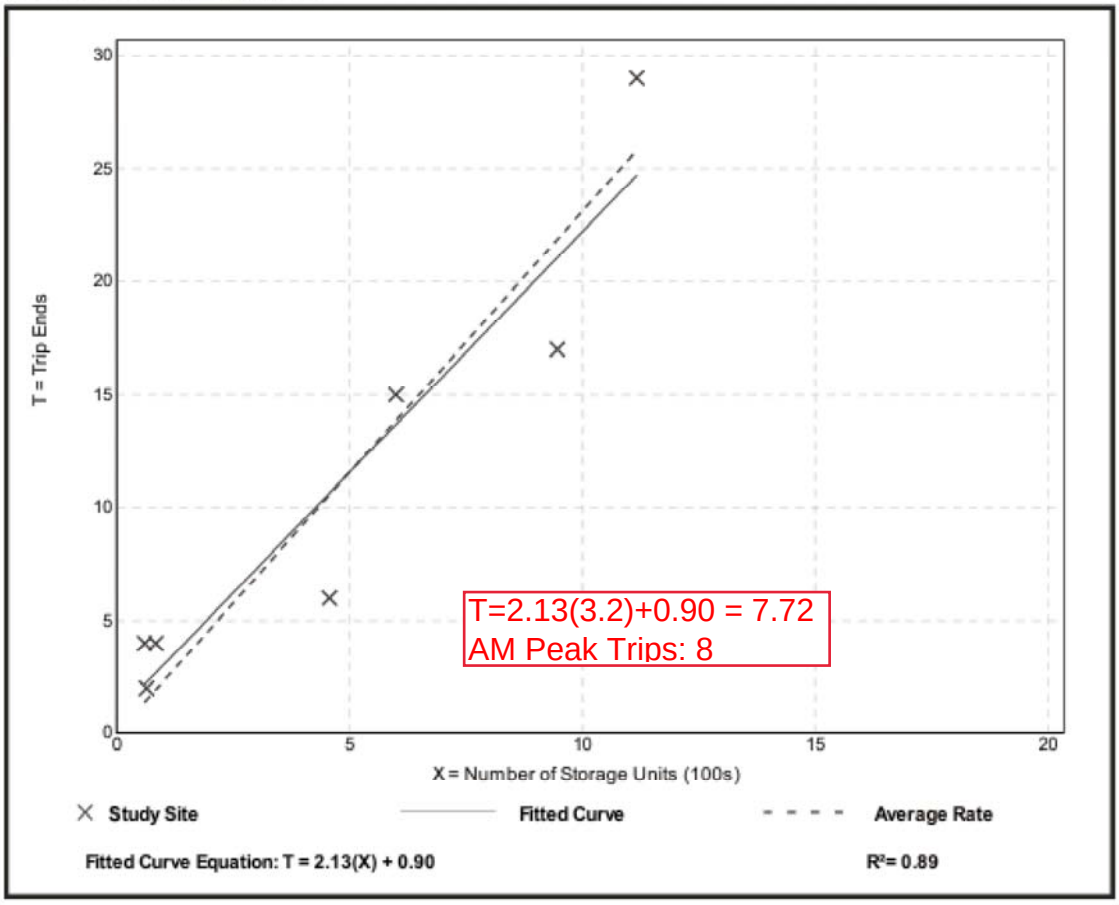
Vehicle Trip Ends vs: **Storage Units (100s)**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Storage Units (100s): 5
Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per Storage Unit (100s)

Average Rate	Range of Rates	Standard Deviation
2.31	1.31 - 6.67	0.94

Data Plot and Equation



Mini-Warehouse
(151)

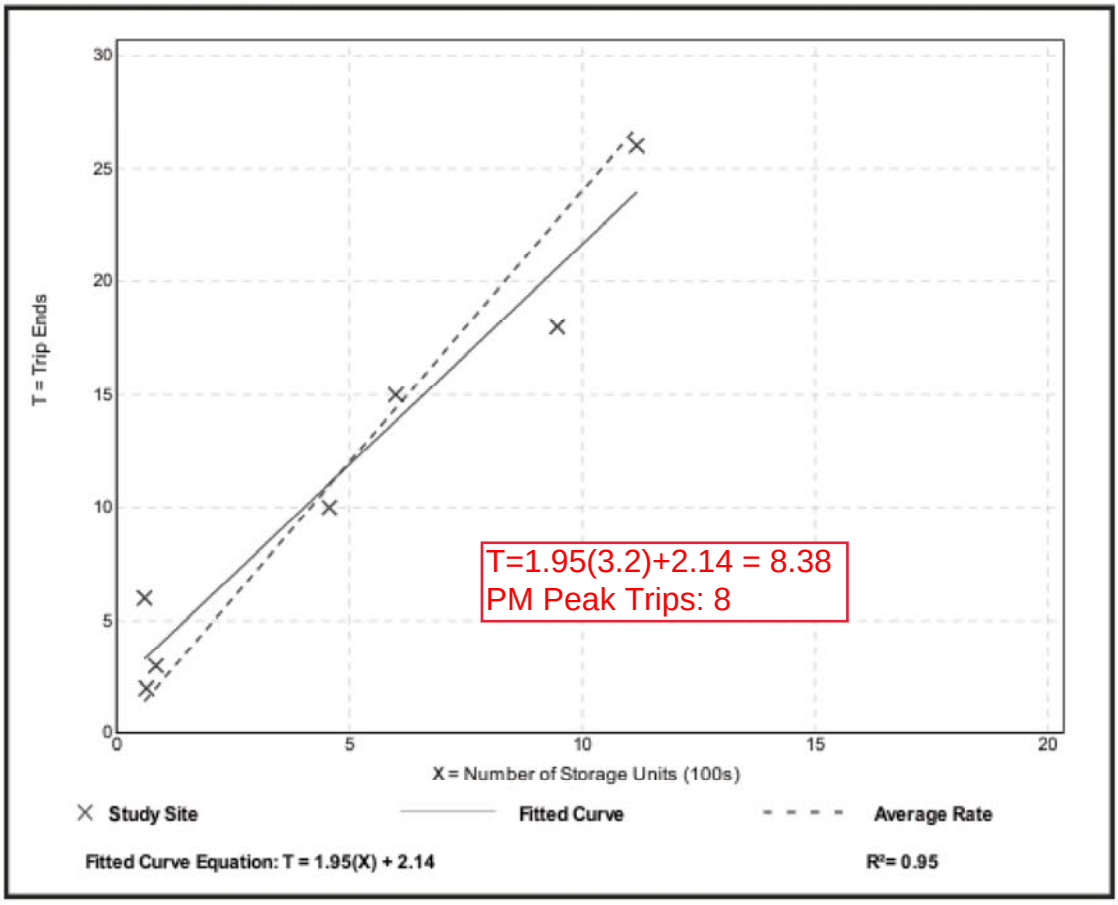
Vehicle Trip Ends vs: **Storage Units (100s)**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Storage Units (100s): 5
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per Storage Unit (100s)

Average Rate	Range of Rates	Standard Deviation
2.40	1.90 - 10.00	1.17

Data Plot and Equation



February 10, 2021

Carmen J. Morris
City Clerk, City of Biddeford
P.O. Box 586
Biddeford, ME 04005

Re: Application for Zone Change
457 Alfred Street (M/L: 17 / 7)

Dear Ms. Morris:

Please consider this letter and enclosures as my application for a zone change for the above-captioned property. Pursuant to City ordinance, I am including an adequate description of the property for which I am requesting rezoning, as well as the nature of the rezoning I am requesting. Enclosed with this letter is a plan showing the subject property in relation to the present zone boundaries.

Our property located at 457 Alfred Street is presently located in the I-3 Zone. I would like to have the property rezoned such that it is part of the adjacent I-1 Zone. The purpose of this zone change would be to permit us to use the old Journal Tribune building located on the subject property for an adult use marijuana cultivation facility and caregiver retail store. While caregiver retail stores are currently permissible in the I-3 Zone, cultivation facilities are not. Both uses are permitted in the I-1 Zone.

Sincerely,

Patrick Donahue

PLANNING BOARD FEE WORKSHEET

CITY OF BIDDFORD, 205 MAIN STREET, P.O. BOX 586, BIDDEFORD, ME 04005

Return Address for remaining funds: _____

PROJECT NAME/APPLICANT: Five Star Auto Sales DATE: 2-10-21

PROPERTY LOCATION: 451 Alfred Street MAP 17 LOT 7-2

GENERAL FEES (as applicable)

- Nonrefundable Administration Fee: 24111-40275 $ 40- BY: [illegible]
- Engineering Review/Additional Review-Draw Accounts: 10052-23000 $_____ BY:_____
- Engineering Inspection (Draw Accounts): 10052-23000 $_____ BY:_____
- Performance Guarantee: 10052-23000 $_____ BY:_____
- Historic Preservation Commission: 24111-40318 $_____ BY:_____
- CFUP 32601-40311 $_____ BY:_____

CONDITIONAL USE/OTHER REVIEWS (E.G. Private Ways)

- Application Fee - $200 (nonrefundable): 24111-40285 $_____ BY:_____

CONTRACT AND CONDITIONAL ZONES, ZONING MAP OR CODE AMENDMENTS

- Application Fee, $1,000 per request (nonrefundable): 24111-40288 $1,000 BY: [illegible]

SHORELAND ZONING/EXTRACTION REVIEW

- Application Fee, $100 (nonrefundable): 24111-40294 $100 BY:_____

SUBDIVISION REVIEW (nonrefundable)

- MINOR SUBDIVISIONS: $500 Plus $100 per lot or dwelling unit (or) $100 for previously approved plan(s) nonrefundable; 24111-40277 $_____ BY:_____
- MAJOR SUBDIVISIONS: $500 Plus $100 per lot or dwelling unit, $500 for FINAL (or) $100 for minor revision to previously approved plan(s); 24111-40278 $_____ BY:_____

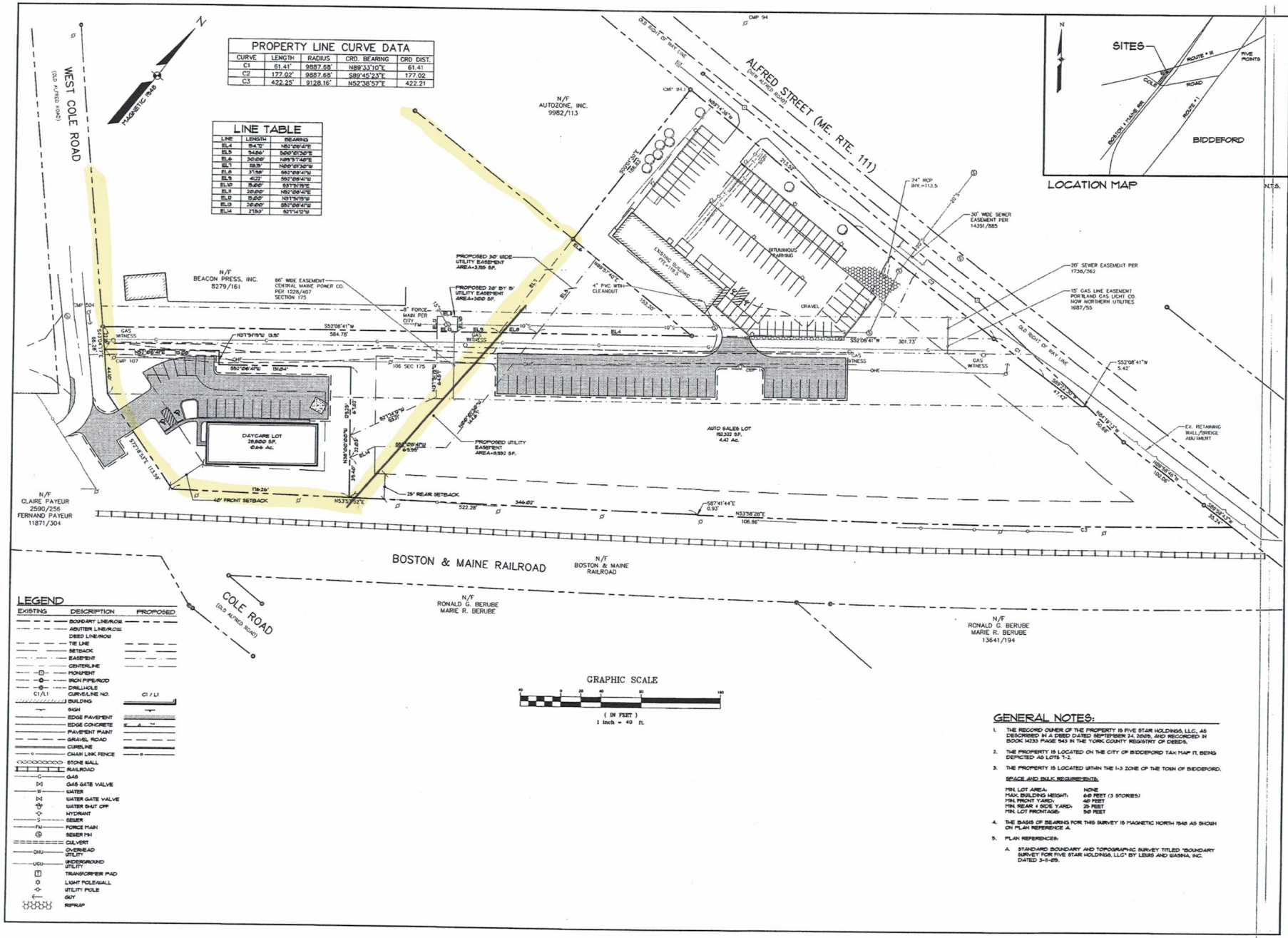
SITE REVIEW (nonrefundable) Square foot calculations based on structures and paving/parking

- LESS THAN 2,000 square feet; 24111-40279 $_____ BY:_____
- 2,000s.f. – 9,999s.f.; 24111-40279 $_____ BY:_____
- 10,000s.f. – 14,999s.f.; 24111-40279 $_____ BY:_____
- 15,000s.f. – 19,999s.f.; 24111-40279 $_____ BY:_____
- 20,000s.f. – 29,999s.f.; 24111-40279 $_____ BY:_____
- MORE THAN 29,999s.f. $2,000 + $15/1,000s.f. above 29,999s.f.; 24111-40279 $_____ BY:_____
- Any conversion: with no new construction; 24111-40279 $_____ BY:_____

[illegible] _____ **Page Total** $ 1040.00

Authorized Signature

Make copies for distribution to: Applicant, Planning and Clerk/Tax Collector



PROPERTY LINE CURVE DATA

CURVE	LENGTH	RADIUS	CRD. BEARING	CRD DIST.
C1	61.41'	9887.68'	N89°33'10"E	61.41
C2	177.02'	9887.68'	S89°45'23"E	177.02
C3	422.25'	9128.16'	N52°38'57"E	422.21

LINE TABLE

LINE	LENGTH	BEARING
EL4	19.41'	N52°08'41"E
EL5	34.66'	S06°51'30"E
EL6	30.00'	N89°51'46"E
EL7	18.15'	N06°51'30"W
EL8	37.18'	S52°08'41"W
EL9	4.27'	S52°08'41"W
EL10	15.00'	S37°51'19"E
EL11	30.00'	N52°08'41"E
EL12	15.00'	N37°51'19"W
EL13	30.00'	S52°08'41"W
EL14	21.93'	S37°14'13"W

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BOUNDARY LINE/ROW	
	ABUTTER LINE/ROW	
	DEED LINE/ROW	
	TIE LINE	
	SETBACK	
	EASEMENT	
	CENTERLINE	
	MONUMENT	
	IRON PIPE/ROD	
	DRILLHOLE	
C1/L1	CURVE/LINE NO.	C1 / L1
	BUILDING	
	SIGN	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT MARK	
	GRAVEL ROAD	
	CURBLINE	
	CHAIN LINK FENCE	
	STONE WALL	
	RAILROAD	
G	GAS	
	GAS GATE VALVE	
W	WATER	
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
S	SEWER	
FM	FORCE MAIN	
	SEWER MH	
	CULVERT	
OHU	OVERHEAD UTILITY	
UGU	UNDERGROUND UTILITY	
	TRANSFORMER PAD	
	LIGHT POLE/WALL	
	UTILITY POLE	
	GUY	
	RIPRAP	

GRAPHIC SCALE

0 10 20 40 80 160

(IN FEET)
1 inch = 40 ft.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PROPERTY IS FIVE STAR HOLDINGS, LLC, AS DESCRIBED IN A DEED DATED SEPTEMBER 24, 2009, AND RECORDED IN BOOK 14233 PAGE 543 IN THE YORK COUNTY REGISTRY OF DEEDS.
2. THE PROPERTY IS LOCATED ON THE CITY OF BIDDEFORD TAX MAP 11, BEING DEPICTED AS LOTS 1-2.
3. THE PROPERTY IS LOCATED WITHIN THE I-3 ZONE OF THE TOWN OF BIDDEFORD.

   SPACE AND BULK REQUIREMENTS:

MIN. LOT AREA:	NONE
MAX. BUILDING HEIGHT:	60 FEET (3 STORIES)
MIN. FRONT YARD:	40 FEET
MIN. REAR & SIDE YARD:	25 FEET
MIN. LOT FRONTAGE:	50 FEET

4. THE BASIS OF BEARING FOR THIS SURVEY IS MAGNETIC NORTH 1948 AS SHOWN ON PLAN REFERENCE A.
5. PLAN REFERENCES:
   A. STANDARD BOUNDARY AND TOPOGRAPHIC SURVEY TITLED "BOUNDARY SURVEY FOR FIVE STAR HOLDINGS, LLC" BY LEWIS AND WASNA, INC. DATED 3-6-09.

REV.	BY:	DATE:	STATUS:
B	DMR	3-12-10	REVISED LOT LINES PER CLIENT REQUEST
A	DMR	12-18-09	ISSUED TO CLIENT FOR REVIEW

THIS PLAN SHALL BE MADE AVAILABLE FOR REVIEW WITH PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATION, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

Sebago Technics
Engineering Expertise You Can Build On.
One Chabot Street
Westbrook, Maine 04092
Tel (207) 856-0277
WWW.SEBAGOTECHNICS.COM
250 Gorham Rd. - Suite 5
Scarborough, Maine 04074
Tel (207) 883-9888

PROJECT NO.	FIELD BOOK	DESIGN	CHKD	DRAWN
04399	-	DMR	CAM	MAL

DIVISION OF LAND PLAN
OF:
CHILDREN'S DAYCARE FACILITY
LOCATED AT:
451 ALFRED STREET
BIDDEFORD, MAINE 04005
FOR RECORD OWNER:
FIVE STAR HOLDINGS, LLC
451 ALFRED STREET
BIDDEFORD, MAINE 04005

DATE	SCALE
12-18-09	1"=40'

SHEET 1 OF 1

04399SB.dwg, TAB:SB

PARCEL DESCRIPTION

A CERTAIN LOT OR PARCEL OF LAND, WITH BUILDINGS THEREON, SITUATED ON THE SOUTHERLY SIDE OF ALFRED ROAD (ROUTE #111) IN THE CITY OF BIDDEFORD, COUNTY OF YORK, AND STATE OF MAINE, BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT AN IRON ON THE SOUTHERLY SIDE OF SAID ALFRED ROAD MARKING THE NORTHWESTERLY CORNER OF LAND CONVEYED TO LEO PAUL LORANGER AND IRENE C. LORANGER BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1467 PAGE 171, SAID IRON BEING ALSO LOCATED ON A COURSE OF

S 86° 34' 30" W A DISTANCE OF 55.10' FROM A STONE MONUMENT OPPOSITE STATION 806 AS SHOWN ON THE STATE HIGHWAY COMMISSION PLAN, FEDERAL AID PROJECT F-360 (1) RECORDED IN SAID REGISTRY IN PLAN BOOK 23 PAGE 21.

THENCE BY LAND OF SAID LORANGER ON THE FOLLOWING COURSES:

S 0° 01' 30" E A DISTANCE OF 205.66' TO A ROD;

N 89° 58' 30" E A DISTANCE OF 200.88' TO AN IRON MARKING THE SOUTHEASTERLY CORNER OF SAID LORANGER LAND;

THENCE BY LAND FORMERLY OF THE GRANTOR BEING THE SOUTHERLY LINE OF THE RE-SUBDIVISION OF LAND OF JOURNAL PUBLISHING CORP. SHOWN AS LOT #4 ON PLAN BY DESROBERTS & HENRY DATED DECEMBER, 1979 AND RECORDED IN SAID REGISTRY IN PLAN BOOK 104 PAGE 10;

THENCE BY THE SOUTHERLY LINE OF SAID LOT #4 N 89° 58' 30" E A DISTANCE OF 152.21' (152.38' IN PLAN BOOK 104, PAGE 10) TO A ROD, MARKING THE SOUTHERLY LINE OF SAID GRANTOR LAND AND BEING THE NORTHWESTERLY LINE OF LAND FORMERLY OF THE BOSTON AND MAINE RAILROAD;

THENCE BY LAND OF SAID BOSTON AND MAINE RAILROAD S 52° 09' W A DISTANCE OF 584.76' TO A ROD MARKING THE NORTHEASTERLY SIDE OF COLE ROAD;

THENCE BY THE NORTHEASTERLY SIDE OF SAID COLE ROAD N 43° 17' W A DISTANCE OF 298.90' TO AN IRON MARKING THE SOUTHEASTERLY LINE OF LAND CONVEYED TO DENISE MILLER BY DEED RECORDED IN SAID REGISTRY IN BOOK 6284 PAGE 91;

THENCE BY SAID MILLER LAND ON THE FOLLOWING COURSES:

N 46° 47' E A DISTANCE OF 300.22' TO AN IRON;

N 0° 01' 30" W A DISTANCE OF 135.55' TO AN IRON ON THE SOUTHERLY SIDE OF SAID ALFRED ROAD;

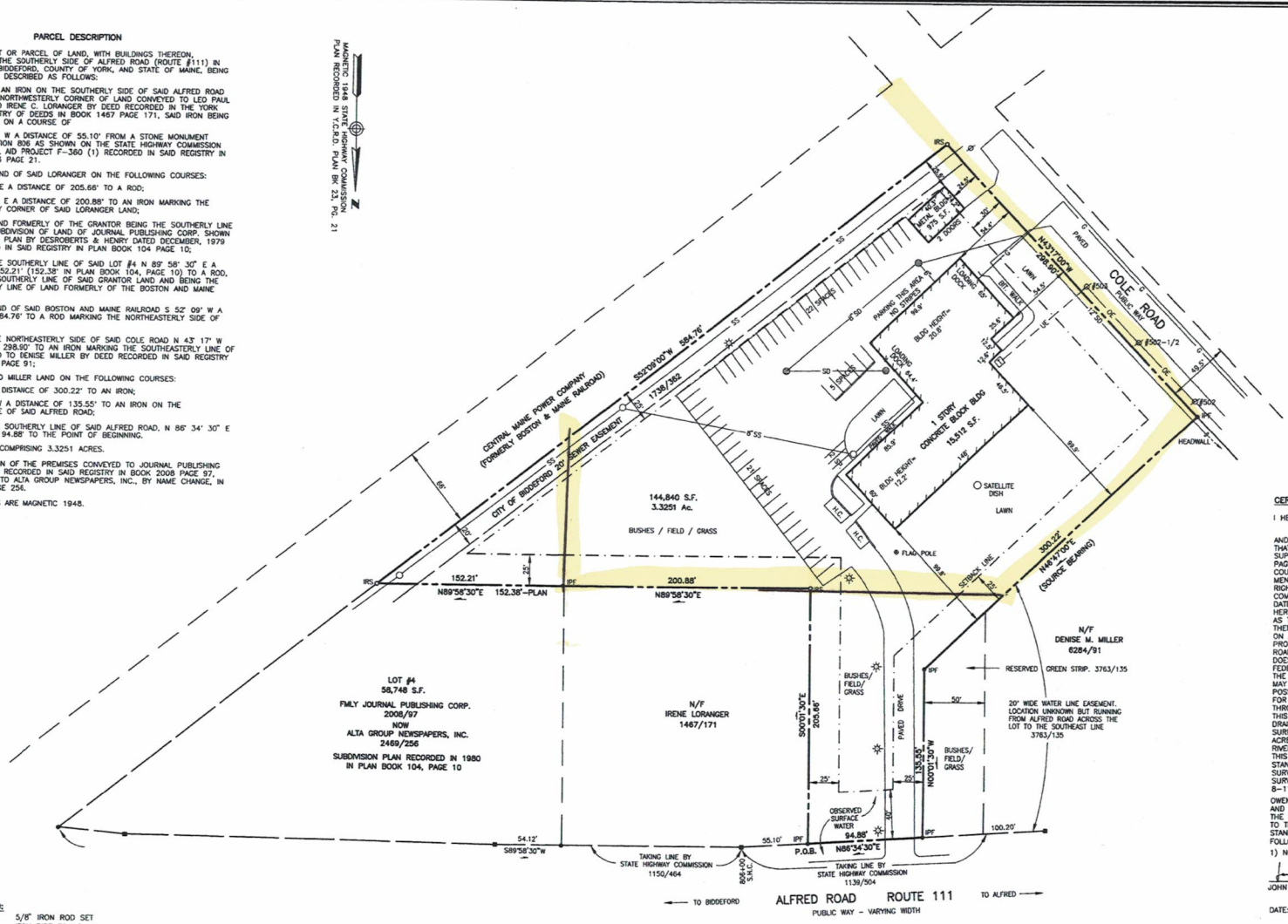
THENCE BY THE SOUTHERLY LINE OF SAID ALFRED ROAD, N 86° 34' 30" E A DISTANCE OF 94.88' TO THE POINT OF BEGINNING.

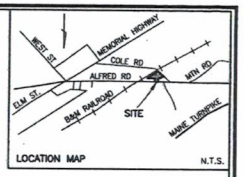
ABOVE PARCEL COMPRISING 3.3251 ACRES.

BEING A PORTION OF THE PREMISES CONVEYED TO JOURNAL PUBLISHING CORP. BY DEED RECORDED IN SAID REGISTRY IN BOOK 2008 PAGE 97, AND CONVEYED TO ALTA GROUP NEWSPAPERS, INC., BY NAME CHANGE, IN BOOK 2469 PAGE 256.

ABOVE COURSES ARE MAGNETIC 1948.

MAGNETIC 1948 STATE HIGHWAY COMMISSION PLAN RECORDED IN Y.C.R.D. PLAN BK. 23, PG. 21





LEGEND:

- 5/8" IRON ROD SET
- IRON PIPE FOUND
- MONUMENT FOUND
- UTILITY POLE
- LIGHT POLE
- MANHOLE
- CATCH BASIN
- TRANSFORMER
- CURB
- OE — OVERHEAD ELECTRIC
- E — UNDERGROUND ELECTRIC
- G — GAS MAIN
- SS — SANITARY SEWER
- SD — STORM DRAIN
- SETBACK LINE

GRAPHIC SCALE: 0, 20', 40', 80', 160'

PLAN REFERENCES:

1) RIGHT OF WAY MAP, STATE HIGHWAY "U" BIDDEFORD, FEDERAL AID PROJECT NO. 360(1) DATED JUNE 1948 (S.H.C. FILE NO. 16-69) RECORDED IN PLAN BOOK 23, PAGE 21.
2) PLAN OF PROPERTY IN BIDDEFORD, MAINE, FOR STEWART & WILLIAMS, INC. JULY 18, 1973 BY E.C. JORDAN RECORDED IN PLAN BOOK 65, PAGE 10.
3) PLAN OF PROPERTY IN BIDDEFORD, MAINE, MADE FOR JOURNAL PUBLISHING CORP. - SUBDIVISION, DATED FEB. 20, 1979 BY E.C. JORDAN CO. RECORDED IN PLAN BOOK 98, PAGE 33.
4) MUNICIPAL TAX MAP #17 LOT #7.
5) PLAN OF LAND TITLE SURVEY FOR COMMUNITY NEWSPAPER CO., INC. BY OWEN HASKELL, INC. DATED JAN. 7, 1997.

NOTES:

1) RECORD OWNER: FNPF, LLC - BOOK 8259, PAGE 337
2) DOCUMENTS NOT AFFECTING THE LOCUS: CITY OF BIDDEFORD - BOOK 2450, PAGE 183.
3) LEDGE NOT OBSERVED ON PROPERTY.
4) PARKING SPACES: STANDARD SPACES: 50; HANDICAPPED SPACES: 2; TOTAL SPACES: 52
5) VISIBLE UTILITY STRUCTURES WERE FIELD LOCATED. UNDERGROUND LINES ARE SHOWN APPROXIMATE ONLY AND NEED TO BE FIELD VERIFIED, ALONG WITH OTHER UTILITIES WHICH MAY BE ON SITE, PRIOR TO CONSTRUCTION.

ZONING DATA:

REQUIREMENTS FOR ZONE I-3 (INDUSTRIAL/COMMERCIAL)

		ACTUAL
LOT AREA:	NO MINIMUM LOT SIZE	3.3251 AC.
FRONTAGE:	50 FT.	94.88'
FRONT YARD SETBACK:	40 FT.	250±
SIDE YARD SETBACK:	25 FT.	99.8'; 25.6'
REAR YARD SETBACK:	25 FT.	N/A
OTHER ROAD OR R.O.W.:	30 FT.	54.4'
MAX. BUILDING COVERAGE:	NONE	11.4%/16,487 S.F. (TWO BLDGS)
OPEN SPACE:	N/A	51,100 S.F. ±
MAX. BUILDING HEIGHT:	60'/6 STORIES	12.2'; 20.8'

THE PROPERTY IS NOT IN THE SHORELAND PROTECTION ZONE OR THE GENERAL DEVELOPMENT ZONE OR RESOURCE PROTECTION ZONE OR IN THE HISTORICAL ZONE OR IN A FLOOD HAZARD ZONE AS DEFINED BY FEMA MAP PANEL 230145 0008B DATED MAY 15, 1984

AREAS:

TOTAL LOT:	144,840 SQ. FT.
TOTAL BUILDINGS:	16,487 SQ. FT.
TOTAL UNIMPROVED OPEN SPACE:	51,100 SQ. FT.

CERTIFICATE:

I HEREBY CERTIFY TO: CHICAGO TITLE INSURANCE COMPANY
BEACON PRESS, INC.

AND THEIR RESPECTIVE SUCCESSORS AND ASSIGNS THAT (A) THIS SURVEY WAS PREPARED BY ME OR UNDER MY SUPERVISION, (B) THE PROPERTY DESCRIBED IN DEED BOOK 2008, PAGE 97 AND BOOK 2469, PAGE 256, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS, AND THE LOCATION OF ALL IMPROVEMENTS, ENCROACHMENTS, FENCES, EASEMENTS, ROADWAYS AND RIGHTS OF WAY WHICH ARE EITHER VISABLE OR REFERED TO IN THE COMMITMENT FOR TITLE INSURANCE NUMBER CY-2365, EFFECTIVE DATE: MAY 27, 1997 AT 4:00 P.M. ARE ACCURATELY REFLECTED HEREON, (C) THIS SURVEY ACCURATELY DEPICTS THE STATE OF FACTS AS THEY APPEAR ON THE GROUND, (D) EXCEPT AS SHOWN HEREON, THERE ARE NO IMPROVEMENTS, ENCROACHMENTS, FENCES OR ROADWAYS ON ANY PORTION OF THE PROPERTY REFLECTED HEREON, (E) THE PROPERTY SHOWN HEREON HAS ACCESS TO A PUBLICLY DEDICATED ROADWAY (ALFRED ROAD), (F) THE PROPERTY DESCRIBED HEREON DOES NOT LIE IN A 100 YEAR FLOOD PLAIN IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AS DETERMINED FROM THE FLOOD INSURANCE RATE MAP NUMBER 230145 0008B DATED MAY 15, 1984, (G) THE TITLE LINES AND THE ACTUAL LINES OF POSSESSION ARE THE SAME, (H) ALL UTILITY SERVICES REQUIRED FOR THE OPERATION OF THE PROPERTY ENTER THE PROPERTY THROUGH ADJOINING PUBLIC STREETS, EXCEPT AS SHOWN, (I) THIS SURVEY SHOWS THE LOCATION AND DIRECTION OF ALL STORM DRAINAGE SYSTEMS FOR THE COLLECTION AND DISPOSAL OF ALL SURFACE DRAINAGE, (J) THE PROPERTY SURVEYED CONTAINS 3.3251 ACRES, 52 PARKING SPACES, (K) ANY DISCHARGE INTO STREAMS, RIVERS, OR OTHER CONVEYANCE SYSTEMS IS SHOWN ON THE SURVEY. THIS SURVEY HAS BEEN MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS" AND MEETS THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY AS DEFINED THEREIN AND INCLUDES ITEMS 1,2,3,4,6,7 (a,b,c) 8-11 a,b,c,d OF TABLE A THEREOF.

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS STANDARDS FOR A CATEGORY 2, CONDITION I SURVEY WITH THE FOLLOWING EXCEPTIONS:

1) NO REPORT

JOHN P.R. CYR, PLS NO. 509

DATE: 5-27-97

STATE OF MAINE — JOHN P.R. CYR No. 509 — PROFESSIONAL LAND SURVEYOR

ALTA/ACSM LAND TITLE SURVEY

ON

ALFRED ROAD, BIDDEFORD, MAINE

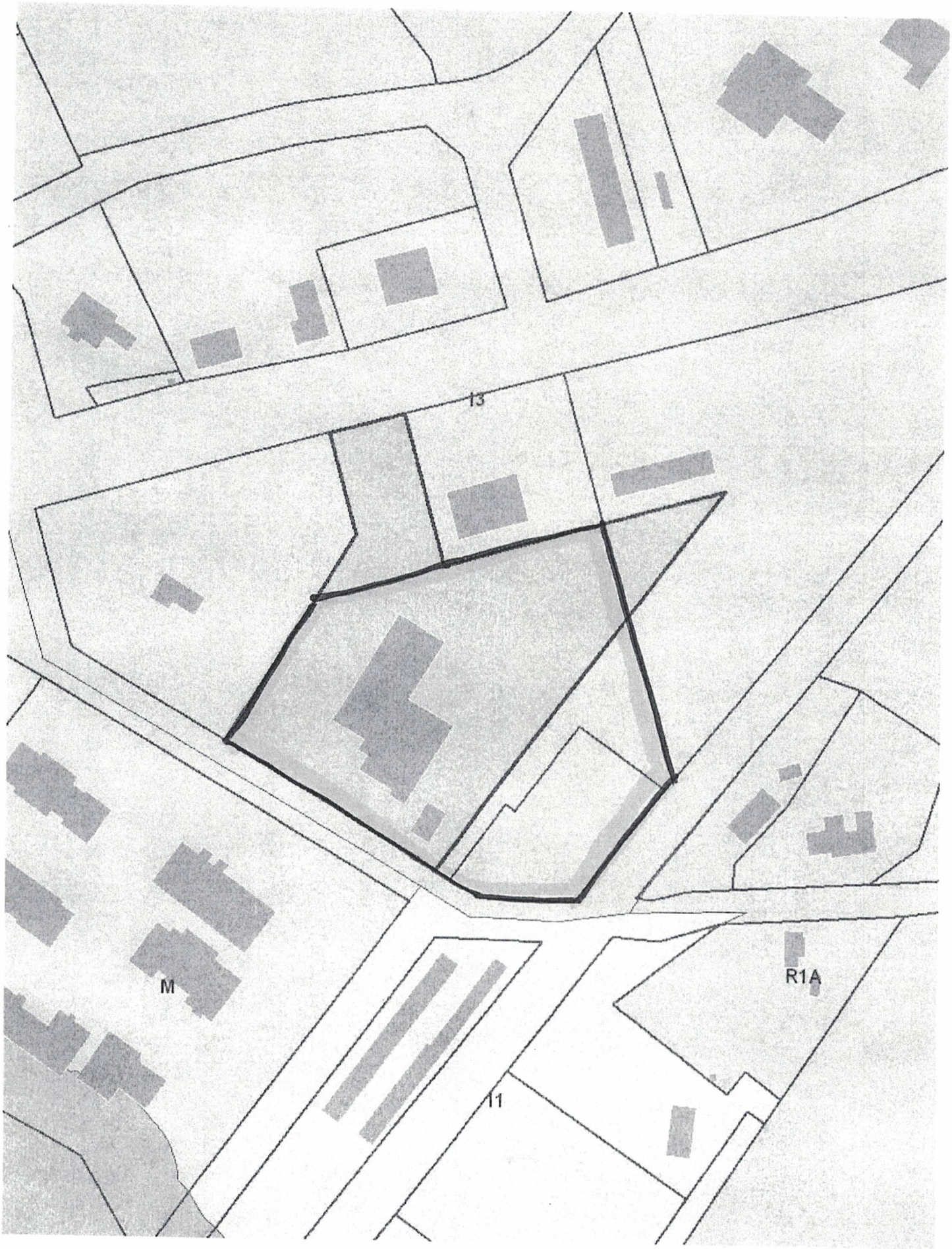
MADE FOR

BEACON PRESS, INC.

457 ALFRED ROAD, BIDDEFORD, MAINE

OWEN HASKELL, INC.
16 CASCO ST., PORTLAND, ME 04101 (207)774-0424
PROFESSIONAL LAND SURVEYORS

Drwn By	FJS	Date	Job No.
Trace By	JLW	MAY 29, 1997	97106B-Y
Check By	JPRC	Scale	Dwng. No.
Book No.	774	1" = 40'	1


I3
M
R1A
I1

Five Star
Odor Mitigation Plan
457 Alfred St Biddeford

Five Star(FS) has taken extreme measures to eliminate all odor emitting from facility during operations. The multiple layers of odor control that FS will install will be more than sufficient to mitigate all odors produced by facility.These include, redundant carbon filtration located throughout the facility, negative air pressure in cultivation rooms, odor ionization technology and Employee standard operating procedures

Procedures

These procedures will be applied to the following odor-emitting areas of activity:

- Mother/ Clone Rooms
- Vegetative Room
- Cultivation Rooms
- Drying Rooms
- Trimming Rooms
- Package Rooms

I. **Staff training procedures** FS has an extensive training program that includes training specifically for odor mitigation. The importance of keeping doors shut, changing carbon filters are among the other Standard Operating Procedures that all employees must follow. FS will conduct monthly staff meetings at these meetings we discuss odor mitigation and discuss with all departments the importance of keeping up with the processes we have in place.

II. **Record keeping** Carbon Filter Report Card, this card is maintained and filled out after every change by our Manager on duty. FS will have a supply of Carbon Filters on site that will be re-ordered by the Manager to keep aligned with the facility maintenance program. If a Filter needs to be changed sooner

Filters will be on premises to do so. If maintenance is needed it will be done immediately as to not affect the surrounding areas at the FS Facility.

III. **Monitoring and inspection**: Every odor emitting room will be continuously monitored with daily inspections for odor. If a high volume of odor is detected by an employee, they will directly inform the Manager. If a filter needs to be changed it will be done so at this time. If doors are not closing by themselves, doors will be fixed as soon as the problem is detected. .

Technical System Design and Equipment Installation:
HVAC system odor control plan: Closed Loop System with limited exhaust.

Bi-polar Ionization Control: Plasma Air Systems Odor Control –The ions produced by Plasma Air units, breaks down gases with electron-volt potential numbers below 12 to harmless compounds prevalent in the atmosphere such as oxygen, nitrogen, water vapor and carbon dioxide. The resultant compounds are a function of the entering contaminants into the plasma field. In this case the VOC's or terpene odors generated by the marijuana breaks down to carbon dioxide and nitrogen, and water vapor, thus eliminating the odor.
The positive and negative ions are drawn to airborne particles by their electrical charge. Once the ions attach to the particle, the particle grows larger by attracting nearby particles of the opposite polarity, thereby increasing the filtration effectiveness. Kills Virus, Bacteria & Mold Similar to how positive and negative ions surround particles, they are also attracted to pathogens. When the ions combine on the surface of a pathogen, they rob the pathogen of the hydrogen necessary for them to survive.

Odor Control – The Active Carbon Filters absorbs its molecular weight of contaminants it comes in contact with. Adsorption is a distinct process where organic compounds in the air react chemically with the activated carbon, which causes them to stick to the filter. The more porous the activated carbon is, the more contaminants it will capture. These filters are most notably used to remove terpene compounds in Marijuana cultivation facilities. If applied correctly, efficiency of 99.9% as stated by several vendors can be achieved

Odor Mitigation System design

General: All the HVAC systems installed at this facility will be considered "closed-loop" systems.All of the HVAC equipment will recirculate 100% of the supply being distributed to the various applications areas throughout the facility. Ionization and active carbon filtering will be installed to mitigate odors within the facility. To the extent possible, the odor mitigation will be intended to mitigate odor migration to the outside of the building and surrounding areas. Each grow room will be designed to create negative air pressure within the growing environment. This essential component to our odor control system isolates odors and doesn't allow them to escape from their respective grow areas.

Cultivation Rooms: Each cultivation room will have multiple high efficiency, high CFM carbon filtration. Flowering rooms are by far the highest odor producing rooms in cannabis cultivation. Therefore extra precautions will be taken for each flowering room.Each Flower room(approximately 1200 square feet) will have 5000 cubic feet per minute(CFM) of air filtration along with finely tuned negative air pressure and bi polar ionization technology. The units will utilize Plasma Air bi-polar Ionization for odor and bacterial mitigation as well as active carbon filters installed in the return air.

Common Areas
High efficiency carbon filtration units will be installed throughout the common areas of the Facility along with Bi polar ionization units. This units will be and changed out and maintained on a fixed schedule.

Drying Rooms
Provide nominally sized vertical high-efficiency split system AC units and dehumidification units with outdoor remote condensing unit(s). The units will utilize Plasma Air bi-polar Ionization units for odor and bacterial mitigation.

Trimming Rooms
Will have climate control units installed to accommodate the cooling and dehumidification, monitoring and control for each room. Trimming Room will have high efficiency carbon filters to operate as "scrubbers".

Packaging Rooms
Will have climate control units installed to accommodate the cooling and dehumidification, monitoring and control for each room. Packaging Room will have high efficiency carbon filters to operate as “scrubbers”.

Building Exhaust Systems

Cultivation Ventilation Fans The grow room ventilation fans will have active carbon rolled filter material installed on the fan inlets. The filters will be roll-type material secured to the fan inlet. Where possible pleated carbon filter and filter box will be installed on the fan inlet.Inline carbon filters will be installed any exhausted air leaving the facility.
Misc. Exhaust Fans: Other misc. exhaust fans will have active carbon rolled filter material installed on the fan inlets. The filters will be roll type material secured to the fan inlet. Where possible pleated carbon filter and filter box will be installed on the fan inlet.

Note: The Extraction Process in not considered to be an odor generating process all material is sealed prior to entering the room. Per Section 510, of the 2015 IMC: No filtration can be installed between the exhaust inlet and the fan outlet. Extraction Rooms will also have installed carbon filters to operate as “scrubbers” the room. The Extraction Rooms fans will have quantities sufficient to provide a minimum of 6 air-changes per hour of active carbon filtration for each room.

Operational processes

Mother Clone Rooms: The existing air conditioning fan operates 24 hours per day. The Plasma Air Bi-polar ionization units will be interlocked with the supply fan. The air conditioning units will also have active carbon filters installed on the return air section to each fan.

Cultivation Rooms: The existing air conditioning fan operates 24 hours per day. The Plasma Air Bi-polar ionization units will be interlocked with the supply fan. The air conditioning units will also have active carbon filters installed on the return air section to each fan.

Drying Room: The supplemental air conditioning unit fan operates 24 hours per day. The Plasma Air Bi-polar ionization units are interlocked with the supply fan. The Can-light fans will operate 24 hours per day.

Trimming Rooms: The existing air conditioning fan operates 24 hours per day. The Plasma Air Bi-polar ionization units will be interlocked with the supply fan. The air conditioning units will also have active carbon filters installed on the return air section to each fan. Packaging Rooms: The existing air conditioning fan operates 24 hours per day. The Plasma Air Bi-polar ionization units will be interlocked with the supply fan. The air conditioning units will also have active carbon filters installed on the return air section to each fan.

Maintenance plan

a. Plasma Bi-polar Ionization Units: have a manufacturer's recommended service requirement for cleaning the electrodes every 2 years in order to maintain their effectiveness.
b. b. Active Carbon: The active carbon filters absorbs its molecular weight of contaminants it comes in contact with. Adsorption is a distinct process where organic compounds in the air react chemically with the activated carbon, which causes them to stick to the filter. The more porous the activated carbon is, the more contaminants it will capture. These filters are most notably used to remove terpene compounds in cannabis facility air purification systems. The physical process of adsorption is followed by chemical adsorption (chemisorption). This is a chemical reaction in which the two substances react together, and the resultant chemical is trapped on the filter material. The impregnation of filter media can greatly extend the range of gases that can be removed from the air stream.

• Terpenes commonly occur in the oils that give plants their fragrance.

c. **Mother/ Clone Room**: Maintenance Active: Bi-polar Ionization-every 2 years or as needed for maintenance. Active carbon filters. The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Mother/ Clone Room 0.10- 0.12 12 lbs. per CFM Recommended rate of replacement of the carbon filter material is every 24-30 months. This is

empirically based on 6 air-changes/ hour and an average cannabis plant size and plant totals, for each room.

d. **Vegetative Room**: Maintenance Active: Bi-polar Ionization-every 2 years or as needed for maintenance. Active carbon filters. The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Vegetative Rooms 0.010-0 – 0.012 lbs. per CFM Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 6 air-changes/ hour and an average cannabis plant size and plant totals, for each room.
e. **Cultivation Rooms** Maintenance Active: Bi-polar Ionization-every 2 years or as needed for maintenance. Active carbon filters. The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Cultivation Rooms 0.020 - 0.024 lbs. per CFM. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 6 air-changes/ hour and an average cannabis plant size and plant totals, for each room.
f. **Drying Rooms:** Maintenance Active: Bi-polar Ionization-every 2 years or as needed for maintenance. Active carbon filters. The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. .
g. **Trimming Rooms:** Maintenance Active: Bi-polar Ionization-every 2 years or as needed for maintenance. Active carbon filters. The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Trimming Rooms 0.020 - 0.024 lbs per CFM. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 6 air-changes/ hour and an average cannabis plant size and plant totals, for each room.
h. **Packaging Rooms**: Maintenance Active carbon Can-lite Fans: The molecular weight of the cannabis terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Packaging Rooms is 12 lbs. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 15 air-changes/ hour and an average cannabis plant size and plant totals, for each room.

This is an initial odor plan, FS will work with local staff and industry professionals to ensure odor level mitigation.

PARCEL DESCRIPTION

A CERTAIN LOT OR PARCEL OF LAND, WITH BUILDINGS THEREON, SITUATED ON THE SOUTHERLY SIDE OF ALFRED ROAD (ROUTE #111) IN THE CITY OF BIDDEFORD, COUNTY OF YORK, AND STATE OF MAINE, BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT AN IRON ON THE SOUTHERLY SIDE OF SAID ALFRED ROAD MARKING THE NORTHWESTERLY CORNER OF LAND CONVEYED TO LEO PAUL LORANGER AND IRENE C. LORANGER BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1467 PAGE 171, SAID IRON BEING ALSO LOCATED ON A COURSE OF

S 86° 34' 30" W A DISTANCE OF 55.10' FROM A STONE MONUMENT OPPOSITE STATION 806 AS SHOWN ON THE STATE HIGHWAY COMMISSION PLAN, FEDERAL AID PROJECT F-360 (1) RECORDED IN SAID REGISTRY IN PLAN BOOK 23 PAGE 21.

THENCE BY LAND OF SAID LORANGER ON THE FOLLOWING COURSES:

S 0° 01' 30" E A DISTANCE OF 205.66' TO A ROD;

N 89° 58' 30" E A DISTANCE OF 200.88' TO AN IRON MARKING THE SOUTHEASTERLY CORNER OF SAID LORANGER LAND;

THENCE BY LAND FORMERLY OF THE GRANTOR BEING THE SOUTHERLY LINE OF THE RE-SUBDIVISION OF LAND OF JOURNAL PUBLISHING CORP. SHOWN AS LOT #4 ON PLAN BY DESROBERTS & HENRY DATED DECEMBER, 1979 AND RECORDED IN SAID REGISTRY IN PLAN BOOK 104 PAGE 10;

THENCE BY THE SOUTHERLY LINE OF SAID LOT #4 N 89° 58' 30" E A DISTANCE OF 152.21' (152.38' IN PLAN BOOK 104, PAGE 10) TO A ROD, MARKING THE SOUTHERLY LINE OF SAID GRANTOR LAND AND BEING THE NORTHWESTERLY LINE OF LAND FORMERLY OF THE BOSTON AND MAINE RAILROAD;

THENCE BY LAND OF SAID BOSTON AND MAINE RAILROAD S 52° 09' W A DISTANCE OF 584.76' TO A ROD MARKING THE NORTHEASTERLY SIDE OF COLE ROAD;

THENCE BY THE NORTHEASTERLY SIDE OF SAID COLE ROAD N 43° 17' W A DISTANCE OF 298.90' TO AN IRON MARKING THE SOUTHEASTERLY LINE OF LAND CONVEYED TO DENISE MILLER BY DEED RECORDED IN SAID REGISTRY IN BOOK 6284 PAGE 91;

THENCE BY SAID MILLER LAND ON THE FOLLOWING COURSES:

N 46° 47' E A DISTANCE OF 300.22' TO AN IRON;

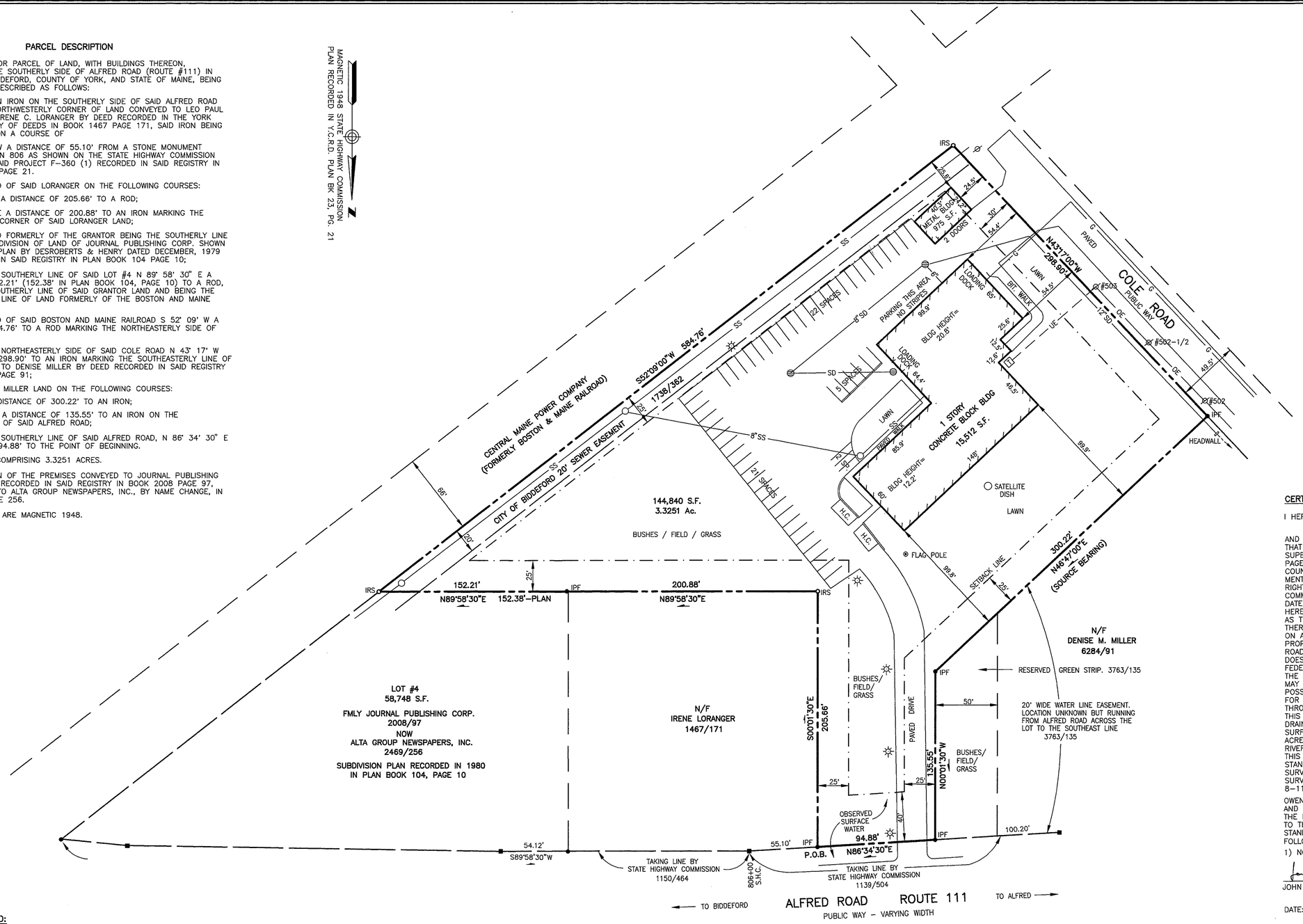
N 0° 01' 30" W A DISTANCE OF 135.55' TO AN IRON ON THE SOUTHERLY SIDE OF SAID ALFRED ROAD;

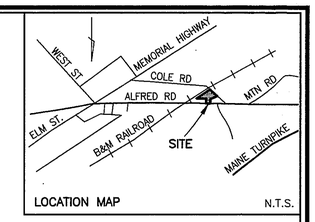
THENCE BY THE SOUTHERLY LINE OF SAID ALFRED ROAD, N 86° 34' 30" E A DISTANCE OF 94.88' TO THE POINT OF BEGINNING.

ABOVE PARCEL COMPRISING 3.3251 ACRES.

BEING A PORTION OF THE PREMISES CONVEYED TO JOURNAL PUBLISHING CORP. BY DEED RECORDED IN SAID REGISTRY IN BOOK 2008 PAGE 97, AND CONVEYED TO ALTA GROUP NEWSPAPERS, INC., BY NAME CHANGE, IN BOOK 2469 PAGE 256.

ABOVE COURSES ARE MAGNETIC 1948.





LOCATION MAP N.T.S.

CERTIFICATE:

I HEREBY CERTIFY TO: CHICAGO TITLE INSURANCE COMPANY
BEACON PRESS, INC.

AND THEIR RESPECTIVE SUCCESSORS AND ASSIGNS THAT (A) THIS SURVEY WAS PREPARED BY ME OR UNDER MY SUPERVISION, (B) THE PROPERTY DESCRIBED IN DEED BOOK 2008, PAGE 97 AND BOOK 2469, PAGE 256, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS, AND THE LOCATION OF ALL IMPROVEMENTS, ENCROACHMENTS, FENCES, EASEMENTS, ROADWAYS AND RIGHTS OF WAY WHICH ARE EITHER VISABLE OR REFERED TO IN THE COMMITMENT FOR TITLE INSURANCE NUMBER CY-2365, EFFECTIVE DATE: MAY 27, 1997 AT 4:00 P.M. ARE ACCURATELY REFLECTED HEREON, (C) THIS SURVEY ACCURATELY DEPICTS THE STATE OF FACTS AS THEY APPEAR ON THE GROUND, (D) EXCEPT AS SHOWN HEREON, THERE ARE NO IMPROVEMENTS, ENCROACHMENTS, FENCES OR ROADWAYS ON ANY PORTION OF THE PROPERTY REFLECTED HEREON, (E) THE PROPERTY SHOWN HEREON HAS ACCESS TO A PUBLICLY DEDICATED ROADWAY (ALFRED ROAD), (F) THE PROPERTY DESCRIBED HEREON DOES NOT LIE IN A 100 YEAR FLOOD PLAIN IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AS DETERMINED FROM THE FLOOD INSURANCE RATE MAP NUMBER 230145 0008B DATED MAY 15, 1984, (G) THE TITLE LINES AND THE ACTUAL LINES OF POSSESSION ARE THE SAME, (H) ALL UTILITY SERVICES REQUIRED FOR THE OPERATION OF THE PROPERTY ENTER THE PROPERTY THROUGH ADJOINING PUBLIC STREETS, EXCEPT AS SHOWN, (I) THIS SURVEY SHOWS THE LOCATION AND DIRECTION OF ALL STORM DRAINAGE SYSTEMS FOR THE COLLECTION AND DISPOSAL OF ALL SURFACE DRAINAGE, (J) THE PROPERTY SURVEYED CONTAINS 3.3251 ACRES, 52 PARKING SPACES, (K) ANY DISCHARGE INTO STREAMS, RIVERS, OR OTHER CONVEYANCE SYSTEMS IS SHOWN ON THE SURVEY. THIS SURVEY HAS BEEN MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS" AND MEETS THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY AS DEFINED THEREIN AND INCLUDES ITEMS 1,2,3,4,6,7 (a,b,c) 8-11 a,b,c,d OF TABLE A THEREOF.

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS STANDARDS FOR A CATEGORY 2, CONDITION I, SURVEY WITH THE FOLLOWING EXCEPTIONS:

1) NO REPORT

JOHN P.R. CYR, PLS NO. 509

DATE: 5-29-97

STATE OF MAINE — JOHN P.R. CYR No. 509 — PROFESSIONAL LAND SURVEYOR

LEGEND:

- 5/8" IRON ROD SET
- IRON PIPE FOUND
- MONUMENT FOUND
- UTILITY POLE
- LIGHT POLE
- MANHOLE
- CATCH BASIN
- TRANSFORMER
- CURB
- OE — OVERHEAD ELECTRIC
- E — UNDERGROUND ELECTRIC
- G — GAS MAIN
- SS — SANITARY SEWER
- SD — STORM DRAIN
- SETBACK LINE

GRAPHIC SCALE

0 20' 40' 80' 160'

PLAN REFERENCES:

1) RIGHT OF WAY MAP, STATE HIGHWAY "U" BIDDEFORD, FEDERAL AID PROJECT NO. 360(1) DATED JUNE 1948 (S.H.C. FILE NO. 16-69) RECORDED IN PLAN BOOK 23, PAGE 21.

2) PLAN OF PROPERTY IN BIDDEFORD, MAINE, FOR STEWART & WILLIAMS, INC. JULY 18, 1973 BY E.C. JORDAN RECORDED IN PLAN BOOK 65, PAGE 10.

3) PLAN OF PROPERTY IN BIDDEFORD, MAINE, MADE FOR JOURNAL PUBLISHING CORP. - SUBDIVISION, DATED FEB. 20, 1979 BY E.C. JORDAN CO. RECORDED IN PLAN BOOK 98, PAGE 33.

4) MUNICIPAL TAX MAP #17 LOT #7.

5) PLAN OF LAND TITLE SURVEY FOR COMMUNITY NEWSPAPER CO., INC. BY OWEN HASKELL, INC. DATED JAN. 7, 1997.

NOTES:

1) RECORD OWNER: FNPF, LLC - BOOK 8259, PAGE 337

2) DOCUMENTS NOT AFFECTING THE LOCUS: CITY OF BIDDEFORD - BOOK 2450, PAGE 183.

3) LEDGE NOT OBSERVED ON PROPERTY.

4) PARKING SPACES:

STANDARD SPACES:	50
HANDICAPPED SPACES:	2
TOTAL SPACES:	52

5) VISIBLE UTILITY STRUCTURES WERE FIELD LOCATED. UNDERGROUND LINES ARE SHOWN APPROXIMATE ONLY AND NEED TO BE FIELD VERIFIED, ALONG WITH OTHER UTILITIES WHICH MAY BE ON SITE, PRIOR TO CONSTRUCTION.

ZONING DATA:

REQUIREMENTS FOR ZONE I-3 (INDUSTRIAL/COMMERCIAL)

		ACTUAL
LOT AREA:	NO MINIMUM LOT SIZE	3.3251 AC.
FRONTAGE:	50 FT.	94.88'
FRONT YARD SETBACK:	40 FT.	250'±
SIDE YARD SETBACK:	25 FT.	99.8'; 25.6'
REAR YARD SETBACK:	25 FT.	N/A
OTHER ROAD OR R.O.W.:	30 FT.	54.4'
MAX. BUILDING COVERAGE:	NONE	11.4%/16,487 S.F. (TWO BLDGS)
OPEN SPACE:	N/A	51,100 S.F. ±
MAX. BUILDING HEIGHT:	60'/6 STORIES	12.2'; 20.8'

THE PROPERTY IS NOT IN THE SHORELAND PROTECTION ZONE OR THE GENERAL DEVELOPMENT ZONE OR RESOURCE PROTECTION ZONE OR IN THE HISTORICAL ZONE OR IN A FLOOD HAZARD ZONE AS DEFINED BY FEMA MAP PANEL 230145 0008B DATED MAY 15, 1984

AREAS:

TOTAL LOT:	144,840 SQ. FT.
TOTAL BUILDINGS:	16,487 SQ. FT.
TOTAL UNIMPROVED OPEN SPACE:	51,100 SQ. FT.

ALTA/ACSM LAND TITLE SURVEY

ON

ALFRED ROAD, BIDDEFORD, MAINE

MADE FOR

BEACON PRESS, INC.

457 ALFRED ROAD, BIDDEFORD, MAINE

OWEN HASKELL, INC.
16 CASCO ST., PORTLAND, ME 04101 (207)774-0424
PROFESSIONAL LAND SURVEYORS

Drwn By	FJS	Date	Job No.
Trace By	JLW	MAY 29, 1997	97106B-Y
Check By	JPRC	Scale	Drwg. No.
Book No.	774	1" = 40'	1

BH2M

WILLIAM A. THOMPSON
ROBERT C. LIBBY, Jr.
WALTER E. PELKEY
ANDREW S. MORRELL
STEVEN J. BLAKE

Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

380B Main Street
Gorham, Maine 04038

Tel. (207) 839-2771
www.bh2m.com

February 9, 2021

Greg Tansley
Biddeford City Planner
P.O. Box 586 / 205 Main Street
Biddeford, Maine 04005

Re: Winding Creek Subdivision

Dear Greg;

On behalf of the applicant, E&R Development Corp., we are submitting a sketch plan, application and fees for an 18-lot residential subdivision.

This 8.3-acre parcel will occupy existing land of E&R Development and an abutting parcel that will be conveyed from the City of Biddeford. This conveyance is part of a land swap approved by the City. This project is a stand-alone project located north of West Brook in the RI-A Zone.

This parcel is an undeveloped wooded parcel that will be accessed through Winding Creek Lane. We will provide public sewer, public water and underground electric/telephone. The proposed sewer serving these lots will be connected to an existing pump station. A concept has been reviewed by Jeff Demers with a detailed design to be completed for the next submission.

We have also talked with Deputy Fire Chief to get his initial comments. He had no concerns at this time and a final design will be forwarded to him.

Maine Water will be copied on the proposed water main extension and we will discuss hydrant and water main size with them.

This design will include pedestrian access points through our project for connection to existing trails in the surrounding City trail system.

Roadway will be designed to a City Standard and includes a sidewalk for the entire roadway length.

Stormwater Management will meet the City requirements and will include catchbasins to collect stormwater and direct it to treatment locations. This design will also be competed for the next submission.

At this time, we would like to present this at the March Planning Board meeting to receive initial comments. Our submission includes 10 copies of the Sketch Plan, application with this narrative and an application fee of $3,500.

Please contact us if you have any questions or need additional information.

Sincerely,

William A. Thompson
Project Manager

encl.
cc: E&R Development

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: **E&R Development Corp.**
Applicant's Mailing Address: **P.O. Box 444 Biddeford, Maine 04005**
Applicant's Telephone: **207 283-3000**
What is Applicant's legal interest in the property?
☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: **E&R Development Corp.**
Owner's Address: **P.O. Box 444 Biddeford, Maine 04005**
Owner's Telephone: **207 283-3000**

Agent's Name: **William Thompson - BH2M**
Agent's Address: **380B Main Street**
Telephone: **Gorham, Maine 04038**

Engineer/Surveyor: **Robert C. Libby Jr. - BH2M**
Engineer/Surveyor's Address: **380B Main Street**
Telephone: **Gorham, Maine 04038**

Project Location and Lot Information:

Street Address: **Winding Creek Lane**
Tax Map: **8** Lot: **3-1 & portion of 3**
Current Zoning: **RI-A** Shoreland Zoning: _____

Size of lot: **8.3** [X] acres [ ] s.f. Lot Frontage: **54.63' on Winding Creek Lane**

Existing Use of Property: **Wooded Undeveloped**

Property currently serviced by:

- [ ] City Road
- [ ] Public Sewer
- [ ] Public Water
- [ ] Public Trash
- [ ] Private Road
- [ ] Septic System
- [ ] Private Well
- [ ] Private Hauler

Slope Conditions in Area of Construction (if applicable):

[ ] Flat (0-3 % slope) [ ] Rolling (3-8% slope) [ ] Hilly (8-15% slope) [X] Steep (15% + slope)

Are there any wetlands or waterbodies on the site? [X] Yes [ ] No If yes, attach information

Do you plan to bring fill onto the lot? [ ] Yes [X] No If yes, attach information

Mapped wetlands shown on Subdivision Plan

Description of proposed use of property:

Project/Proposed Use Description: **Proposed 18-lot residential subdivision on public road with public sewer, water and under ground electric**

Property to be serviced by:

- [X] City Road
- [X] Public Sewer
- [X] Public Water
- [X] Public Trash
- [ ] Private Road
- [ ] Septic System
- [ ] Private Well
- [ ] Private Hauler

Is this project part of a larger project? [ ] Yes [X] No

☐ 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: **18**

☐ 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: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval **Pending**

- ☐ 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): **$3,500**

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: (Agent) William A. Thompson Date: 2/9/2021

William A. Thompson

Signature of owner of property: _____ Date: _____

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.

NOTES:

1. APPLICANT: E & R DEVELOPMENT CORP.
P.O BOX 444, BIDDEFORD, ME

2. SURVEYOR: ROBERT C. LIBBY JR., PLS#2190
BH2M
380 B MAIN STREET
GORHAM, ME

3. ENGINEER: CHRISTOPHER MACDONALD, PE#11985
BH2M
380B MAIN STREET
GORHAM, ME

4. ZONE: RESIDENTIAL 1A (R1–A)

5. LOT STANDARDS: MIN. LOT SIZE: 10,000 S.F.
MIN. STREET FRONTAGE: 100'
MIN. SETBACKS
FRONT: 40' OR AS REQUIRED BY THE CITY OF BIDDEFORD
SIDE & REAR: 10'

6. PROPOSED USE: RESIDENTIAL SUBDIVISION

7. WATER SUPPLY: PUBLIC WATER

8. SEWER: PUBLIC SEWER

9. TAX MAP: MAP 8 LOT 3–1 & P.O. 3

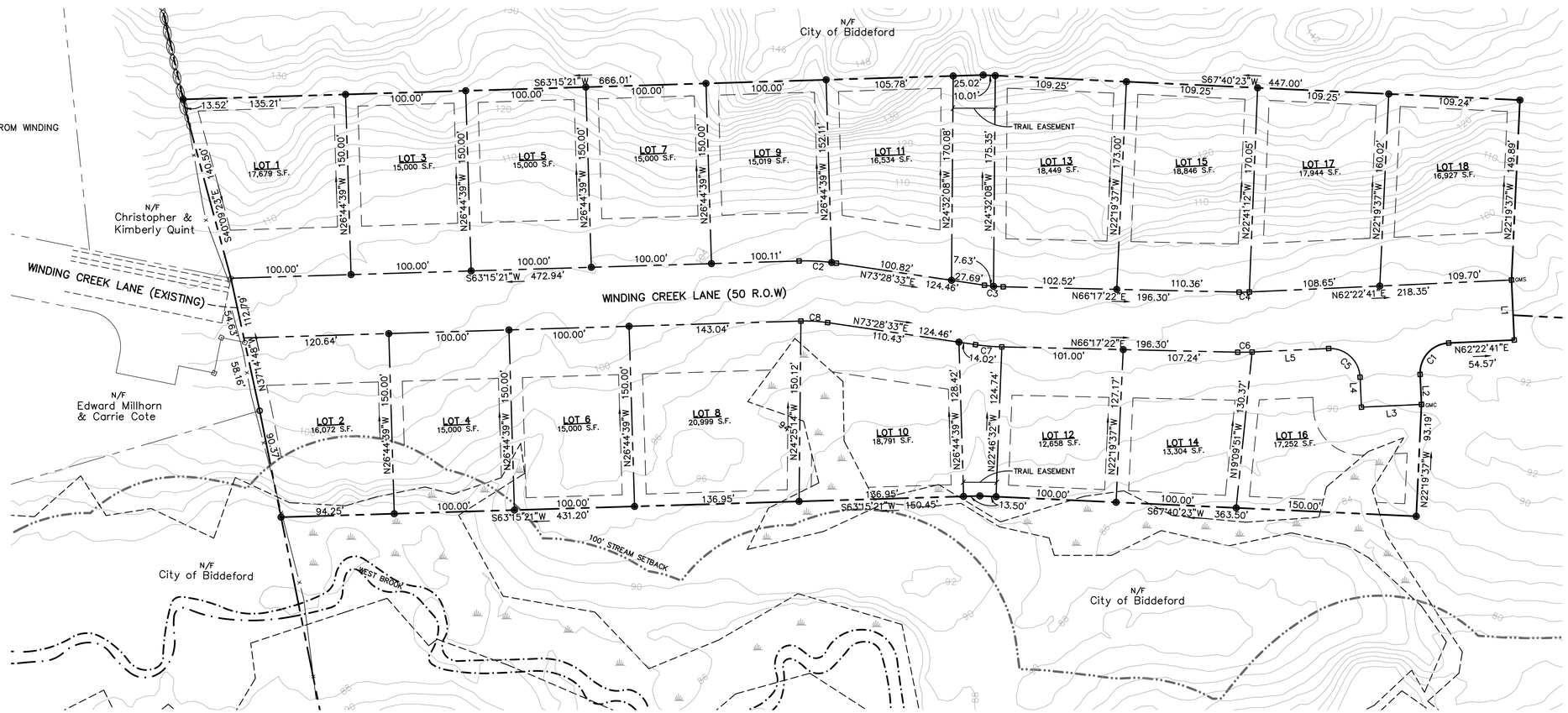
10. PARCEL DEED: BOOK 3458 PAGE 43

11. TOTAL PARCEL: 8.30 ACRES

12. WETLAND MAPPING: MARK HAMPTON
HAMPTON ASSOCIATES
PORTLAND, ME

13. ELECTRIC/TELEPHONE: UNDERGROUND

14. EASEMENTS SHALL BE RESERVED FOR PATHS/TRAILS FROM WINDING CREEK TO ACCESS CLIFFORD PARK.



Scale: 1" = 50'

LINE DATA:
L1=S27°37'19"E 50.00'
L2=N27°37'19"W 25.00'
L3=N62°22'41"E 50.00'
L4=N27°37'19"W 25.00'
L5=N62°22'41"E 63.78'

CURVE DATA:
C1= L=39.27', R=25.00'
C2= L=31.22', R=175.00'
C3= L=15.68', R=125.00'
C4= L=8.53', R=125.00'
C5= L=39.27', R=25.00'
C6= L=11.95', R=175.00'
C7= L=21.95', R=175.00'
C8= L=22.30', R=125.00'

LEGEND

SYMBOL	DESCRIPTION
IPF/IRF	IRON PIPE/ROD FOUND
IRS	5/8" IRON ROD W/ CAP TO BE SET
GMS	GRANITE MONUMENT TO BE SET
	STONE WALL
	WETLANDS
	PROPERTY LINE
	ABUTTER'S PROPERTY LINE
	EDGE OF PAVEMENT
130	EXISTING CONTOUR
A.G.	ABOVE GROUND
N/F	NOW OR FORMERLY

THIS PLAN REVIEWED AND APPROVED BY THE CITY OF BIDDEFORD PLANNING BOARD.

DATE

CHAIR

NO.	DATE	REVISION DESCRIPTION

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
E & R Development Corp.
P.O. Box 444
Biddeford, Maine

SKETCH PLAN
WINDING CREEK LANE
WINDING CREEK SUBDIVISION
WINDING CREEK LANE
BIDDEFORD, MAINE

DESIGNED	DATE
C. MacDonald	December 2020
DRAWN	SCALE
Dept.	As Noted
CHECKED	JOB. NO.
W. Thompson	20217

SHEET
1

REPRODUCTION OR REUSE OF THIS DOCUMENT WITHOUT THE EXPRESSED WRITTEN CONSENT OF BH2M INC. IS PROHIBITED

G:\2020\20217\Winding Creek Sketch plan.dwg

PLANNING BOARD REPORT

March 10, 2021

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

Application: Winding Creek Drive– E & R Development Corp.
(Tax Map 8 Lot 3-1 and Lot 3)
Subdivision Sketch Plan Review
Review Status: New application

Board members and Mr. Tansley,

The following application and attached information has been provided for review:

1. Application form dated 2/9/2021.
2. Cover letter dated 2/9/2021, from BH2M Engineers, Surveyors.
3. Sketch Plan entitled: *Winding Creek Subdivision, Winding Creek Lane, Biddeford, Maine For: E & R Development Corp.* Prepared by BH2M Engineers, Surveyors, dated December 2020.

Attachments:

4. Letter of Understanding (Between the City, applicant and Gervais Dube) (ATT. 1)
5. Staff Memo to the City Council by Carl Walsh, Recreation Director, Meeting Date: 10-20-2020 (ATT. 2)
6. *Proposed Land Conveyances* Map (referenced in Staff Memo above and in the Letter of Understanding, Exhibit A) (ATT. 3)

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

PROJECT DESCRIPTION

The applicant seeks to create 18 residential lots via an extension of Winding Creek Lane, a dead-end public street that connects to Granite Street by means of Robin Court and Alison Avenue. The site is approximately 8.3 acres in size, approximately 350 feet wide and 1,050 feet in length, located in the Residential 1 (R-1-A) zone. It is adjacent to the West Brook, straddling lands owned by E & R

Development Corp. (Tax Map 8 Lot 3) and a portion of Clifford Park that is owned by the City (Tax Map 8 Lot 3-1). The applicant, along with adjacent property owner Gervais Dube (Tax Map 30 Lot 58) and the City have an understanding on land conveyances among the three parties as outlined in the attached letter.

COMPLETENESS REVIEW

The application is before the Planning Board as required by Chapter 66 (Subdivisions) subject to 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.

The applicant has submitted a cover letter with a brief description of the proposal accompanied by a concept design of the proposed lots that appears to be adequate for a Sketch Plan review. The applicant also submitted information related to right, title and interest in the form of the letter of understanding between the applicant and the City and the referenced Attachment A. Items submitted to the City Council, along with the staff review by the Director of Recreation, is also attached for the Board's consideration.

REVIEW PROCESS

As outlined in Sec. 66-30, the Planning Board and the applicant have three primary objectives/areas of focus: 1) general nature of the project and its impact on the community; 2) determining the development is a major or minor subdivision; and if a clustered subdivision is a development that the Board is interested in the applicant to consider and submit.

Another item for discussion and action is to determine if the application, prior to review and approval of the preliminary plan will require any studies for the Board's consideration. This is outlined in Sec. 66-38. Staff recommends the Board requires a Wildlife Study as per Sec. 70 of the Land Development Regulations.

And lastly, in addition to the items above, and with an eye on the preliminary plan review application, it would be helpful for the applicant to provide a narrative(s) that address how the application conforms to the various applicable standards required by Chapter 66.

COMPLIANCE WITH THE CITY'S ORDINANCES

When considering the review at this point, it is intended by the process to be general in nature, the applicant should take the opportunity to introduce the project and the Board should ask questions and provide feedback. The following are comments that Board and the applicant may consider in the discussion:

ENVIRONMENTALLY SENSITIVE AREAS (Sec. 66-39(b)(8))

When reviewing the context of the overall area through a lens of land conservation and plant and wildlife habitat, it appears that this and subsequent developments as identified in the Letter of Understanding, will encroach and likely block what looks to be a corridor connecting conserved land within Clifford Park (Maine Coast Heritage Trust conservation easement) and the Blandings Park

Wildlife Sanctuary (conserved significant wildlife habitat). This particular location in the City is part of an identified *Undeveloped Habitat Block* that is 939 acres in size and as having State Listed Animal Habitats. See Beginning with Habitat maps (FIG. 1 & 2) and annotated City GIS Tax Map (FIG. 3).

1. Though this area is within a growth district for the City, the Planning Board and the applicant may want to consider growth that reflects, what is likely, the valuable and sensitive wildlife and plant habitat in this locale. This might be realized through different locations and/or form of the proposed development.
2. The development site's limits appear to have been informed by a specific design. This process results in a shape of land area that may not be appropriate when considering other factors, such as the environmental assets adjacent to the proposed development. A clustered form of development would likely result in a different shape of land that might inform a different location and one that could have less impact to the environment. (See FIG. 4)
3. The type of development proposed can be characterized as sprawl, continuation of the suburban housing development that was constructed in the 1980's through the early 2000's along Alison Ave, Robin Circle and Winding Creek Lane, as it progresses onward in a mostly linear fashion. The result is a proposed development that is characterized by lots that average more than 60% than the minimum lot size. Some of this is due to the frontage and front yard setbacks required in the underlying district.

PUBLIC TRAIL NETWORK

Existing trails located in Clifford Park are in the vicinity of the proposed development, and it appears from the Proposed Land Conveyances map (attached) that some are directly impacted.

4. Subsequent development plans for the application should include the delineation of these trails for reference and the opportunity to inform development design.
5. The 25' to 35' width proposed for the trail easements through the development should be discussed and ensure that it is sufficient. For a point of reference, the corridor for many sections of the Eastern Trail is typically 75 feet wide.
6. It appears the proposed trail along the south side of the development is located within a natural swale or drainage way that is not ideal.

LAND NOT SUITABLE FOR DEVELOPMENT (Sec. 66-71)

7. The applicant should identify these areas and address the standards outlined in this section.
8. Net Density Calculations (Sec. 44 in Article VI of the Zoning Ordinance) will need to be addressed and added to the plans.

WAIVER REQUESTS

None requested. The applicant should review compliance with standards and provide a list of those standards they seek a waiver from along with a rationale for the Board to grant it.

CONCLUSION

The Planning Board and applicant should discuss the comments/topics outlined above, along with other comments the Board, applicant and staff may have regarding the specifics of the proposed development. In summary, the Board and applicant may want to consider the following:

1. Is the proposed development in the best location as it relates to the larger environmental context of the area (see FIG. 4).
2. Is there other development options, such as a cluster development or multi-family condominium, available to add housing in this area that could be less impacting on the public use and environmental resource of the area;
3. The Board should solicit feedback from the Conservation Commission;
4. The Board should determine what studies are to be completed as part of or prior to the subsequent preliminary plan application. Staff is recommending a wildlife study be required per Sec. 70 of the Land Development Regulations.
5. In the absence of information and insight from the Conservation and Commission and a Wildlife Habitat Study, the Board may want to consider another Sketch Plan prior to the applicant submitting preliminary plan application.
6. Per Sec. 66-30, the Board should determine whether the application is a major or minor subdivision and might consider if a clustered plan is to be submitted per 66-30(c).

SUGGESTED MOTIONS

Move to find the application Winding Creek Subdivision/E & R Development Corp. is determined to be a Major Subdivision and that a Wildlife Habitat Study of the vicinity of the proposed development and as it relates to potential impacts to existing plant and wildlife habitats, be prepared by a qualified Wildlife Biologist, to be engaged by the City at the expense of the applicant.

In addition:

Move to have the applicant E & R Development Corp. regarding the Winding Creek Subdivision application, prepare and submit two clustered development sketch plans as outlined Section 66-30(c) in the Subdivision Ordinance, and to be considered by the Planning Board prior to submitting a preliminary plan application.

Feel free to contact me with questions.

Best regards,

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

Conserved Land and Undeveloped Habitat

Welcome **Layers** **Legend**

Beginning with HABITAT

Conserved Lands and Undeveloped Habitat Blocks

This map viewer is an on-line adaptation of the Beginning with Habitat Map 3. It depicts the State of Maine's conserved lands database including lands in federal, state, and nonprofit ownership. Some privately owned conservation lands may not be represented. For the most accurate and current information about land ownership, consult with the local assessor and/or other local land management agencies. If public access potential to any of the properties displayed here is uncertain, landowners should be contacted first to determine if permission is necessary. If errors are noted in the current depiction of resources, please contact our office: *www.BeginningWithHabitat.org*

Ownership Types:

- Federal: National parks, forests, and wildlife refuges.
- State: Wildlife Management Areas and other properties managed by the Department of Inland Fisheries and Wildlife, state parks, and parcels managed by the Bureau of Parks & Lands.
- Municipal: Town parks, water district properties, community forests, etc.
- Private Conservation: Properties owned and managed by private (usually nonprofit) organizations such as The Nature Conservancy, Maine Coast Heritage Trust; Trust for Public Land, and local land trusts.
- Easement: Voluntary legal agreements that allow landowners to realize economic benefit by permanently restricting the amount and type of future development and other uses on all or part of their property as they continue to own and use it.

Focus Areas of Statewide Ecological Significance:

- Focus Areas of Statewide Ecological Significance have been designated based on an unusually rich convergence of rare plant and animal occurrences, high value habitat, and relatively intact natural landscapes (the combined elements of Beginning with Habitat Maps 1-3). Focus area boundaries were drawn

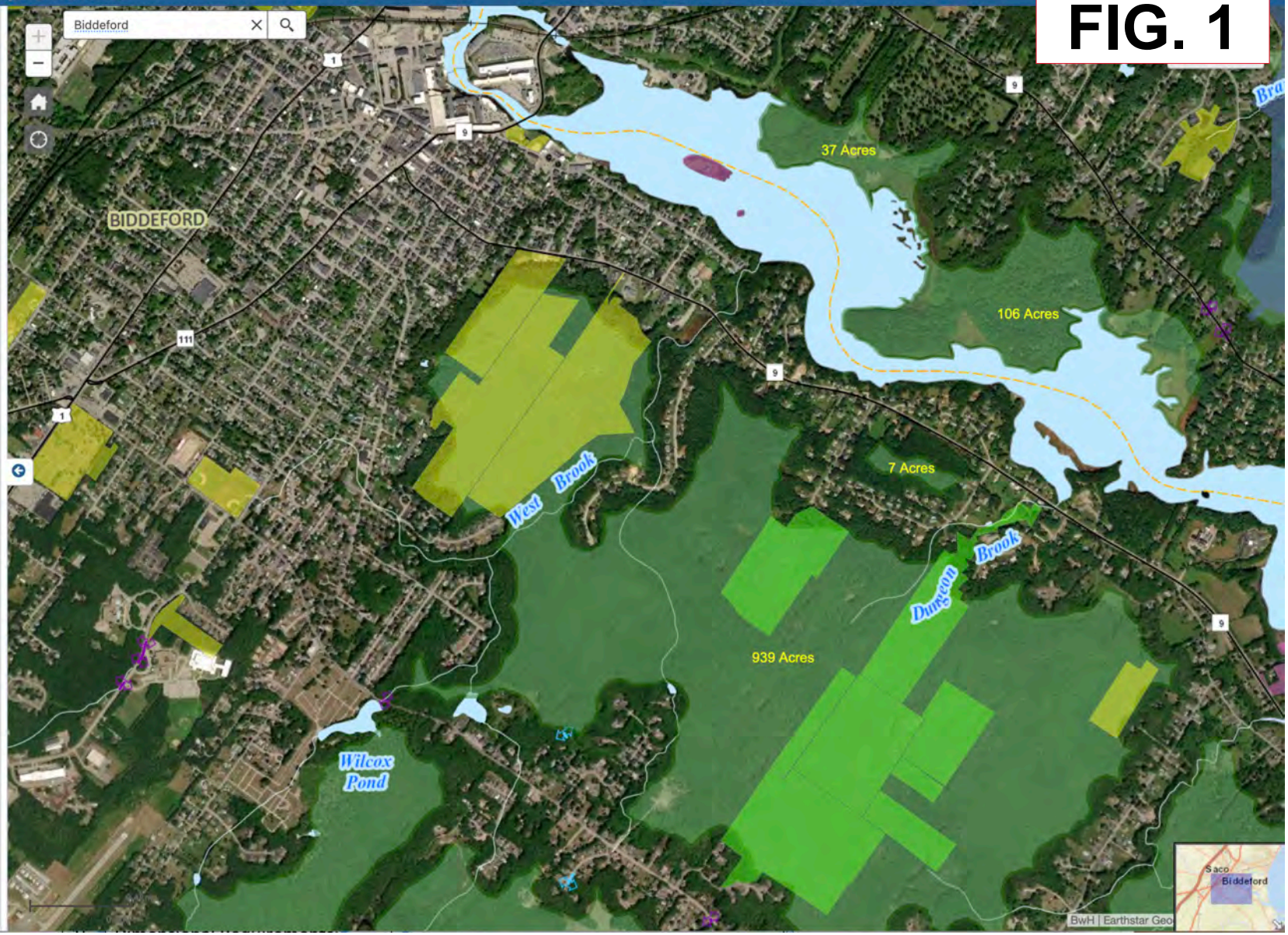


FIG. 2

Plant and Animal Habitats

Welcome | Layers | Legend

Layer Details:

Toggle layers on and off. Layers with gray checkbox will appear once zoomed to visible scale.

- [ ] Endangered Fish Species
- [ ] Maine State Listed Plants
- [x] Significant Vernal Pools
- [x] Deer Wintering Areas
- [ ] Essential Plover and Tern Habitat
- [x] Exemplary Natural Communities
- [x] State Listed Animal Habitats
- [ ] Inland Wading Bird and Waterfowl Habitat
- [ ] Shorebird Habitat
- [ ] Seabird Nesting Islands
- [ ] Shellfish Beds
- [x] Tidal Wading Bird and Waterfowl Habitat
- [ ] Atlantic Salmon Spawning Habitat
- [ ] Atlantic Salmon Rearing Habitat
- [ ] Wild Brook Trout Habitat

Hover:

[x] Check this box to enable your mouse to hover over features on the map. Click on the feature to identify more information.

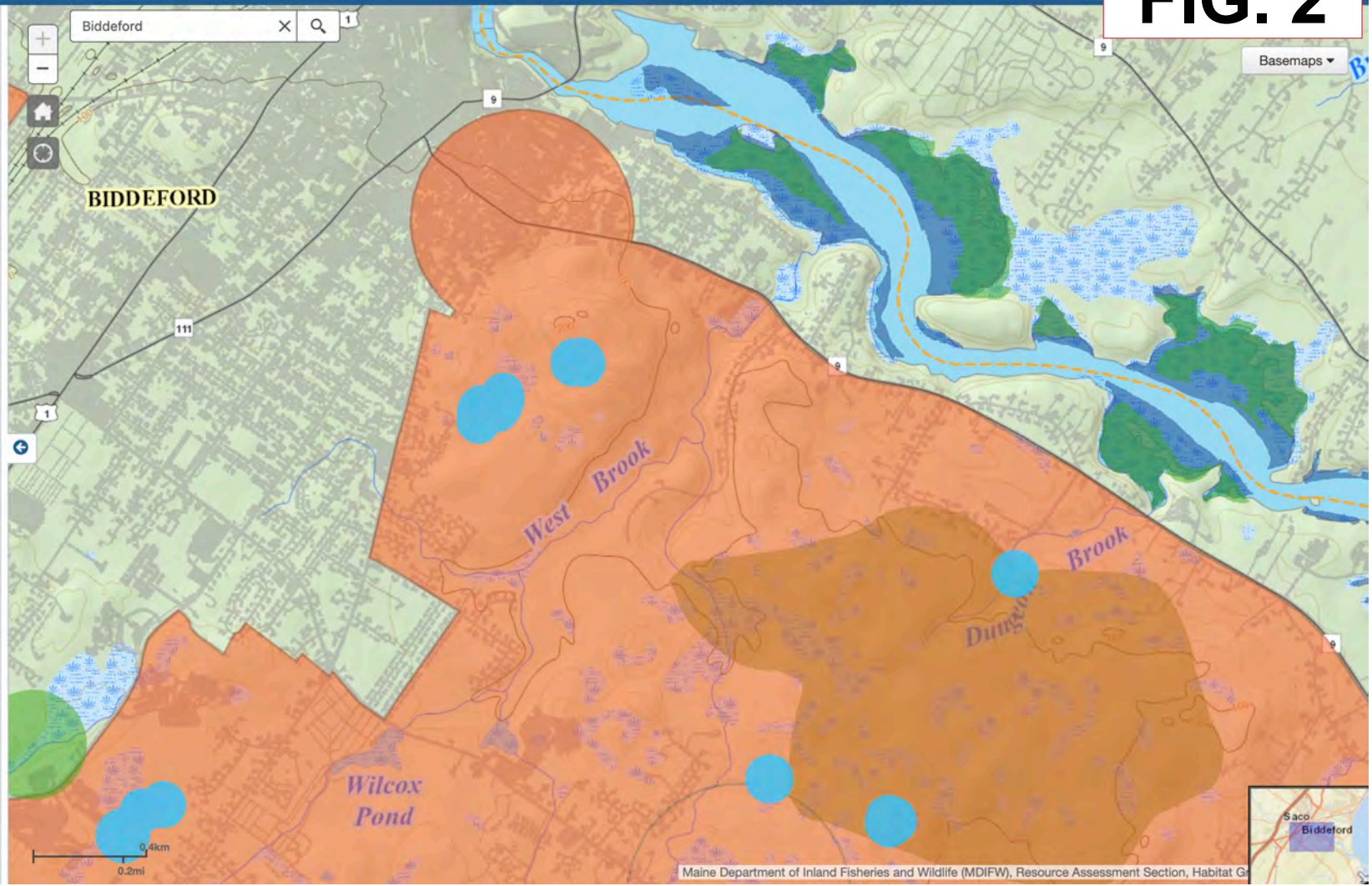


FIG. 3

Home
Biddeford Online Tax Map
Details
Add
Basemap
Legend
Conserved_Lands - Maine Conserved Lands - All
Online_Tax_Map - Online Tax Map ROW Lines
Interstate
US or State Highway
Local Road
Private Road
Railroad ROW
Online_Tax_Map - Easement Information
Online_Tax_Map - Easements and ROWs (Public and Private)
Online_Tax_Map - Condos and Lease Areas
Online_Tax_Map - Biddeford Tax Parcels
CLIFFORD PARK CONSERV. LAND
WEST BROOK (TYP).
BLANDINGS PARK WILDLIFE SANCTUARY
WINDING CREEK LANE
WILDLIFE CORRIDOR

ATT. 1

LETTER OF UNDERSTANDING

By Order of the Biddeford City Council (2020.100), the City Manager has been authorized to enter into a land conveyance agreement with both E & R Development Corporation (or official designee) and Mr. Gervais Dube (or official designee) under the terms of which there shall be an exchange of interests in certain parcels of real estate situated at and near Clifford Park, so-called, in Biddeford, Maine. The land mentioned as being owned by Mr. Gervais Dube in said Order is actually owned by Gervais Dube Properties, Inc. which will be hereinafter referred to as "Dube" and E & R Development Corporation shall be hereinafter referred to as "E & R". The City of Biddeford shall be referred to as "Biddeford".

E & R intends to transfer to Biddeford two separate parcels of land being designated as "Land to be Conveyed to the City of Biddeford from E & R Development Corp. 35.1+/- Acres" and "Land to be Conveyed to the City of Biddeford from E & R Development Corp., 24.1+/- Acres" in exchange for the transfer of land designated "Land to be Conveyed to E & R Development Corp. from the City of Biddeford-4.3+/- acres", all as shown as diagonally lined areas on plan entitled "Proposed Land Conveyances" attached hereto as Exhibit A.

Dube intends to transfer to Biddeford a parcel of land designated as "Land to be Conveyed to the City of Biddeford from Gervais Dube-42.6+/- Acres" as shown as box lined areas on the above referenced plan. The City shall be obligated to provide Dube with an appraisal of the property to be transferred and an enforceable agreement that the transferred property shall only be used for recreational purposes.

E & R intends to develop portions of its remaining property, the property it is acquiring from the City and property it intends to acquire from Dube as additions to the existing Parkside Subdivision and the existing Winding Creek subdivision, said additions to contain a total of 50 residential lots, more or less. E & R understands and agrees that it shall promptly apply for and proceed diligently to obtain approvals for such additions, it being the desire of E & R that all municipal reviewing agencies give due consideration to the transfers made hereunder in the reviewing process and the issuance of all licenses, approvals and permits. E & R shall be entitled to retain such necessary drainage easements, filter beds, and outfall areas as may be required to secure approval of the development plans by any applicable governmental agencies.

The parties hereto recognize that E & R will be expending significant sums of money in reliance on the understanding set forth herein.

Dated: January 15, 2021

Inhabitants of the City of Biddeford

By: _____

James Bennett, City Manager

E & R Development Corporation

BY: _____

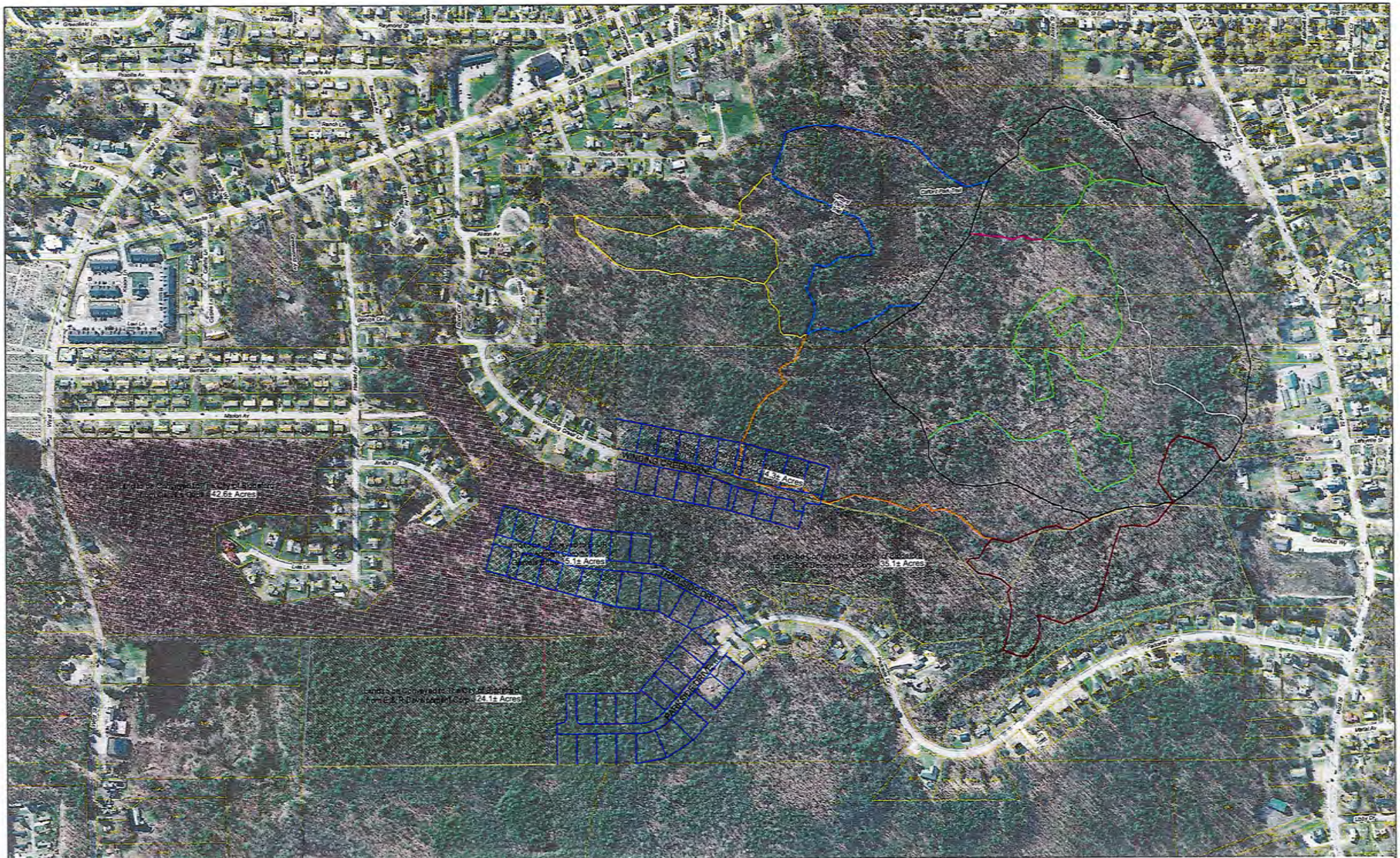
Michael R. Eon, President

Gervais Dube Properties, Inc.

By: _____

Gervais Dube, President

1022-114-ltrunderstading/1/rrevised1/14/2020



The City of Biddeford, Maine
Technologies Department - GIS Mapping
205 Main Street - P.O. Box 586 - Biddeford, Maine 04005-0586*
Tel. 207-571-0660 - Email gis@biddefordmaine.org*

0 100 200 400 600 800 Feet
1 inch = 200 feet

EXHIBIT A
Proposed Land Conveyances

Legend
Proposed Parcels to be Transfered
City of Biddeford to ESR Development Corp
ESR Development Corp to the City of Biddeford
Gervais Dube to ESR Development Corp
Gervais Dube to The City of Biddeford
Clifford Park Trails
Blue Trail
Pink Trail
Clifford Park Trails
Green Trail
Red Trail
Black Trail
Orange Trail
White Trail
Yellow Trail

Document Path: S:\Departments\Recreation\Clifford Park Area.mxd

ATT. 2

City Council

Meeting Date: 10-20-2020
Meeting Time: 6:00 PM

Agenda Item No: 2020.100
Item Description: Clifford Park Land Conveyance

Submitted by: Carl Walsh, Recreation Director

Supporting Information/Documentation:

Please see attached map

Key Terms:

N/A

Executive Summary:

For many years now the Recreation Commission has had great interest in an exchange of property from Mr. Mike Eon adjacent to Clifford Park that includes the falls. This is often a destination for the public however, it is private property. This beautiful feature added to the trail system would give members of the public the opportunity to enjoy this natural resource.

Detailed Review:

Over the years there have been on again off again discussions regarding this piece of property which has focused on a land swap. The current plan would provide the public access to the falls. This would provide Mr. Eon a piece of land approximately 5 acres reduced from approximately 12 acres discussed over the past year. In this transaction with Mr. Eon the public would be receiving approximately 60 acres. Also during recent discussions Mr. Gervais Dube has come to the table with Mr. Eon and has offered to convey approximately 42 acres off of West Street. He would do this in exchange for the city paying for a private appraisal. In total this would add approximately 100 acres to Clifford Park. The park currently has 140+ acres.

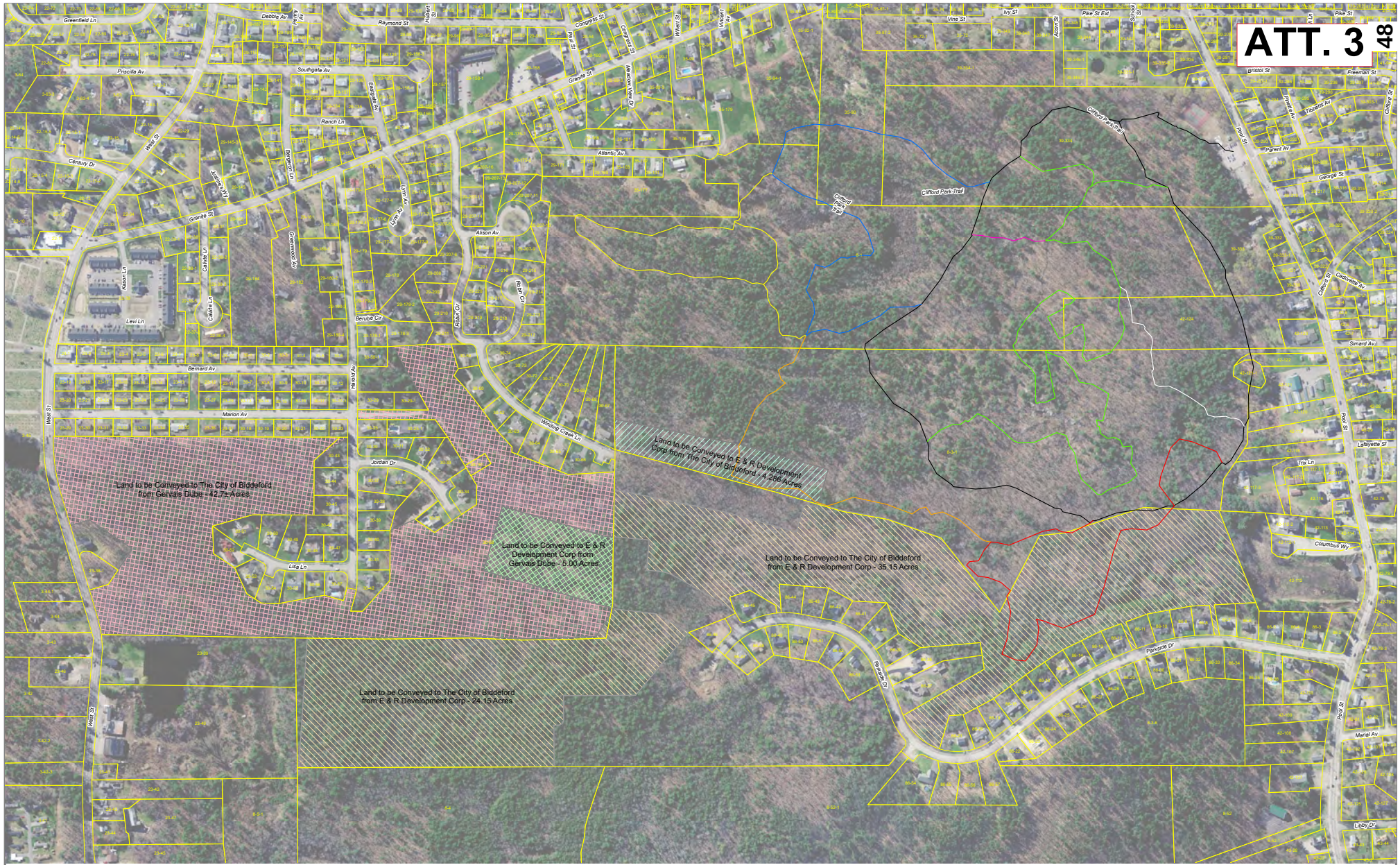
Funding Source:

Cost for the appraisal would come from account 22002-60463 Park Improvements should a final plan be accepted in the future.

Staff Recommendation:

Staff is looking for the support of council to continue discussions with the property owners and submit a final plan to council for approval.

The Recreation Commission supports the addition of these properties to Clifford Park.



The City of Biddeford, Maine
Technologies Department - GIS Mapping
205 Main Street · P.O. Box 586 · Biddeford, Maine 04005-0586*
Tel. 207-571-0660 · Email gis@biddefordmaine.org*

0 100 200 400 600 800 Feet
1 inch = 200 feet

Proposed Land Conveyances

Legend

Proposed Parcels to be Transfered
- City of Biddeford to E&R Development Corp
- E&R Development Corp to the City of Biddeford
- Gervais Dube to E&R Development Corp
- Gervais Dube to The City of Biddeford

Clifford Park Trails
- Black Trail
- Blue Trail
- Green Trail
- Orange Trail
- Pink Trail
- Red Trail
- White Trail
- Yellow Trail

Document Path: S:\Departments\Recreation\Clifford Park Area.mxd

PLANNING BOARD REPORT

March 10, 2021

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

Application: 4 Unit Warehouse Facility – Westfield Inc.
20 Pomerleau Street (Tax Map 2 Lot 81 and 81-5)
Site Plan Review
Review Status: New final plan application.

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Application form dated 12/8/2020.
2. Cover letter dated 12/8/20 and submittal application information *Final Application Packet, 20 Pomerleau Street, Commercial Buildings Site Plan, Biddeford, Maine, for Westfield Inc. December 2020*, prepared by BH2M Engineers and Surveyors.
3. Engineering Plan set entitled: *4 Unit Warehouse Facility, Pomerleau Street, Biddeford, Maine.* REV. Date 1/29/2021. Prepared by BHM2 Engineers and Surveyors.
4. Supplemental application information: BH2M Response to peer-review (Site Design) comments dated 1/29/2021
5. Proposed building, elevations, façade renderings and siding information prepared by Canam Group, Inc.
6. Peer-review comments by Site Design Associates (email dated 2/9/2021 and attached)

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 in the Industrial-3 Zone, is an existing mixed commercial property partially developed with buildings and parking. The proposal is to construct four new warehouse units (two

buildings that are approx. 35-40 feet high in the front and 20 feet high at the rear) that would add 22,500 SF of commercial floor area to the property. The site is serviced by public water and sewer and overhead power lines and the proposed development is located adjacent to the former 'Out of the Rough' and the Biddeford Ice Arena.

COMPLETENESS REVIEW

The application is before the Planning Board as required by Article XI (Site Plan Review) of the Land Development Regulations and appears to be complete with the following exceptions:

1. Ability to serve letters from the City of Biddeford Wastewater Department and Fire Department.
2. Financial Capacity Letter.
3. Letter from Maine Inland Fish & Wildlife
4. CFUP (Compensation Fee Utilization Plan) fee calculation for net new pavement/roof/vegetation as required by development within the Thatcher Brook Watershed.

COMPLIANCE WITH THE CITY'S ORDINANCES

1. Parking Lot Design. As part of the new warehouse buildings, the existing gravel parking lot is planned to be paved. The applicant and Planning Board should consider having the parking and driveway limits reduced to be conforming with the land use regulations. The existing driveway is approximately 75 feet wide; the standard (Chapter 66 Section 111) is 40 feet wide for Type II-A. The parking spaces and surplus pavement should be removed out of the front yard setback to conform to Article XI Site Plan Standards (Sec. 5.B.4.f.) and Article VI Performance Standards (Sec. 49.A.5)

2. Building Façade. The proposed building façade does not use masonry materials as required in the Industrial-3 zone, Section 5.B.4.a.2 of the Article XI Site Plan Review (Part II). As anticipated by the provision, the applicant should demonstrate to the Planning Board that a masonry building façade is not needed here so the Board can determine if the metal siding proposed will conform to the provision. Building elevation, renderings and siding information has been submitted.

3. Landscape Design. The Site Plan includes a number of proposed large and medium shade trees that are located to provide some degree of screening of the parking and new buildings. The applicant and the Board may want to consider additional plantings to provide more screening that would help with the view from the public street. The addition of evergreen trees amongst some of the shade trees proposed, along with dense planting within the portion of the front yard setback referenced in comment #1 above, would be an overall benefit and help towards conforming to Sec. 49.A.10 under Article VI Performance Standards.

4. Maximum Lot Coverage. The standard (75% Maximum) is noted on the plan, however, the actual coverage proposed is not. What percentage of the lot is going to be non-vegetated?
5. Electrical and telephone Utilities. The proposed development plans for overhead lines. The existing building is serviced by underground utilities. The standard under the Site Plan regulations (Section 5.B. Site Design Criteria) is to place these utilities underground where practicable. The applicant should address, and the Board should determine if its practicable or not.
6. Lighting. The applicant should review the existing and proposed lighting and determine if the renovated site will be sufficiently lighted while avoiding glare past the property and on to the street.
7. Solid Waste. It is not evident from the plan the location of existing of proposed dumpster. The applicant should clarify how solid waste and recycling is planned to be managed and confirm that there is a private hauler that services the site.
8. Snow Storage. This is typically identified on the plan, and doesn't appear to be. The City is requesting a Winter Maintenance Plan be prepared as part of non-residential developments. The applicant should address snow storage in the Winter Maintenance Plan.

WAIVER REQUESTS

None requested.

CONCLUSION

The submitted application appears to be complete with the exceptions noted above. If the Planning Board should determine if the building materials proposed are appropriate for the zoning district and if the outstanding items identified, peer-review engineer comments and any of the comments above the Board concurs with, can be addressed through conditions of approval it can grant a conditional approval. The Board can also move to continue the application if it would like to see a revised plan or more information prior to final approval.

SUGGESTED MOTION

Move to grant conditional approval for the Site Plan application for Westfield, Inc. at 20 Pomerleau Street, Tax Map 2 Lot 81 and 81-5…

Suggested conditions:

Prior to any ground disturbance or issuance of any permits:

1. All outstanding review comments shall be addressed to the satisfaction of the City Planner.
2. Approval letter from Fire Department
3. Capacity Letter from the Wastewater Department
4. Letter from the Department of Inland Fish and Wildlife
5. Provide CFUP Fee calculation to City staff for review

6. Financial Capacity Letter
7. A pre-construction meeting with the contractor needs to be held with the Engineering Department to discuss inspection requirements.
8. Revise Unit Cost Estimate submitted to reflect City Engineer's review and shall be resubmitted to the City Planner.
9. An Erosion and Sedimentation Control Performance Guarantee (acceptable to the Planning Department) in an amount to be determined by the City based on Condition of Approval 4) shall be submitted to the Planning Department
10. Stabilized Construction Access shall be constructed to the satisfaction of the Engineering Department.
11. Winter Maintenance plan that addresses snow storage be submitted to staff for review and approval (contact City Engineer Tom Milligan for details)
12. Provide to Staff for review and approval lighting information for the site demonstrating no glare and excessive light spillage onto the public street.

Prior to the issuance of any occupancy permits:

13. A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers are provided to the Director.
14. A performance guarantee (acceptable to the Engineering Department) in the amount of 150% of any remaining site improvements shall be submitted to the Planning Department. Amount to be determined based on City inspections and the recommendation of the City Engineer.
15. A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers are provided to the Director.
16. Payment of the CFUP Fee to the City.
17. No trash is permitted to be placed at the curb for City pickup. All trash pickup and disposal is the responsibility of the applicant.
18. Standard Conditions of Approval apply.

Feel free to contact me with questions.

Best regards,

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

Subject: Westfield - Pomerleau Street
Date: Tuesday, February 9, 2021 at 1:38:30 PM Eastern Standard Time
From: Tom Saucier
To: Tansley, Greg
CC: Christopher Di Matteo

Hi Greg and Chris

We have undertaken a review of the revised plans and documentation for the subject project. It appears the majority of our original comments have been addressed. A few items remain as noted below, numbered per the response letter:

B.1.a. Spot grades should be shown at the accessible parking in front of unit B.

B.1.b. The spot grades on the walk near the building entrances are higher than the building FFE. They may want to review this.

B.1.f. The plan continues to show overhead electrical service.

B.2.a. The pavement joint detail should call for milling of the existing surface course of pavement.

B.2.c. A round frame and grate are specified on the square outlet structure.

B.2.e. A sizing calculation for the sediment forebay should be provided.

B.2.h. The detail for the GUSF shows 6” dia UD while the plan calls for 4” dia. The 6” dia is probably the better option. Also, the specification should call for the UD to be installed holes down.

A couple of additional comments regarding the stormwater modelling:

- The outlet structure detail on sheet 4 calls for the rim elevation to be at elevation 102.0 while the model uses 101.6.
- The modelling reflects a peak elevation of 101.9 with a berm elevation of 102.0 in SF 1. The grading should be revised to provide 1 ft of freeboard.
- The modelling reflects a peak elevation of 102.5 with a berm elevation of 102.5 in EC 1. The grading should be revised to provide 1 ft of freeboard.
- The modelling reflects a peak elevation of 109.66 at EP 2. A berm should be provided with 1 ft of freeboard to ensure the stormwater remains segregated as designed.
- The 25 year peak runoff rate is expected to increase by 50% at AP #2. What is the impact on the capacity of the storm drain out of the structure? The invert, rim, and pipe size should be determined and the increase in the headwater depth provided.

If you or the applicant have any questions, please let me know.

Thanks
Tom

Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086
207-449-4275

FINDINGS OF FACT AND CONCLUSIONS OF LAW
SITE PLAN REVIEW

Pursuant to the provisions of the City of Biddeford Code of Ordinances Land Development Regulations Article XI, the Biddeford Planning Board has considered the application of **Westfield, 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:	Westfield, Inc., c/o David Gould 26 Rivers Edge Drive Kennebunk, ME 04043
2.	Owner of Property:	Westfield, Inc
3.	Agent:	BH2M Engineers 28 State Street, Gorham, ME 04038
4.	Project Location:	20 Pomerleau Street
5.	Project Tax Map #/Lot #:	Tax Map 2, Lot 81 and Lot 81-5
6.	Lot Size:	16 AC +/-
7.	Existing Zoning:	Industrial -3
8.	Overlay Zoning:	none
9.	Designations:	none
10.	Existing Use:	Mixed Commercial – Warehousing
11.	Proposed Use:	4 units of warehousing and mixed commercial
12.	Floodplain Status:	None
13.	Approvals Required:	Site Plan Review
14.	Uses in the Vicinity:	Mixed Commercial
15.	Dimensional Requirements:	
	Min. Setback from R.O.W: 40 FT	Minimum Rear Setback: 25 FT
	Minimum Side Setback: 25 FT	Maximum Height: 6 stories / 60 FT
16.	Waivers Needed:	a. None
17.	Waivers Granted:	a. None
18.	Variances Needed for Approval:	None.
19.	Other Approvals Required:	Building Permits from the Biddeford Code Enforcement Office.
20.	Other Permits Obtained:	None.
21.	Other Non-City Permits Required:	None
22.	LDR Attachment A: Fees Paid:	Yes

DRAFT

23.	Application Materials Submitted: 1. Application form dated 12/8/2020. 2. Cover letter dated 12/8/20 and submittal application information *Final Application Packet, 20 Pomerleau Street, Commercial Buildings Site Plan, Biddeford, Maine, for Westfield Inc. December 2020*, prepared by BH2M Engineers and Surveyors. 3. Engineering Plan set entitled: *4 Unit Warehouse Facility, Pomerleau Street, Biddeford, Maine.* REV. Date 1/29/2021. Prepared by BHM2 Engineers and Surveyors, including revised Final Plan "(Rev. 6)" 4. Supplemental application information: BH2M Response to peer-review (Site Design) comments dated 1/29/2021 5. Proposed building, elevations, façade renderings and siding information prepared by Canam Group, Inc. 6. Peer-review comments by Site Design Associates	
24.	Planning Board Review History:	
	Final Site Plan review and approval:	Meeting on March 17, 2021

Conclusions of Law:

The Planning Board concludes based on the application information submitted, peer-review and staff reports prepared and testimony provided at their meetings, the application conforms to the following provisions:

A. Article XI Site Plan Review of the City's Land Development Regulations, including Section 5 Site design and development criteria (subsection B):
   1. **Drainage:** The proposed development has been designed by a licensed engineer and has been reviewed by the City's peer-review engineer and applicable standards related to stormwater and drainage have been adequately addressed.
   2. **Utilities:** The proposed development has been designed by a licensed engineer and has been reviewed by the City's peer-review engineer and applicable standards related to utilities have been adequately addressed.
   3. **Parking:** The proposed development has been designed to provide for sufficient parking spaces and adequately addresses related parking standards.
   4. **Structural Layout and Design:** The proposed development has been designed to adequately address the factors to be considered under this the Site Design criterion. This includes the use of metal siding for the building façade as allowed under Section 5.B.4.a.2 of the Article XI; review and approval by the City Fire Department per conditional of approval; the removal of paving within the front yard setback; and demonstration that external lighting will not have an adverse impact to abutting properties and traffic per conditional of approval.

DRAFT

B. Article VI Performance standards of the City's Land Development Regulations, all applicable provisions including Section 37 Glare; and Section 49 Off-Street Parking and Loading.

Determination:

Based on the evidence available and the conclusions above, the Biddeford Planning Board approves the application with the following conditions:

Conditions of Approval:
Prior to any ground disturbance or issuance of any permits:

1. **All outstanding review comments shall be addressed to the satisfaction of the City Planner.**
2. **Approval letter from Fire Department**
3. **Capacity Letter from the Wastewater Department**
4. **Letter from the Department of Inland Fish and Wildlife**
5. **Provide CFUP Fee calculation to City staff for review**
6. **Financial Capacity Letter**
7. **A pre-construction meeting with the contractor needs to be held with the Engineering Department to discuss inspection requirements.**
8. **Revise Unit Cost Estimate submitted to reflect City Engineer's review and shall be resubmitted to the City Planner.**
9. **An Erosion and Sedimentation Control Performance Guarantee (acceptable to the Planning Department) in an amount to be determined by the City based on Condition of Approval 4) shall be submitted to the Planning Department**
10. **Stabilized Construction Access shall be constructed to the satisfaction of the Engineering Department.**
11. **Winter Maintenance plan that addresses snow storage be submitted to staff for review and approval (contact City Engineer Tom Milligan for details)**
12. **Provide to Staff for review and approval lighting information for the site demonstrating no glare and excessive light spillage onto the public street.**

Prior to the issuance of any occupancy permits:

13. **A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers are provided to the Director.**
14. **A performance guarantee (acceptable to the Engineering Department) in the amount of 150% of any remaining site improvements shall be submitted to the Planning Department. Amount to be determined based on City inspections and the recommendation of the City Engineer.**
15. **A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers and pump rates are provided to the Director.**

DRAFT

16. Payment of the CFUP Fee to the City.

17. No trash is permitted to be placed at the curb for City pickup. All trash pickup and disposal is the responsibility of the applicant.

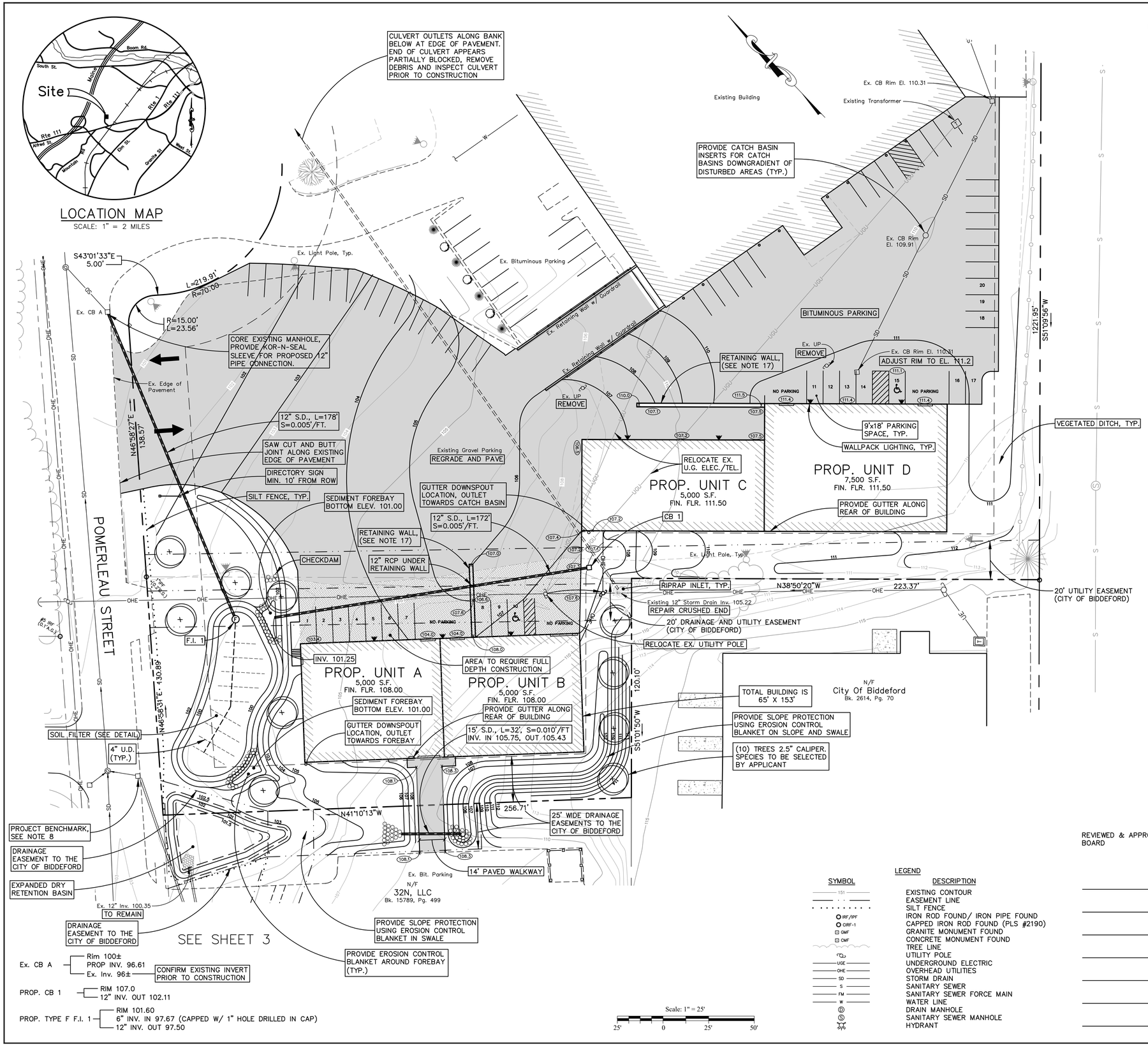
18. Standard Conditions of Approval apply.

_____
Planning Board Chairman

_____
Date

DRAFT

LOCATION MAP
SCALE: 1" = 2 MILES



NOTES:

1. OWNER/APPLICANT: WESTFIELD INC.
26 RIVERS EDGE DRIVE
KENNEBUNK, ME 04043
2. ENGINEER: ANDREW MORRELL, PE #13285
BH2M
28 STATE STREET
GORHAM, MAINE
3. SURVEYOR: ROBERT C. LIBBY JR., PLS #2190
BH2M
4. DEED REFERENCES: BK. 9128 PG. 22
BK. 16102, PG. 230
5. TAX MAP REFERENCES: MAP 2, LOT 81
MAP 2, LOT 81-5
6. ZONING: I-3, INDUSTRIAL 3
7. MINIMUM STANDARDS: LOT SIZE - NONE
FRONTAGE - 50'
SETBACKS - 30' FRONT, 25' SIDE/REAR
MAX. LOT COVERAGE - 75%
8. BENCHMARK: EXISTING C.B. RIM IN POMERLEAU STREET
RIM ELEVATION 102.42
9. PROPOSED USE: 4 UNIT WAREHOUSE FACILITY
10. SEWER SERVICE: PUBLIC
11. WATER SERVICE: PUBLIC
12. ELECTRIC/TELEPHONE: UNDERGROUND FROM EXISTING UTILITY POLE
13. PARKING: REQUIRED (WAREHOUSE & STORAGE):
- 1 SPACE/2,000 SF + 1 PER EMPLOYEE
- 22,500 SF/2,000 = 11.25 SPACES
- ESTIMATED 8 EMPLOYEES = 8 SPACES
- TOTAL = 19.25 SPACES

PROVIDED: 20 SPACES
14. SIGNS: MAX HEIGHT: 20'
MAX. SIZE: 72 SF OR 30 SF PER BUSINESS
15. PLAN REFERENCES:
A. AMENDED PLAN, THE DIVISION OF LOT 7A, ALFRED ROAD INDUSTRIAL PARK, POMERLEAU STREET, BIDDEFORD, MAINE, JOB # 11003, DATED JANUARY 2011, BY BH2M.
B. AMENDED PLAN OF THE DIVISION OF LOT 7, LAND OF THE CITY OF BIDDEFORD, ALFRED ROAD INDUSTRIAL PARK, POMERLEAU STREET, BIDDEFORD, MAINE, DATED 8-23-02 BY THE CITY OF BIDDEFORD ENGINEERING DEPARTMENT AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS PLAN BOOK 275, PAGE 27.
16. ALL CONSTRUCTION AND SITE ALTERATIONS SHALL BE DONE IN ACCORDANCE WITH MAINE EROSION AND SEDIMENTATION CONTROL, BMP'S LATEST REVISION.
17. RETAINING WALLS TO BE DESIGNED BY STRUCTURAL ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
18. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND LOCATING ALL UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. EXISTING UTILITY/LIGHT POLES SHALL BE REMOVED OR RELOCATED AT THE DIRECTION OF THE PROJECT OWNER.
19. ALL DISTURBED AREAS THAT ARE NOT PROPOSED TO BE PAVED SHALL BE LOAMED AND SEEDED.
20. EXISTING PROPERTY LINE BETWEEN LARGER NORTHERN PARCEL AND SMALLER SOUTHERN PARCEL TO BE DISSOLVED CREATING ONE LARGER PARCEL.
21. WATER SERVICES TO BE SIZED BASED ON PROPOSED USE AND IF SPRINKLERS ARE REQUIRED.

LEGEND

SYMBOL	DESCRIPTION
151	EXISTING CONTOUR
	EASEMENT LINE
	SILT FENCE
IRF/IPF	IRON ROD FOUND/ IRON PIPE FOUND
CIRF-1	CAPPED IRON ROD FOUND (PLS #2190)
GMF	GRANITE MONUMENT FOUND
CMF	CONCRETE MONUMENT FOUND
	TREE LINE
	UTILITY POLE
UGE	UNDERGROUND ELECTRIC
OHE	OVERHEAD UTILITIES
SD	STORM DRAIN
S	SANITARY SEWER
FM	SANITARY SEWER FORCE MAIN
W	WATER LINE
D	DRAIN MANHOLE
S	SANITARY SEWER MANHOLE
	HYDRANT

REVIEWED & APPROVED BIDDEFORD PLANNING BOARD

DATE

I CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS TECHNICAL STANDARDS OF PRACTICE FOR A STANDARD BOUNDARY SURVEY WITH THE FOLLOWING EXCEPTIONS:

1. NO SURVEYORS REPORT

STATE OF MAINE ROBERT C. LIBBY JR. 2190 PROFESSIONAL LAND SURVEYOR

ROBERT C. LIBBY JR. PLS #2190

NO.	DATE	REVISION DESCRIPTION
1	8/17/20	Submitted to City for Review
2	8/27/20	Rev'd. Ex. Utility Locations
3	11/19/20	Building Modifications
4	12/16/20	Submitted for Final Approval
5	01/29/21	Response to review comments

STATE OF MAINE ANDREW S. MORRELL No. 13285 LICENSED PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

SITE PLAN
4-UNIT WAREHOUSE FACILITY
POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	Dec. 2019
DRAWN	SCALE
Dept.	1" = 25'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
1

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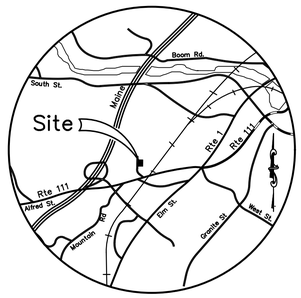
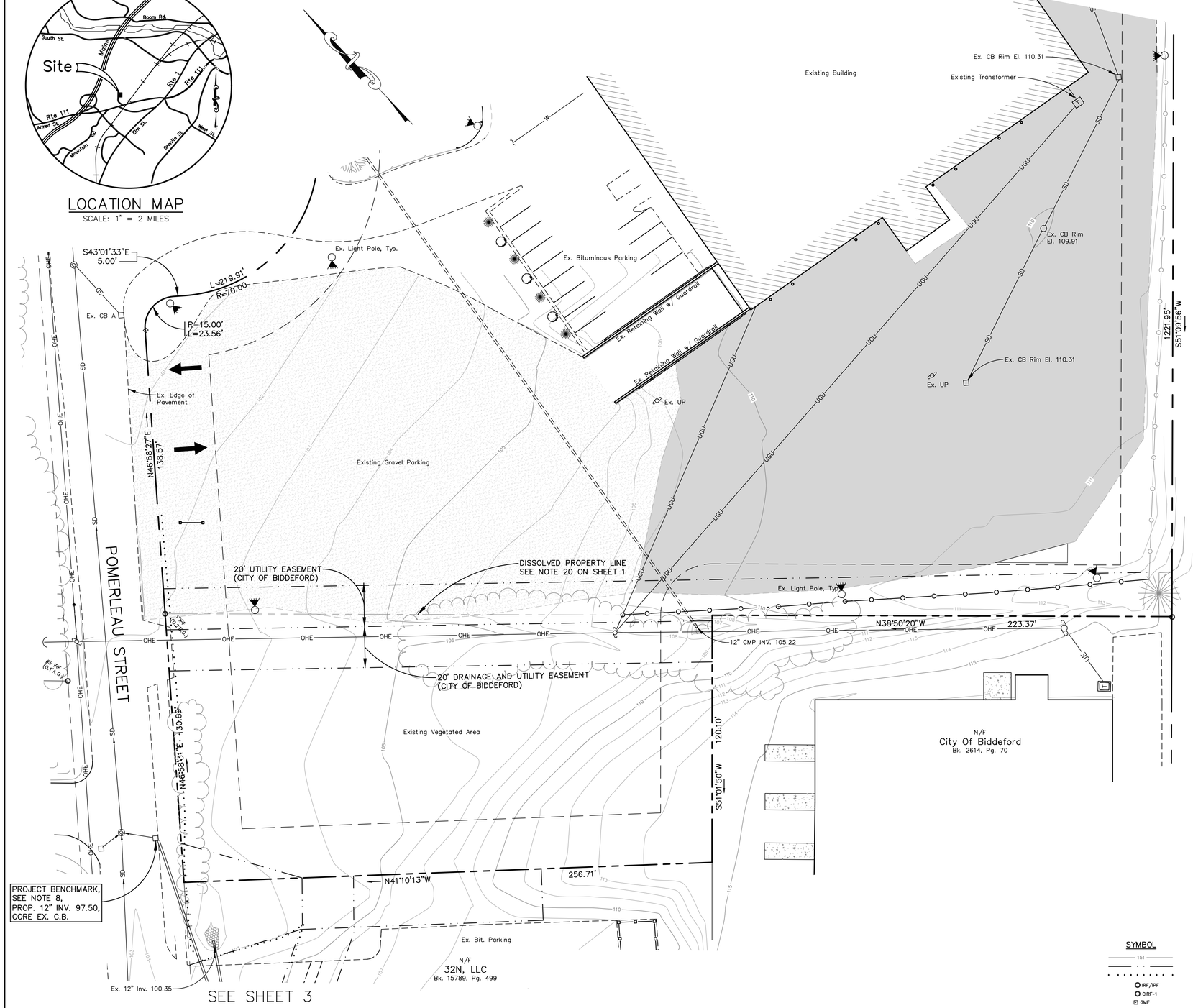


LOCATION MAP

SCALE: 1" = 2 MILES



Ex. CB A — Rim 100± / Ex. Inv. 96± — CONFIRM EXISTING INVERT PRIOR TO CONSTRUCTION

Scale: 1" = 25'

25' 0 25' 50'

NOTES:

1. OWNER/APPLICANT: WESTFIELD INC.
26 RIVERS EDGE DRIVE
KENNEBUNK, ME 04043

2. ENGINEER: ANDREW MORRELL, PE #13285
BH2M
380B MAIN STREET
GORHAM, MAINE

3. SURVEYOR: ROBERT C. LIBBY JR., PLS #2190
BH2M

4. DEED REFERENCES: BK. 9128 PG. 22
BK. 16102, PG. 230

5. TAX MAP REFERENCES: MAP 2, LOT 81
MAP 2, LOT 81-5

6. ZONING: I-3, INDUSTRIAL 3

7. MINIMUM STANDARDS: LOT SIZE - NONE
FRONTAGE - 50'
SETBACKS - 30' FRONT, 25' SIDE/REAR
MAX. LOT COVERAGE - 75%

8. BENCHMARK: EXISTING C.B. RIM IN POMERLEAU STREET
RIM ELEVATION 102.42

9. PROPOSED USE: 4 UNIT WAREHOUSE FACILITY

10. SEWER SERVICE: PUBLIC

11. WATER SERVICE: PUBLIC

12. ELECTRIC/TELEPHONE: UNDERGROUND FROM EXISTING UTILITY POLE

13. PARKING: REQUIRED (WAREHOUSE & STORAGE):
- 1 SPACE/2,000 SF + 1 PER EMPLOYEE
- 22,500 SF/2,000 = 11.25 SPACES
- ESTIMATED 8 EMPLOYEES = 8 SPACES
- TOTAL = 19.25 SPACES

PROVIDED: 20 SPACES

14. SIGNS: MAX HEIGHT: 20'
MAX. SIZE: 72 SF OR 30 SF PER BUSINESS

15. PLAN REFERENCES:

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LEGEND

SYMBOL	DESCRIPTION
151	EXISTING CONTOUR
	EASEMENT LINE
	SILT FENCE
IRF/IPF	IRON ROD FOUND/ IRON PIPE FOUND
CIRF-1	CAPPED IRON ROD FOUND (PLS #2190)
CMF	GRANITE MONUMENT FOUND
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	UTILITY POLE
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OHE	OVERHEAD UTILITIES
SD	STORM DRAIN
S	SANITARY SEWER
FM	SANITARY SEWER FORCE MAIN
W	WATER LINE
	DRAIN MANHOLE
	SANITARY SEWER MANHOLE
	HYDRANT

I CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS TECHNICAL STANDARDS OF PRACTICE FOR A STANDARD BOUNDARY SURVEY WITH THE FOLLOWING EXCEPTIONS:

1. NO SURVEYORS REPORT

STATE OF MAINE
ROBERT C. LIBBY JR.
2190
PROFESSIONAL LAND SURVEYOR

ROBERT C. LIBBY JR. PLS #2190

REVISION		
NO.	DATE	DESCRIPTION
1	01/29/21	Response to review comments

STATE OF MAINE
ANDREW S. MORRELL
No. 13285
PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

EXISTING CONDITIONS

4-UNIT WAREHOUSE FACILITY

POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	January 2021
DRAWN	SCALE
Dept.	1" = 25'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
2

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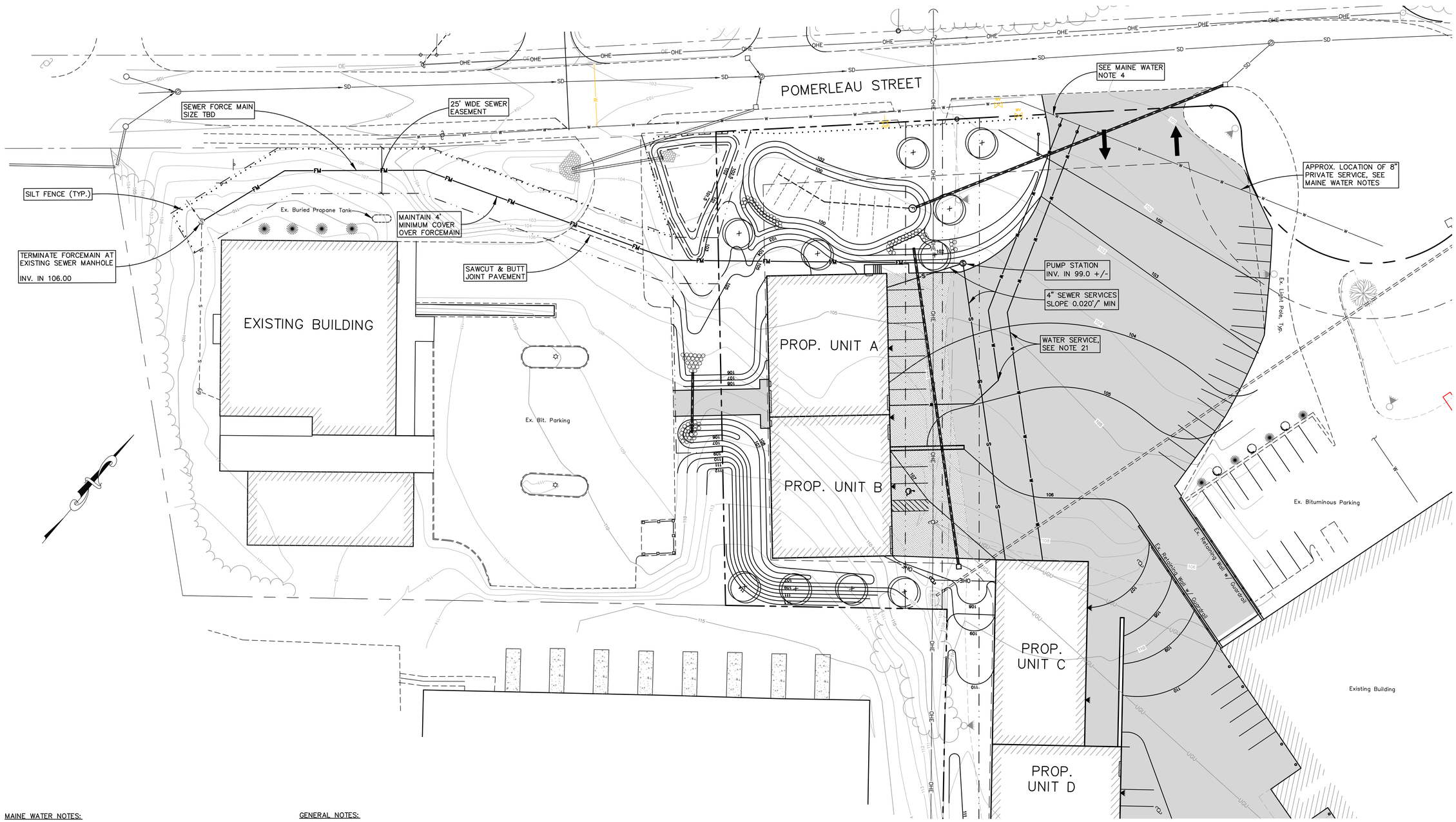

MAINE WATER NOTES:

1. THE LOCATION OF THE EXISTING PRIVATE 8" SERVICE MAIN IS APPROXIMATE AND THE SERVICE MATERIAL IS UNKNOWN. UTILITY LOCATE SERVICES CAN BE SCHEDULED WITH MAINE WATER COMPANY SERVICE DEPARTMENT. PRIVATE UTILITY LOCATE SERVICES MAY BE REQUIRED.
2. DUE TO THE EXISTING PRIVATE SERVICE MAIN THAT SERVICES THIS PARCEL NEW SERVICES FOR NEW BUILDINGS ON THIS SAME PARCEL SHOULD BE TAPPED FROM THE PRIVATE SIDE OF THE SERVICE MAIN BEYOND THE RIGHT-OF-WAY. OWNERSHIP AND MAINTENANCE OF SERVICES AND MAIN IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
3. MWC STILL REQUIRES ALL SPECIFICATIONS TO BE FOLLOWED WITH PRIVATE MAINS AND SERVICES. PROPER PERMITS PROVIDED THROUGH MWC REVIEW AND AGREEMENT/CONTRACTS MUST BE OBTAINED BEFORE ANY WORK ON WATERWORKS MATERIALS.
4. THE 8" SERVICE MAIN TRANSITIONS FROM A PUBLIC SERVICE TO A PRIVATE SERVICE WHERE THE 8" MAIN EXITS THE PUBLIC RIGHT-OF-WAY. THE PRIVATE SERVICE MAIN SERVES PARCEL 20-26 POMERLEAU STREET. SEE PLAN FOR APPROXIMATE LOCATION OF TRANSITION.

GENERAL NOTES:

1. CONTRACTOR SHALL CONTACT DIG SAFE TO FLAG UTILITIES PRIOR TO ANY CONSTRUCTION ACTIVITIES.
2. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND LOCATING ALL UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. EXISTING UTILITY/LIGHT POLES SHALL BE REMOVED OR RELOCATED AT THE DIRECTION OF THE PROJECT OWNER.
3. WATER SERVICES TO BE SIZED BASED ON PROPOSED USE AND IF SPRINKLERS ARE REQUIRED.

Scale: 1" = 25'

25' 0 25' 50'

LEGEND

SYMBOL	DESCRIPTION
151	EXISTING CONTOUR
	EASEMENT LINE
	SILT FENCE
	IRON ROD FOUND/ IRON PIPE FOUND
	GRANITE MONUMENT FOUND
	TREE LINE
	UTILITY POLE
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OHE	OVERHEAD UTILITIES
SD	STORM DRAIN
S	SANITARY SEWER
FM	SANITARY SEWER FORCE MAIN
W	WATER LINE
	DRAIN MANHOLE
	SANITARY SEWER STRUCTURE
	HYDRANT

REVISION		
NO.	DATE	DESCRIPTION
1	12/16/20	Submitted for Final Approval
2	01/29/21	Response to review comments

STATE OF MAINE ANDREW S. MORRELL No. 19203 PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

SITE UTILITIES
4-UNIT WAREHOUSE FACILITY
POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	Dec. 2020
DRAWN	SCALE
Dept.	1" = 25'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
3

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GRASSED UNDERDRAIN SOIL FILTER NOTES

REFERENCES

1. MAINE STORMWATER BEST MANAGEMENT PRACTICES (BMP), VOLUME III BMP TECHNICAL DESIGN MANUAL, CHAPTER 7 FILTRATION BMP'S (LATEST REVISION).

CONSTRUCTION METHODS

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MATERIALS, INSTALLATION, MEANS, METHODS, AND SCHEDULING.
2. ALL WORK SHALL BE IN CONFORMANCE WITH THE PROJECT PLANS AND BMP'S REFERENCED ABOVE.
3. THE SOIL FILTER MEDIA AND VEGETATION SHALL NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURES, 90% VEGETATION COVER OR PERMANENT STABILIZATION.

DE-WATERING PLAN

1. DURING CONSTRUCTION OF THE SITE AND VEGETATED SOIL FILTER, THE CONTRACTOR SHALL BE PREPARED TO IMPLEMENT A DEWATERING PLAN IN ANTICIPATION OF HEAVY RAIN EVENTS.
2. THE AREA OF THE BASIN MAY BE EXCAVATED IN PREPARATION OF THE INSTALLATION OF THE UNDERDRAIN AND MAY BE USED FOR A SEDIMENT TRAP FOR THE SITE DURING CONSTRUCTION. AFTER EXCAVATION OF THE BASIN, THE OUTLET STRUCTURE AND PIPING SYSTEM SHALL BE INSTALLED AT THE APPROPRIATE ELEVATION AND PROTECTED WITH A SEDIMENT BARRIER. THE BASIN IS TO BE USED AS A SEDIMENT TRAP, THE SIDES OF THE EMBANKMENTS MUST BE MULCHED AND MAINTAINED TO PREVENT EROSION.

SOIL MEDIA

1. THE SOIL MEDIA SHALL CONSIST OF SILTY SANDY SOIL OR SOIL MIXTURE COMBINED WITH 20% TO 25% BY VOLUME (NO LESS THAN 10% BY DRY WEIGHT) OF MODERATELY SHREDDED BARK OR WOOD FIBER MULCH.
2. THE SOIL FILTER MEDIA SAND SHALL MEET THE GRADATION IN TABLE 7-2 (MDOT 703.01) WITH ADDITIONAL FINES ADDED IF NECESSARY.
3. THE RESULTING SOIL FILTER MEDIA SHALL HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE AND SHALL HAVE A CLAY CONTENT OF LESS THAN 2%.
4. THE COARSE GRAVEL MATERIAL SHALL MEET THE GRADATION OF TABLE 7.1 (MDOT 703.22 UNDERDRAIN, TYPE B).
5. THE FILTER MEDIA SHALL BE LIGHTLY COMPACTED BY SATURATING THE MEDIA IN 6" TO 9" LIFTS AND SHALL HAVE A PERMEABILITY OF 2.4 IN/HR TO 4 IN/HR.
6. THE CLAY CONTENT SHALL BE < 2%.

CONSTRUCTION

1. SOIL FILTER MEDIA, COARSE GRAVEL, AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" AND 6" SCHEDULE 40 OR SDR 35 PVC PIPE. SPACED 8 FEET AND 4 FEET ON CENTER AS SHOWN ON PLANS.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED SOIL FILTER SHALL BE CONTROLLED BY A 2" PLASTIC TYPE 34-6 BALL VALVE WITH TYPE 615 BALL VALVE HANDLE EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE-PIECE VALVE BOX (AVILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE VEGETATED SOIL FILTER SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.
6. IF VEGETATION IS NOT ESTABLISHED WITHIN THE FIRST YEAR, THE CONTRACTOR SHALL INSTALL A 2-3 INCH LAYER OF LOAM (WITH LESS THAN 2% CLAY AS TESTED VIA HYDROMETER TEST) ON THE SURFACE OF THE GRASS FILTER AND RE-SEED/MULCH.
7. THE SURFACE OF THE VEGETATED SOIL FILTER SHALL BE PLANTED WITH A GRASS SPECIES THAT IS TOLERANT OF FREQUENT INUNDATION AND WELL-DRAINED SOILS. UPON SEEDING, THE SURFACES SHALL BE MULCHED WITH HAY OR AN EROSION CONTROL BLANKET BUT SHALL NOT BE FERTILIZED. AN APPROPRIATE SEED MIXTURE SHOULD CONTAIN THE FOLLOWING OR BE AN EQUIVALENT CONSERVATON TYPE MIX:

CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREFOIL	8 LBS/ACRE
TOTAL	48 LBS/ACRE

TESTING AND SUBMITTALS

1. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL TESTING RESULTS SHALL BE SUBMITTED TO THE PROJECT ENGINEER.
2. SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILLER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE WILL BE DETERMINED BY TESTING LABORATORY.
3. THE CONTRACTOR SHALL PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHODS FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES, 1996A) ON EACH TYPE OF SAMPLE MATERIAL INCLUDING A HYDROMETER TEST FOR CLAY CONTENT.
4. THE CONTRACTOR SHALL PERFORM A PERMEABILITY TEST ON THE SOIL MEDIA MIXTURE CONFORMING TO ASTM D2434.
5. THE CONTRACTOR SHALL PERFORM ONE COMPACTION DENSITY TEST ON THE IN-PLACE SOIL FILTER MEDIA FOR EVERY 1,500 S.F. OF BED OR FRACTION THEREOF. THE TEST SHALL CONFORM TO ASTM 2922.
6. UPON COMPLETION OF THE VEGETATED SOIL FILTER MEDIA AND THE ESTABLISHMENT OF 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED BASIN TO THE SPILLWAY WITH CLEAR WATER AND ADJUST THE OUTFLOW TO OBTAIN A 24-HOUR TO 32-HOUR RELEASE TIME.

CONSTRUCTION OVERSIGHT

1. THE CONTRACTOR SHALL MEET THE "CONSTRUCTION OVERSIGHT" SECTION OF CHAPTER 7, FILTRATION BMP'S (REVISED MAY 2016) OF THE STORMWATER MANAGEMENT FOR MAINE, VOLUME III, BMP'S TECHNICAL DESIGN MANUAL.
2. THE DESIGN ENGINEER SHALL BE CONDUCTING PERIODIC SITE OVERSIGHT OF THE CONSTRUCTION AS DESCRIBED BELOW AND IN COMPLIANCE WITH THE PERMITS.
3. THE ENGINEER SHALL REVIEW AND APPROVE ALL CONTRACTOR SUBMITTALS.
4. THE CONTRACTOR SHALL GIVE THE ENGINEER A PROPOSED CONSTRUCTION SCHEDULE AND A 48-HOUR NOTICE FOR ALL SITE VISITS.
5. INSPECTIONS SHALL INCLUDE:
   * PRE-CONSTRUCTION MEETING WITH CONTRACTOR
   * INSPECTION OF EXCAVATION IF USED FOR SEDIMENT TRAP
   * INSPECTION OF EXCAVATED HOLE.
   * AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND
   * ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT
   * BACK-FILLED.
   * AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO
   * INSTALLATION OF THE FILTER MEDIA.
   * AFTER FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
   * AFTER ONE YEAR TO INSPECT VEGETATION UPTAKE AND OBSERVE
   * FLOODING TEST.

TABLE 7-1
UNDERDRAIN SPECS.
MDOT #703.22

SIEVE SIZE	% BY WEIGHT
UNDERDRAIN TYPE B	
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5
SIEVE SIZE	**% BY WEIGHT**
UNDERDRAIN TYPE C	
1"	100
3/4"	90-100
3/8"	0-75
#4	0-25
#10	0-5

TABLE 7-2
AGGREGATE SPECS.
MDOT #703.01

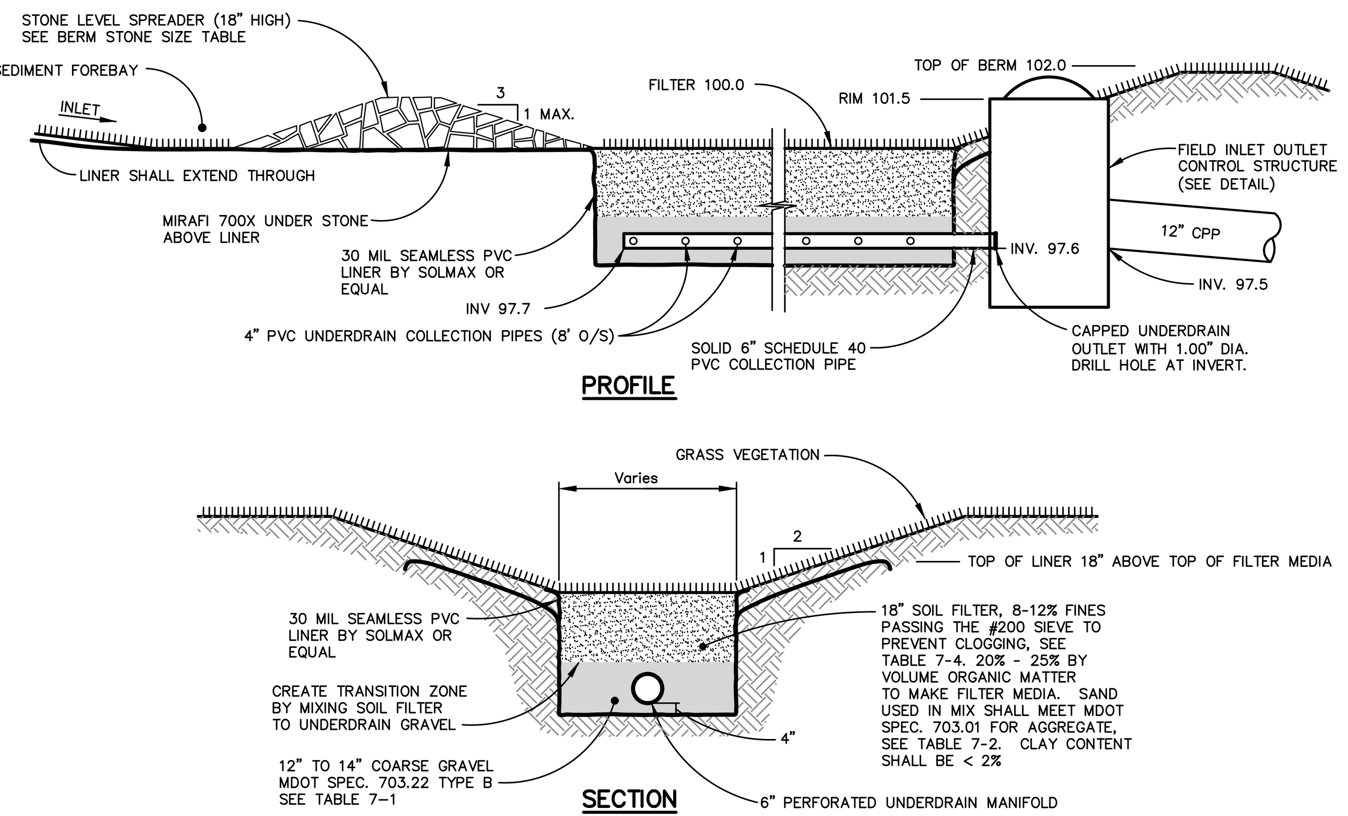
SIEVE SIZE	% BY WEIGHT
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#60	10-30
#100	2-10
#200	0-5

TABLE 7-4
COARSE LOAMY SAND SIEVE ANALYSIS SPECIFICATION

SIEVE #	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15

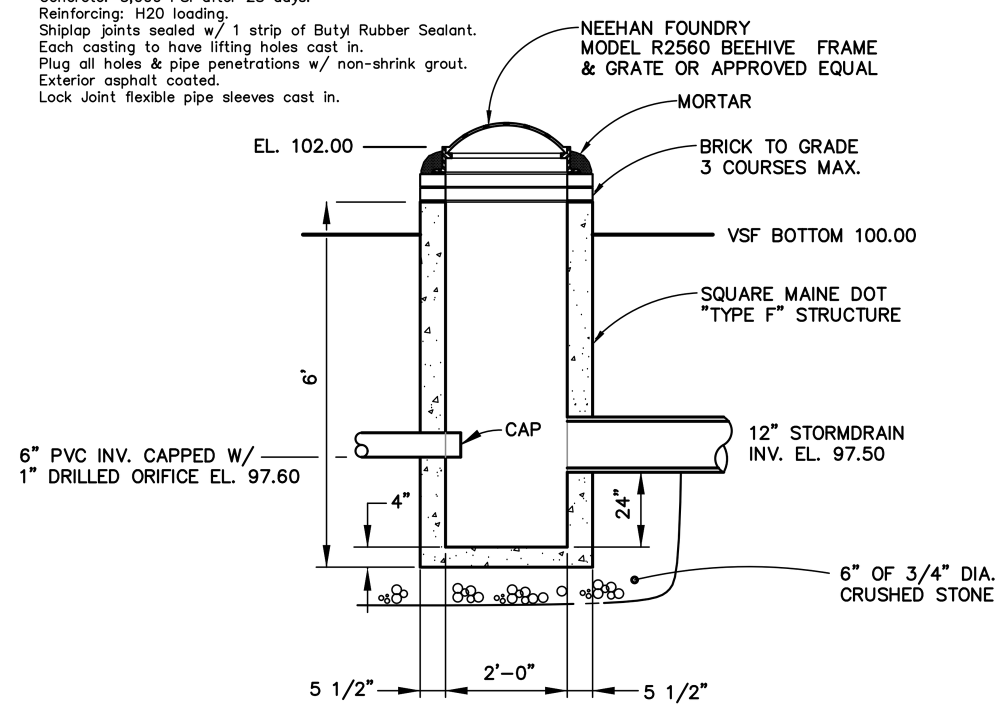
BERM STONE SIZE

SIEVE DISIGNATION METRIC	SIEVE DISIGNATION US CUSTOMARY	% BY WEIGHT PASSING SQUARE MESH SIEVES
300 MM	12"	100
150 MM	6"	84–100
75 MM	3"	68–83
25.4 MM	1"	42–55
4.75 MM	NO. 4	8–12

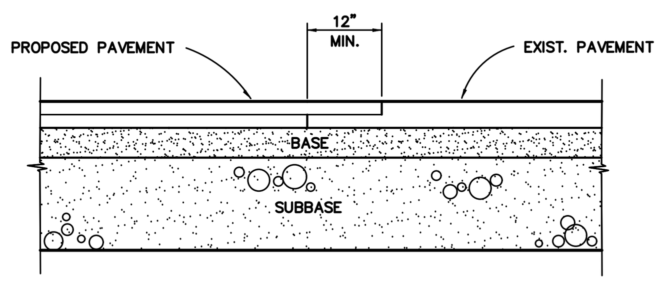


GRASSED UNDERDRAIN SOIL FILTER DETAIL
NTS

Manhole shall conform to ASTM C478.
Concrete: 5,000 PSI after 28 days.
Reinforcing: H20 loading.
Shiplap joints sealed w/ 1 strip of Butyl Rubber Sealant.
Each casting to have lifting holes cast in.
Plug all holes & pipe penetrations w/ non-shrink grout.
Exterior asphalt coated.
Lock Joint flexible pipe sleeves cast in.

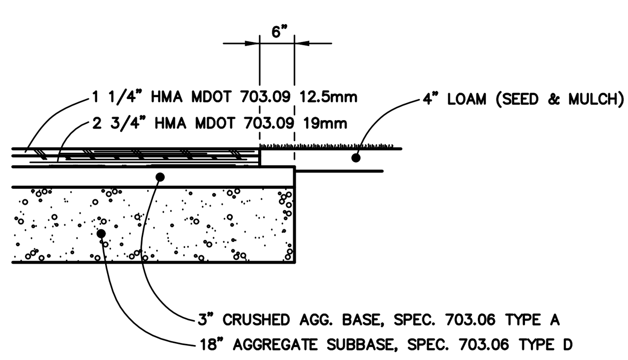


PRECAST CONCRETE FIELD INLET OUTLET CONTROL STRUCTURE
N.T.S.

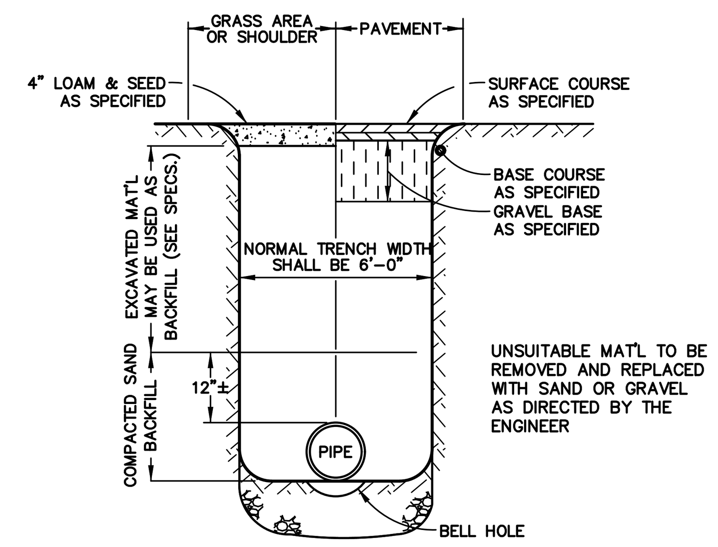


SAWCUT EXIST. PAVEMENT ALONG A SMOOTH LINE TO A NEAT EVEN VERTICAL JOINT, APPLY TACK PRIOR TO PROPOSED PAVING (AS REQ'D)

PAVEMENT JOINT DETAIL
N.T.S.



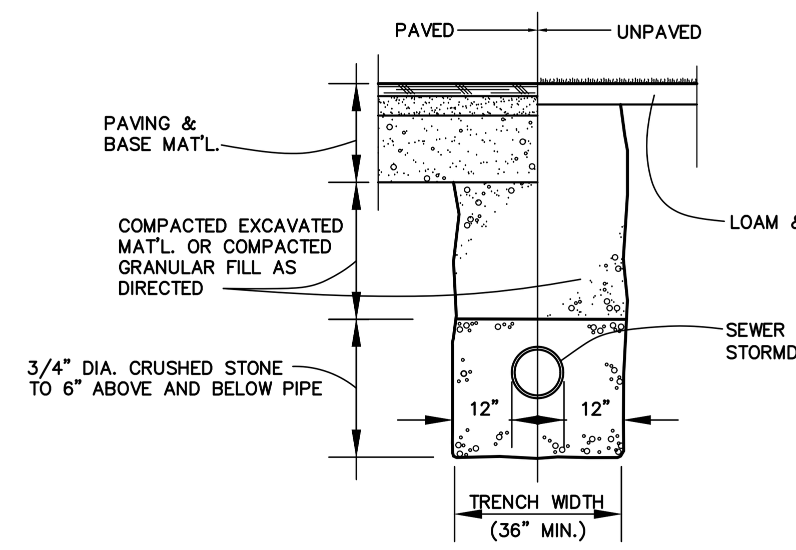
TYP. PAVEMENT DETAIL
NTS



WATER THROUGH EARTH TRENCH
N.T.S.

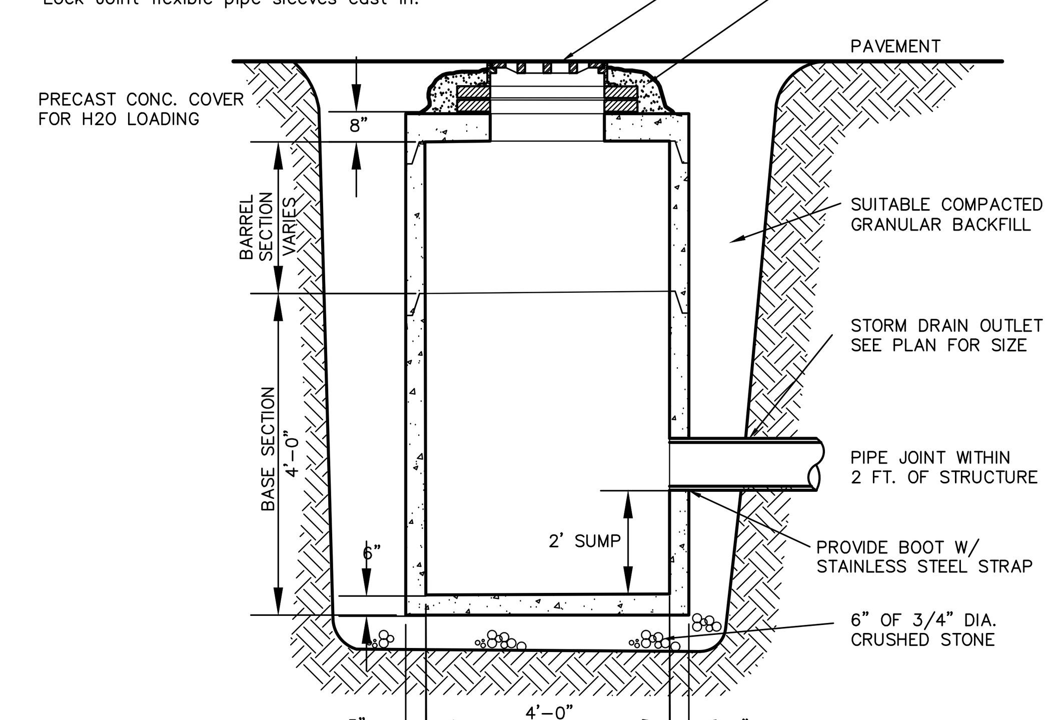
NOTES:

1. Trench width shown is payment width for rockexcavation & replacement of unsuitable material.
2. Do not mechanically compact directly over flexible pipe (e.g. PVC, Poltyethylene)
3. Concrete pipe shall have sand bedding.



TRENCH DETAIL
NTS

Manhole shall conform to ASTM C478.
Concrete: 4,000 PSI after 28 days.
Reinforcing: H20 loading.
Shiplap joints sealed w/ 1 strip of Butyl Rubber Sealant.
Each casting to have lifting holes cast in.
Plug all holes & pipe penetrations w/ non-shrink grout.
Exterior asphalt coated.
Lock Joint flexible pipe sleeves cast in.

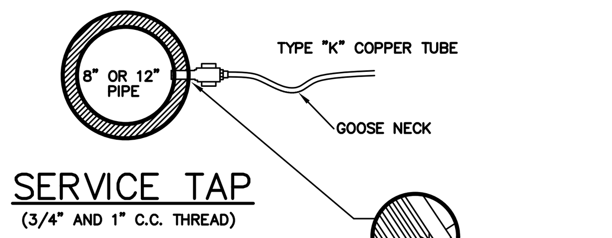


NOTE: USE A CASCO TRAP ON ALL OUTLETS AS APPLICABLE.

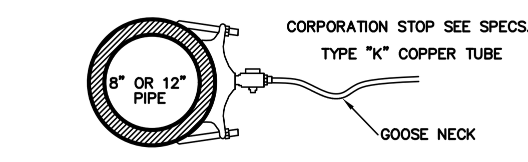
PRECAST CONCRETE CATCH BASIN DETAIL
N.T.S.

NOTES:

1. Trench width shown is payment width for rockexcavation & replacement of unsuitable material.
2. Do not mechanically compact directly over flexible pipe (e.g. PVC, Poltyethylene)
3. Concrete pipe shall have sand bedding.

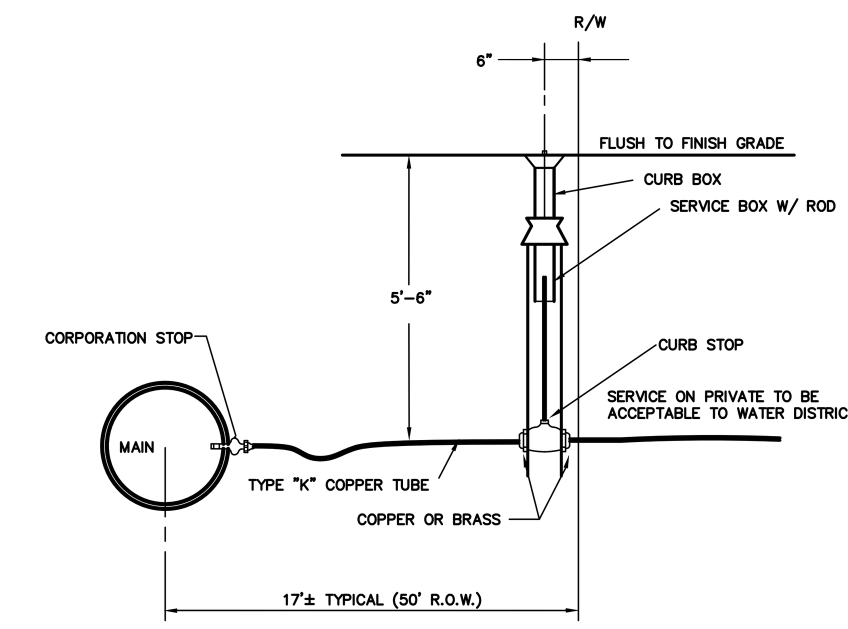


SERVICE TAP
(3/4" AND 1" C.C. THREAD)



SERVICE SADDLE
(1-1/2" & 2" C.C. OR IRON PIPE THREAD)

NOTE: SERVICE CONNECTIONS (DIRECT TAPS AND SERVICE CLAMPS) WILL BE INSTALLED SO THAT THE OUTLET IS AT AN ANGLE OF NOT MORE THAN 45° ABOVE THE HORIZONTAL. ALWAYS PUT A BEND OR "GOOSENECK" IN THE SERVICE LINE PRIOR TO CONNECTING TO PROVIDE FLEXIBILITY AND "GIVE" TO COUNTERACT THE EFFECTS OF A LOAD DUE TO SETTLEMENT OR EXPANSON AND/OR CONTRACTION (SEE DETAILS).



TYPICAL SERVICE CONNECTION
N.T.S.

REVISION		
NO.	DATE	DESCRIPTION
1	8/17/20	Submitted to City for Review
2	8/27/20	Rev'd. Ex. Utility Locations
3	12/16/20	Submitted for Final Approval
4	01/29/21	Response to review comments

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

STANDARD DETAILS
4-UNIT WAREHOUSE FACILITY
POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	Dec. 2019
DRAWN	**SCALE**
Dept.	N/A
CHECKED	**JOB. NO.**
A. Morrell	19203

SHEET
4

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EROSION AND SEDIMENT CONTROL PLAN

THIS PLAN HAS BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION. THIS PLAN IS BASED ON THE STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION IN DEVELOPING AREAS AS CONTAINED IN THE LATEST REVISION OF TO THE 2016 MAINE EROSION AND SEDIMENT CONTROL BMP'S MANUAL FOR DESIGNERS AND ENGINEERS, AND THE LATEST REVISION TO THE 2014 MAINE EROSION AND SEDIMENT CONTROL FIELD GUIDE FOR CONTRACTORS. SEE MANUALS FOR ADDITIONAL INFORMATION AND DETAILS.

DURING CONSTRUCTION THE DEVELOPER/APPLICANT OR THEIR REPRESENTATIVES WILL BE RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL BMP'S AS WELL ROUTINE INSPECTIONS AND MAINTENANCE OF THE BMP'S.

THE PROPOSED LOCATIONS OF SILTATION AND EROSION CONTROL STRUCTURES ARE SHOWN ON THE SITE PLAN.

1. ALL CONSTRUCTION INSPECTIONS SHALL BE CONDUCTED BY SOMEONE WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING STANDARDS AND PERMIT CONDITIONS. CONSTRUCTION INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE A WEEK, AND PRIOR TO AND 24 HOURS AFTER A WET WEATHER EVENT (0.5 INCH OR MORE IN A 24 HOUR PERIOD). CONSTRUCTION INSPECTION AND CORRECTIVE ACTION DOCUMENTATION RECORDS IN ACCORDANCE WITH THE INSPECTION AND MAINTENANCE PLAN AND SHALL BE MAINTAINED FOR A MINIMUM OF 5 YEARS.
2. THE SCOPE OF CONSTRUCTION INSPECTIONS INCLUDE THE EROSION AND SEDIMENTATION CONTROL MEASURES AS WELL AS DISTURBED AREAS, MATERIAL STORAGE AREAS, AND LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL BMP'S", DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST REVISION.
4. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 7 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 75 FEET OF A WETLAND OR WATERBODY, THE AREA SHALL BE STABILIZED WITHIN 2 DAYS OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
5. EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRES OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
6. EXPOSED AREA SHOULD BE LIMITED TO THAT WHICH CAN BE MULCHED IN ONE DAY.
7. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO MORE THAN ONE ACRE OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION.
8. SEDIMENT BARRIERS (EROSION CONTROL MIX, STONE CHECK DAMS, STABILIZED CONSTRUCTION ENTRANCE, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.
9. INSTALL EROSION CONTROL MIX AT TOE OF SLOPES TO FILTER SILT FROM RUNOFF. SEE E.C. MIX DETAIL FOR PROPER INSTALLATION. EROSION CONTROL MIX WILL REMAIN IN PLACE PER NOTE #7. THE USE OF AN EROSION CONTROL MIX BERM IS PROHIBITED AT THE BASE OF SLOPES STEEPER THAN 8% OR WHERE THERE IS FLOWING WATER.
10. ALL ERSOION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED, AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY BEFORE AND FOLLOWING ANY SIGNIFICANT RAINFALL (0.5 INCH OR MORE IN A 24-HOUR PERIOD) OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE. IF AN INSPECTION DETERMINES THAT A CORRECTIVE ACTION IS REQUIRED, THE ACTION OR REPAIR SHALL BE STARTED BY THE END OF THE NEXT WORKDAY AND COMPLETED WITHIN SEVEN DAYS OR BEFORE THE NEXT STORM EVENT. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY TURF. EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS OF PERMANENT STABILIZATION. PERMANENT STABILIZATION IS 90% GRASS CATCH IN VEGETATED AREAS.
11. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN ONE AND ONE HALF TO ONE (1.5 TO 1).
12. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
13. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED BY AUG. 15 OR 45 DAYS PRIOR TO THE FIRST KILLING FROST (OCT. 1) TO PROTECT FROM SPRING RUNOFF PROBLEMS.
14. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS. POST SEEDING SEDIMENT, IF ANY WILL BE DISPOSED OF IN AN ACCEPTABLE MANNER.
15. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
    a. FOUR INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
    b. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SQ. FT.).
    c. FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1000 SQ. FT. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED. SEED MIX SHALL CONTAIN 10% ANNUAL RYE GRASS.
    d. HAY MULCH AT THE RATE OF 70-90 LBS PER 1000 SQUARE FEET FOR OVER 75% COVERAGE. FOR UNPROTECTED OR WINDY AREAS, ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD./BLOCK). HYDRAULIC MULCHES MAY ALSO BE USED, APPLIED AT A RATE OF 5 LBS PER 1000 SQUARE FEET FOR PAPER MULCH OR 40 LBS PER 1000 SQUARE FEET OR AS DIRECTED BY THE MANUFACTURER. ON SLOPES GREATER THAN 3:1 EROSION CONTROL MIX MAY BE USED, SEE EROSION CONTROL MIX NOTES BELOW.
    e. FOR DISTURBED AREAS TO BE MAINTAINED IN POST-CONSTRUCTION AS A MEADOW BUFFER, APPLY NEW ENGLAND CONSERVATION WILDLIFE MIX BY NEW ENGLAND WETLAND PLANTS, INC., OF AMHERST, MASSACHUSETTS OR APPROVED EQUAL.
14. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS ONCE THE SITE IS STABILIZED WITH 90% GRASS CATCH IN VEGETATED AREAS. TEMPORARY EROSION AND SEDIMENT CONTROL BLANKET SHALL BE USED IN ALL DITCHES AND SWALES AS SHOWN IN DETAILS.
15. WETLANDS WILL BE PROTECTED WITH EROSION CONTROL MIX OR SILT FENCE INSTALLED AT THE EDGE FOR THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE. ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS DURING WINTER CONSTRUCTION.
16. ALL STORMWATER WILL BE PREVENTED FROM RUNNING ONTO STOCKPILES. SEDIMENT BARRIERS WILL BE INSTALLED DOWNGRADIENT OF ALL STOCKPILES.
17. PERMANENT POST-CONSTRUCTION BMP'S (VEGETATED SWALES, WET PONDS, ETC.) WILL NOT BE USED TO MANAGE FLOWS DURING CONSTRUCTION WITHOUT SPECIAL PROTECTION AND/OR RESTORATION.

ADDITIONAL TEMPORARY SEED MIXTURE (FOR PERIODS LESS THAN 12 MONTHS):

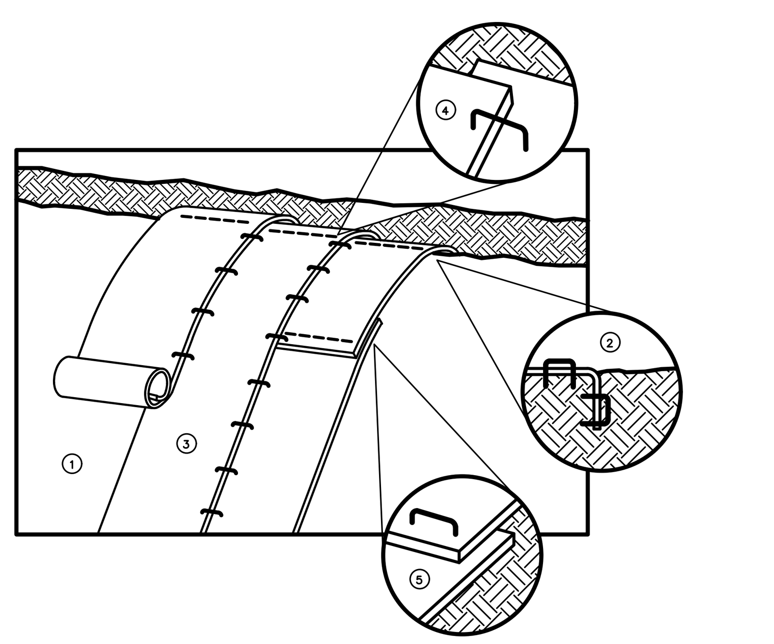
SEASON	SEED	RATE
SUMMER (5/15 – 8/15)	SUDANGRASS	40 LBS/ACRE
	OATS	80 LBS/ACRE
LATE SUMMER/EARLY FALL (8/15 – 9/15)	PERENNIAL RYEGRASS	40 LBS/ACRE
FALL (9/15 – 11/1)	WINTER RYE	112 LBS/ACRE
WINTER (11/1 – 4/1)	MULCH W/ DORMANT SEED	80 LBS/ACRE**
SPRING (4/1 – 7/1)	OATS	80 LBS/ACRE
	ANNUAL RYEGRASS	40 LBS/ACRE

**SEED RATE ONLY

EROSION CONTROL MIX

EROSION CONTROL MIX (ECM) SHALL MEET THE REQUIREMENTS PROVIDED IN THE LATEST REVISION OF MAINE DEP'S EROSION AND SEDIMENTATION CONTROL BMP MANUAL. ECM IS ACCEPTABLE FOR USE ON SLOPES OF GREATER THAN 3:1 BUT LESS THAN 2:1. ECM SHALL CONSIST OF WELL-GRADED ORGANIC COMPONENT 50 – 100% OF DRY WEIGHT, AND COMPRISED OF FIBROUS AND ELONGATED FRAGMENTS. ECM SHALL BE FREE FROM REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR CONSTRUCTION DEBRIS. ECM SHALL BE EVENLY DISTRIBUTED AND APPLIED AT A THICKNESS OF 2" ON 3:1 SLOPES, WITH AN ADDITIONAL 1/2" PER 20' OF SLOPE FOR A MAXIMUM OF 100' IN LENGTH. SLOPES GREATER THAN 3:1, ECM SHALL BE APPLIED AT THICKNESS OF 4" OR 5" FOR SLOPES GREATER THAN 60' IN LENGTH.

NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN ONE AND ONE HALF TO ONE (1.5:1). EROSION CONTROL MIX IS AN ACCEPTABLE STABILIZATION MEASURE FOR SLOPES UP TO 3:1, WITH LIMITS THAT ARE COVERED BY NOTES ON THIS SHEET. SLOPES BETWEEN 3:1 AND 2:1 SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS, AND ALL SLOPES GREATER THAN 2:1 SHALL BE STABILIZED WITH RIPRAP. SEE SLOPE STABILIZATION DETAIL FOR ADDITIONAL INFORMATION.



1. Prepare soil before installing blankets, including lime, fertilzer & seed.
2. Begin at top of slope by anchoring blanket in 6" x 6" trench. Backfill & compact trench after stapling.
3. Roll blankets down or horizontally across slope.
4. The edges of parallel blankets must be stapled with approx. 2" overlap.
5. When blankets must be spliced down the slope, place blankets end over end (shingle style) with approx. 4" overlap. Staple through overlapped area, approx. 12" apart.
6. Erosion control blankets shall be used on slopes steeper than 3:1 but limited to a max. of 2:1.

Slope Stabilization:
Erosion Control Blanket shall be in accordance with M.D.O.T. standard specifications, Section 6.13, Temporary Erosion Control Blankets and Extended Use Erosion Control Blankets.

Slope Stabilization Detail
N.T.S.

EROSION CONTROL DURING CONSTRUCTION

WINTER CONSTRUCTION

1. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15
2. OVERWINTER STABILIZATION OF DITCHES AND CHANNELS:
ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL GRASS LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A DITCH OR CHANNEL IS NOT GRASS-LINED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.
    A. INSTALL A SOD LINING IN THE DITCH:
    A DITCH MUST BE LINED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES: PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING SOD AT THE BASE OF THE DITCH WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD FROM SLOUGHING DURING FLOW CONDITIONS. SEE THE PERMANENT VEGETATION BMP SECTION.
    B. INSTALL A STONE LINING IN THE DITCH:
    A DITCH MUST BE LINED WITH STONE RIPRAP BY NOVEMBER 15. A REGISTERED PROFESSIONAL ENGINEER MUST BE HIRED TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE CONTRACTOR WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.
3. OVERWINTER STABILIZATION OF DISTURBED SLOPES:
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS. BY OCTOBER 1 THE DISTURBED SLOPE MUST BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP AS DESCRIBED IN THE FOLLOWING STANDARDS.
    A. STABILIZE THE SOIL WITH SOD:
    THE DISTURBED SLOPE MUST BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR WILL NOT USE LATE SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
    B. STABILIZE THE SOIL WITH EROSION CONTROL MIX:
    EROSION CONTROL MIX MUST BE PROPERLY INSTALLED BY NOVEMBER 15. THE CONTRACTOR WILL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE. SEE THE EROSION CONTROL MIX NOTES FOR ADDITIONAL CRITERIA.
    C. STABILIZE THE SOIL WITH STONE RIPRAP:
    PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.
4. OVERWINTER STABILIZATION OF DISTURBED SOILS:
BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.
    A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION:
    BY OCTOBER 1, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 90% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED BELOW.
    B. STABILIZE THE SOIL WITH SOD:
    STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLIING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
    C. STABILIZE THE SOIL WITH MULCH:
    BY NOVEMBER 15, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL. PROVIDE NETTING ON ALL SLOPES GREATER THAN 8%.
5. MAINTENANCE:
IF AN INSPECTION DETERMINES THAT A CORRECTIVE ACTION IS REQUIRED, THE ACTION OR REPAIR SHALL BE STARTED BY THE END OF THE NEXT WORKDAY AND COMPLETED WITHIN SEVEN DAYS OR BEFORE THE NEXT STORM EVENT. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. ONCE A WEEK AND BEFORE AND AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL, IN THE SPRING, INSPECT AND REPAIR ANY DAMAGES AND/OR BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85 TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

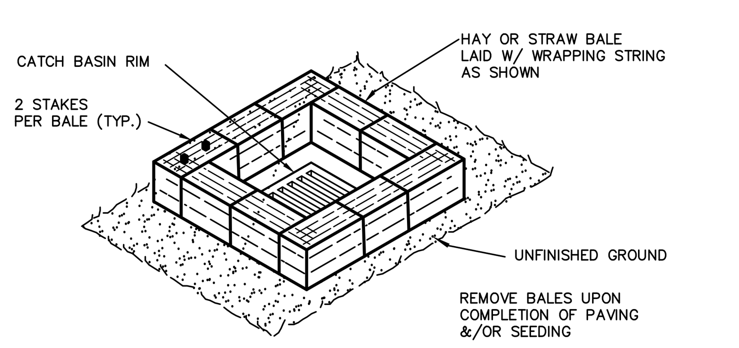
STABILIZATION SCHEDULE BEFORE WINTER:

SEPTEMBER 15	ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED. ALL SLOPES MUST BE STABILIZED, SEEDED AND MULCHED. ALL GRASS LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET
OCTOBER 1	IF THE SLOPE IS STABILIZED WITH AN EROSION CONTROL BLANKET AND SEEDED. ALL DISTURBED AREAS TO BE PROTECTED WITH AN ANNUAL GRASS MUST BE SEEDED AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND MULCHED.
NOVEMBER 15	ALL STONE LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED. SLOPES THAT ARE COVERED WITH RIPRAP MUST BE CONSTRUCTED BY THAT DATE.

6. DURING WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.
7. AREAS WITHIN 75 FEET OF STREAMS, WETLANDS, AND OTHER PROTECTED NATURAL RESOURCES THAT ARE NOT STABILIZED WITH VEGETATION BY DEC. 1 SHALL BE MULCHED AND ANCHORED WITH NETTING. IF WORK CONTINUES IN THIS AREA DURING THE WINTER, A DOUBLE LINE OF SEDIMENT BARRIERS MUST BE USED.

HOUSEKEEPING

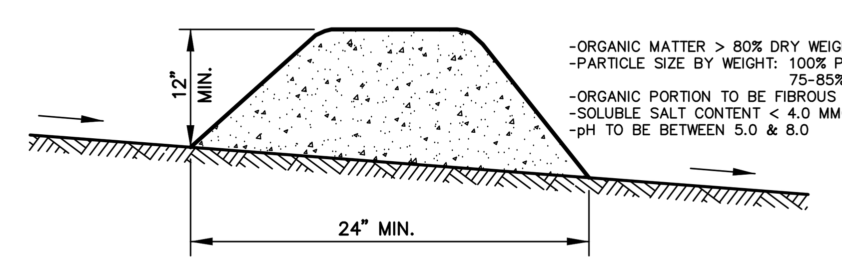
1. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS 1. ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
2. GROUNDWATER PROTECTION: DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY, AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.
3. FUGITIVE SEDIMENT AND DUST: ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MY NOT BE USED FOR DUST CONTROL. ANY OFFSITE TRACKING OF MUD OR SEDIMENT SHALL BE VACUUMED IMMEDIATELY AND PRIOR TO THE NEXT SIGNIFICANT STORM EVENT.
4. DEBRIS AND OTHER MATERIALS: LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
5. TRENCH OR FOUNDATION DE-WATERING: TRENCH DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.
6. NON-STORMWATER DISCHARGES: IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
    - DISCHARGES FROM FIREFIGHTING ACTIVITY;
    - FIRE HYDRANT FLUSHINGS;
    - VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
    - DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX (C)(3) OF MAINE DEP 06-096 CHAPTER 500;
    - ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
    - PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
    - UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
    - UNCONTAMINATED GROUNDWATER OR SPRING WATER;
    - FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
    - UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5) MAINE DEP 06-096 CHAPTER 500);
    - POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
    - LANDSCAPE IRRIGATION.
7. UNAUTHORIZED NON-STORMWATER DISCHARGES: THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C(6) MAINE DEP 06-096 CHAPTER 500. SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
    - WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
    - FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
    - SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
    - TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.
8. ADDITIONAL REQUIREMENTS: ADDITIONAL REQUIREMENTS MAY BE APPLIED ON A SITE-SPECIFIC BASIS.



LOW POINT SEDIMENT CONTROL BARRIER
N.T.S.

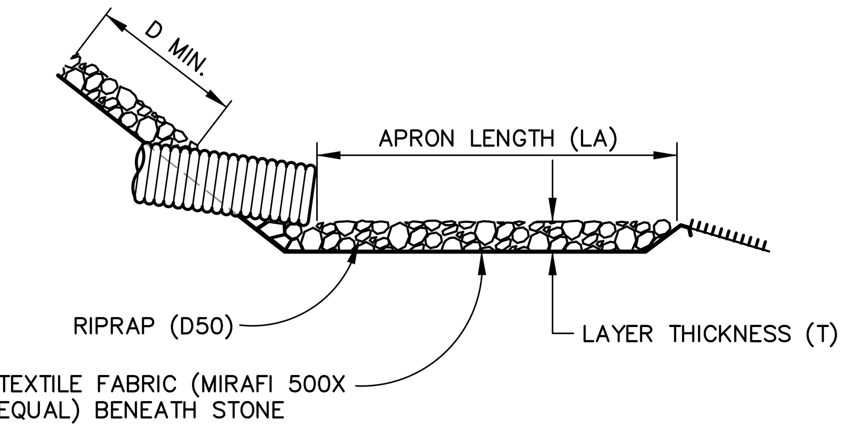
PLACE BARRIER ALONG RELATIVELY LEVEL CONTOUR.
ECM BERM PROHIBITED AT THE BASE OF SLOPES > 8% OR WHERE THERE IS FLOWING WATER.
SEE MAINE EROSION AND SEDIMENT CONTROL FIELD GUIDE FOR CONTRACTORS FOR INSTALLATION INSTRUCTIONS.

EROSION CONTROL MIX SHOULD CONTAIN A WELL GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. ECM SHOULD BE FREE OF REFUSE, PHYSICAL CONTAMINATES, AND MATERIAL TOXIC TO PLANT GROWTH.



- -ORGANIC MATTER > 80% DRY WEIGHT
- -PARTICLE SIZE BY WEIGHT: 100% PASSING 6" SCREEN, 75-85% PASSING 0.75" SCREEN
- -ORGANIC PORTION TO BE FIBROUS & ELONGATED
- -SOLUBLE SALT CONTENT < 4.0 MMHOS/CM.
- -pH TO BE BETWEEN 5.0 & 8.0

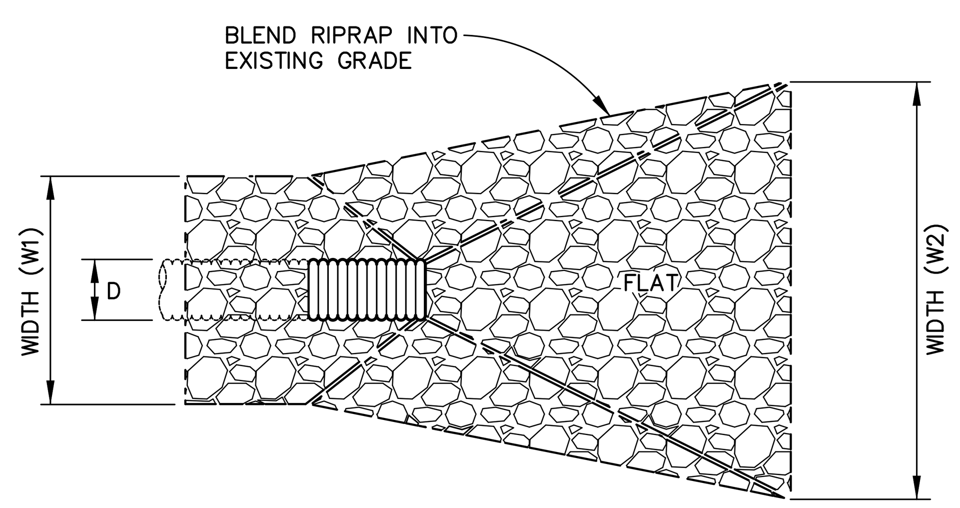
EROSION CONTROL MIX BERM
NTS



SECTION

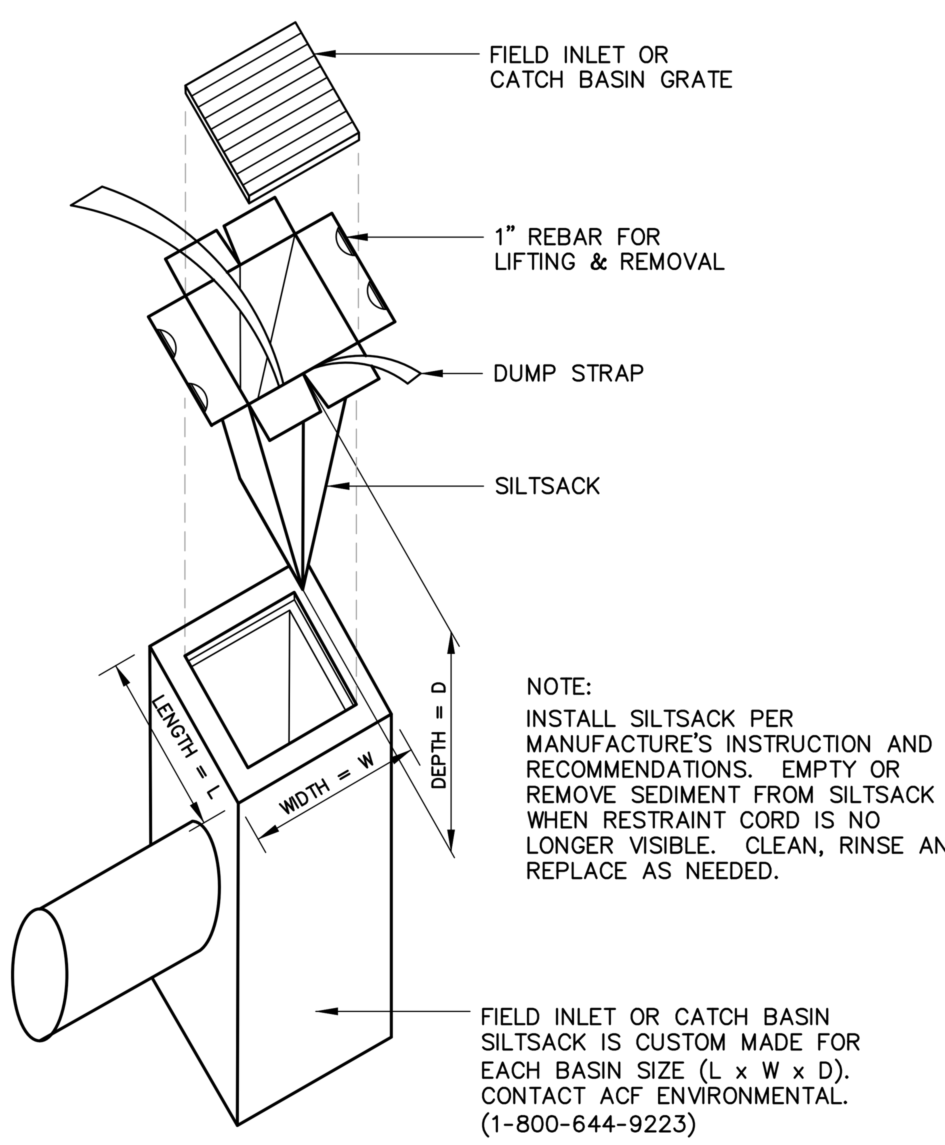
APRON SCHEDULE

CULV. DIA. (D)	D50 (IN.)	T (IN.)	LA (FT.)	W1 (FT.)	W2 (FT.)
15"	6"	15"	10'	3.75'	14'



PLAN

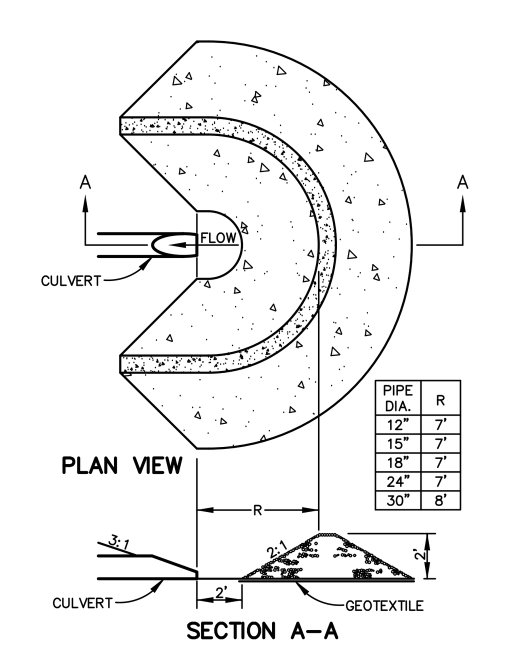
PIPE OUTLET PROTECTION
NTS



NOTE:
INSTALL SILTSACK PER MANUFACTURE'S INSTRUCTION AND RECOMMENDATIONS. EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE AND REPLACE AS NEEDED.

FIELD INLET OR CATCH BASIN SILTSACK IS CUSTOM MADE FOR EACH BASIN SIZE (L x W x D). CONTACT ACF ENVIRONMENTAL. (1-800-644-9223)

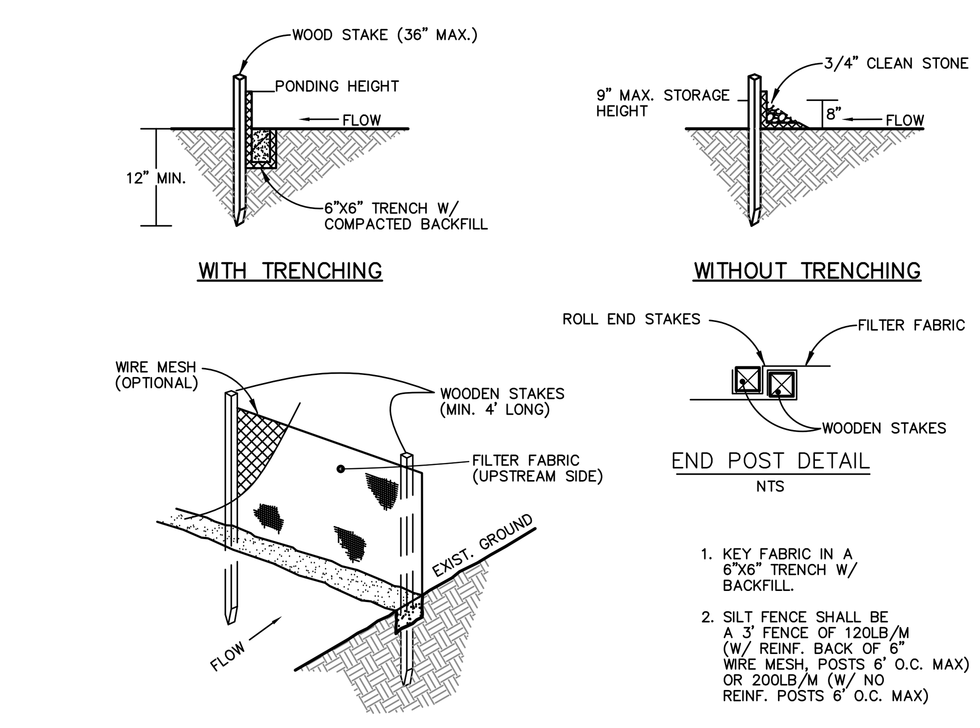
SILTSACK INLET SEDIMENT CONTROL DEVICE
NTS



PIPE DIA.	R
12"	7'
15"	7'
18"	7'
24"	7'
30"	8'

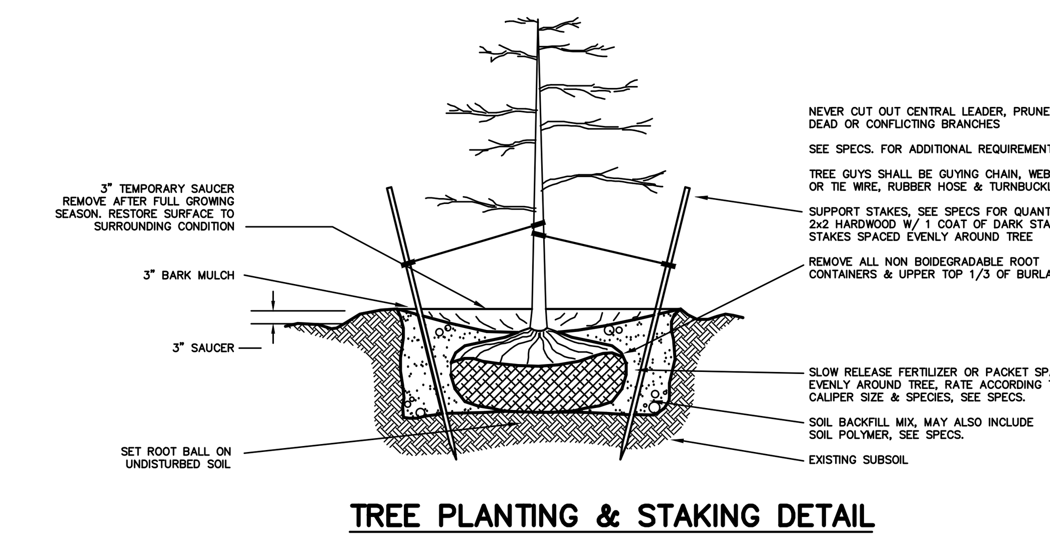
1. USE 2" TO 3" STONE.
2. PLACE STONE OVER GEOTEXTILE.
3. ONCE THE AREAS UPSTREAM FROM THE CHECK DAM ARE STABILIZED BY VEGETATION, THE SEDIMENT TRAPPED BEHIND/WITHIN THE DAM SHALL BE RELOCATED TO AN AREA UNDERGOING FINAL GRADING.
4. THE CHECK DAMS SHALL BE FLATTENED AND GRADED IN A MANNER WHICH PROTECTS THE AREA FROM EROSION AND CHANNEL BLOCKAGE. (GEOTEXTILE MUST BE REMOVED)
5. THE GEOTEXTILE SHALL BE DISPOSED OF OFFSITE.
6. THE AREA CONTRIBUTING TO THE CHECK DAM SHALL NOT EXCEED 10 ACRES.

TEMPORARY CHECK DAM AT CULVERT INLET
NTS

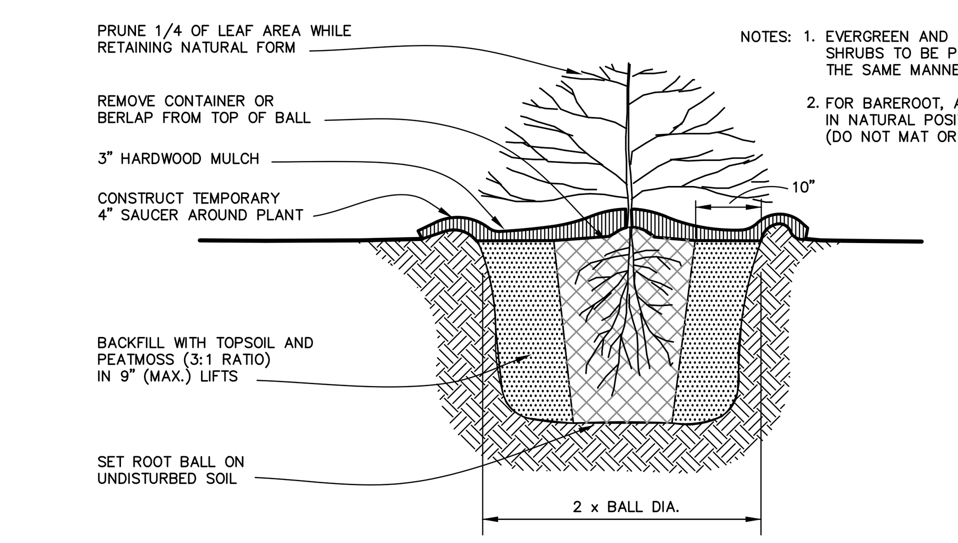


1. KEY FABRIC IN A 6"X6" TRENCH W/ BACKFILL.
2. SILT FENCE SHALL BE A 3' FENCE OF 120LB/M (W/ REINF. BACK OF 6" WIRE MESH, POSTS 6' O.C. MAX) OR 200LB/M (W/ NO REINF. POSTS 6' O.C. MAX)

SILT FENCE DETAIL
N.T.S.

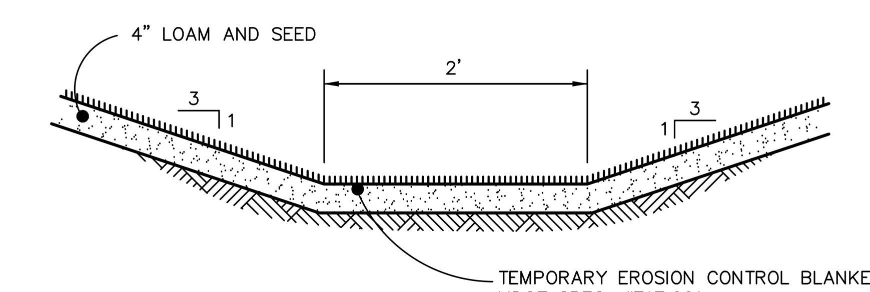


TREE PLANTING & STAKING DETAIL
N.T.S.

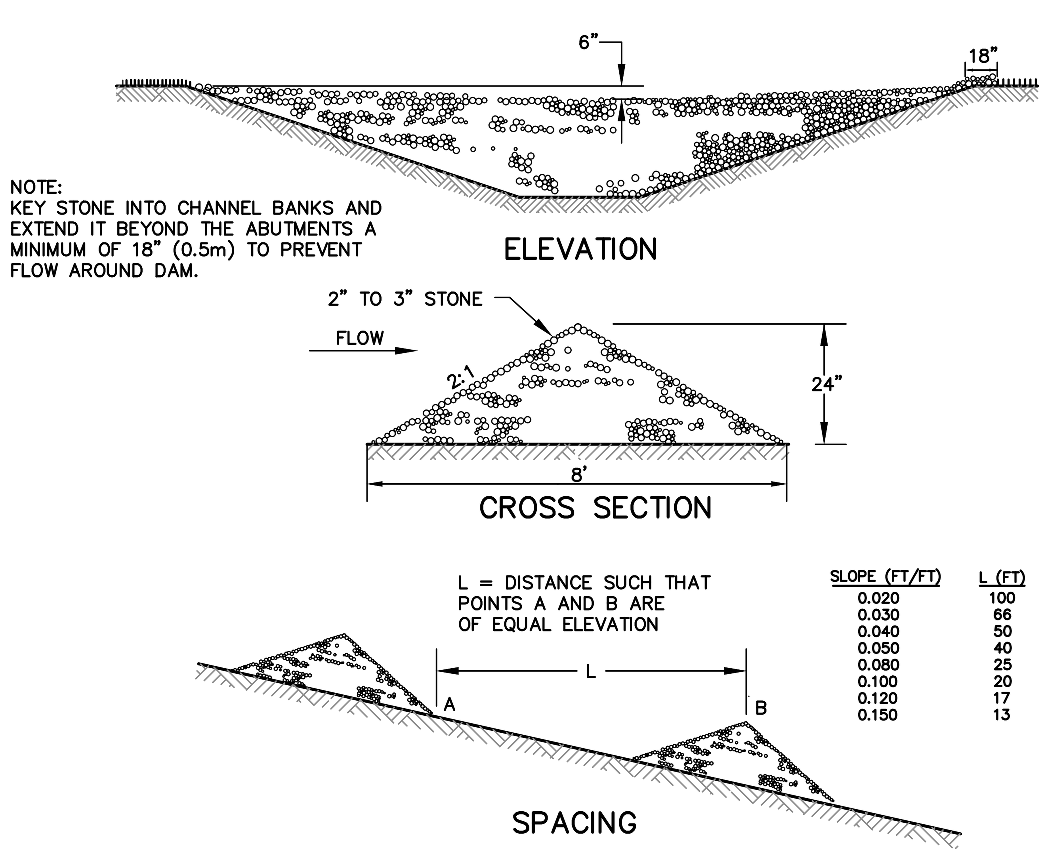


NOTES: 1. EVERGREEN AND DECIDUOUS SHRUBS TO BE PLANTED IN THE SAME MANNER.
2. FOR BAREROOT, ARRANGE ROOTS IN NATURAL POSITION (DO NOT MAT OR TWIST)

SHRUB PLANTING DETAIL
N.T.S.



VEGETATED DITCH DETAIL
NTS



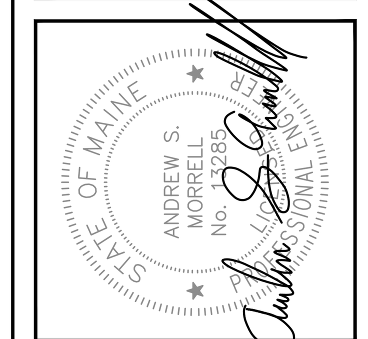
NOTE:
KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18" (0.5m) TO PREVENT FLOW AROUND DAM.

L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

SLOPE (FT/FT)	L (FT)
0.020	100
0.030	66
0.040	50
0.050	40
0.080	25
0.100	20
0.120	17
0.150	13

STONE CHECK DAM DETAIL
NTS

REVISION		
NO.	DATE	DESCRIPTION
1	01/29/21	Response to review comments



BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

EROSION CONTROL DETAILS

4-UNIT WAREHOUSE FACILITY

POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	January 2021
DRAWN	SCALE
Dept.	N/A
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
5

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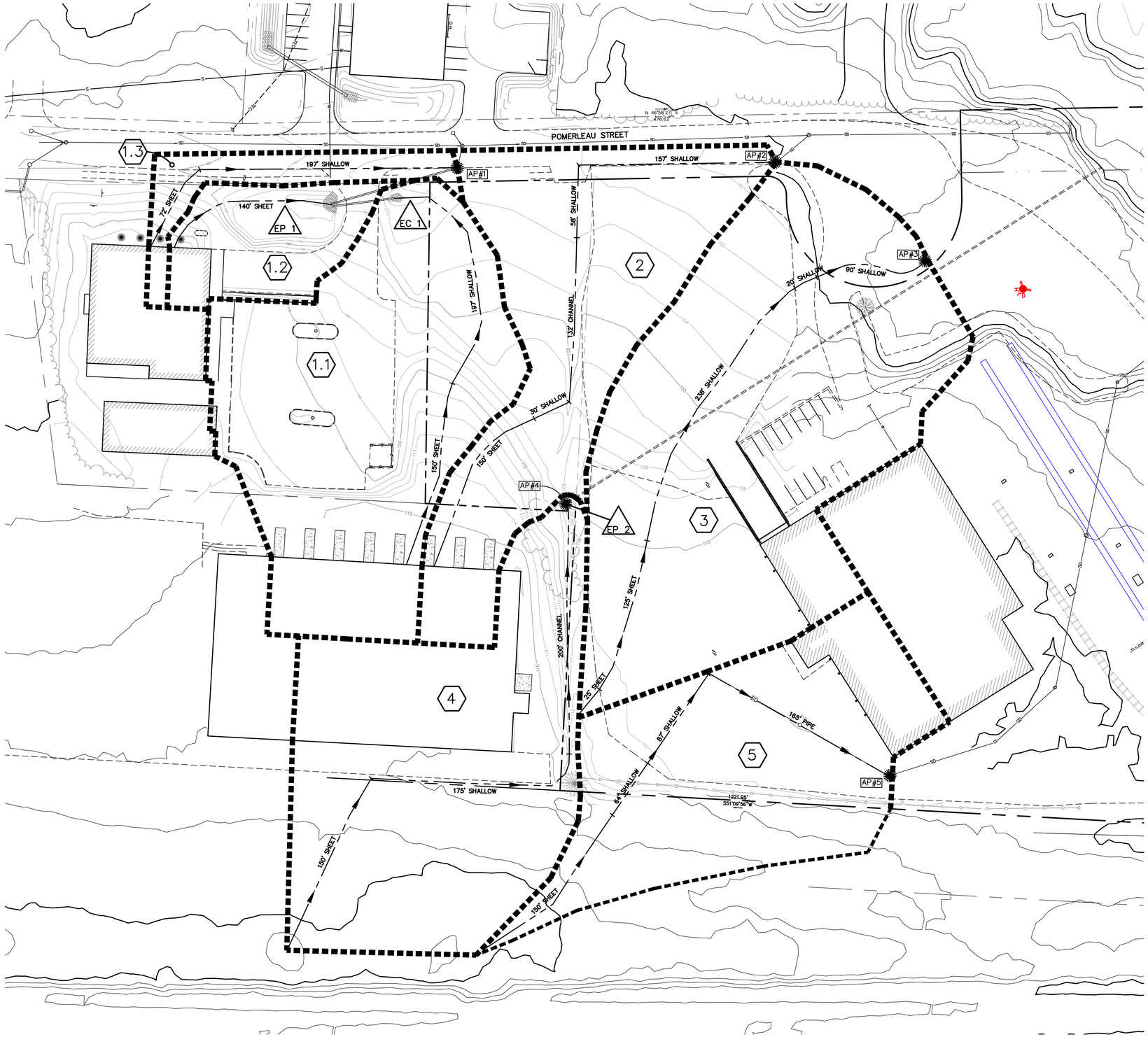

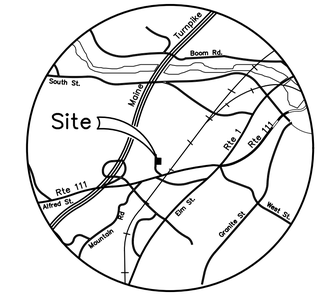

LOCATION MAP

SCALE: 1" = 2 MILES

NOTES:

1. OWNER/APPLICANT: WESTFIELD INC.
   26 RIVERS EDGE DRIVE
   KENNEBUNK, ME 04043

2. ENGINEER: BH2M
   ANDREW MORRELL PE #13285
   380B MAIN STREET
   GORHAM, MAINE

2. BOUNDARY/ SURVEY: BH2M
   ROBERT C. LIBBY JR. PLS #2190
   380B MAIN STREET
   GORHAM, MAINE

3. TOPOGRAPHY: OFFSITE: MAINE OFFICE OF GIS 2' CONTOURS
   ONSITE: GROUND TOPOGRAPHY BY BH2M

4. SOILS PER YORK COUNTY MEDIUM INTENSITY SOILS, SHOWING A SINGLE ON SITE SOIL TYPE "Sc" SCANTIC. ALL SOILS ON SITE ARE ASSUMED AS HSG D

PRE DEVELOPMENT FLOWS

ANALYSIS POINT	2 YR. STORM	10 YR. STORM	25 YR. STORM
AP-1	3.64 CFS	5.11 CFS	7.09 CFS
AP-2	2.26 CFS	3.75 CFS	4.96 CFS
AP-3	5.70 CFS	8.65 CFS	11.04 CFS
AP-4	2.51 CFS	4.23 CFS	6.16 CFS
AP-5	2.30 CFS	3.76 CFS	4.94 CFS

LEGEND

SYMBOL	DESCRIPTION
EP 2	POND/CULVERT/CATCH BASIN
3	DRAINAGE SUB AREA
	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION ROUTE
64	EXISTING CONTOUR
64	PROPOSED CONTOUR

NO.	DATE	REVISION DESCRIPTION
1	8/17/20	Submitted to City for Review
2	01/29/21	Response to review comments

STATE OF MAINE
ANDREW S. MORRELL
No. 13285
PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, Maine

PRE DEVELOPMENT
4-UNIT WAREHOUSE FACILITY
20 POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
C. MacDonald	August 2020
DRAWN	SCALE
C. MacDonald	1" = 40'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
A

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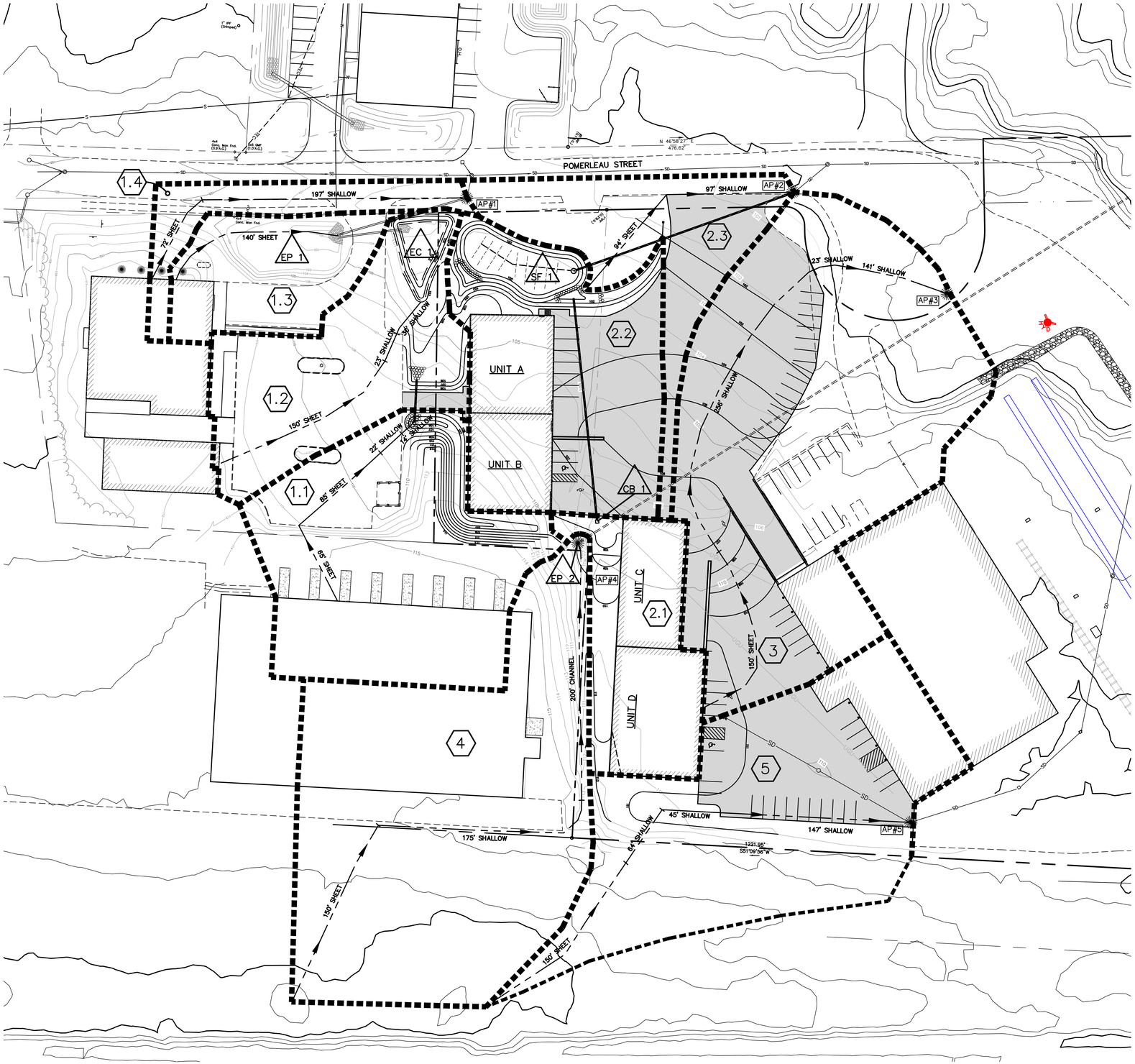
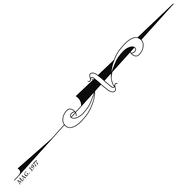
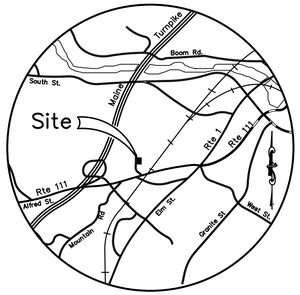


Scale: 1" = 40'

40' 0 40' 80'





LOCATION MAP

SCALE: 1" = 2 MILES

NOTES:

1. OWNER/APPLICANT: WESTFIELD INC.
   26 RIVERS EDGE DRIVE
   KENNEBUNK, ME 04043
2. ENGINEER: BH2M
   ANDREW MORRELL PE #13285
   380B MAIN STREET
   GORHAM, MAINE
2. BOUNDARY/ SURVEY: BH2M
   ROBERT C. LIBBY JR. PLS #2190
   380B MAIN STREET
   GORHAM, MAINE
3. TOPOGRAPHY: OFFSITE: MAINE OFFICE OF GIS 2' CONTOURS
   ONSITE: GROUND TOPOGRAPHY BY BH2M
4. SOILS PER YORK COUNTY MEDIUM INTENSITY SOILS, SHOWING A SINGLE ON SITE SOIL TYPE "Sc" SCANTIC. ALL SOILS ON SITE ARE ASSUMED AS HSG D

POST DEVELOPMENT FLOWS

ANALYSIS POINT	2 YR. STORM	10 YR. STORM	25 YR. STORM
AP-1	3.53 CFS	5.01 CFS	5.72 CFS
AP-2	1.07 CFS	3.78 CFS	7.29 CFS
AP-3	4.53 CFS	6.88 CFS	8.77 CFS
AP-4	2.46 CFS	4.17 CFS	5.96 CFS
AP-5	1.95 CFS	3.29 CFS	4.38 CFS

LEGEND

SYMBOL	DESCRIPTION
EP 2	POND/CULVERT/CATCH BASIN
3	DRAINAGE SUB AREA
	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION ROUTE
64	EXISTING CONTOUR
64	PROPOSED CONTOUR

REVISION DESCRIPTION

NO.	DATE	DESCRIPTION
1	8/17/20	Submitted to City for Review
1	01/29/21	Response to review comments

STATE OF MAINE ANDREW S. MORRELL No. 13285 REGISTERED PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
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FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, Maine

POST DEVELOPMENT
4-UNIT WAREHOUSE FACILITY

20 POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
C. MacDonald	August 2020
DRAWN	SCALE
C. MacDonald	1" = 40'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
B

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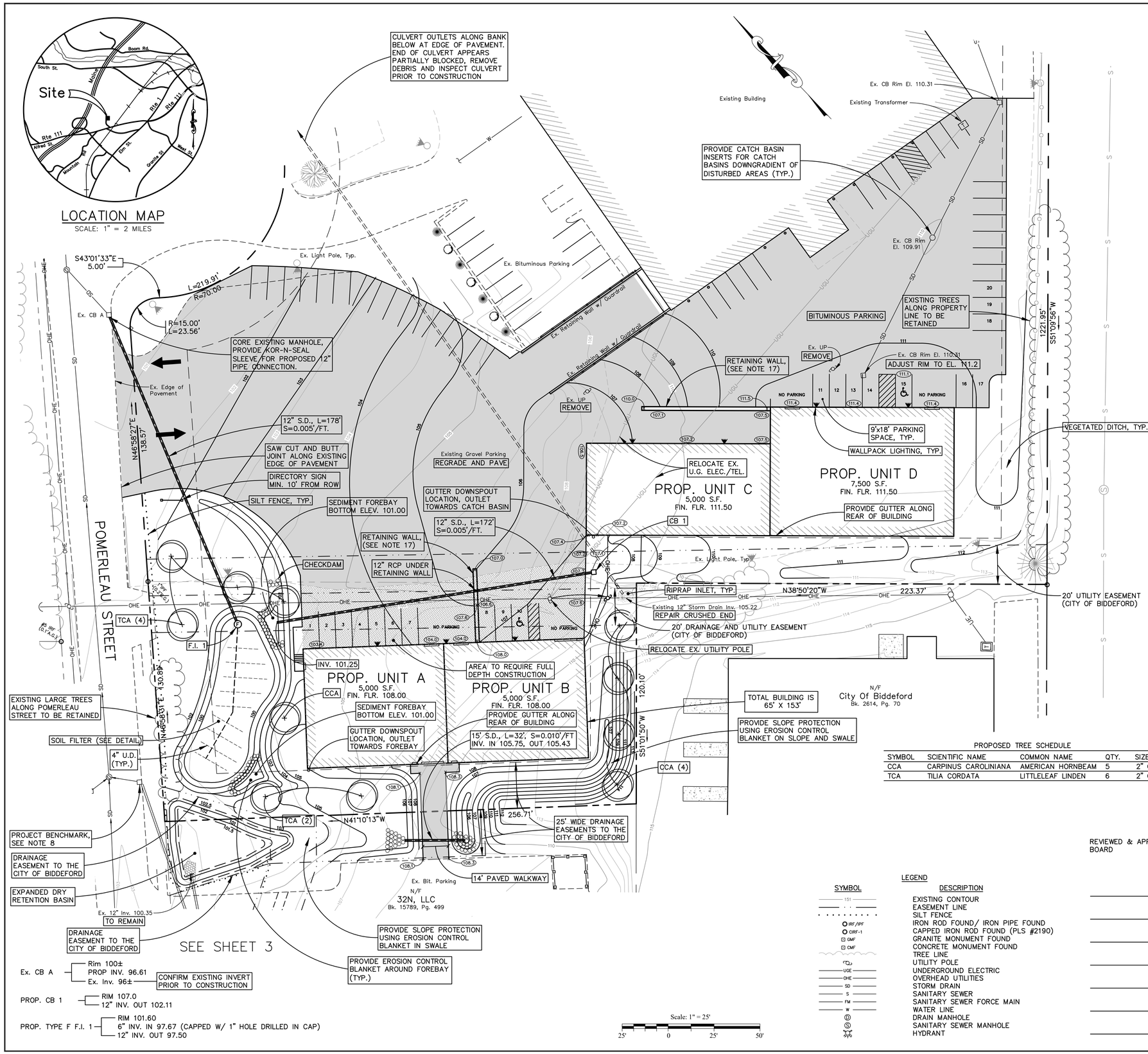

NOTES:

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26 RIVERS EDGE DRIVE
KENNEBUNK, ME 04043
2. ENGINEER: ANDREW MORRELL, PE #13285
BH2M
28 STATE STREET
GORHAM, MAINE
3. SURVEYOR: ROBERT C. LIBBY JR., PLS #2190
BH2M
4. DEED REFERENCES: BK. 9128 PG. 22
BK. 16102, PG. 230
5. TAX MAP REFERENCES: MAP 2, LOT 81
MAP 2, LOT 81-5
6. ZONING: I-3, INDUSTRIAL 3
7. MINIMUM STANDARDS: LOT SIZE - NONE
FRONTAGE - 50'
SETBACKS - 30' FRONT, 25' SIDE/REAR
MAX. LOT COVERAGE - 75%
8. BENCHMARK: EXISTING C.B. RIM IN POMERLEAU STREET
RIM ELEVATION 102.42
9. PROPOSED USE: 4 UNIT WAREHOUSE FACILITY
10. SEWER SERVICE: PUBLIC
11. WATER SERVICE: PUBLIC
12. ELECTRIC/TELEPHONE: UNDERGROUND FROM EXISTING UTILITY POLE
13. PARKING: REQUIRED (WAREHOUSE & STORAGE):
- 1 SPACE/2,000 SF + 1 PER EMPLOYEE
- 22,500 SF/2,000 = 11.25 SPACES
- ESTIMATED 8 EMPLOYEES = 8 SPACES
- TOTAL = 19.25 SPACES

PROVIDED: 20 SPACES
14. SIGNS: MAX HEIGHT: 20'
MAX. SIZE: 72 SF OR 30 SF PER BUSINESS
15. PLAN REFERENCES:
A. AMENDED PLAN, THE DIVISION OF LOT 7A, ALFRED ROAD INDUSTRIAL PARK, POMERLEAU STREET, BIDDEFORD, MAINE, JOB # 11003, DATED JANUARY 2011, BY BH2M.
B. AMENDED PLAN OF THE DIVISION OF LOT 7, LAND OF THE CITY OF BIDDEFORD, ALFRED ROAD INDUSTRIAL PARK, POMERLEAU STREET, BIDDEFORD, MAINE, DATED 8-23-02 BY THE CITY OF BIDDEFORD ENGINEERING DEPARTMENT AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS PLAN BOOK 275, PAGE 27.
16. ALL CONSTRUCTION AND SITE ALTERATIONS SHALL BE DONE IN ACCORDANCE WITH MAINE EROSION AND SEDIMENTATION CONTROL, BMP'S LATEST REVISION.
17. RETAINING WALLS TO BE DESIGNED BY STRUCTURAL ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
18. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND LOCATING ALL UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. EXISTING UTILITY/LIGHT POLES SHALL BE REMOVED OR RELOCATED AT THE DIRECTION OF THE PROJECT OWNER.
19. ALL DISTURBED AREAS THAT ARE NOT PROPOSED TO BE PAVED SHALL BE LOAMED AND SEEDED.
20. EXISTING PROPERTY LINE BETWEEN LARGER NORTHERN PARCEL AND SMALLER SOUTHERN PARCEL TO BE DISSOLVED CREATING ONE LARGER PARCEL.
21. WATER SERVICES TO BE SIZED BASED ON PROPOSED USE AND IF SPRINKLERS ARE REQUIRED.

PROPOSED TREE SCHEDULE

SYMBOL	SCIENTIFIC NAME	COMMON NAME	QTY.	SIZE
CCA	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	5	2" CAL.
TCA	TILIA CORDATA	LITTLELEAF LINDEN	6	2" CAL.

LEGEND

SYMBOL	DESCRIPTION
151	EXISTING CONTOUR
	EASEMENT LINE
	SILT FENCE
IRF/IPF	IRON ROD FOUND/ IRON PIPE FOUND
CIRF-1	CAPPED IRON ROD FOUND (PLS #2190)
GMF	GRANITE MONUMENT FOUND
CMF	CONCRETE MONUMENT FOUND
	TREE LINE
	UTILITY POLE
UGE	UNDERGROUND ELECTRIC
OHE	OVERHEAD UTILITIES
SD	STORM DRAIN
S	SANITARY SEWER
FM	SANITARY SEWER FORCE MAIN
W	WATER LINE
D	DRAIN MANHOLE
S	SANITARY SEWER MANHOLE
	HYDRANT

REVIEWED & APPROVED BIDDEFORD PLANNING BOARD

DATE

I CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS TECHNICAL STANDARDS OF PRACTICE FOR A STANDARD BOUNDARY SURVEY WITH THE FOLLOWING EXCEPTIONS:

1. NO SURVEYORS REPORT

STATE OF MAINE ROBERT C. LIBBY JR. 2190 PROFESSIONAL LAND SURVEYOR

ROBERT C. LIBBY JR. PLS #2190

REVISION

NO.	DATE	DESCRIPTION
1	8/17/20	Submitted to City for Review
2	8/27/20	Rev'd. Ex. Utility Locations
3	11/19/20	Building Modifications
4	12/16/20	Submitted for Final Approval
5	01/29/21	Response to review comments
6	02/09/21	Landscaping details provided

STATE OF MAINE ANDREW S. MORRELL No. 13285 LICENSED PROFESSIONAL ENGINEER

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Westfield Inc.
26 Rivers Edge Drive
Kennebunk, ME

SITE PLAN
4-UNIT WAREHOUSE FACILITY
POMERLEAU STREET
BIDDEFORD, MAINE

DESIGNED	DATE
W. Pelkey	Dec. 2019
DRAWN	SCALE
Dept.	1" = 25'
CHECKED	JOB. NO.
A. Morrell	19203

SHEET
1

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ROBERT C. LIBBY, Jr.
WALTER E. PELKEY
ANDREW S. MORRELL
STEVEN J. BLAKE

Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

380B Main Street *Tel. (207) 839-2771*
Gorham, Maine 04038 *www.bh2m.com*

February 9, 2021

Greg Tansley
Biddeford City Planner
205 Main Street
P.O. Box 586
Biddeford, Maine 04005

Re: 4 Unit Warehouse Facility
Site Design Review Landscaping Comments

Dear Greg;

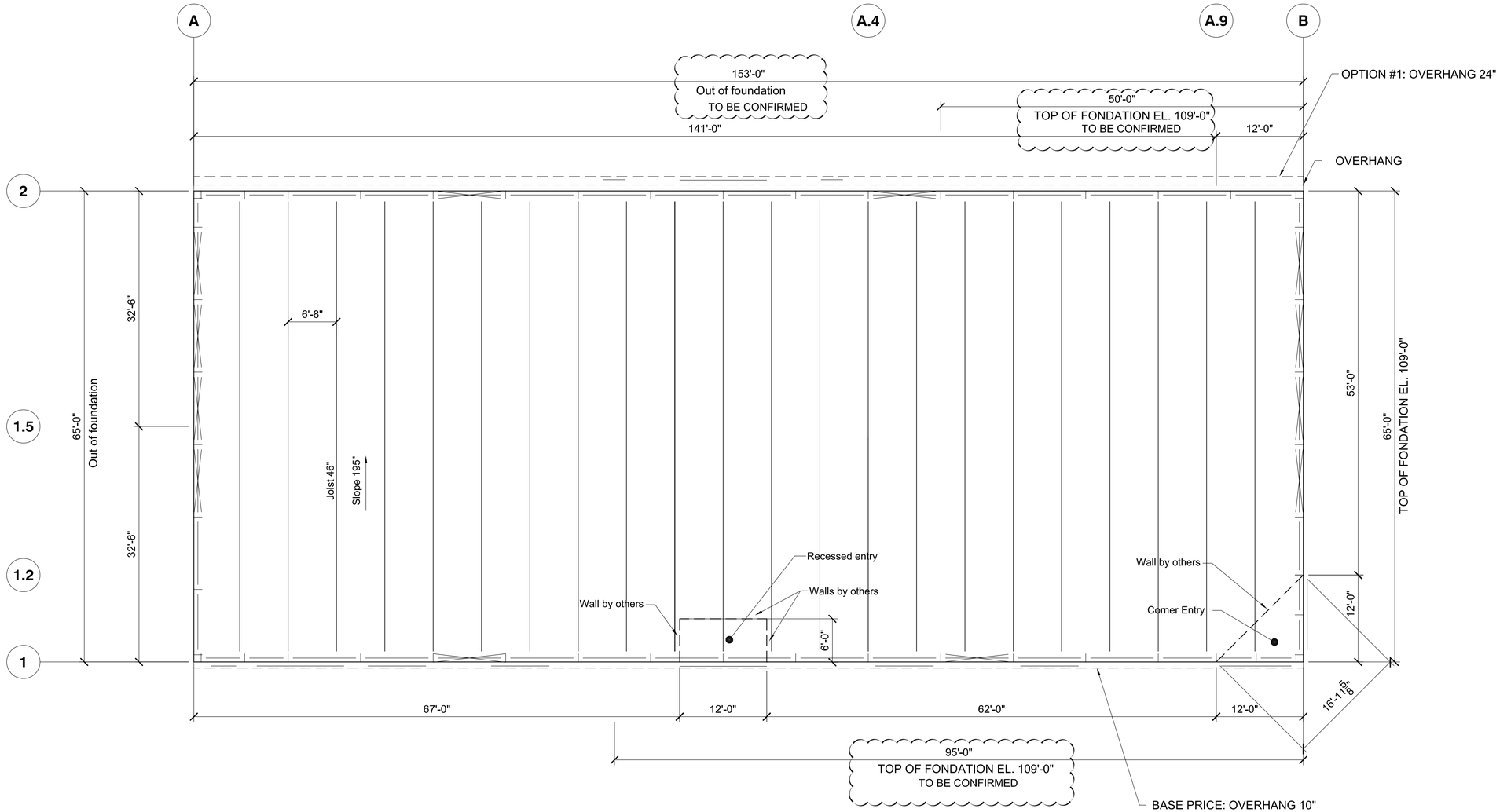
Following up on your January 15, 2021 comments regarding the landscaping details for the project, the site plan has been updated to included additional specific information on the size, type and location of trees proposed for the project. You will find existing trees to remain called out, a proposed tree schedule, and the specific varieties of proposed trees now shown.

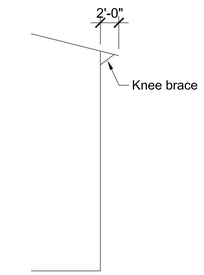
You will find that there are trees proposed in the area of units A and B. These trees are positioned along the perimeter of the units and around proposed underdrained soil filter to provide shading and buffering from the neighboring properties and Pomerleau Street. A number of large trees exist along the Pomerleau Street side of the property and these are proposed to remain. Recent changes to the outlet of the underdrained soil filter have removed disturbances associated with the outlet pipe away from the existing stand of trees and through the existing paved areas. Units C and D are proposed in areas of currently developed parking and pavement. This area of the site does not lend itself to having trees or other landscaping placed. There are trees along the top of slope along the southern property line that will continue to provide screening for the area of Units C and D.

Thank you for providing these comments. We trust that these responses will alleviate your concerns for the project.

Sincerely,

Christopher MacDonald, P.E.
Civil Engineer





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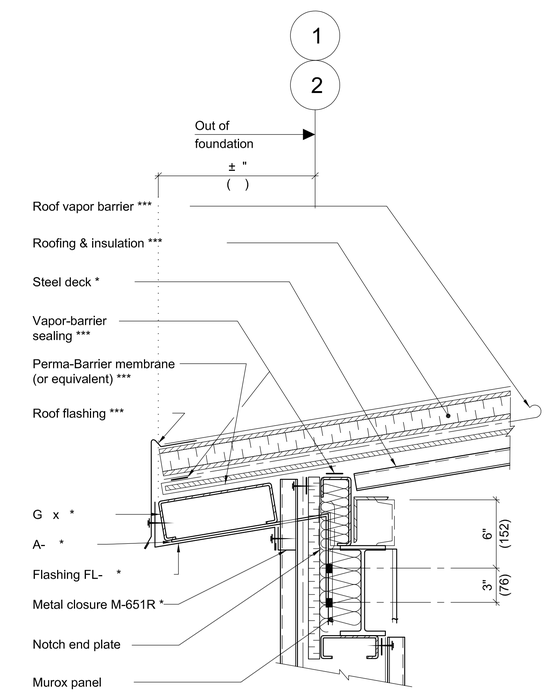

Note:

* Supplied & installed by Murox.

*** Supplied & installed by general contractor.

Proposition panel & roof joint

ROOF

TOP OF SLAB:	108'-0"
TOP OF FOUNDATION TYPICAL U/N:	112'-0"
TOP OF FOUNDATION (SEE SKETCH):	109'-0"
CLEAR HEIGHT:	20'-0"
T.O.S. Line 1:	148'-1"
T.O.S. Line 2:	131'-10"

LOADS

D.L.	18	psf
Coll,	4	psf
Ground snow load	50	psf
Roof Live load	0	psf
Roof Snow load P_f	35	psf
Wind speed (Exposure C)	119	mph
Velocity pressure q_z	30.5	psf

EARTHQUAKE LOADS ASSUME

S_S	0.251
S_1	0.079
SEISMIC DESIGN CATEGORY	B
I_E	1.00
SITE CLASS	D

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No.	Date	Revision	Drawn	Checked
6				
5				
4				
3				
2	12-04-20	R2	D.P.	
1	10-21-2020	R1	D.P.	

Drawn: P.P.
Approved by:
Scale: ---
Date: 08-26-2020

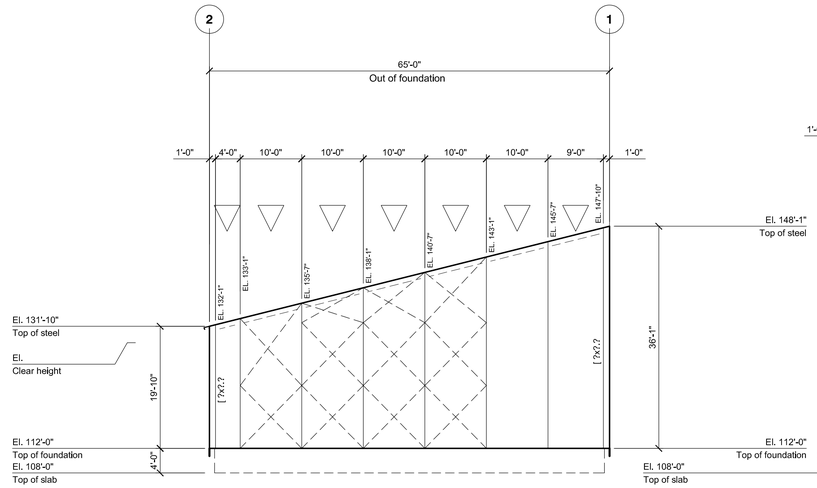
CANAM
11505, 1re Avenue, bureau 500, Saint-Georges Beauce
Québec, Canada, G5Y 7X3
Tél.: (418) 228-8031
Fax: (418) 226-4489

Project: **Gould Biddeford Maine**

Customer: Benchmark

Description: Priminary Sketch

Project	Sheet	Revision
P2020-183 R2	1 of 2	R2



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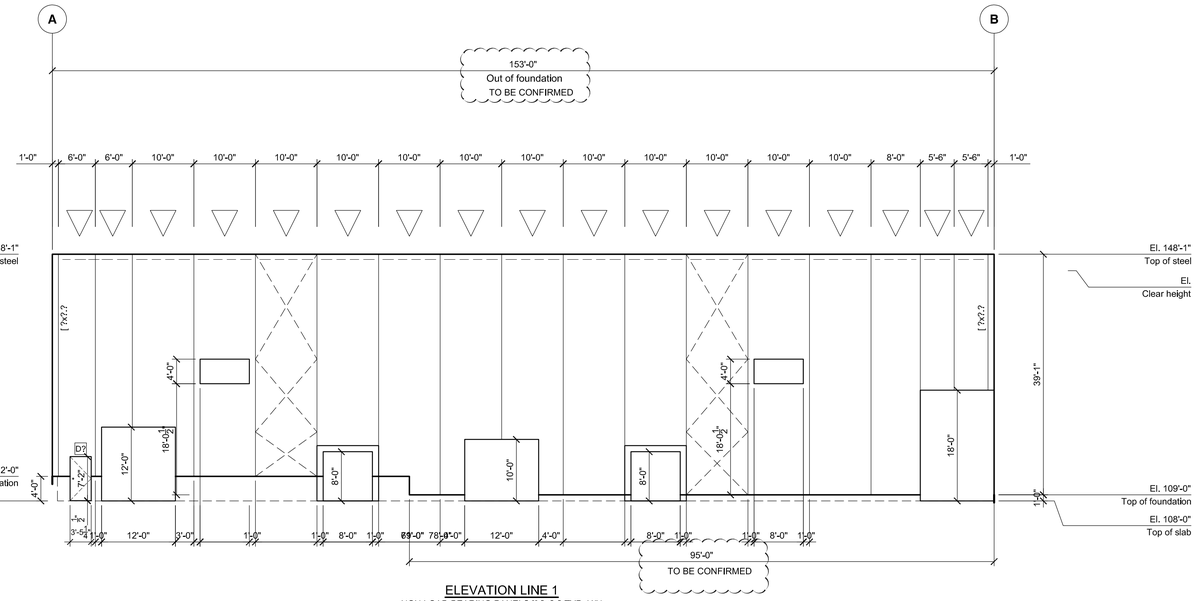
NON LOAD BEARING PANELS][?x?.? TYP. U/N
BRACING ROD 1ø" TYP. U/N



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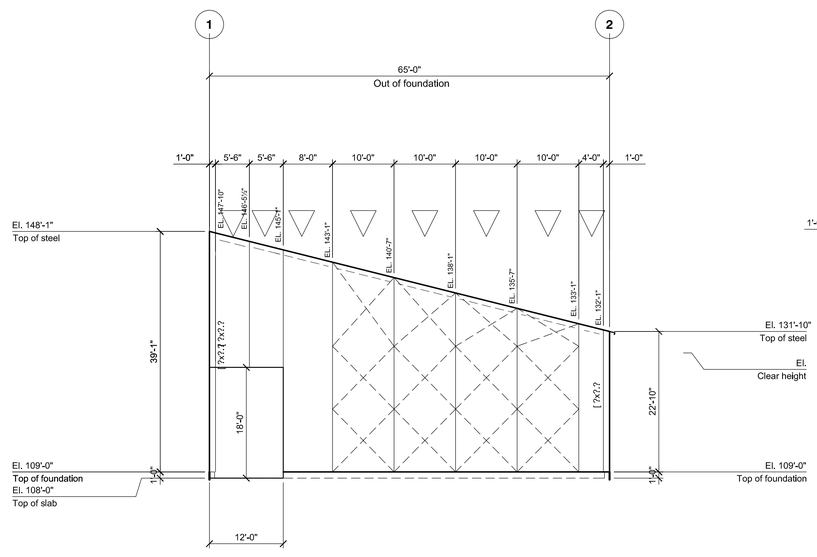

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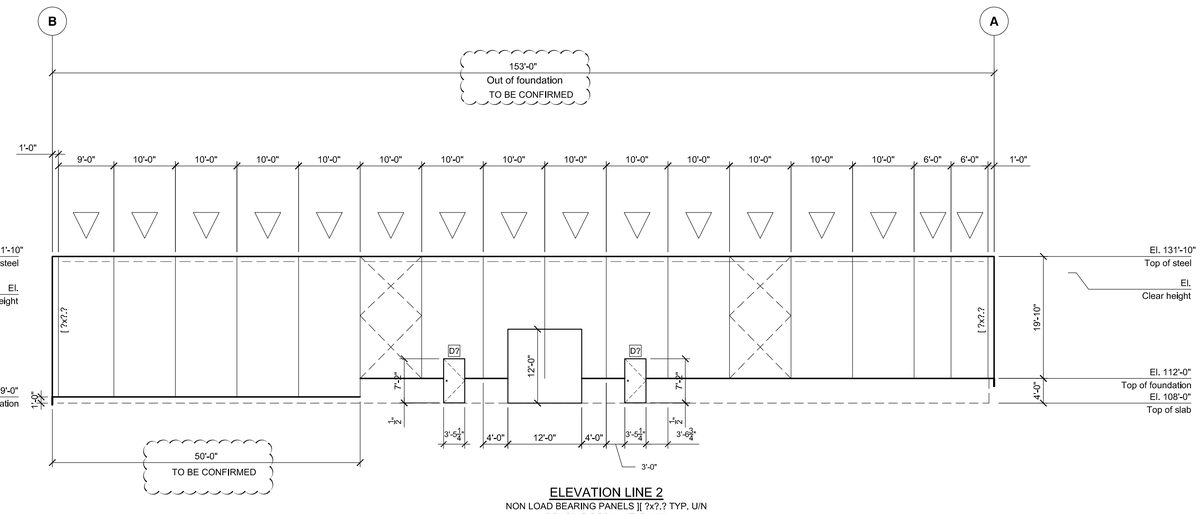

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BRACING ROD 1ø" TYP. U/N

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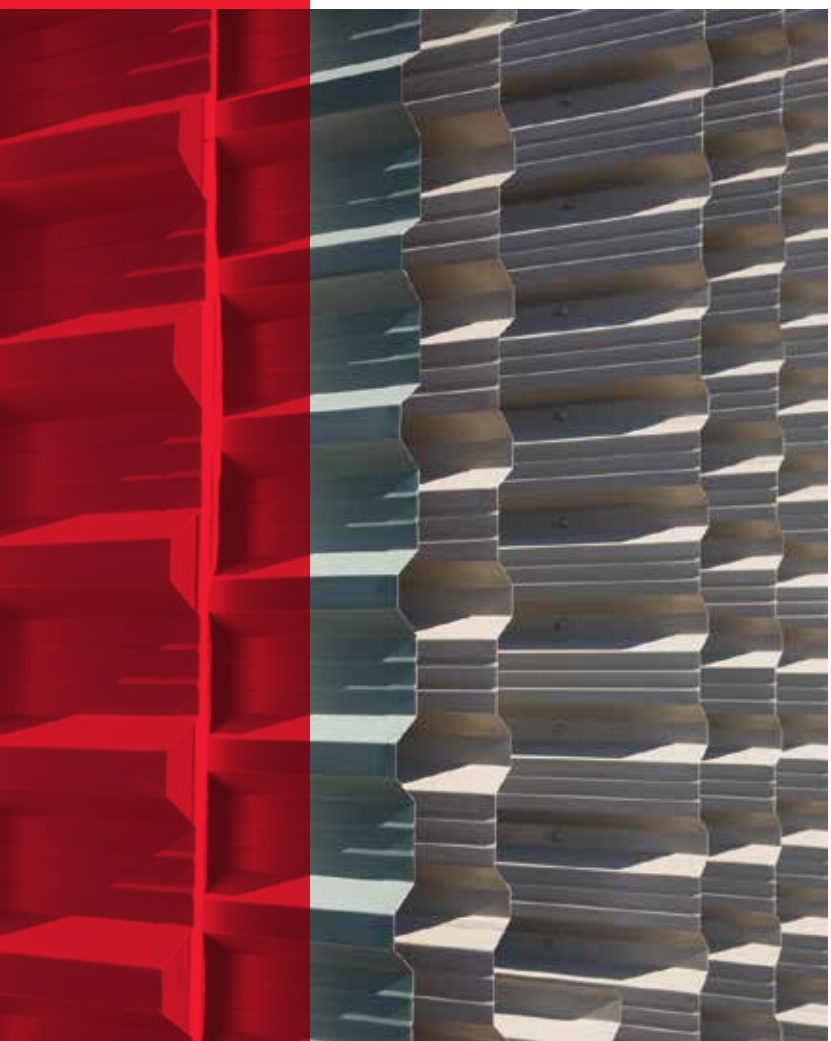
No.	Date	Revision	Drawn	Checked
6				
5				
4				
3				
2				
1	12-04-20	R2	D.P.	

Drawn: Donald Pich.
Approved by:
Scale: ---
Date: Nov. 10-2020

CANAM
11505, 1re Avenue, bureau 500, Saint-Georges Beauce
Québec, Canada, G5Y 7X3
Tél.: (418) 228-8031
Fax: (418) 226-4489

Project: **Gould** **Biddeford** **Maine**

Costumer: Benchmark
Description: Prliminary Sketch
Project: P2020-183 R2
Sheet: 2 of 2
Revision: R2



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CANAM BUILDINGS

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The Murox® building system is a unique approach that lets you erect your building in half the time it takes using traditional construction methods and allows you to choose from a wide selection of cladding finishes that are as distinctive as your design. Whether you opt for Canam cladding or another product on the market, we will help you find the ideal solution for your project.

STEEL CLADDING

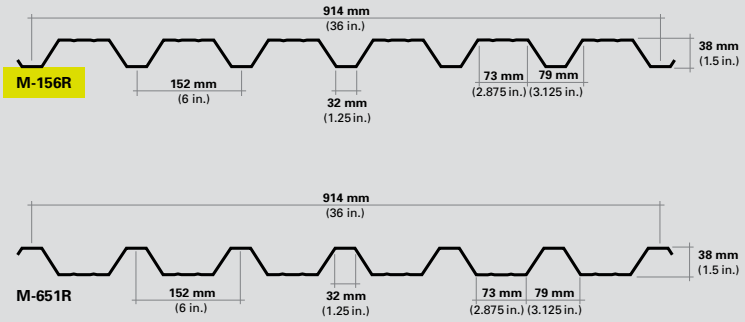
Steel cladding is a cost-effective finish for both the exterior and interior walls of your building. Canam cladding comes in three different profiles, M-156R, M-651R and M-2297, in order to meet your specific needs and tastes.

All Canam cladding products are cold-formed from Perspectra Series™ steel coil that is made to rigid specifications and quality-tested to comply with ASTM A653/A653M or A792/A792M requirements. The cladding is coated with a proven formula of advanced polyester resins with added silicone for enhanced durability and corrosion resistance. Canam cladding is available in a full range of standard and custom colors as well as with the following specialized color coatings: Stelcolour 10000 Series™, Stelcolour Metallic and Elite Series™, and Stelcolour Barrier Series™.

Perspectra Series™	Stelcolour 10000 Series™	Stelcolour Metallic and Elite Series™	Stelcolour Barrier Series™
• Available on a hot-dip galvanized or enhanced corrosion-resistant Galvalume™ (55% aluminium-zinc alloy) base	• PVF_2 topcoat (based on Kynar 500™ and Hylar 5000™ fluoropolymer resins) over a special corrosion-resistant primer	• Four-layer system with three PVF_2 coatings (based on Kynar 500™ and Hylar 5000™ fluoropolymer resins) over a corrosion-resistant primer	• Exclusive thick-film PVC plastisol system
• Resistant to natural elements and pollutants found in urban/industrial environments	• Resistant to natural elements and pollutants found in urban/industrial environments	• Highly resistant to pollutants found in urban environments	• For applications in industrial and other aggressive environments requiring superior corrosion protection
• 40 years of film integrity	• 40 years of film integrity	• 40 years of film integrity	• Extremely flexible coating
• 30 years of stringent color fade and chalk values	• 30 years of stringent color fade and chalk values	• 40 years of stringent color fade and chalk values	• Highly resistant to pollutants such as salts, acids, alkalies, oxidizing agents, industrial and automotive fumes, as well as natural elements

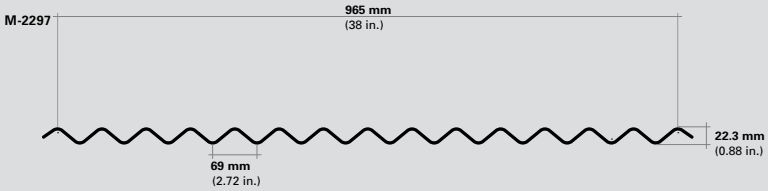
M-156R AND M-651R

- Cover width: 914 mm (36 in.)
- Nominal thickness: 0.38 mm to 0.76 mm (0.015 in. to 0.030 in.)
- Gauge: 24 to 28
- Nominal rib depth: 38 mm (1.5 in.)
- Rib spacing (center to center): 152 mm (6 in.)



M-2297

- Cover width: 965 mm (38 in.)
- Nominal thickness: 0.38 mm to 0.76 mm (0.015 in. to 0.030 in.)
- Gauge: 22 to 28
- Nominal rib depth: 22.3 mm (0.88 in.)
- Rib spacing (center to center): 69 mm (2.72 in.)



COLOR CHART

Metal cladding designed for installation on the interior and exterior walls of Murox buildings is available in the following colors:

QC-18273 Bone White	QC-18317 White-White
QC-18305 Stone Grey	QC-18330 Heron Blue
Galvalume Plus	QC-18315 Tan
QC-18229 Dark Brown	QC-18260 Slate Blue
QC-18262 Black	QC-18076 Putnam Ivory
QC-18329 Forest Green	

Please note that additional colors are available but may take longer to deliver, incur supplemental costs, or require minimum quantities. We invite you to contact your representative to find out more about product availability, obtain a quote, or for any other information.

The colors shown above were reproduced using a lithographic printing process and are presented for reference purposes. We recommend that you verify the desired color(s) using actual Murox® samples.

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STORMWATER MANAGEMENT REPORT

SITE PLAN
4-Unit Warehouse Facility
Biddeford, Maine

Submitted by:

WESTFIELD INC.

Prepared by:

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

STATE OF MAINE
ANDREW S.
MORRELL
No. 13285
LICENSED
PROFESSIONAL ENGINEER

Date:
August 2020
January 2021 Updated

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APPENDIX C PRE-DEVELOPMENT CALCULATIONS
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1.0 INTRODUCTION

Westfield Inc. owns two parcels of land (Map 2, Lot 81 & 81-5) at 20-26 Pomerleau Street in Biddeford. The parcel currently houses a commercial building with associated parking infrastructure. The applicant is looking to construct four new commercial warehouse units along with additional parking infrastructure.

This property is a part of the Alfred Road Industrial Park which has an existing Site Location of Development Act Permit through the Maine DEP. The original permit number for this project is Permit #39-4124-31050. Multiple revisions have been made to this permit over the years, but it is our understanding that this project will not require an amendment to the permit as it was issued prior to DEP's Site Law impervious area standards.

The proposed project as shown on the plans will result in approximately 16,475 square feet of new impervious area. Along with the addition of new impervious area, approximately 71,045 sf of existing impervious area will be redeveloped for this project. The following report has been prepared to address the City of Biddeford Stormwater Standards.

Runoff from the newly developed impervious area will be collected with vegetated swales and a catch basin and discharged to a grassed underdrained soil filter that is proposed outlet into an existing catchbasin located along Pomerleau Street.

1.1 MODELING METHODOGY AND SOURCE INFORMATION

Hydrologic Analysis: The pre and post development conditions have been modeled using modeling software (Hydrocad Version 10) which is based upon the methodology contained within the USDA Soil Conservation Service Technical Release 55. Type III 24-hour storm distributions for York County were used for the analysis. The following return periods and 24-hour rainfall depths were used for the analysis:

Return Period	24-Hour Rainfall Depth
2-Year Storm	3.30 inches
10-Year Storm	4.90 inches
25-Year Storm	6.20 inches

Soils: The soils used for the stormwater analysis were digitized from the Natural Resource Conservation Service (NRCS), web soil survey website. The source of the data is the York County Soil Survey (Class D). Refer to the following for additional documentation regarding the soils used for modelling:

- Appendix B of this Report
- Pre and Post Development Watershed Plans (Sheets A and B)

The soils include:

Soil Map Unit	Unit Description	Hydrologic Soil Group
Sc	Scantic Silt Loam, 0 to 3% slopes	D

Topography: Field gathered topography on site, and LIDAR data from the Maine Office of GIS in offsite areas.

1.2 DESCRIPTION OF POINTS OF ANALYSIS

The watershed model analyzes the discharge of runoff at two Analysis Points as described below:

Analysis Point #1

Description: Catchbasin along shoulder of Pomerleau Street southwest of the site
Pre-Development Tributary Drainage Areas: 1.86 acres
Post Development Tributary Drainage Areas: 1.90 acres

Analysis Point #2
Description: Catchbasin along shoulder of Pomerleau Street northwest of the site
Pre-Development Tributary Drainage Areas: 1.09 acres
Post Development Tributary Drainage Areas: 1.54 acres

Analysis Point #3
Description: Catchbasin at the end of Pomerleau Street
Pre-Development Tributary Drainage Areas: 1.91 acres
Post Development Tributary Drainage Areas: 1.49 acres

Analysis Point #4
Description: Inlet to 12" CMP along a swale along the eastern side of the site
Pre-Development Tributary Drainage Areas: 1.39 acres
Post Development Tributary Drainage Areas: 1.37 acres

Analysis Point #5
Description: Catchbasin system located south of the existing building onsite
Pre-Development Tributary Drainage Areas: 1.09 acres
Post Development Tributary Drainage Areas: 1.04 acres

1.3 PRE DEVELOPMENT CONDITIONS

The Existing Conditions are shown on Sheet A of the accompanying plans. The parcel, located at 20-26 Pomerleau Street in Biddeford, is currently developed with a large commercial building and associated parking areas. The sites stormwater runoff

currently discharges to catchbasins onsite and in Pomerleau Street. The parcel lies within the Thatcher Brook Watershed.

The watershed that was analyzed for this project is approximately 7.33 acres. The analysis points are described in Section 1.2 of this report. The watershed generally flows east to west.

The Pre-Development Watershed Map is included as Sheet A of the accompanying plans and the Calculations are attached as Appendix C.

The Pre-Development Watershed Model predicts the following peak flow rates:

Pre-Development Peak Flows (cu. ft./sec)			
Analysis Point	**2-Year**	**10-Year**	**25-Year**
AP-1	3.64	5.11	7.09
AP-2	2.26	3.75	4.96
AP-3	5.70	8.65	11.04
AP-4	2.51	4.23	6.16
AP-5	2.30	3.76	4.94

Please note that the existing culvert receiving watershed 1.1 appears to be undersized in comparison to the depressed area for the 25 year storm, and the model predicts that this will likely overtop. The model presents this condition, showing excess spilling out of the depression and running along the shoulder to the catch basin, AP 1.

1.4 POST DEVELOPMENT CONDITIONS

The project proposes to develop the site that shows existing areas of impervious and vegetated grass surfaces. Proposed conditions will include construction of four commercial warehouse units along with parking infrastructure for each unit. The project proposes 16,475 sf of new impervious area in areas of existing grassed areas requiring treatment. The grassed underdrained soil filter is proposed to capture the following areas based on cover type:

Proposed Impervious Area Treated = 35,868 sf
Proposed Landscaped Area Treated = 12,658 sf

Areas of existing vegetation to be redeveloped will be restored to grassed conditions consistent with existing conditions. Comparing the new proposed impervious area to the impervious area proposed to be treated, the project proposes to treat an excess of 19,393 sf

The proposed project will include a Grassed Underdrained Soil Filter to provide water quality treatment and attenuation of peak flows. Treatment sizing calculations can be found in Appendix E.

The Post Development Watershed Map is included as Sheet B of the accompanying plan set and the Calculations are attached as Appendix D.

The Post-Development Watershed Model predicts the following peak flow rates:

Post Development Peak Flows (cu. ft./sec)			
Analysis Point	**2-Year**	**10-Year**	**25-Year**
AP-1	3.53	5.01	5.72
AP-2	1.07	3.78	7.29
AP-3	4.53	6.88	8.77
AP-4	2.46	4.17	5.96
AP-5	1.95	3.29	4.38

1.5 BASIC STANDARDS

The proposed project is required to meet the City of Biddeford stormwater ordinance. To meet the Basic Standards the project design must demonstrate that the erosion and sedimentation control, inspection and maintenance, and housekeeping standards, and that the grading or other construction activity will not impede or otherwise alter drainageways so as to have an unreasonable adverse impact on a wetland or waterbody, or an adjacent downslope parcel.

The proposed project will provide temporary (during construction) BMP's and post-construction BMP's. Refer to sheet 5 of the project plans for erosion and sedimentation control narratives and details. The project requirements for inspection and maintenance during construction and post-construction are described in the Erosion and Sedimentation Control - Inspection and Maintenance Plan found in Appendix F of this Report. The housekeeping standards can also be found in the Inspection and Maintenance Plan.

1.6 FLOODING STANDARD

The proposed project is not required to meet the Flooding Standards. However, the City of Biddeford requires that pre and post development runoff modelling be evaluated.

The following Table compares the Pre and Post Development peak flow rates for the 2-year, 10-year, and 25-year return periods. Refer to Appendix C for the Pre-Development model and Appendix D for Post Development model.

Peak Flow Comparison (cu. ft./sec)						
Analysis Point	2-Year		10-Year		25-Year	
	Pre	Post	Pre	Post	Pre	Post
AP-1	3.64	3.53	5.11	5.01	7.09	5.72
AP-2	2.26	1.07	3.75	3.78	4.96	7.29
AP-3	5.70	4.53	8.65	6.88	11.04	8.77
AP-4	2.51	2.46	4.23	4.17	6.16	5.96
AP-5	2.30	1.95	3.76	3.29	4.94	4.38

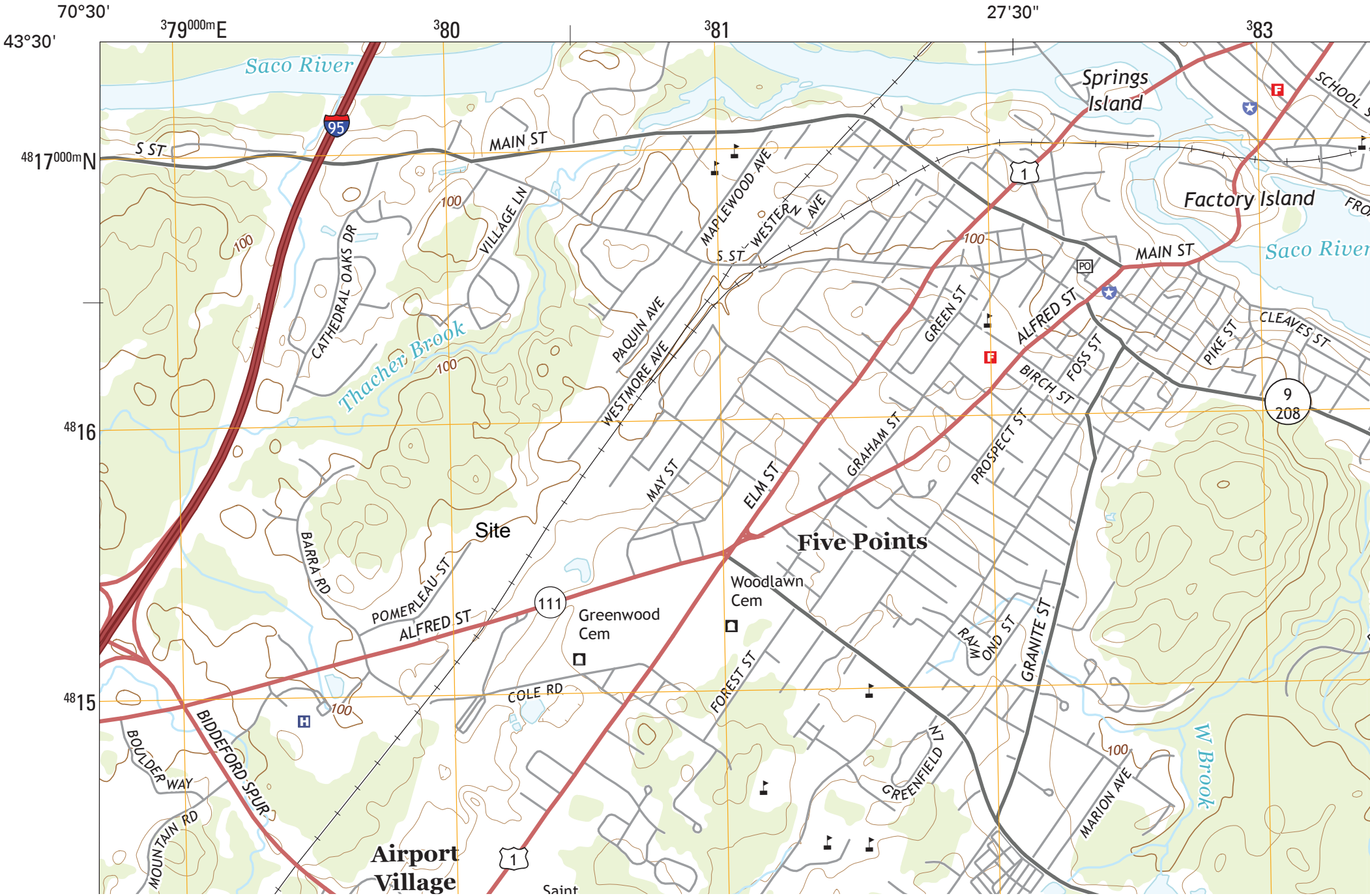
This design reduces the peak flow rates to all analysis points with the exception of AP-2, an existing catch basin along Pomerleau Street. AP-2 shows overages in the 10 and 25-year events. This catch basin is the final connection to the drain main running along Pomerleau Street. The drain empties through a 36" diameter outlet at a headwall to an existing stream along the bottom of bank at the northern end of Pomerleau Street. Given the size of the main, the proximity to the outlet, the apparent upstream contributing area to the main, the main outletting to a stream segment, and considering the reductions in AP-1 contributing to the drain main upstream of AP-2 (representing a net increase of approximately 1 cfs under 25-year events), this can be considered a minor increase and will not cause downstream impacts.

1.7 CLOSURE

The proposed stormwater management facilities have been designed to mitigate stormwater impacts associated with development of the proposed project. The proposed stormwater management facilities have been designed to meet the Basic, General and Flooding Standards required by Chapter 500 from the Maine DEP as well as City of Biddeford standards.

Appendix A

Figures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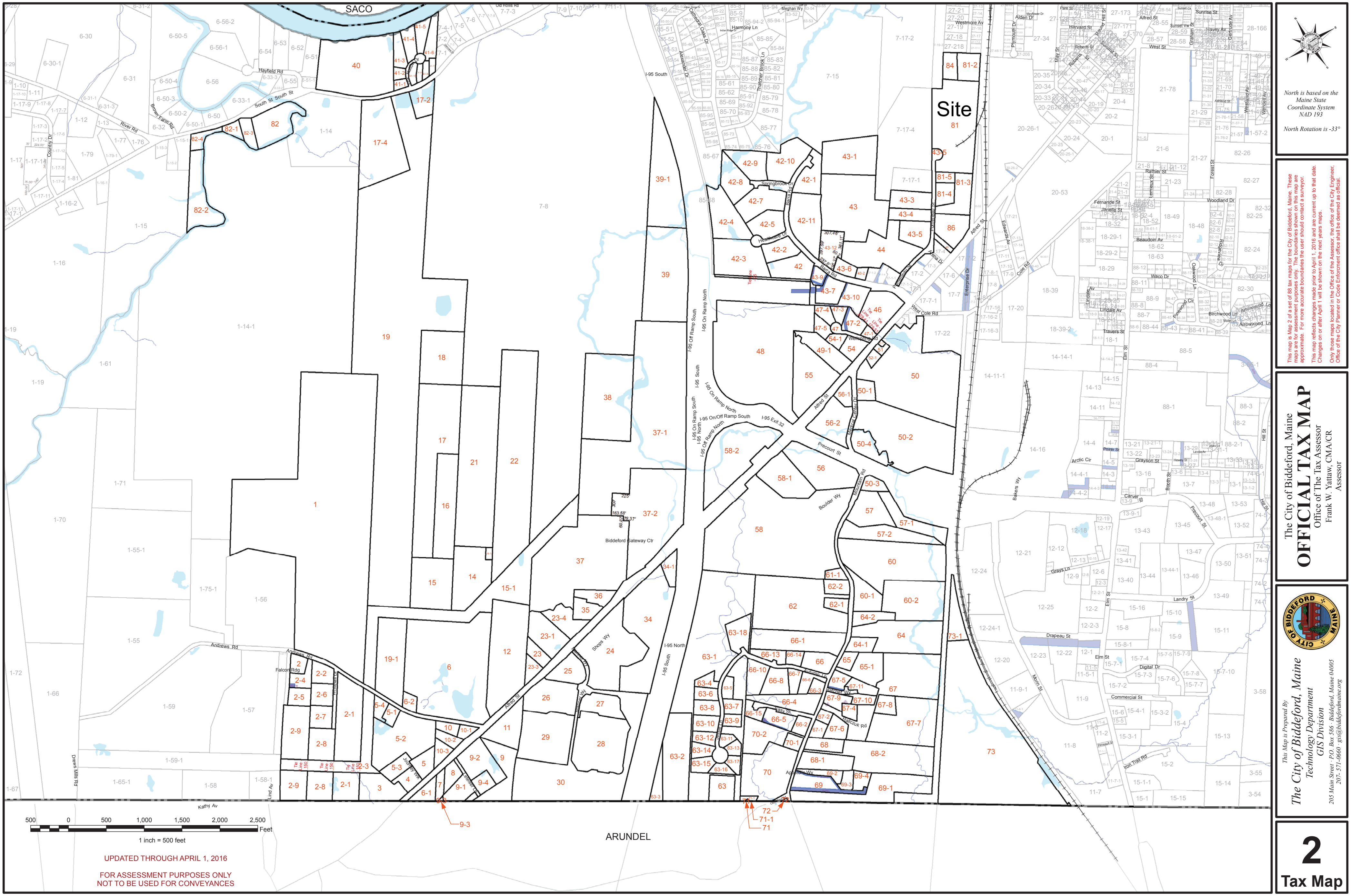
43°30'
27'30"
379000mE
380
381
383
4817000mN
4816
4815
Saco River
Springs Island
Factory Island
Saco River
Thacher Brook
W Brook
95
1
111
9
208
S ST
MAIN ST
VILLAGE LN
CATHEDRAL OAKS DR
MAPLEWOOD AVE
S ST
WESTERN AVE
PAQUIN AVE
WESTMORE AVE
GREEN ST
ALFRED ST
BIRCH ST
FOSS ST
PIKE ST
CLEAVES ST
SCHOOL
PO
F
H
100
MAY ST
ELM ST
GRAHAM ST
PROSPECT ST
Five Points
Site
BARRA RD
POMERLEAU ST
ALFRED ST
Greenwood Cem
Woodlawn Cem
COLE RD
FOREST ST
RAYMOND ST
GRANITE ST
GREENFIELD LN
MARION AVE
BIDDEFORD SPUR
BOULDER WAY
MOUNTAIN RD
Airport Village
Saint


SACO
ARUNDEL
Site
North is based on the Maine State Coordinate System NAD 193
North Rotation is -33°
The City of Biddeford, Maine
OFFICIAL TAX MAP
Office of The Tax Assessor
Frank W. Yattaw, CMA/CR
Assessor
This Map is Prepared By:
The City of Biddeford, Maine
Technology Department
GIS Division
205 Main Street · P.O. Box 586 · Biddeford, Maine 04005
207 · 571-0660 · gis@biddefordmaine.org
2
Tax Map
1 inch = 500 feet
Feet
UPDATED THROUGH APRIL 1, 2016
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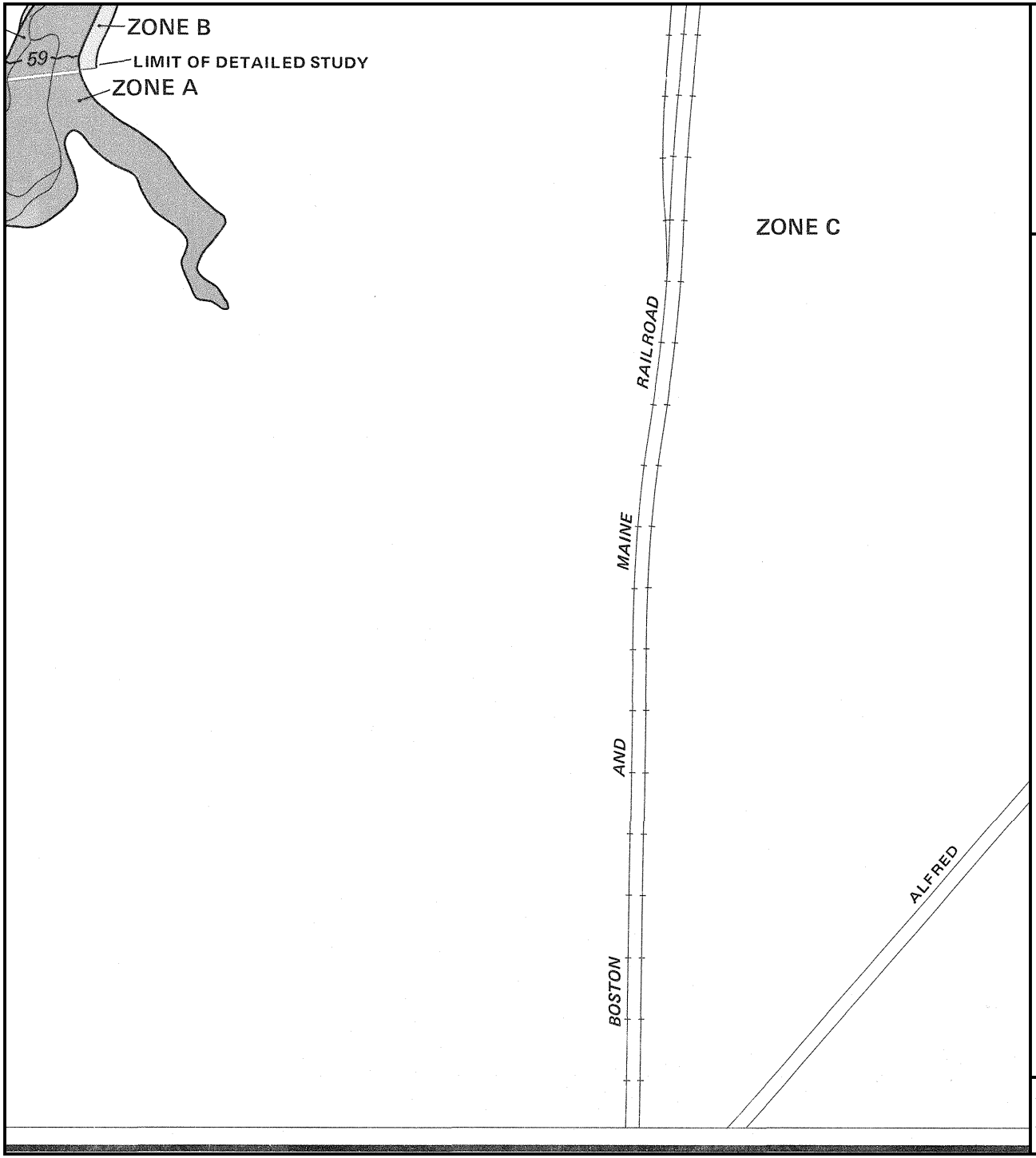


APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
BIDDEFORD,
MAINE
YORK COUNTY

PANEL 3 OF 11
(SEE MAP INDEX FOR PANELS NOT PRINTED)

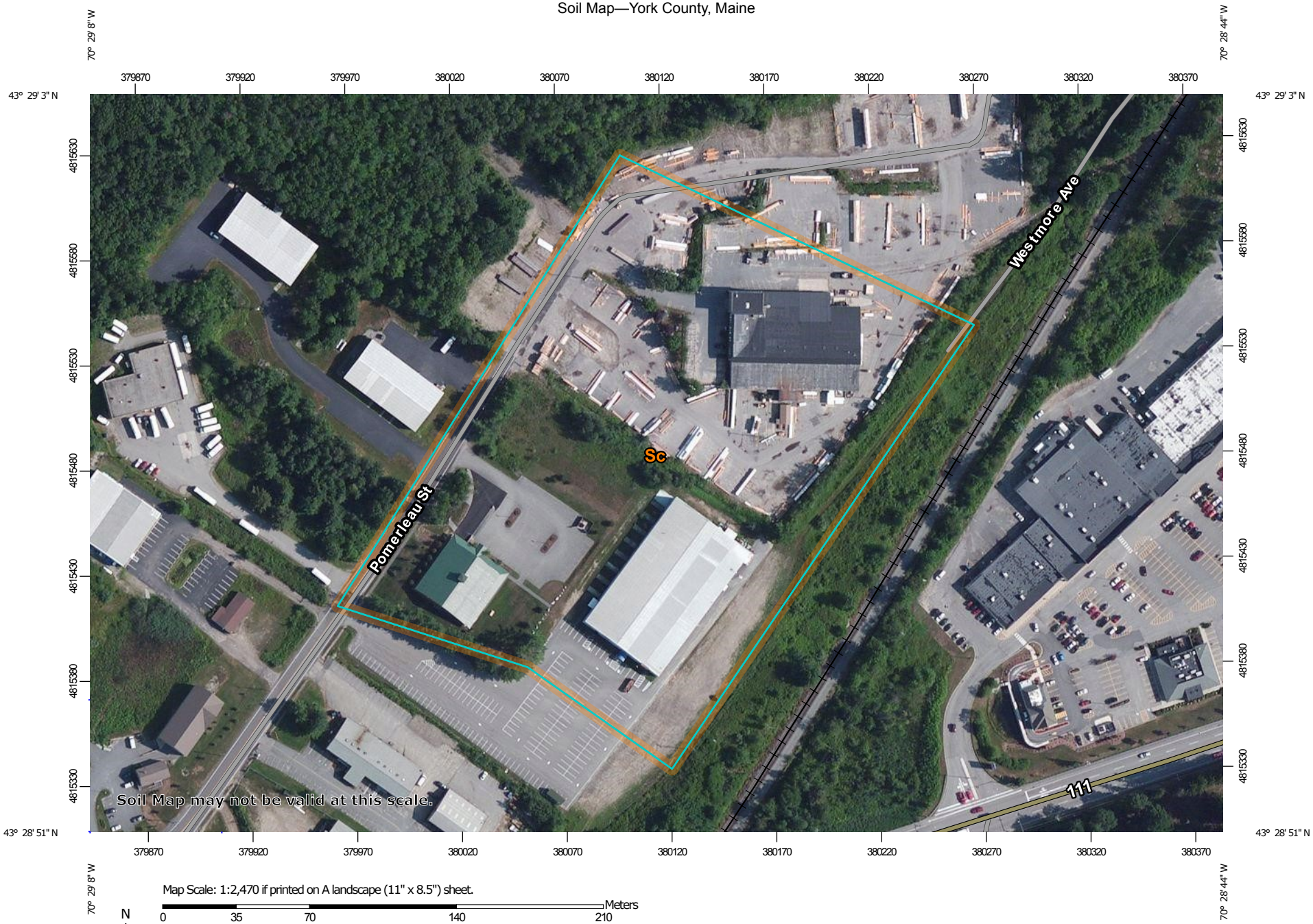
COMMUNITY-PANEL NUMBER
230145 0003 B

EFFECTIVE DATE:
MAY 15, 1984

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix B
Soils Report



Map Scale: 1:2,470 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: York County, Maine
Survey Area Data: Version 15, Sep 15, 2016

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

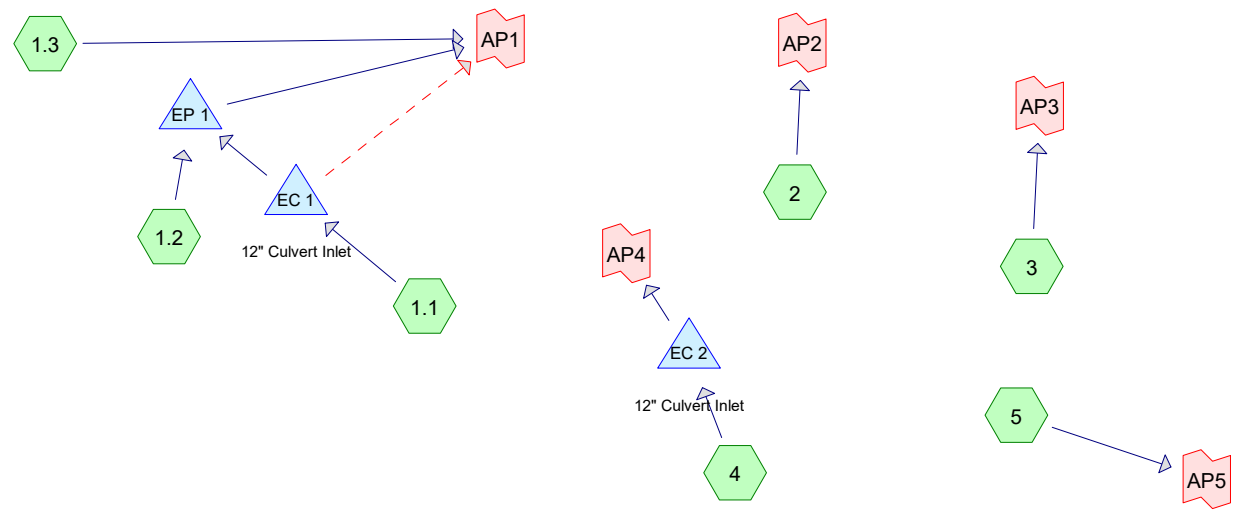
Date(s) aerial images were photographed: Jun 20, 2010—Jul 18, 2010

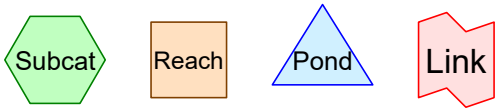
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

York County, Maine (ME031)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Sc	Scantic silt loam, 0 to 3 percent slopes	11.1	100.0%
Totals for Area of Interest		**11.1**	**100.0%**

Appendix C
Pre-Development Calculations





Routing Diagram for Pomerleau Warehouse Pre
Prepared by BH2M, Printed 1/29/2021
HydroCAD® 10.00-22 s/n 00619 © 2018 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=59,359 sf 50.94% Impervious Runoff Depth>4.65"
Flow Length=347' Tc=12.0 min CN=89 Runoff=6.19 cfs 0.528 af

Subcatchment 1.2: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>4.66"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=1.59 cfs 0.119 af

Subcatchment 1.3: Runoff Area=8,152 sf 64.61% Impervious Runoff Depth>4.97"
Flow Length=269' Tc=6.0 min CN=92 Runoff=1.06 cfs 0.078 af

Subcatchment 2: Runoff Area=47,558 sf 49.23% Impervious Runoff Depth>4.65"
Flow Length=527' Tc=12.0 min CN=89 Runoff=4.96 cfs 0.423 af

Subcatchment 3: Runoff Area=83,034 sf 88.12% Impervious Runoff Depth>5.36"
Flow Length=498' Tc=6.6 min CN=96 Runoff=11.04 cfs 0.851 af

Subcatchment 4: Runoff Area=60,515 sf 34.48% Impervious Runoff Depth>4.33"
Flow Length=525' Tc=12.5 min CN=86 Runoff=5.90 cfs 0.502 af

Subcatchment 5: Runoff Area=47,454 sf 54.27% Impervious Runoff Depth>4.76"
Flow Length=466' Tc=12.6 min CN=90 Runoff=4.94 cfs 0.432 af

Pond EC 1: 12" Culvert Inlet Peak Elev=102.67' Storage=562 cf Inflow=6.19 cfs 0.528 af
Primary=4.03 cfs 0.505 af Secondary=1.38 cfs 0.011 af Outflow=5.41 cfs 0.516 af

Pond EC 2: 12" Culvert Inlet Peak Elev=109.93' Storage=171 cf Inflow=5.90 cfs 0.502 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=6.16 cfs 0.502 af

Pond EP 1: Peak Elev=101.81' Storage=355 cf Inflow=5.44 cfs 0.624 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=5.01 cfs 0.624 af

Link AP1: Inflow=7.09 cfs 0.712 af
Primary=7.09 cfs 0.712 af

Link AP2: Inflow=4.96 cfs 0.423 af
Primary=4.96 cfs 0.423 af

Link AP3: Inflow=11.04 cfs 0.851 af
Primary=11.04 cfs 0.851 af

Link AP4: Inflow=6.16 cfs 0.502 af
Primary=6.16 cfs 0.502 af

Link AP5: Inflow=4.94 cfs 0.432 af
Primary=4.94 cfs 0.432 af

Total Runoff Area = 7.333 ac Runoff Volume = 2.932 af Average Runoff Depth = 4.80"
41.99% Pervious = 3.079 ac 58.01% Impervious = 4.254 ac

Summary for Subcatchment 1.1:

Runoff = 6.19 cfs @ 12.16 hrs, Volume= 0.528 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
29,123	80	>75% Grass cover, Good, HSG D
30,236	98	Paved parking, HSG D
59,359	89	Weighted Average
29,123		49.06% Pervious Area
30,236		50.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	150	0.0330	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.1	197	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.0	347	Total			

Summary for Subcatchment 1.2:

Runoff = 1.59 cfs @ 12.11 hrs, Volume= 0.119 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
6,745	80	>75% Grass cover, Good, HSG D
6,594	98	Paved parking, HSG D
13,339	89	Weighted Average
6,745		50.57% Pervious Area
6,594		49.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	140	0.0714	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 1.3:

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
2,885	80	>75% Grass cover, Good, HSG D
5,267	98	Paved parking, HSG D
8,152	92	Weighted Average
2,885		35.39% Pervious Area
5,267		64.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	72	0.0833	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.6	197	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2:

Runoff = 4.96 cfs @ 12.16 hrs, Volume= 0.423 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
24,144	80	>75% Grass cover, Good, HSG D
23,414	98	Paved parking, HSG D
47,558	89	Weighted Average
24,144		50.77% Pervious Area
23,414		49.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	150	0.0466	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.2	30	0.0333	2.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	132	0.0151	4.52	24.13	**Parabolic Channel,** W=8.00' D=1.00' Area=5.3 sf Perim=8.3' n= 0.030 Earth, grassed & winding
0.5	58	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.3	157	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.0	527	Total			

Summary for Subcatchment 3:

Runoff = 11.04 cfs @ 12.09 hrs, Volume= 0.851 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
9,868	80	>75% Grass cover, Good, HSG D
73,166	98	Paved parking, HSG D
83,034	96	Weighted Average
9,868		11.88% Pervious Area
73,166		88.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	25	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	125	0.0120	1.19		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	238	0.0336	3.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	20	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	90	0.0278	3.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.6	498	Total			

Summary for Subcatchment 4:

Runoff = 5.90 cfs @ 12.17 hrs, Volume= 0.502 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
39,651	80	>75% Grass cover, Good, HSG D
20,864	98	Paved parking, HSG D
60,515	86	Weighted Average
39,651		65.52% Pervious Area
20,864		34.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.9	175	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	200	0.0350	6.80	29.48	**Parabolic Channel,** W=6.50' D=1.00' Area=4.3 sf Perim=6.9' n= 0.030
12.5	525	Total			

Summary for Subcatchment 5:

Runoff = 4.94 cfs @ 12.17 hrs, Volume= 0.432 af, Depth> 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
21,703	80	>75% Grass cover, Good, HSG D
25,751	98	Paved parking, HSG D
47,454	90	Weighted Average
21,703		45.73% Pervious Area
25,751		54.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	150	0.0333	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	64	0.0781	4.19		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.7	87	0.0115	2.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	165	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
12.6	466	Total			

Summary for Pond EC 1: 12" Culvert Inlet

Inflow Area = 1.363 ac, 50.94% Impervious, Inflow Depth > 4.65" for 25-YR event
Inflow = 6.19 cfs @ 12.16 hrs, Volume= 0.528 af
Outflow = 5.41 cfs @ 12.17 hrs, Volume= 0.516 af, Atten= 13%, Lag= 0.4 min
Primary = 4.03 cfs @ 12.17 hrs, Volume= 0.505 af
Secondary = 1.38 cfs @ 12.17 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 4
Peak Elev= 102.67' @ 12.17 hrs Surf.Area= 1,311 sf Storage= 562 cf

Plug-Flow detention time= 11.2 min calculated for 0.516 af (98% of inflow)
Center-of-Mass det. time= 1.5 min (764.2 - 762.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	562 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.00	0	0.0	0	0	0
101.00	36	25.4	12	12	53
102.00	342	85.6	163	175	588
102.50	1,311	139.6	387	562	1,557

Device	Routing	Invert	Outlet Devices
#1	Primary	100.35'	**12.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 100.35' / 98.67' S= 0.0336 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	102.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.99 cfs @ 12.17 hrs HW=102.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.99 cfs @ 5.08 fps)

Secondary OutFlow Max=1.21 cfs @ 12.17 hrs HW=102.64' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.21 cfs @ 0.87 fps)

Summary for Pond EC 2: 12" Culvert Inlet

Inflow Area = 1.389 ac, 34.48% Impervious, Inflow Depth > 4.33" for 25-YR event
Inflow = 5.90 cfs @ 12.17 hrs, Volume= 0.502 af
Outflow = 6.16 cfs @ 12.16 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.0 min
Primary = 6.16 cfs @ 12.16 hrs, Volume= 0.502 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 109.93' @ 12.16 hrs Surf.Area= 201 sf Storage= 171 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (771.0 - 770.9)

Volume	Invert	Avail.Storage	Storage Description
#1	105.50'	171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.50	0	0.0	0	0	0
106.00	12	19.5	2	2	31
107.00	72	43.3	38	40	154
108.00	201	75.3	131	171	461

Device	Routing	Invert	Outlet Devices
#1	Primary	105.20'	**12.0" Round Culvert** L= 500.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.20' / 90.00' S= 0.0304 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=5.95 cfs @ 12.16 hrs HW=109.67' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.95 cfs @ 7.57 fps)

Summary for Pond EP 1:

Inflow Area = 1.669 ac, 50.66% Impervious, Inflow Depth > 4.49" for 25-YR event
Inflow = 5.44 cfs @ 12.14 hrs, Volume= 0.624 af
Outflow = 5.01 cfs @ 12.22 hrs, Volume= 0.624 af, Atten= 8%, Lag= 4.6 min
Primary = 5.01 cfs @ 12.22 hrs, Volume= 0.624 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 101.81' @ 12.22 hrs Surf.Area= 540 sf Storage= 355 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (764.1 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	2,086 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
98.50	0	0.0	0	0	0
101.00	125	59.5	104	104	291
102.00	675	108.4	363	468	950
103.00	2,804	214.0	1,618	2,086	3,664

Device	Routing	Invert	Outlet Devices
#1	Primary	98.50'	**12.0" Round Culvert** L= 105.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 98.50' / 97.09' S= 0.0134 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=5.00 cfs @ 12.22 hrs HW=101.80' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.00 cfs @ 6.36 fps)

Summary for Link AP1:

Inflow Area = 1.856 ac, 52.07% Impervious, Inflow Depth > 4.60" for 25-YR event
Inflow = 7.09 cfs @ 12.16 hrs, Volume= 0.712 af
Primary = 7.09 cfs @ 12.16 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2:

Inflow Area = 1.092 ac, 49.23% Impervious, Inflow Depth > 4.65" for 25-YR event
Inflow = 4.96 cfs @ 12.16 hrs, Volume= 0.423 af
Primary = 4.96 cfs @ 12.16 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP3:

Inflow Area = 1.906 ac, 88.12% Impervious, Inflow Depth > 5.36" for 25-YR event
Inflow = 11.04 cfs @ 12.09 hrs, Volume= 0.851 af
Primary = 11.04 cfs @ 12.09 hrs, Volume= 0.851 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP4:

Inflow Area = 1.389 ac, 34.48% Impervious, Inflow Depth > 4.33" for 25-YR event
Inflow = 6.16 cfs @ 12.16 hrs, Volume= 0.502 af
Primary = 6.16 cfs @ 12.16 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP5:

Inflow Area = 1.089 ac, 54.27% Impervious, Inflow Depth > 4.76" for 25-YR event
Inflow = 4.94 cfs @ 12.17 hrs, Volume= 0.432 af
Primary = 4.94 cfs @ 12.17 hrs, Volume= 0.432 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=59,359 sf 50.94% Impervious Runoff Depth>2.04"
Flow Length=347' Tc=12.0 min CN=89 Runoff=2.82 cfs 0.231 af

Subcatchment 1.2: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>2.04"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=0.72 cfs 0.052 af

Subcatchment 1.3: Runoff Area=8,152 sf 64.61% Impervious Runoff Depth>2.31"
Flow Length=269' Tc=6.0 min CN=92 Runoff=0.51 cfs 0.036 af

Subcatchment 2: Runoff Area=47,558 sf 49.23% Impervious Runoff Depth>2.04"
Flow Length=527' Tc=12.0 min CN=89 Runoff=2.26 cfs 0.185 af

Subcatchment 3: Runoff Area=83,034 sf 88.12% Impervious Runoff Depth>2.69"
Flow Length=498' Tc=6.6 min CN=96 Runoff=5.70 cfs 0.427 af

Subcatchment 4: Runoff Area=60,515 sf 34.48% Impervious Runoff Depth>1.79"
Flow Length=525' Tc=12.5 min CN=86 Runoff=2.52 cfs 0.208 af

Subcatchment 5: Runoff Area=47,454 sf 54.27% Impervious Runoff Depth>2.12"
Flow Length=466' Tc=12.6 min CN=90 Runoff=2.30 cfs 0.193 af

Pond EC 1: 12" Culvert Inlet Peak Elev=101.68' Storage=87 cf Inflow=2.82 cfs 0.231 af
Primary=2.71 cfs 0.231 af Secondary=0.00 cfs 0.000 af Outflow=2.71 cfs 0.231 af

Pond EC 2: 12" Culvert Inlet Peak Elev=106.40' Storage=10 cf Inflow=2.52 cfs 0.208 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=2.51 cfs 0.208 af

Pond EP 1: Peak Elev=100.20' Storage=33 cf Inflow=3.29 cfs 0.283 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=3.27 cfs 0.283 af

Link AP1: Inflow=3.64 cfs 0.319 af
Primary=3.64 cfs 0.319 af

Link AP2: Inflow=2.26 cfs 0.185 af
Primary=2.26 cfs 0.185 af

Link AP3: Inflow=5.70 cfs 0.427 af
Primary=5.70 cfs 0.427 af

Link AP4: Inflow=2.51 cfs 0.208 af
Primary=2.51 cfs 0.208 af

Link AP5: Inflow=2.30 cfs 0.193 af
Primary=2.30 cfs 0.193 af

Total Runoff Area = 7.333 ac Runoff Volume = 1.332 af Average Runoff Depth = 2.18"
41.99% Pervious = 3.079 ac 58.01% Impervious = 4.254 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=59,359 sf 50.94% Impervious Runoff Depth>3.47"
Flow Length=347' Tc=12.0 min CN=89 Runoff=4.68 cfs 0.393 af

Subcatchment 1.2: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>3.47"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=1.20 cfs 0.089 af

Subcatchment 1.3: Runoff Area=8,152 sf 64.61% Impervious Runoff Depth>3.77"
Flow Length=269' Tc=6.0 min CN=92 Runoff=0.81 cfs 0.059 af

Subcatchment 2: Runoff Area=47,558 sf 49.23% Impervious Runoff Depth>3.47"
Flow Length=527' Tc=12.0 min CN=89 Runoff=3.75 cfs 0.315 af

Subcatchment 3: Runoff Area=83,034 sf 88.12% Impervious Runoff Depth>4.16"
Flow Length=498' Tc=6.6 min CN=96 Runoff=8.65 cfs 0.661 af

Subcatchment 4: Runoff Area=60,515 sf 34.48% Impervious Runoff Depth>3.17"
Flow Length=525' Tc=12.5 min CN=86 Runoff=4.38 cfs 0.367 af

Subcatchment 5: Runoff Area=47,454 sf 54.27% Impervious Runoff Depth>3.57"
Flow Length=466' Tc=12.6 min CN=90 Runoff=3.76 cfs 0.324 af

Pond EC 1: 12" Culvert Inlet Peak Elev=102.52' Storage=562 cf Inflow=4.68 cfs 0.393 af
Primary=3.86 cfs 0.393 af Secondary=0.09 cfs 0.000 af Outflow=3.95 cfs 0.394 af

Pond EC 2: 12" Culvert Inlet Peak Elev=107.71' Storage=119 cf Inflow=4.38 cfs 0.367 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=4.23 cfs 0.367 af

Pond EP 1: Peak Elev=101.35' Storage=172 cf Inflow=4.70 cfs 0.482 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=4.58 cfs 0.482 af

Link AP1: Inflow=5.11 cfs 0.541 af
Primary=5.11 cfs 0.541 af

Link AP2: Inflow=3.75 cfs 0.315 af
Primary=3.75 cfs 0.315 af

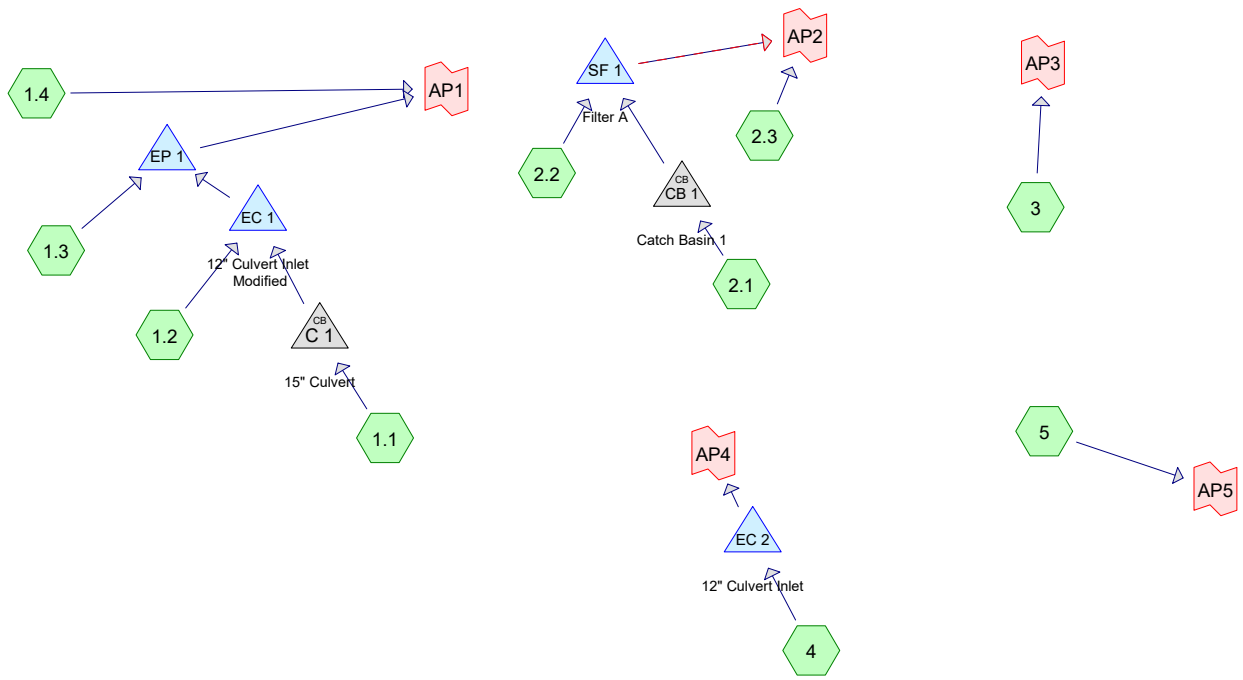
Link AP3: Inflow=8.65 cfs 0.661 af
Primary=8.65 cfs 0.661 af

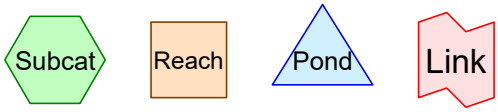
Link AP4: Inflow=4.23 cfs 0.367 af
Primary=4.23 cfs 0.367 af

Link AP5: Inflow=3.76 cfs 0.324 af
Primary=3.76 cfs 0.324 af

Total Runoff Area = 7.333 ac Runoff Volume = 2.208 af Average Runoff Depth = 3.61"
41.99% Pervious = 3.079 ac 58.01% Impervious = 4.254 ac

Appendix D
Post Development Calculations





Routing Diagram for Pomerleau Warehouse Post
Prepared by BH2M, Printed 1/29/2021
HydroCAD® 10.00-22 s/n 00619 © 2018 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=36,619 sf 51.39% Impervious Runoff Depth>4.66"
Flow Length=186' Tc=6.0 min CN=89 Runoff=4.55 cfs 0.326 af

Subcatchment 1.2: Runoff Area=24,636 sf 67.38% Impervious Runoff Depth>4.97"
Flow Length=203' Tc=6.0 min CN=92 Runoff=3.19 cfs 0.234 af

Subcatchment 1.3: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>4.66"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=1.59 cfs 0.119 af

Subcatchment 1.4: Runoff Area=8,068 sf 65.28% Impervious Runoff Depth>4.97"
Flow Length=269' Tc=6.0 min CN=92 Runoff=1.05 cfs 0.077 af

Subcatchment 2.1: Runoff Area=16,706 sf 71.83% Impervious Runoff Depth>5.07"
Tc=6.0 min CN=93 Runoff=2.19 cfs 0.162 af

Subcatchment 2.2: Runoff Area=31,820 sf 75.01% Impervious Runoff Depth>5.17"
Tc=6.0 min CN=94 Runoff=4.21 cfs 0.315 af

Subcatchment 2.3: Runoff Area=18,396 sf 64.49% Impervious Runoff Depth>4.97"
Flow Length=191' Tc=9.8 min CN=92 Runoff=2.12 cfs 0.175 af

Subcatchment 3: Runoff Area=65,096 sf 86.65% Impervious Runoff Depth>5.36"
Flow Length=570' Tc=6.0 min CN=96 Runoff=8.77 cfs 0.667 af

Subcatchment 4: Runoff Area=59,476 sf 35.08% Impervious Runoff Depth>4.33"
Flow Length=525' Tc=12.5 min CN=86 Runoff=5.80 cfs 0.493 af

Subcatchment 5: Runoff Area=45,257 sf 44.80% Impervious Runoff Depth>4.54"
Flow Length=406' Tc=14.1 min CN=88 Runoff=4.38 cfs 0.393 af

Pond C 1: 15" Culvert Peak Elev=107.32' Inflow=4.55 cfs 0.326 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0100 '/' Outflow=4.55 cfs 0.326 af

Pond CB 1: Catch Basin 1 Peak Elev=103.09' Inflow=2.19 cfs 0.162 af
12.0" Round Culvert n=0.013 L=172.0' S=0.0050 '/' Outflow=2.19 cfs 0.162 af

Pond EC 1: 12" Culvert Inlet Modified Peak Elev=102.50' Storage=2,952 cf Inflow=7.74 cfs 0.561 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0336 '/' Outflow=3.83 cfs 0.543 af

Pond EC 2: 12" Culvert Inlet Peak Elev=109.66' Storage=171 cf Inflow=5.80 cfs 0.493 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=5.96 cfs 0.493 af

Pond EP 1: Peak Elev=101.75' Storage=321 cf Inflow=5.40 cfs 0.662 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=4.95 cfs 0.662 af

Pond SF 1: Filter A Peak Elev=101.90' Storage=8,397 cf Inflow=6.40 cfs 0.477 af
Primary=0.05 cfs 0.047 af Secondary=5.13 cfs 0.269 af Outflow=5.19 cfs 0.316 af

Link AP1: Inflow=5.72 cfs 0.738 af
Primary=5.72 cfs 0.738 af

Link AP2: Inflow=7.29 cfs 0.491 af
Primary=7.29 cfs 0.491 af

Link AP3: Inflow=8.77 cfs 0.667 af
Primary=8.77 cfs 0.667 af

Link AP4: Inflow=5.96 cfs 0.493 af
Primary=5.96 cfs 0.493 af

Link AP5: Inflow=4.38 cfs 0.393 af
Primary=4.38 cfs 0.393 af

Total Runoff Area = 7.333 ac Runoff Volume = 2.962 af Average Runoff Depth = 4.85"
39.72% Pervious = 2.912 ac 60.28% Impervious = 4.420 ac

Summary for Subcatchment 1.1:

Runoff = 4.55 cfs @ 12.09 hrs, Volume= 0.326 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
17,802	80	>75% Grass cover, Good, HSG D
18,817	98	Paved parking, HSG D
36,619	89	Weighted Average
17,802		48.61% Pervious Area
18,817		51.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	65	0.0615	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.0	85	0.0235	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.1	22	0.0235	3.11		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0900	4.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	186	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1.2:

Runoff = 3.19 cfs @ 12.09 hrs, Volume= 0.234 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
8,037	80	>75% Grass cover, Good, HSG D
16,599	98	Paved parking, HSG D
24,636	92	Weighted Average
8,037		32.62% Pervious Area
16,599		67.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0267	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.1	23	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	30	0.0800	4.24		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.7	203	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1.3:

Runoff = 1.59 cfs @ 12.11 hrs, Volume= 0.119 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
6,745	80	>75% Grass cover, Good, HSG D
6,594	98	Paved parking, HSG D
13,339	89	Weighted Average
6,745		50.57% Pervious Area
6,594		49.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	140	0.0714	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 1.4:

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.077 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
2,801	80	>75% Grass cover, Good, HSG D
5,267	98	Paved parking, HSG D
8,068	92	Weighted Average
2,801		34.72% Pervious Area
5,267		65.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	72	0.0833	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.6	197	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2.1:

Runoff = 2.19 cfs @ 12.09 hrs, Volume= 0.162 af, Depth> 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
4,706	80	>75% Grass cover, Good, HSG D
12,000	98	Paved parking, HSG D
16,706	93	Weighted Average
4,706		28.17% Pervious Area
12,000		71.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Assumed**

Summary for Subcatchment 2.2:

Runoff = 4.21 cfs @ 12.09 hrs, Volume= 0.315 af, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
7,952	80	>75% Grass cover, Good, HSG D
23,868	98	Paved parking, HSG D
31,820	94	Weighted Average
7,952		24.99% Pervious Area
23,868		75.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Assumed**

Summary for Subcatchment 2.3:

Runoff = 2.12 cfs @ 12.13 hrs, Volume= 0.175 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
6,532	80	>75% Grass cover, Good, HSG D
11,864	98	Paved parking, HSG D
18,396	92	Weighted Average
6,532		35.51% Pervious Area
11,864		64.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0213	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.8	97	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	191	Total			

Summary for Subcatchment 3:

Runoff = 8.77 cfs @ 12.09 hrs, Volume= 0.667 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
8,688	80	>75% Grass cover, Good, HSG D
56,408	98	Paved parking, HSG D
65,096	96	Weighted Average
8,688		13.35% Pervious Area
56,408		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0266	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.5	256	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	23	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.7	141	0.0278	3.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.9	570	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4:

Runoff = 5.80 cfs @ 12.17 hrs, Volume= 0.493 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
38,612	80	>75% Grass cover, Good, HSG D
20,864	98	Paved parking, HSG D
59,476	86	Weighted Average
38,612		64.92% Pervious Area
20,864		35.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.9	175	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	200	0.0350	6.80	29.48	**Parabolic Channel,** W=6.50' D=1.00' Area=4.3 sf Perim=6.9' n= 0.030
12.5	525	Total			

Summary for Subcatchment 5:

Runoff = 4.38 cfs @ 12.19 hrs, Volume= 0.393 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
24,982	80	>75% Grass cover, Good, HSG D
20,275	98	Paved parking, HSG D
45,257	88	Weighted Average
24,982		55.20% Pervious Area
20,275		44.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	150	0.0333	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	64	0.0781	4.19		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.7	45	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.2	147	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
14.1	406	Total			

Summary for Pond C 1: 15" Culvert

Inflow Area = 0.841 ac, 51.39% Impervious, Inflow Depth > 4.66" for 25-YR event
Inflow = 4.55 cfs @ 12.09 hrs, Volume= 0.326 af
Outflow = 4.55 cfs @ 12.09 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.09 hrs, Volume= 0.326 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 107.32' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	105.75'	**15.0" Round Culvert** L= 32.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.75' / 105.43' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=4.44 cfs @ 12.09 hrs HW=107.28' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.44 cfs @ 3.62 fps)

Summary for Pond CB 1: Catch Basin 1

Inflow Area = 0.384 ac, 71.83% Impervious, Inflow Depth > 5.07" for 25-YR event
Inflow = 2.19 cfs @ 12.09 hrs, Volume= 0.162 af
Outflow = 2.19 cfs @ 12.09 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 2.19 cfs @ 12.09 hrs, Volume= 0.162 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 103.09' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	102.11'	**12.0" Round Culvert** L= 172.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.11' / 101.25' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.13 cfs @ 12.09 hrs HW=103.07' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.13 cfs @ 3.51 fps)

Summary for Pond EC 1: 12" Culvert Inlet Modified

Inflow Area = 1.406 ac, 57.82% Impervious, Inflow Depth > 4.78" for 25-YR event
Inflow = 7.74 cfs @ 12.09 hrs, Volume= 0.561 af
Outflow = 3.83 cfs @ 12.15 hrs, Volume= 0.543 af, Atten= 50%, Lag= 3.7 min
Primary = 3.83 cfs @ 12.15 hrs, Volume= 0.543 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 8
Peak Elev= 102.50' @ 12.15 hrs Surf.Area= 1,978 sf Storage= 2,952 cf

Plug-Flow detention time= 23.0 min calculated for 0.543 af (97% of inflow)
Center-of-Mass det. time= 9.9 min (764.6 - 754.6)

Volume	Invert	Avail.Storage	Storage Description
#1	100.35'	2,953 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.35	0	0.0	0	0	0
100.50	978	140.2	49	49	1,564
101.00	1,195	149.6	542	591	1,793
102.00	1,704	177.7	1,442	2,033	2,543
102.50	1,978	187.1	920	2,953	2,830

Device	Routing	Invert	Outlet Devices
#1	Primary	100.35'	**12.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 100.35' / 98.67' S= 0.0336 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.83 cfs @ 12.15 hrs HW=102.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.83 cfs @ 4.88 fps)

Summary for Pond EC 2: 12" Culvert Inlet

Inflow Area = 1.365 ac, 35.08% Impervious, Inflow Depth > 4.33" for 25-YR event
Inflow = 5.80 cfs @ 12.17 hrs, Volume= 0.493 af
Outflow = 5.96 cfs @ 12.17 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min
Primary = 5.96 cfs @ 12.17 hrs, Volume= 0.493 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 109.66' @ 12.16 hrs Surf.Area= 201 sf Storage= 171 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (771.0 - 770.9)

Volume	Invert	Avail.Storage	Storage Description
#1	105.50'	171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.50	0	0.0	0	0	0
106.00	12	19.5	2	2	31
107.00	72	43.3	38	40	154
108.00	201	75.3	131	171	461

Device	Routing	Invert	Outlet Devices
#1	Primary	105.20'	**12.0" Round Culvert** L= 500.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.20' / 90.00' S= 0.0304 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=5.75 cfs @ 12.17 hrs HW=109.41' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.75 cfs @ 7.32 fps)

Summary for Pond EP 1:

Inflow Area = 1.712 ac, 56.32% Impervious, Inflow Depth > 4.64" for 25-YR event
Inflow = 5.40 cfs @ 12.12 hrs, Volume= 0.662 af
Outflow = 4.95 cfs @ 12.21 hrs, Volume= 0.662 af, Atten= 8%, Lag= 5.1 min
Primary = 4.95 cfs @ 12.21 hrs, Volume= 0.662 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 101.75' @ 12.21 hrs Surf.Area= 495 sf Storage= 321 cf

Plug-Flow detention time= 0.2 min calculated for 0.662 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (763.8 - 763.6)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	2,086 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
98.50	0	0.0	0	0	0
101.00	125	59.5	104	104	291
102.00	675	108.4	363	468	950
103.00	2,804	214.0	1,618	2,086	3,664

Device	Routing	Invert	Outlet Devices
#1	Primary	98.50'	**12.0" Round Culvert** L= 105.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 98.50' / 97.09' S= 0.0134 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=4.94 cfs @ 12.21 hrs HW=101.74' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.94 cfs @ 6.29 fps)

Summary for Pond SF 1: Filter A

Inflow Area = 1.114 ac, 73.92% Impervious, Inflow Depth > 5.14" for 25-YR event
Inflow = 6.40 cfs @ 12.09 hrs, Volume= 0.477 af
Outflow = 5.19 cfs @ 12.15 hrs, Volume= 0.316 af, Atten= 19%, Lag= 3.9 min
Primary = 0.05 cfs @ 12.15 hrs, Volume= 0.047 af
Secondary = 5.13 cfs @ 12.15 hrs, Volume= 0.269 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 101.90' @ 12.15 hrs Surf.Area= 6,289 sf Storage= 8,397 cf
Flood Elev= 103.00' Surf.Area= 6,368 sf Storage= 8,797 cf

Plug-Flow detention time= 134.5 min calculated for 0.316 af (66% of inflow)
Center-of-Mass det. time= 63.1 min (808.6 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	6,336 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	97.50'	2,461 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 6,153 cf Overall x 40.0% Voids
		8,797 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
100.00	2,461	0	0
101.00	3,156	2,809	2,809
101.50	3,524	1,670	4,479
102.00	3,907	1,858	6,336

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.50	2,461	0	0
100.00	2,461	6,153	6,153

Device	Routing	Invert	Outlet Devices
#1	Primary	97.50'	**12.0" Round Culvert** L= 178.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.50' / 96.61' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	97.67'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	101.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 12.15 hrs HW=101.90' (Free Discharge)
└─**1=Culvert** (Passes 0.05 cfs of 5.21 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 9.85 fps)

Secondary OutFlow Max=5.11 cfs @ 12.15 hrs HW=101.90' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 5.11 cfs @ 2.06 fps)

Summary for Link AP1:

Inflow Area = 1.898 ac, 57.19% Impervious, Inflow Depth > 4.67" for 25-YR event
Inflow = 5.72 cfs @ 12.13 hrs, Volume= 0.738 af
Primary = 5.72 cfs @ 12.13 hrs, Volume= 0.738 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2:

Inflow Area = 1.536 ac, 71.32% Impervious, Inflow Depth > 3.84" for 25-YR event
Inflow = 7.29 cfs @ 12.15 hrs, Volume= 0.491 af
Primary = 7.29 cfs @ 12.15 hrs, Volume= 0.491 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP3:

Inflow Area = 1.494 ac, 86.65% Impervious, Inflow Depth > 5.36" for 25-YR event
Inflow = 8.77 cfs @ 12.09 hrs, Volume= 0.667 af
Primary = 8.77 cfs @ 12.09 hrs, Volume= 0.667 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP4:

Inflow Area = 1.365 ac, 35.08% Impervious, Inflow Depth > 4.33" for 25-YR event
Inflow = 5.96 cfs @ 12.17 hrs, Volume= 0.493 af
Primary = 5.96 cfs @ 12.17 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP5:

Inflow Area = 1.039 ac, 44.80% Impervious, Inflow Depth > 4.54" for 25-YR event
Inflow = 4.38 cfs @ 12.19 hrs, Volume= 0.393 af
Primary = 4.38 cfs @ 12.19 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=36,619 sf 51.39% Impervious Runoff Depth>2.04"
Flow Length=186' Tc=6.0 min CN=89 Runoff=2.08 cfs 0.143 af

Subcatchment 1.2: Runoff Area=24,636 sf 67.38% Impervious Runoff Depth>2.31"
Flow Length=203' Tc=6.0 min CN=92 Runoff=1.55 cfs 0.109 af

Subcatchment 1.3: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>2.04"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=0.72 cfs 0.052 af

Subcatchment 1.4: Runoff Area=8,068 sf 65.28% Impervious Runoff Depth>2.31"
Flow Length=269' Tc=6.0 min CN=92 Runoff=0.51 cfs 0.036 af

Subcatchment 2.1: Runoff Area=16,706 sf 71.83% Impervious Runoff Depth>2.40"
Tc=6.0 min CN=93 Runoff=1.08 cfs 0.077 af

Subcatchment 2.2: Runoff Area=31,820 sf 75.01% Impervious Runoff Depth>2.50"
Tc=6.0 min CN=94 Runoff=2.11 cfs 0.152 af

Subcatchment 2.3: Runoff Area=18,396 sf 64.49% Impervious Runoff Depth>2.31"
Flow Length=191' Tc=9.8 min CN=92 Runoff=1.03 cfs 0.081 af

Subcatchment 3: Runoff Area=65,096 sf 86.65% Impervious Runoff Depth>2.69"
Flow Length=570' Tc=6.0 min CN=96 Runoff=4.53 cfs 0.335 af

Subcatchment 4: Runoff Area=59,476 sf 35.08% Impervious Runoff Depth>1.79"
Flow Length=525' Tc=12.5 min CN=86 Runoff=2.48 cfs 0.204 af

Subcatchment 5: Runoff Area=45,257 sf 44.80% Impervious Runoff Depth>1.95"
Flow Length=406' Tc=14.1 min CN=88 Runoff=1.95 cfs 0.169 af

Pond C 1: 15" Culvert Peak Elev=106.57' Inflow=2.08 cfs 0.143 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0100 '/' Outflow=2.08 cfs 0.143 af

Pond CB 1: Catch Basin 1 Peak Elev=102.73' Inflow=1.08 cfs 0.077 af
12.0" Round Culvert n=0.013 L=172.0' S=0.0050 '/' Outflow=1.08 cfs 0.077 af

Pond EC 1: 12" Culvert Inlet Modified Peak Elev=101.55' Storage=1,314 cf Inflow=3.63 cfs 0.252 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0336 '/' Outflow=2.49 cfs 0.251 af

Pond EC 2: 12" Culvert Inlet Peak Elev=106.38' Storage=10 cf Inflow=2.48 cfs 0.204 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=2.46 cfs 0.204 af

Pond EP 1: Peak Elev=100.10' Storage=27 cf Inflow=3.13 cfs 0.303 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=3.13 cfs 0.303 af

Pond SF 1: Filter A Peak Elev=101.53' Storage=7,059 cf Inflow=3.19 cfs 0.229 af
Primary=0.05 cfs 0.040 af Secondary=0.16 cfs 0.029 af Outflow=0.21 cfs 0.069 af

Link AP1: Inflow=3.53 cfs 0.339 af
Primary=3.53 cfs 0.339 af

Link AP2: Inflow=1.07 cfs 0.151 af
Primary=1.07 cfs 0.151 af

Link AP3: Inflow=4.53 cfs 0.335 af
Primary=4.53 cfs 0.335 af

Link AP4: Inflow=2.46 cfs 0.204 af
Primary=2.46 cfs 0.204 af

Link AP5: Inflow=1.95 cfs 0.169 af
Primary=1.95 cfs 0.169 af

Total Runoff Area = 7.333 ac Runoff Volume = 1.357 af Average Runoff Depth = 2.22"
39.72% Pervious = 2.912 ac 60.28% Impervious = 4.420 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1: Runoff Area=36,619 sf 51.39% Impervious Runoff Depth>3.47"
Flow Length=186' Tc=6.0 min CN=89 Runoff=3.44 cfs 0.243 af

Subcatchment 1.2: Runoff Area=24,636 sf 67.38% Impervious Runoff Depth>3.77"
Flow Length=203' Tc=6.0 min CN=92 Runoff=2.46 cfs 0.178 af

Subcatchment 1.3: Runoff Area=13,339 sf 49.43% Impervious Runoff Depth>3.47"
Flow Length=140' Slope=0.0714 '/' Tc=7.6 min CN=89 Runoff=1.20 cfs 0.089 af

Subcatchment 1.4: Runoff Area=8,068 sf 65.28% Impervious Runoff Depth>3.77"
Flow Length=269' Tc=6.0 min CN=92 Runoff=0.81 cfs 0.058 af

Subcatchment 2.1: Runoff Area=16,706 sf 71.83% Impervious Runoff Depth>3.87"
Tc=6.0 min CN=93 Runoff=1.70 cfs 0.124 af

Subcatchment 2.2: Runoff Area=31,820 sf 75.01% Impervious Runoff Depth>3.97"
Tc=6.0 min CN=94 Runoff=3.28 cfs 0.242 af

Subcatchment 2.3: Runoff Area=18,396 sf 64.49% Impervious Runoff Depth>3.77"
Flow Length=191' Tc=9.8 min CN=92 Runoff=1.63 cfs 0.133 af

Subcatchment 3: Runoff Area=65,096 sf 86.65% Impervious Runoff Depth>4.16"
Flow Length=570' Tc=6.0 min CN=96 Runoff=6.88 cfs 0.518 af

Subcatchment 4: Runoff Area=59,476 sf 35.08% Impervious Runoff Depth>3.17"
Flow Length=525' Tc=12.5 min CN=86 Runoff=4.30 cfs 0.360 af

Subcatchment 5: Runoff Area=45,257 sf 44.80% Impervious Runoff Depth>3.36"
Flow Length=406' Tc=14.1 min CN=88 Runoff=3.29 cfs 0.291 af

Pond C 1: 15" Culvert Peak Elev=106.91' Inflow=3.44 cfs 0.243 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0100 '/' Outflow=3.44 cfs 0.243 af

Pond CB 1: Catch Basin 1 Peak Elev=102.93' Inflow=1.70 cfs 0.124 af
12.0" Round Culvert n=0.013 L=172.0' S=0.0050 '/' Outflow=1.70 cfs 0.124 af

Pond EC 1: 12" Culvert Inlet Modified Peak Elev=102.23' Storage=2,442 cf Inflow=5.90 cfs 0.421 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0336 '/' Outflow=3.51 cfs 0.420 af

Pond EC 2: 12" Culvert Inlet Peak Elev=107.65' Storage=111 cf Inflow=4.30 cfs 0.360 af
12.0" Round Culvert n=0.013 L=500.0' S=0.0304 '/' Outflow=4.17 cfs 0.360 af

Pond EP 1: Peak Elev=101.19' Storage=135 cf Inflow=4.52 cfs 0.508 af
12.0" Round Culvert n=0.013 L=105.0' S=0.0134 '/' Outflow=4.42 cfs 0.508 af

Pond SF 1: Filter A Peak Elev=101.74' Storage=7,807 cf Inflow=4.97 cfs 0.366 af
Primary=0.05 cfs 0.045 af Secondary=2.42 cfs 0.161 af Outflow=2.47 cfs 0.205 af

Link AP1: Inflow=5.01 cfs 0.566 af
Primary=5.01 cfs 0.566 af

Link AP2: Inflow=3.78 cfs 0.338 af
Primary=3.78 cfs 0.338 af

Link AP3: Inflow=6.88 cfs 0.518 af
Primary=6.88 cfs 0.518 af

Link AP4: Inflow=4.17 cfs 0.360 af
Primary=4.17 cfs 0.360 af

Link AP5: Inflow=3.29 cfs 0.291 af
Primary=3.29 cfs 0.291 af

Total Runoff Area = 7.333 ac Runoff Volume = 2.236 af Average Runoff Depth = 3.66"
39.72% Pervious = 2.912 ac 60.28% Impervious = 4.420 ac

Appendix E
Stormwater Treatment Calcuations

Grassed Underdrained Soil Filter Calculations

Subcatchment ID	Impervious Area (sf)	WQ Impervious Area Runoff Depth (inches)	WQ Impervious Volume Required (ft3)	Landscaped Area (sf)	WQ Landscape Area Runoff Depth (inches)	WQ Landscape Volume Required (ft^3)	Total WQ Volume Required (ft^3)
2.1	12,000	1.00	1,000	4,706	0.4	157	1,157
2.2	23,868	1.00	1,989	7,952	0.4	265	2,254
Total	**35,868**		**2,989**	**12,658**		**422**	**3,411**

Summary of Underdrain Filter Sizing	
Total WQ Volume Required (ft^3)	3,411
WQ Volume Provided (ft^3)	**4,574**
Filter Surface Elevation	100.00
WQ Surface Elevation	101.50
Invert of Underdrain	97.67
5% of Tributary Impervious Area (ft^2)	1,793
2% of Tributary Landscaped (ft^2)	253
Filter Surface Area Required (ft^2)	2,047
Filter Surface Area Provided (ft^2)	**2,461**

Underdrain Filter Volume				
Elevation	Surface Area (ft^2)	Average Stage Area (ft^2)	Stage Volume (ft^3)	Cumulative Volume (ft^3)
100	2,461			0
101	3,156	2,808	2,808	2,808
101.5	3,907	3,531	1,766	4,574
Water Quality Volume Provided (at Elevation 197.0) =				**4,574**

Orifice Eqn: $C*A*(2gH)^{1/2}$

Orifice Sizing	
Discharge Coefficient	0.62
Orifice Size (inches)	1
Orifice Size (feet)	0.08
Orifice Area (ft^2)	0.005
Orifice Centerline Elevation	97.92

Q (cfs)	Stage Elevation	Total Drawdown at Stage	Pond Area	Drawdown Time (hrs)
0.0391	100	0.00	2,461	0.00
0.0476	101	1.00	3,156	18.42
0.0513	101.5	0.50	3,907	10.58
			Total Drawdown Time =	**28.99**

Appendix F
Inspection and Maintenance Manual

INSPECTION & MAINTENANCE PLAN FOR STORMWATER FACILITIES

For
Westfield Inc.
4-Unit Warehouse Facility
Biddeford, Maine

Prepared By:

Berry Huff McDonald Milligan, Inc.
Engineers Surveyors Planners
28 State Street
Gorham, ME 04038
207-839-2771
FAX 207-839-8250
amorrell@bh2m.com

Project Narrative

The proposed project is a four unit commercial warehouse facility. The development includes structures, underground utilities, parking infrastructure and stormwater management facilities. The proposed development is subject to the standard conditions of the City of Biddeford stormwater ordinance. The following outlines the proposed BMP's and their required inspection, maintenance, and reporting:

The Applicant, Westfield Inc., will be responsible for all operation and maintenance of the proposed site improvements during construction. If an inspection determines that corrective action is required during construction the applicant's contractor is responsible for making the repair. This repair shall begin by the end of the following work day and completed within seven days or before the next storm event.

The Applicant, Westfield Inc., will also be responsible for post construction operations and maintenance.

Contacts:

Design Engineer: BH2M
28 State Street
Gorham, Me. 04038
(207) 839-2771

Developer/Applicant: David Gould, Westfield Inc.
26 Rivers Edge Drive
Kennebunk, Maine 04043

Owner: David Gould, Westfield Inc.
26 Rivers Edge Drive
Kennebunk, Maine 04043

Post Construction Stormwater Inspector: (See definition of Inspector in Post Construction Stormwater Infrastructure Management Ordinance)

_____
_____
_____
_____

Contractors:

_____
_____
_____

Inspection

The applicant, Westfield Inc., is responsible for complying with the City of Biddeford stormwater ordinance. The Applicant will be responsible for inspection and maintenance during construction and will also be responsible for Post-Construction operations. The development is not subject to permitting by the Maine DEP for Stormwater Law.

Purpose

The following O&M Plan provides guidance and schedules for compliance with the City's Post Construction Stormwater Infrastructure Management Ordinance.

Definitions

Significant Period of Rain: 1" or more of rain in a 24-hour period.

Inspection Scope

Construction inspections shall include all disturbed and impervious areas, material storage areas, vehicle access points, and all erosion and sediment control measures.

Inspection Frequency

An inspection is required at least once a week and before and after (within twenty-four (24) hours) a significant storm event during construction. If an inspection determines that corrective action is required, the repair shall begin by the end of the following work day and completed within seven (7) days or before the next storm event.

Inspector Qualifications

For Post-Construction Inspections, the qualified post-construction stormwater inspector with knowledge of erosion and stormwater control, including the standards and conditions of this projects permit shall be retained by the owner.

During construction, it is the responsibility of the applicant and the applicant's contractor to inspect, maintain and repair Post-Construction BMP's until such time that the BMP's are accepted by the Dempsey Drive Business Association.

Inspection/Maintenance Responsibility

The Applicant, Westfield Inc., shall be responsible for inspection and maintenance during construction. If an inspection determines that corrective action is required during construction the applicant's contractor is responsible for making the repair. This repair shall begin by the end of the following work day and completed within seven days or before the next storm event.

It shall also be Westfield Inc's responsibility to retain the services of the Post-Construction Stormwater Inspector and provide for the repair and maintenance noted by inspections, if any. When maintenance is required by inspection, Westfield Inc. shall perform the required maintenance and/or repairs in a timely fashion and notify the inspector when the maintenance is complete. The Association shall maintain detailed records of the inspections and maintenance performed.

Documentation

Construction inspection forms and documentation of corrective active actions shall be maintained for at least three (3) years. Post construction inspection forms and documentation of corrective active actions shall be maintained for at least five (5) years.

O&M Plan

The following is a summary of the required inspection and maintenance for the Post-Construction BMP's:

Access Roads

1. On-site inspection of the roads shall be performed at least twice annually and after a significant period of rainfall.

    a) All low spots of pooling water shall be re-graded to direct the water off the pavement and to the appropriate, catch basin or ditch.
    b) Areas of erosions shall be repaired immediately. This includes all grassy area adjacent to the road.
    c) Sweeping the roadway free of sand after the winter season should be completed annually in the spring of the year.

Storm Drain and Catch Basins

1. Inspect catch basin inlets on a monthly basis for debris or conditions which could inhibit flow entry. Remove debris and properly dispose.

2. Inspect all catch basin structures annually.

    a) Check that rims are securely attached and properly set to optimize flow entry.
    b) Measure and record silt accumulation, if any. Sumps shall be cleaned at least on a yearly basis in the spring. All sediment removed should be disposed of properly.

3. Check pipelines annually to determine silt accumulation, if any. Remove excess silt if found.

Vegetated Swales/Ditches

1. On-site inspection of the vegetated ditches shall be on a monthly schedule and after a significant period of rainfall.

    a) Ditches should be inspected to repair erosion problems, remove any accumulated debris and to check the condition and integrity of the check dams.
    b) Ditches shall be mowed periodically to a minimum grass height of 6". Ditches shall be maintained such that woody vegetation is removed from the flow line of the ditch or areas that may impede the capacity of the ditch.
    c) The use of pesticides and fertilizer should be limited to what is needed to promote a healthy/stable growth of vegetation.

Sediment Forebay

1. On-site inspection of the rip-rap on a monthly schedule or after a significant period of rainfall.
    a.) Carefully inspect to determine if high flows have caused scour beneath the rip-rap or dislodged any of the stones. If repairs are needed, they should be accomplished immediately.

Grassed Underdrain Filter

1. On-site inspection of Grassed Underdrain Filters shall be twice per year (May 1 and October 1). The following shall be accomplished:

   a.) Record date of inspection
   b.) Identify person making the inspection
   c.) Record observed water depth. (If no rain within last 24-36 hours should be dry.
   d.) Inspect rip rap for debris accumulation
   e.) Remove debris.
   f.) Inspect for evidence of snow storage.
   g.) Inspect for evidence of vehicles driving on bmp.
   h.) Mow grassed slopes and/or repair slopes if eroded.
   i.) Clean accumulated sediment from forebay.

Snow Storage Areas

1. On-site inspection of the snow storage areas on an annual schedule.

   a.) Carefully inspect to determine the condition of vegetation and remove any accumulated debris. If repairs are needed, they should be accomplished immediately.

Attachments

1. Inspection & Maintenance Log

2. See attached Appendix B "Inspection and Maintenance" from MDEP Stormwater Regulations.

3. See attached "Appendix C" from MDEP Stormwater Regulations for performance standards.

4. Final Site Plan – Pomerleau Street

INSPECTION SUMMARY
4-Unit Warehouse Facility

Inspection of	**Schedule ***
• Access Drives and Parking Areas	
Inspect	Twice Annually
Sweep Parking Areas	Annually
• Storm Drain and Catch Basins	
Inspect (CB Inlets)	Monthly
Inspect (CB Sumps)	Annually
Measure Silt & Remove	Annually
• Sediment Forebay	
Inspect	Monthly
Remove Litter	Annually
• Grassed Underdrain Filter	
Inspect	Bi-Annually
Remove Litter	Annually

* After significant rainstorm in addition to regular inspections. Inspections shall be within 3 days of significant rainfall.

INSPECTION AND MAINTENANCE LOG

4-Unit Warehouse Facility
Post Construction Stormwater
Inspection & Maintenance Log

Date of Inspection:_____

Inspection by:_____

Purpose of Inspection: Monthly, Yearly, Significant Rainfall (circle one)

- Access Drives and Parking Areas
  Description of Conditions:

  _____
  _____
  _____
  _____
  _____
  _____

  Maintenance & Date of Repairs:

  _____
  _____
  _____
  _____
  _____
  _____

  Annual Sweeping (date & Contractors):

  _____
  _____
  _____
  _____
  _____
  _____

  Follow Up Needed:

  _____
  _____

- Storm drain and catch basins
  Description:

  Description of Conditions:

  _____
  _____
  _____
  _____
  _____
  _____

  Maintenance & Date of Repairs:

  _____
  _____
  _____
  _____
  _____
  _____

  Sediment Inspection & Removal:

  _____
  _____
  _____
  _____
  _____
  _____

  Date & Contractor for Sump Cleaning:

  _____
  _____
  _____
  _____
  _____
  _____

  Follow Up Needed:

  _____
  _____
  _____
  _____
  _____

- Sediment Forebay
  Description of Conditions:

  _____
  _____
  _____
  _____
  _____
  _____

  Maintenance & Date of Repairs:

  _____
  _____
  _____
  _____
  _____
  _____

  Follow Up Needed:

  _____
  _____
  _____
  _____
  _____

- Grassed Underdrained Soil Filter
  Description:

  Description of Conditions:

  _____
  _____
  _____
  _____
  _____
  _____

  Evidence of Snow Storage: Y / N

  Evidence of Vehicle on Filter: Y / N

  Maintenance & Date of Repairs:

  _____
  _____
  _____
  _____
  _____
  _____

  Sediment Inspection & Removal:

  _____
  _____
  _____
  _____
  _____
  _____

  Date & Contractor for Sump Cleaning:

  _____
  _____
  _____
  _____
  _____

  Follow Up Needed:

  _____
  _____
  _____

  _____
  Inspector Signature

BH2M

WILLIAM A. THOMPSON
ROBERT C. LIBBY, Jr.
WALTER E. PELKEY
ANDREW S. MORRELL
STEVEN J. BLAKE

Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

380B Main Street *Tel. (207) 839-2771*
Gorham, Maine 04038 *www.bh2m.com*

January 29, 2021

Greg Tansley
Biddeford City Planner
205 Main Street
P.O. Box 586
Biddeford, Maine 04005

Re: 4 Unit Warehouse Facility
Site Design review dated January 12, 2021
Received 1/19/2021

Dear Greg;

The following up on the above referenced memo we have revised the proposed project documents. We are including a revised plan set and stormwater report in addition to the following responses to these comments:

A. General
   1. It would be helpful if an existing conditions plan was provided.
      RESPONSE:
      An existing conditions plan is now included in the plan set.

   2. There were no drainage plans or building elevations included in the information provided for review. This information is necessary to determine the roof drainage, door locations, and to review the stormwater management plans and report. The applicant has since provided both.
      RESPONSE:
      Drainage plans have been provided.

   3. The cover letter provided indicates that because the project involves less than 20,000 sf of new impervious surface, a CFUP fee is not required. As we discussed, that may not be accurate.
      RESPONSE:
      We have received clarification that a CFUP fee is required.

B. Drawings
   1. Sheet 1 – Site Plan

a. Spot elevations should be provided at the accessible parking spaces. As currently shown, the space in front of unit D exceeds the 2% maximum.
RESPONSE:
All areas of available parking have final contours shown on the site plan. The 2% parking grade has been adjusted at Building D and relocated handicap parking in the southern units to in front of unit B where the accessible entrance will be located. These grades are now shown as 2%.

b. Spot grades should be provided along the walk southerly of units A and B.
RESPONSE:
Grades are now shown.

c. Elevations at the tops and ends of the retaining walls should be shown.
RESPONSE:
Preliminary grades for the top of wall are now shown. Note 17 on Sheet 1 indicates that the retaining walls will be designed by a Structural Engineer. This information will be part of the building permit process.

d. The grades southerly and easterly of building B are shown to be one foot higher than the finished floor elevation. Will this be problematic with the adjacent drainage swale running full?
RESPONSE:
The swale easterly of building B have been revised to be below FFE.

e. A saw cut and butt joint should be called for at Pomerleau Street.
RESPONSE:
Sawcut note added at entrance from Pomerleau Street.

f. Note 12 indicates underground electric from the existing utility pole, while the plan indicates overhead service.
RESPONSE:
This has been resolved to consistently show underground electric.

g. The grading indicates that the elevations in front of units A and B from the retaining wall to the west will be flat for 35 ft and then run along the building for 60 ft, outletting onto a 3H:1V slope. Perhaps a few more spot grades could be provided to clarify the intent and the grading of the sediment forebay. An erosion control blanket should be specified for this area.
RESPONSE:
Grades of forebay shown; erosion control blanket specified.

h. A kor-n-seal joint sleeve or equivalent should be specified for the storm drain connection at the catch basin in Pomerleau Street.
RESPONSE:
Existing C.B. in Pomerleau Street shown to be cored and kor-n-seal sleeve

noted.

i. The plan shows two existing 20 ft wide drainage and utility easement to the city of Biddeford. Currently 3 ph power and a drainage ditch are located within the easement. The plan indicates the power will remain but the stormwater will be rerouted. It seems new easements may be required to accommodate drainage, particularly to the east and south of units A and B.
RESPONSE:
New drainage easements are proposed to the City of Biddeford and locations are shown on the Site Plan. These include the area of the proposed swale southerly of units A and B, as well as the area of the expanded dry basin. These easements are also shown on the abutting property owned by 32N, LLC, which is also a holding of the subject property's owner.

j. Based on our site visit it appears a substantial amount of runoff from the ice arena roof and abutting property currently run onto the development site to the proposed shallow ditch to be constructed around units A and B noted in the previous comment. We recommend that slope erosion control protection be shown. The capacity of the proposed swale and culvert should be demonstrated. More on this issue in the stormwater comments.
RESPONSE:
Drainage calculations have been comprehensively revised to include offsite areas, including the ice arena. Areas of slope protection have been noted.

k. Stormwater runoff from the easterly side of the city property including the arena roof, a portion of the drive, and a gravel/lawn area extending to the power lines also appears to be tributary to the existing ditch northerly of the ice arena, ultimately to the existing storm drain inlet located in the easement. The proposed grading would redirect this runoff to the shallow swale southerly of unit D. We suggest a better alternative would be to provide the needed maintenance to the existing swale within the easement, including removal of the vegetation and reestablishing turf, rather than flattening the slope and lessening the capacity as currently shown.
RESPONSE:
During a recent site visit, we note that the brush and saplings in the area of the swale have been cut back and cleaned out. We also note that the swale along the entrance drive to the arena (outside of the watershed of the subject project) has been cleaned out and riprap replaced. There appears to be ongoing maintenance of this area being conducted by the City. Changes in proposed grading now show that we are reducing the contribution slightly to this swale, and are routing propsed run off away from the swale to maintain its existing capacity.

l. The inlet to the existing culvert shown as "unknown outlet" is badly damaged and in need of repair. This should be removed to sound piping and repaired as

required. The size and invert should be noted on the drawing. Because additional stormwater will be routed to this inlet, we also recommend that the outlet be identified. It seems that it may drain to an existing catch basin in the lower driveway in front of the entrance to Gillespie's office.
RESPONSE:
The culvert has been determined to outlet along the bank north of the edge of pavement at the end of Pomerleau Street. As noted in comment K above, the design now shows a slight reduction in contributing area so its capacity should not be effected. We note on the site plan that the crushed end of the culvert should be repaired, and the exit of the culvert should be exposed and inspected prior to construction.

m. The striping layout results in a 10 ft wide access aisle at the southeasterly corner of the existing building northerly of unit D. The parking should be rearranged to provide a minimum width of 20 ft for emergency vehicle access and no parking fire lane signage and striping provided. The existing transformer and barrier at that location should also be shown.
RESPONSE:
Parking spots along this area have been removed to maintain a 20' lane.

n. The hatched area northerly of units A and B represents full depth pavement construction. What is the intent for treatment of the shaded areas shown on the plan?
RESPONSE:
The shaded area will be regraded to the proposed elevations and paved. As the majority of these areas are considered impervious in existing conditions, treatment is not required. The project proposes 16,475 sf of new impervious surfaces in areas shown as vegetated in existing conditions, and proposes to treat 35,868 sf of existing and proposed impervious area. Therefore, the design proposes to exceed the impervious area treatment requirements by 19,393 sf

o. It seems that drip edges at the rear of the units are necessary given the shed roof style proposed.
RESPONSE:
Gutters are now proposed to collect run off at the rear of the buildings and to ensure these are directed to the grassed underdrained soil filter.

p. Erosion and sedimentation control measures should be shown on the plan.
RESPONSE:
The site plan shows erosion control silt fence and stone check dams.

q. The 4 inch underdrains in the GUSF should be called out.
RESPONSE:
The soil filter detail sheet 3 labels all pipe sizes, and 4" underdrains are now called

out on the site plan.

2. Sheet 3 – Standard Details

a. The pavement joint detail should be revised to call out the sawcut location and milling of the existing pavement.
RESPONSE:
A pavement joint detail is now provided on sheet 4 and sawcut locations called out on the site plan.

b. Catch basin inserts should be detailed and called for at any catch basins located within disturbed areas, in lieu of the haybale inlet protection shown.
RESPONSE:
Catch basin insert detail is now shown on sheet 5 and a typical note calls out their use on the site plan.

c. Is the GUSF outlet control structure proposed to be square or round?
RESPONSE:
The GUSF outlet control structure is a square "type-f" catch basin. This is now specified in the detail for the outlet control structure on sheet 4.

d. The GUSF detail should show the elevations associated with the various storm events, side slopes, a seeding specification, and inspection and testing requirements per the DEP BMP manual.
RESPONSE:
A comprehensive set of notes for the underdrained soil filter is now shown on sheet 4. The predicted elevations of stormwater events for the filter are presented in the stormwater calculations found in Appendix D of the stormwater report.

e. Specifications for the stone level spreader material should be provided. More detail should be provided for the sediment forebay, including elevations, depth, and width to verify adequate sediment storage volume exists.
RESPONSE:
Grading of the sediment forebays are shown on the site plan, sheet 1. A berm stone size table is now included on sheet 4.

f. The filter specification calls for sand supplemented with organic matter. The DEP BMP manual suggests that loamy sand or sandy loam should also be included in the filter mix.
RESPONSE:
Soil media details are now included in the soil filter notes on sheet 4 specifying silty sandy soil.

g. The outlet invert for the 12" CPP matches the proposed invert into the existing catch basin in Pomerleau Street. Some slope should be provided.
RESPONSE:
The outlet control structure design has been changed to outlet to a different structure and is shown above the assumed existing invert of existing catchbasin A.

h. Pipe material for the 4" diameter underdrain should be specified.
RESPONSE:
The pipe material for the underdrain is now shown as PVC on the details on sheet 4.

i. A riprap inlet apron detail should be provided.
RESPONSE:
An apron detail is now provided on sheet 5.

j. Given the Scantic soils, have there been any explorations which indicate the elevation of the seasonal high water table? Will underdrain outside the liner be necessary?
RESPONSE:
Geotechnical investigations are ongoing and a report is pending completion. The groundwater table will be reviewed against the design and considerations for ground water will be made once information is available.

k. There is a conflict in the definition of a significant storm event in notes 1 and 10 of the Erosion and Sediment Control Plan. During construction, a significant storm event is 0.5" of rainfall in 24 hours.
RESPONSE:
This has been corrected on the updated notes shown on sheet 5.

l. Construction inspection documentation requirements should be included on the drawing.
RESPONSE:
The note 1 of the Erosion and Sedimentation Control Plan on sheet 5 has been updated to include reference to the Inspection and Maintenance Plan and shows a 5 year document retention policy.

3. Stormwater Management

a. The stormwater report states that 19,040 sf of new impervious surface will be created as a result of the project, while the cover letter submitted suggests that 16,000 sf will be created.
RESPONSE:
To clarify, 16,475 sf of new impervious surface will be created in currently vegetated areas. The project proposes to treat 35,868 sf of existing and

proposed impervious surfaces.

b. Existing topography of the lot area should be shown on the existing and post development drainage plans.
RESPONSE:
Off Site topography is now shown on the drainage plans.

c. As noted previously there appears to be a significant portion of the city ice arena property draining onto the development property at 2 locations. The pre development and post development drainage plans should be updated to include these off site drainage areas.
RESPONSE:
A comprehensive revision of the stormwater analysis has been presented in the revised documents. Offsite areas have been identified and are now considered in pre and post development analyses.

d. The post development drainage plan should be revised to reflect shed style roofs for buildings C and D, per information provided to our office by BH2M.
RESPONSE:
This has been considered in the revised drainage analysis. Note that these shed roofs are proposed to be collected by gutters.

e. The existing storm drain inlet size at analysis point 4 should be determined and this area modeled as a pond.
RESPONSE:
This has been incorporated into the revised models.

f. The subcatchment 1A post development time of concentration path should be revised to follow the proposed contours and other paths updated with the segment information which was missing from the plan.
RESPONSE:
The analysis has been comprehensively revised and no longer shows this issue.

g. The post development drainage plan includes routing of subcatchment 1A to the proposed GUSF. The routing should include the off site area which will also be routed to the GUSF based on the grading provided to determine what impacts this has on the pond capacity.
RESPONSE:
The analysis has been comprehensively revised and no longer shows this issue.

h. Subcatchment 4 should be updated to include the area easterly of the ice arena and the ice arena roof which currently drains to the existing swale and the storm drain with the unknown outlet.
RESPONSE:
The stormwater analyses have been revised to include these off site areas.

i. We did not note any water quality design calculations for the GUSF in the submission.
RESPONSE:
The treatment calculations for the soil filter are included as Appendix E of the stormwater report.

Thank you for providing these comments. We trust that these responses will alleviate your concerns for the project.

Sincerely,

Christopher MacDonald, P.E.
Civil Engineer

CITY OF BIDDEFORD, MAINE

ENGINEERING DIVISION/PUBLIC WORKS DEPARTMENT

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December 29, 2020

Letter of Wastewater Treatment Plant Capacity to Serve

Brief description of project: 4 Unit commercial Project by Westfield Inc., Pomerleau Ave
Estimated flows: **96 gpd**.

Determination

The City of Biddeford Wastewater Department has reviewed the request to serve the above-described project. It has been determined that at this time, once the flow reaches the treatment facility, the City has sufficient capacity at the City's Wastewater Treatment Facilities to serve the above described project. It is estimated that 96 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.

The property will be served by a private force main sewer connection into an existing private SMH which will then flow to the City system.

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 any determined pump station upgrade costs based on the flow amount calculated at the time application is made and prior to the issuance of any building permits and/or the issuance of a certificate of occupancy.

This Capacity to Serve Letter is intended only to determine the City of Biddeford Wastewater Treatment Facility's ability to handle and 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.

Thomas Milligan, PE
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207-284-9118

CC: James Bennett, City Manager
Jeff Demers, Public Works/Wastewater Director
Brian Phinney, COO
Roby Fecteau, Code Enforcement
Greg Tansley, City Planner
Alex Buechner, Superintendent
Matt Eddy, Economic development Director

From: Tom Saucier
To: Tansley, Greg
Cc: Christopher Di Matteo
Subject: Westfield - Pomerleau Street

Hi Greg and Chris

We have undertaken a review of the revised plans and documentation for the subject project. It appears the majority of our original comments have been addressed. A few items remain as noted below, numbered per the response letter:

B.1.a. Spot grades should be shown at the accessible parking in front of unit B.

B.1.b. The spot grades on the walk near the building entrances are higher than the building FFE. They may want to review this.

B.1.f. The plan continues to show overhead electrical service.

B.2.a. The pavement joint detail should call for milling of the existing surface course of pavement.

B.2.c. A round frame and grate are specified on the square outlet structure.

B.2.e. A sizing calculation for the sediment forebay should be provided.

B.2.h. The detail for the GUSF shows 6" dia UD while the plan calls for 4" dia. The 6" dia is probably the better option. Also, the specification should call for the UD to be installed holes down.

A couple of additional comments regarding the stormwater modelling:

- The outlet structure detail on sheet 4 calls for the rim elevation to be at elevation 102.0 while the model uses 101.6.
- The modelling reflects a peak elevation of 101.9 with a berm elevation of 102.0 in SF 1. The grading should be revised to provide 1 ft of freeboard.
- The modelling reflects a peak elevation of 102.5 with a berm elevation of 102.5 in EC 1. The grading should be revised to provide 1 ft of freeboard.
- The modelling reflects a peak elevation of 109.66 at EP 2. A berm should be provided with 1 ft of freeboard to ensure the stormwater remains segregated as designed.
- The 25 year peak runoff rate is expected to increase by 50% at AP #2. What is the impact on the capacity of the storm drain out of the structure? The invert, rim, and pipe size should be determined and the increase in the headwater depth provided.

If you or the applicant have any questions, please let me know.

Thanks
Tom

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