CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

REVISED

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date: **Tuesday, September 24, 2024**
Meeting Time: **7:00 pm**

1. **CITIZENS' FORUM**
2. **APPROVAL OF THE PRIOR MINUTES**
   - August 27, 2024 Regular Meeting Minutes
3. **OLD BUSINESS**
4. **NEW BUSINESS**
   A. Consideration and acceptance of a Minor Subdivision for the Estate of Marc Keith Gagnon, Assessor's Map D, Lot 9-B, zoned R-12, located at 48 Old Rochester Road. (Proposal is to subdivide parcel to make one (1) new lot.) *(SUBM-2024-0004)

   B. Consideration and acceptance of a Lot Line Adjustment for Richardson Estates of Dover, LLC & Mohamed & Lisa K. Hamcha, Assessor's Map 35, Lots 64 & 72, zoned R-12, located at 141 Sixth Street & 5 Dowaliby Court. *(LOTA-2024-0011)

   C. Consideration and acceptance of a Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at Crosby Road. (Proposal is to construct a 75' wide extension of Crosby Road that would result in 4,861 s.f. of wetland buffer impact. No wetlands will be disturbed.) *(COND-2024-0025)

   D. Consideration and acceptance of a Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at Crosby Road. (Proposal is to create a three-lot subdivision which will be accessed from an extension of Crosby Road with associated drainage and grading creating 786.5 s.f. of permanent impact to the 50-foot wetland buffer.) *(COND-2024-0026)

   E. Consideration and acceptance of a Minor Subdivision for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at Crosby Road. (Proposal is to subdivide the lot into 3 total lots). *(SUBM-2024-0003)

   F. Consideration and acceptance of a Site Review for Del Sol Dover, LLC. Assessor's Map G, Lot 2-1, zoned CM, located at Crosby Road. (Proposal is to construct one (1) 9,600 s.f. warehouse building with associated parking and infrastructure and an 807' paved extension of Crosby Road). *(SITE-2024-0010)

   G. Public hearing and discussion of site changes to a parking lot for the State of New Hampshire and C&J Trailways, Assessor's Map D, Lot 18-004LSE, zoned C, located at 23 Indian Brook Dr. (Proposal is to implement paid parking controls, traffic flow improvements, and associated infrastructure.)* [*This item falls under NH RSA 674:54 as a governmental land use*]

   H. Discussion of Impact Fees. *
5. **STAFF COMMENT**
6. **MEMBER COMMENTS**
7. **ADJOURNMENT**

*Indicates that if the application is accepted for discussion, the public hearing will be held the same evening. Note that some hearings will be continued from one meeting to another and some may be postponed. Since this is only a partial description of the proposal and may change, persons with questions or wishing to see the plans are invited to visit the Planning Office, Monday through Thursday from 8:30 am to 5:30 pm and Friday 8:30 am to 4:00 pm or email Dover-Planning@dover.nh.gov. You may also view materials at www.dover.nh.gov. Follow us on Twitter @DoverNHPlanning and find us on Facebook at https://www.facebook.com/DoverNHPlanning. The public is encouraged to leave comments in advance by emailing Dover-Planning@dover.nh.gov, or mailing written comments to Planning Board, Dover City Hall, 288 Central Ave., Dover, NH 03820. Messages must be received no later than 4 p.m. the day of the meeting and should identify the name and Dover address of the person leaving the message or providing the comment.

CITY OF DOVER

DOVER PLANNING BOARD – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Ave, Dover, NH.
Meeting Date:	**Tuesday, August 27, 2024**
Meeting Time:	**7:00 pm**

Members Present: Gina Cruikshank (Chair), Mark Speidel (Vice-Chair), Ken Mavrogeorge, George DeBoer, Melina Gambino, Fergus Cullen (Councilor), Kyle Pimental
Members Not Present (excused): Erinn Kaspari, Tom Clark, Jeff Sanborn (Alternate), Mallory Strange (Alternate)
Staff Present: Donna Benton, Planning Director, David Carpenter, Community Development Planner, Erin Bassegio, Assistant City Planner/Outreach Coordinator

Gina Cruikshank (Chair) called the meeting to order at 7:01p.m. and clarified the items on the agenda.

1. CITIZENS' FORUM

Citizens Forum Open
No one spoke
Citizens Forum Closed

2. APPROVAL OF THE PRIOR MINUTES

- July 23, 2024 Regular Meeting Minutes

Motion F. Cullen moved to approve the regular meeting minutes of July 23, 2024 as submitted. Seconded by: M. Gambino. Vote: U/A

3. OLD BUSINESS

A. Public hearing and possible recommendation of amendments to Chapter 170, entitled "Zoning" of the code of the City of Dover. Amendments include updating terms, and titles, as well as revising numbering and formatting. The full text of the amendments is available in Planning Department & at www.dover.nh.gov located under Planning Board meeting materials.*

D. Benton explained that the proposed amendments to Chapter 170 were posted following Board approval on July 23 and the Board can now hold a public hearing for feedback and recommend the amendments for approval to the City Council. Chapter 170 is the final chapter of the code to be digitized. D. Benton outlined 3 minor edits to the R-20 table she recommends the Planning Board recommend be amended which included:

-Conversion to 2 family" should refer to footnote [6], but it references [5].
-"Dwelling, Two-Family" should reference footnote [7], but it shows [6].
- "Dwelling, 3-4 Fam" should reference footnote [7], not [6].

Public hearing opened.
No one spoke
Public hearing closed.

Board members discussed suggested edits, comments and questions.

Motion: M. Speidel moved to recommend for City Council approval the amendments to Chapter 170, entitled "Zoning" of the code of the City of Dover with staff and board member recommended edits. Seconded by G. DeBoer. Vote: U/A

4. NEW BUSINESS

A. Public Hearing of the draft substantial amendments to the FY23 and FY24 CDBG Annual Action Plans. All persons wishing to speak on the proposed substantial amendments are urged to attend. *

DRAFT

D. Benton explained that the City is proposing to amend the FY23 and FY24 Action Plans to reallocate available Community Development Block Grant funds.

Community Development Planner Dave Carpenter explained the proposed substantial amendments and recommended actions for funding and the background and reasoning for them.

M. Speidel asked some clarifying questions about the current amount of funds.

Public hearing opened.
Bob Arnold and Jamie Swan, Community Action shared details about each of the projects for which they have applied for funding at each of their sites.

D. Carpenter answered some follow-up questions from the board.

Susan Ford, My Friends Place has submitted four applications for review and explained the projects.

D. Carpenter further explained and clarified his request in front of the board tonight regarding the projects for approval and the funding amounts.
Public hearing closed.

D. Carpenter addressed board and staff questions.

Motion: M. Speidel moved to recommend for City Council approval the draft substantial amendments to the FY23 and FY24 CDBG Annual Action Plans per the staff recommendations with changes to My Friends Place allocation from $20,000 to $36,000 in FY23 and increase the FY23 overall pool by $16,000. Seconded by G. DeBoer. Vote: U/A

B. Consideration and acceptance of a Lot Line Adjustment for Shawn L. Arkwell & Drew Family Revocable Trust, Assessor's Map F, Lots 6 and 8, zoned R-40, located at 258 Tolend Road and Tolend Road. *(LOTA-2024-0010)

D. Benton explained that the applicant is proposing a lot line adjustment to revise the lot lines between abutting properties, located at 258 Tolend Rd., Map F, Lot 6, and an abutting vacant parcel on Tolend Road, Map F, Lot 8, adding approximately 30,354 sf. from the vacant parcel to the 258 Tolend Rd. For both lots, the frontage and compliance with the underlying R-12 zoning regulations will remain the same.

As a Lot Line Adjustment, this application did not appear before the TRC.

Michael Menary, CivilWorks represented the application and explained the request.

Motion: M. Gambino moved to accept the application and declared no regional impact. Seconded by: F. Cullen**.** Vote: U/A

Public hearing opened.
An email from Tracey Lauder, 250 Tolend Rd was read into the record.
Public hearing closed.

STAFF RECOMMENDATION- Lot Line Adjustment:
Chapter 157-17 of the Land Subdivision Regulations of the City Code provides for the adjustment of existing lot lines between two or more lots. This plan is consistent with those regulations.

The Planning Department recommends the Planning Board make findings, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of Plans:

1. Provide physical and digital copies (including CAD) of complete plan set for recording at Strafford County Registry of Deeds which additionally shall include:
   a. Planning File Number #LOTA-2024-0010
   b. The owners' signatures (both properties)
   c. The LLS stamp and signature
   d. Minimum building setbacks or build-to lines on all lots

Motion: M. Gambino moved to approve the Lot Line Adjustment with conditions detailed by staff. Seconded by F. Cullen. Vote: U/A

The Chair announced Items 4C & D would be heard together.

C. Consideration and acceptance of a Conditional Use Permit for Andrew Koellmer & Natalie A. Hoginski, Assessor's Map L, Lot 14-L, zoned R-20, located at 59 Spur Road. (Proposal is to construct an addition to a residential home, creating 256 square feet of permanent impact to the Conservation District). *(COND-2024-0021)

D. Consideration and acceptance of a Lot Line Adjustment for Andrew Koellmer & Natalie A. Hoginski and Natalie Koellmer, Assessor's Map L, Lots 14-P and 14-L, zoned R-20, located at 3 & 59 Spur Road. *(LOTA-2024-0008)

D. Benton explained that the applicant is proposing an addition to the existing structure on the subject property. The proposed project is limited to the addition which will create approximately 256 square feet of permanent impact to the Conservation District.

The applicant has also applied for a NHDES Minimum Expedited Wetlands Permit as the proposed project is within the 100' Tidal Buffer and is in conformance with "Minimum Impact Projects."

The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting.

The applicant is also submitting a proposed lot line revision to revise the lines between two parcels they own, one of which is located at 3 Spur Rd., Map L, Lot 14-P, and the other at 59 Spur Rd., Map L, Lot 14-L, with the intent of adding approximately 3,500 square feet from 3 Spur Rd. to 59 Spur Rd. For both lots, the frontage and compliance with the underlying R-20 zoning regulations will remain the same.

Michael Menary, CivilWorks represented the application and explained the request.

Motion: G. DeBoer moved to accept both applications and declared no regional impact. Seconded by: F. Cullen**.** Vote: U/A

Public hearing opened.

An email from Bevan Bloemendaal, 53 Spur Rd and Anthony Jackson, 55 Spur Rd was read into the record.
Public hearing closed.

STAFF RECOMMENDATION: Conditional Use Permit
The Conservation District ordinance §170.27.C provides for Conditional Use Permits to allow impacts to the Conservation District if standards related to demonstration that the use is essential to the productive use of land, a soil erosion and sedimentation control plan is submitted, state and federal approvals have been applied for, and a written review by the Conservation Commission has been sought.

Planning Staff feels that the applicant considered and met all of the criteria as specified in §170.27.C per their narrative. The impacts created by the proposed project will be limited to the square footage of the addition. The project does not involve any impacts to wetlands and a NH Natural Heritage Bureau (NHB) review was conducted that resulted in no record of any habitats or endangered wildlife. The applicant has also submitted a NHDES Minimum Expedited Wetlands Permit for the project which has been reviewed and endorsed by the Conservation Commission.

The Planning Department recommends the Planning Board make the necessary and supporting findings of fact, and to approve the Conditional Use Permit with the following subsequent conditions, as the plans meet the standards outlined:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:
1. Approval of LOTA-2024-0008;
2. Copies of the NHDES Minimum Expedited Wetlands Permit submitted to the Planning Department.
3. Outstanding application fees are paid.

Motion M. Speidel moved to approve the Conditional Use Permit with the subsequent conditions. Seconded by M. Gambino. Vote: U/A

STAFF RECOMMENDATION- Lot Line Adjustment:
Chapter 157-17 of the Land Subdivision Regulations of the City Code provides for the adjustment of existing lot lines between two or more lots. This plan is consistent with those regulations.

The Planning Department recommends the Planning Board make findings, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of Plans:
1. Provide physical and digital copies (including CAD) of complete plan set for recording at Strafford County Registry of Deeds which additionally shall include:
    a. Planning File Number #LOTA-2024-0008
    b. The owner's signatures
    c. The LLS stamp and signature

Motion: M. Speidel moved to approve the Lot Line Adjustment with conditions detailed by staff. Seconded by G. DeBoer. Vote: U/A

E. Consideration and acceptance of a Conditional Use Permit for Edward John Williams III & Lydia N. Williams, Assessor's Map L, Lot 44, zoned R-20, located at 167 Spur Road. (Proposal is for 6,114 s.f. of total disturbance within the Conservation District for the re-development of the residential lot). *(COND-2024-0022)

D. Benton explained that the applicant is proposing to redevelop an existing lot which would create approximately 2,798 square feet of permanent impact and approximately 3,316 square feet of temporary construction impact to the previously developed 100' Tidal Buffer Zone. The proposed work would include the demolition of the existing residential structure, construction of a new home, re-configuration of the existing driveway, patio, deck, grading, utility connections, and associated landscaping.

The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting.

Steve Riker, Hayley Ward, represented the application and explained the request. DES accepted the application as complete and it is under their review. He further addressed stormwater, pervious pavers and impervious surfaces.
He addressed questions from the board regarding the pavers and their maintenance, easement, vulnerability assessment, and conservation district and wetland buffers.

Motion: M. Speidel moved to accept the application and declared no regional impact. Seconded by: K. Mavrogeorge**.** Vote: U/A

Public hearing opened.
Ray Bardwell, 199 Spur Rd is concerned about the lack of sewage disposal systems along that road. There is nothing yet in writing, though the owner has agreed verbally to sign a contract for use of the system he designed for the road which is in the deed and will transfer. He gave additional information about the abutting property and the water issues there. He doesn't see a leach field on the plans, would like the owner to sign the contract or even better, hook up to City sewer if it is an option.

Chris Leveck, the Builder, clarified the owner is willing and desires to tie into Mr. Bardwell's system.

Deena Mottola 171 Spur Rd had questions about the proposal including: footprint of house and water/drainage and the effects on abutters.

Mr. Riker addressed public comment: yes, the proposed footprint is larger than the existing footprint; water, sea-level rise and stormwater plans.
Additional clarifications and discussion were made about the impervious surface percentages before and after and what items they include, setback difference before and after, non-mowed buffer area and delineation, private sewer line tie in, ground water rise, footprint/ square footage and size of proposed project.
Public hearing closed.

STAFF RECOMMENDATION: Conditional Use Permit

The Conservation District ordinance §170.27.C provides for Conditional Use Permits to allow impacts to the Conservation District if standards related to demonstration that the use is essential to the productive use of land, a soil erosion and sedimentation control plan is submitted, state and federal approvals have been applied for, and a written review by the Conservation Commission has been sought.

Planning Staff feels that the applicant considered and met all of the criteria as specified in §170.27.C per their narrative.

The Planning Department recommends the Planning Board make the necessary and supporting findings of fact, and to approve the Conditional Use Permit with the following subsequent conditions, as the plans meet the standards outlined:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:

1. Copies of the approved NHDES Standard Dredge and Fill Wetlands Permit shall be submitted to the Planning Department.
2. Stormwater management plan be submitted and approved by the City Engineer.
3. Provide revised plan for Planning Board Chair signature that indicates porous pavers for driveway to Spur Rd and patio, update impervious surface area table, and wetland placards be shown every 25' from edge of river to closest point of building, along edges of the delineated wetland.

Motion M. Gambino moved to approve the Conditional Use Permit with the subsequent conditions. Seconded by K. Mavrogeorge. Vote: U/A

The Chair announced Items 4F & G would be heard together.

F. Consideration and acceptance of a Conditional Use Permit for Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located at Back Road. (Proposal is to create an access drive to the developable portion of the lot where a single home and accessory structures are to be built, permanently impacting 8,880 square feet of wetlands and 29,176 square feet of the 50-foot wetland buffer. There are also 151 square feet of temporary impact to wetlands). *(COND-2024-0023)

G. Consideration and acceptance of a Conditional Use Permit for Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located at Back Road. (Proposal is to have 1,110 square feet of permanent impact and 73 square feet of temporary impact are proposed to the Conservation District associated with a patio path, patio and access to a proposed tidal docking structure). *(COND-2024-0027)

D. Benton explained that the applicant is proposing to construct a driveway from Back Road to the developable portion of the subject parcel and to construct a patio, patio path, and access to a proposed tidal docking structure.

The proposed driveway will primarily be constructed on a 20'-wide strip of the subject parcel and total approximately 3,440± linear feet. The driveway is proposed to be gravel except for 40± linear feet leading to the proposed residence, which will be paved.

The proposed driveway will create 8,880± square feet of permanent impacts to wetlands and 29,176± square feet of permanent impacts to the 50-foot wetland buffer. There are also 151± square feet of temporary impact to wetlands.

The proposed accessory structure and access paths will create 1,110± square feet of permanent impact to the Conservation District. There are also 73± square feet of temporary impact.

The Conservation Commission reviewed and endorsed the applications at their August 12, 2024 meeting. One of the conditions for approval is that the item go before TRC for stormwater review.

Mike Parsont, Stable Growth Environmental represented the application explaining he is the wetlands scientist and permits have been submitted to DES. He explained the proposal in detail and noted they did get letters of consent from two of the three abutters. They have put in the waiver request to address the other abutter. He addressed the eight wetland crossings – six are currently highly disturbed and are in an area they don't control. One of the six is a utility easement in place. He addressed the two crossings and the buffer zones on the property.

M. Parsont and John Warden, Beals Associates addressed board questions including: driveway width, grading and not enough documentation provided (cross sections) to support the driveway and grading plan, driveway material, culvert materials, fire access, sewer and water plan/ fire suppression, storm water systems/infiltration ponds and impervious surfaces leading to them, Alteration of Terrain permit and information to be provided for it, abutter easement idea, impacts by previous owners being restored.

Board members discussed whether the best action is to table the item until it has gone through TRC, or vote tonight on the CUP and make TRC and NH DES approvals conditions of approval.

Motion: G. DeBoer moved to table the application for TRC review. Seconded by: K. Mavrogeorge**.** Vote: 6-1 in favor with F. Cullen opposed.

D. Benton clarified since it wasn't tabled to a date certain, new abutters notices will be mailed before the Planning Board hears the item again.

H. Consideration and acceptance of a Conditional Use Permit for 17-19 Summer Street Properties, LLC, Assessor's Map 12, Lot 35-1, zoned HR, located at Locust Street. (Proposal is to build a 2,400 s.f four (4) unit building in the Heritage District.) *(COND-2024-0020)

I. Consideration and acceptance of a Site Review for 17-19 Summer Street Properties, LLC, Assessor's Map 12, Lot 35-1, zoned HR, located at Locust Street. (Proposal is to build a 2,400 s.f. residential building consisting of (4) four, (2) two bedroom units, improved driveway access, parking, utilities and drainage improvements.) *(SITE-2024-0003)

The Vice Chair announced Items 4H and I have been requested to be continued.

Motion: M. Speidel moved to continue the items to October 8, 2024. Seconded by: K. Mavrogeorge. Vote: U/A

J. ~~Consideration and acceptance of an Amendment to a Site Plan for Wooden Ruler Realty, LLC, Assessor's Map 6, Lot 40, zoned CBD-G, located at 42-44 Third Street. (Proposal is to modify the building design and amend conditions of approval, numbers 13 and 19 in regards to parking). *(WAIV-2024-0012)~~ This item will not be heard.

K. Consideration and acceptance of a Site Review for Berry Surveying & Engineering (Owners: Pillar Imaging, LLC), Assessor's Map 31, Lot 11, zoned CBD-T, located at 1 Grove Street. (Proposal is for the construction of a 25-space parking lot.) *(SITE-2024-0007)

D. Benton explained that the applicant is proposing the construction of a 25-space parking lot on the subject parcel. Hampshire Controls Corp. occupies the building on the parcel. Hampshire Controls Corp. is proposing to expand the number of employees working from the facility, the existing operation employs 8

people, with an expansion to 25 employees desired. The available parking has been determined as not adequate for current and future operations.
As part of the project, the current gravel parking area on the north side of the building will be replaced with a sidewalk and landscaping.

Five waivers are also being proposed requesting relief from submission requirements and design elements.

The Technical Review Committee reviewed the application at their July 28, 2024 meeting.

Kevin Poulin, Berry Surveying and Engineering represented the application and highlighted the request and each of the waivers.

Motion: M. Speidel moved to accept the application and declared no regional impact. Seconded by: K. Mavrogeorge**.** Vote: U/A

Public hearing opened.
No one spoke
Public hearing closed.

STAFF RECOMMENDATION - Waivers/Relief:
§153-21 of the Site Plan Review Regulations state the "Planning Board may waive specific provisions of these regulations. The Planning Board may only grant a waiver if the Planning Board finds, by majority vote, that:

(1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
(2) Specific circumstances relative to the subdivision, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Planning Staff believes the applicant's rationale for the waivers meets criterion (1) and waiving such standards and requirements is not contrary to the spirit or intent of the ordinance.

The Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to grant the waivers with the following subsequent condition:

Subsequent Condition to be Met Prior to the Signing of the Plans:

1. Add a note that the Planning Board found the criteria of Chapter 153-21 have been met and the Board approved the following waivers:
   §153-14A(3)(f)[2], submission of a Site-Specific Soils Map.
   §153-14D(6)(b), minimum two-way parking lot aisle access width of 24'. §153-14G(2)(a), interior landscaping of 5% for a parking lot of 21-50 spaces.
   §153-14G(3)(a), perimeter landscaping with trees 35 ft. on center, shrubs with 5 ft. on center.
   §157-40B(5), three-foot minimum pipe cover.

Motion: M. Speidel moved to grant the waiver requests with subsequent condition set by staff as strict conformity would pose an unnecessary hardship. Seconded by: F. Cullen. Vote: U/A

STAFF RECOMMENDATION- Site Plan:
The Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to approve the Site Plan with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of the Plans:

1. Submit final plans (including CAD) with owner's signature and all professional stamps and signatures.
2. Pest control specialist review the site and determine in writing to the Planning Department if a pest control plan is necessary.

Subsequent Conditions to Be Met Prior to Construction:

3. A site construction sign with the contact information for the general contractor must be displayed in a location approved by the City Engineer or Planning Director;
4. If pest control plan is necessary, it shall comply with Chapter 153-10.G.

Subsequent Conditions to Be Met Prior to Completion:

5. Payment of Water and Sewer Investment Fees if applicable at time or request of service.
6. Issuance of Certificate of Completion;
7. Payment of Impact Fees as noted in the invoice attached to the Decision Letter unless a change is made to the impact fee policy; and
8. Surety or other form of security acceptable to the City is provided for any unfinished work.
9. Design engineer to submit a construction certification letter to the City ensuring construction was completed in accordance with the plans and specifications approved by the City of Dover.
10. Cross access, utility and drainage easements recorded at Strafford County Registry of Deeds.
11. Roof drains disconnected from sewer.

Motion: M. Gambino moved to approve the Site Plan with subsequent conditions set by staff as it meets criteria. Seconded by: F. Cullen. Vote: U/A

L. Discussion of Impact Fees. *

D. Benton reviewed the discussions that the Planning Board has had on the topic of Impact Fees and staff considerations following the 2024 analysis that was completed on the City of Dover's Impact Fees. Three courses of action were explained for the Board to consider for the next steps.

• Option 1:
The Board may choose to receive the draft impact fee memo from Fougere Planning but not necessarily accept the findings, therefore leaving the impact fee ordinance and policy status quo.

• Option 2:
The Board may choose to revise impact fee levels to the suggested amounts per the draft report/study. Statutorily, the Planning Board is the entity to set the impact fee amounts, thus it has the authority to make these changes It should be noted, that the revenue derived from the adjusted impact fees would be less than the costs for administering the program.

• Option 3:
The Board may choose to vote to recommend that the City Council amend the Zoning Ordinance to remove the collection of impact fees. This option may help towards the City's recently adopted Vision including more attainable housing as well as the City Council's goals of attainable housing. This option also lessens the burden of staff to educate, calculate, invoice, collect, spend, and analyze impact fees. Should the Board choose to direct effort towards Option 3, then staff will provide potential amendments to the Ordinance for the Planning Board to review and post similar to other Zoning Amendments, hold a public hearing, and then recommend potential amendments to City Council. The Planning Board could decide on a transition policy

including effective date and affected parties to help ensure this change is as fair as possible to recently approved/invoiced developments.

Discussion and clarification occurred on the amount of funds brought in through impact fees (various methods) and the amount of funds spent managing the impact fees. Also discussed were the varying methods researched to determine the fee structure.

Discussion occurred about how impact fees affect approved housing projects and whether to abandon all impact fees or continue them when and where it makes sense and at the Planning Board's discretion and how that might logistically work. Varying opinions and examples given by all board members.

Continued discussion on timeline and logistics of specific project-based improvements to the City rather than generic impact fees- conversations should start at TRC level/ become part of staff recommendations at Planning Board level.

Public hearing opened.
Email from Todd Baker was received as has already been discussed during board discussion.
Public hearing closed.

D. Benton noted staff can draft some zoning amendments to bring back to the board for review and posting. Other requests include more details about what option 3 will look like and if zeroing out the impact fee will cause a deficit.

Continued discussion occurred about the options the Board can take and the benefits and drawbacks for each.

Discussion occurred about how to collect needs for Police, Fire, etc. as part of TRC, what could be requested, and what should or shouldn't be requested.

Request made for staff to draft 1 amendment relating to option 1 and 1 amendment relating to option 2.

There was general consensus to see draft amendment language for option 3 and as well as an option for a moratorium on impact fees.

5. STAFF COMMENTS

- TRCs since last meeting:
    - (August 1st) TDR Site Review for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to construct 2 duplexes and a single-family dwelling). SITE-2024-0008
    - (August 8th) TDR Site Review for Dover Development, LLC 80%, Robert V. Paolini, 20%, Assessor's Map 40 Lot 25, zoned C, located at 52 Old Rochester Road. (Proposal is to construct two (2) residential buildings with a total of 48, one (1) bedroom units, and 87 parking spaces. One (1) related Conditional Use Permit application and Transfer of Development Rights Request would also appear before the Planning Board). (SITE-2024-0009)
- Upcoming TRCs:
    - (August 29th) Site Review for Del Sol Dover, LLC Assessor's Map G Lot 2-1-2, zoned CM, located at Crosby Road. (Proposal is to construct one (1) 9,600 s.f. warehouse building with

associated parking and infrastructure and an 807' paved extension of Crosby Road). (SITE-2024-0010)
    - (August 29th) Site Review for Chauvin Arnoux, Inc., Assessor's Map G, Lot 1-L, zoned CM, located at 15 Faraday Drive. (Proposal is to construct one (1) 2,356 s.f. storage building). (SITE-2024-0011)
- Next Planning Board meeting 9/24/24 – cancelling the 9/10/24 meeting

6. MEMBER COMMENTS

- K. Pimental
    - Not here 9/24/24 meeting
- The Chair signed the following:
    - Site Plan Amendment and Development Agreement for McIntosh Dover at 23 Cataract Ave. (158 total units including 78 HUD rent-restricted units)
    - Verizon Tower on Tolend Rd
- M. Speidel
    - Not here 9/24/24
    - Term expires at the 1st meeting in Oct- Board will need a new Vice Chair

7. ADJOURNMENT

Motion: M. Speidel moved to adjourn at 10:33pm. Seconded by K. Mavrogeorge. Vote: U/A

DRAFT

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SUBM-2024-0004

Application Type:	Minor Subdivision
Applicant(s):	Estate of Marc K. Gagnon
Owner(s):	Estate of Marc K. Gagnon
Location:	48 Old Rochester Rd. (Tax Map D, Lot 9B)
Meeting Date:	Tuesday, September 24, 2024

INTENT: Proposal is for a Minor Subdivision of 48 Old Rochester Rd., creating one (1) new lot

LOTS PROPOSED: One (1) new lot

AGENDA ITEM #: 4-A

ACREAGE:
Existing Parent Lot Acreage: 0.46± ac.

Proposed Lot 1 (Map D, Lot 9-B): 0.239± ac. / 10,426± sq. ft.

Proposed Lot 2 (Map D, Lot 9-B1): 0.230± ac. / 10,000± sq. ft.

ZONING DISTRICT: R-12

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USES: Residential and Commercial

ZBA ACTION: Yes. Variance ZONE-2024-0032 approved on 7/18/2024 to allow for the subdivision of the parent lot into two (2) ten-thousand (10,000) sf. lots, where a minimum lot size of 12,000 sf. is required. *Subsequent Variance Application (ZONE-2024-0036) to be heard 9/19/2024 proposed subdivision's setback encroachment.*

APPLICATION IS COMPLETE: Yes

REGIONAL IMPACT: No

PERMITS REQUIRED: N/A

WAIVERS REQUESTED: N/A

NOTICES SENT: Abutter notices were sent by certified mail to all abutters.

ATTACHMENTS: Application material, Subdivision Plan

Summary of Request and Background:
The Applicant proposes subdividing the parent parcel at 48 Old Rochester Rd. roughly in half, creating one new lot with frontage along Strafford Rd. with proposed lots 9-B and 9-B1 having 0.239± ac. / 10,426± sq. ft. and 0.230± ac. / 10,000± sq. ft. respectively.

As noted, the Applicant previously received variance relief from the Zoning Board of Adjustment on 7/18/2024 due to the proposed lots lacking the required 12,000 sf. of total area as prescribed in the R-12 Zoning Table. The Applicant also requires additional variance relief for rear setback encroachment by the existing single-family home on proposed lot 9-B. This variance request, ZONE-2024-0036 is slated to be heard during the 9/19/2024 ZBA meeting.

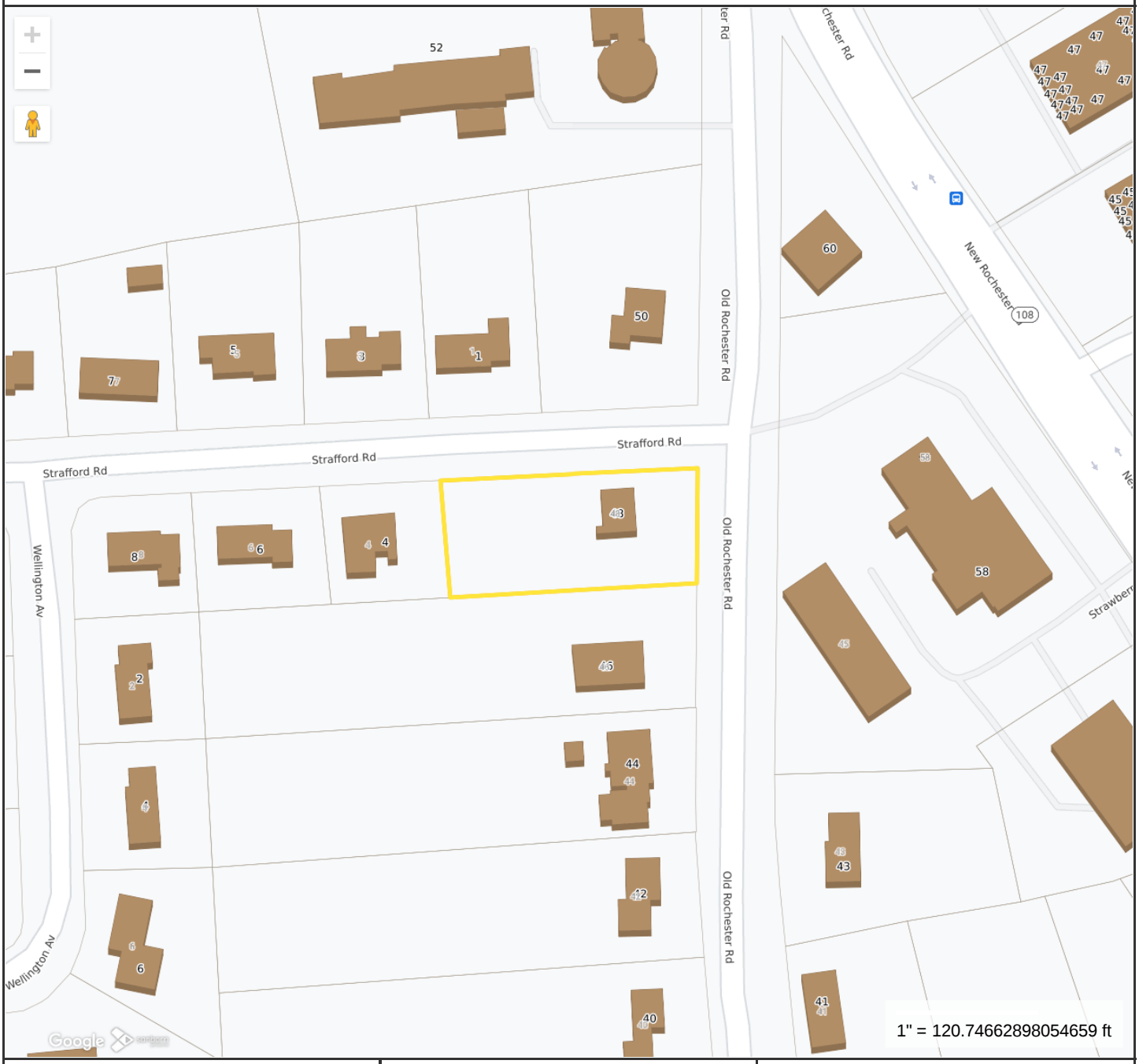
Consistency with Land Use Regulations:
The plan is consistent with §157-15 of the City of Dover's Land Subdivision Regulations, which provides for subdivision of existing lots.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board vote to accept the application and determine it not to have regional impact, open a public hearing, close the public hearing, make the necessary and supporting findings of fact, and vote to approve the minor subdivision with the following subsequent conditions:

Subsequent Conditions to be Met Prior to Signing of Plans:

1. Variance (ZONE-2024-0036) granted, in relief of rear setback encroachment, as detailed above or encroachment some other way revised to come into conformance.
2. Provide physical and digital copies (including CAD) of complete plan set which additionally shall include:
   2.1. Signature and stamp of PE, LLS, CWS and LLA
   2.2. The owners' signatures for recording at Strafford County Registry of Deeds

SUBM-2024-0004 48 Old Rochester Road



Property Information

Location	48 OLD ROCHESTER RD
Owner	ESTATE OF GAGNON MARC KEITH
Land Use	
Zoning Code	R-12
Property Id	D0009-B00000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PLAN SNAPSHOT REPORT SUBM-2024-0004
FOR CITY OF DOVER, N.H.

Plan Type:	Subdivision Plan - Minor	**Project:**		**App Date:**	08/06/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	10/10/2024
Status:	In Review	**Square Feet:**	20,426.00	**Completed:**	NOT COMPLETED
Valuation:	$310,000.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Subdivide Tax Map D, Lot 9B into two (2) Lots, creating One (1) new lot.

Parcel:	D0009-B00000	Main	**Address:**	48 Old Rochester Rd Dover, NH	Main	**Zone:**

Applicant
Tritech Engineering Corp.
755 Central Avenue
Dover, NH 03820
Business: (603) 742-8107

Owner
Steven Endsley
18 Varney St
Lebanon, ME 04027
Business: (603) 834-3351
Mobile: (603) 834-3351

Plan Custom Fields

Proposed Number of New Lots	2	Existing Number of Lots	1	Parcel Map/Lot	D/9B
Parcel Zoning Overlay		Select Subdivision Type	Conventional	Parcel Zoning	R-12
Property Address	48 Old Rochester Road	Existing Parcel Size (Ac)	0.469	Existing Parcel Size (sqft)	20429.6
Proposed Use Detail	One (1) New Building Lot.	Owner Name	Estate of Mark Keith Gagnon c/o Steven Endsley	Deed Page	334
Deed Book	2097	Owner Address	18 Varney Road, Lebanon Me 04027	Deed Date	4/12/1999
Refuse Removal	Public	Owner Phone	603-834-3351	Parcel Feedback	
Owner EMail	sendsley@spjce.com	Existing Use Detail	Single Family Home	TDR Detail	
subdroadtype	Municipal	Water Source?	Municipal	Distance to City Water (ft)	20
Distance to City Sewer (ft)	20	Sewer Service?	Municipal	Subdivision Regulations section(s) to be waived	
Justification for waiver request(s)					

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Robert_Stowell_8/6/2024.jpg	08/06/2024 13:41	Stowell, Robert		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008886	Planning Subdivision Lot Fee	$300.00	$300.00
	Planning Subdivision Application Fee	$200.00	$200.00
	Total for Invoice INV-00008886	$500.00	$500.00
	Grand Total for Plan	**$500.00**	**$500.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1			
Confirm application complete v.1	Generic Action		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		

Planner Creates Staff Recommendations v.1	Plan Activity
Distribute Planning Board Materials v.1	Task
Planning Board Hearing v.1	Hold Hearing
Planning Board Decision v.1	Plan Activity
NOD Sent to Applicant v.1	Create Report
Final Plan v.1	
Land Use Plan Final Review v.1	Receive Submittal
Land Use Plan Stamped and Signed v.1	Generic Action
Recording v.1	Task
Document Archival v.1	Generic Action
Internal Notification of Plan Completion v.1	Generic Action
Create/Link to Records v.1	
Create / Link to Permit - Building Major v.1	Create Sub Permit

City of Dover, New Hampshire
MINOR SUBDIVISION APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Steven Endsley Telephone # 603-834-3351

Address of Applicant: 18 Varney Street, Lebanon, ME 04027

Name of Property Owner (*if different from applicant*): Estate of Marc K. Gagnon Telephone # 603-834-3351

Address of Property Owner: 18 Varney Street, Lebanon, ME 04027

E-Mail Address: sendsley@spjce.com

PROPERTY INFORMATION

Address of Property: 48 Old Rochester Road Dover, NH 03820

Assessor's Map # D Lot(s) # 9B

Zoning District(s) R-12 Overlay District(s) None

Size of Parcel: 20,426 sq.ft. Property Deed: Book 2097 Page: 334

Existing Use of Property: Single Family Home

SUBDIVISION INFORMATION

Existing Number of Lots: 1 Proposed Number of Lots: 2

TDR Relief sought (Check All That Apply): □ Lot Size □ Frontage □ Setback □ 30' Buffer □ Purchase ____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

Circle one for each category:

Water: (City)/Well (circle one) How far is city water from the property? At road frontage

Sewer: (City)/Septic (circle one) How far is city sewer from the property? At road frontage

Highway Access (City Street)/State Highway (circle one) | Roadway (Public) or Private Road (circle one)

Refuse removal: (Public)/Private (circle one) | Estimated Length of Proposed Road: N/A feet

Estimated value of construction: N/A New impervious area (in s.f.): N/A

WAIVER REQUESTS

Subdivision Regulations section(s) to be waived: _____

Justification for waiver request(s) (*attach additional sheets as needed*): _____

_____

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Robert J. Stowell Tritech Engineering Corporation

Address 755 Central Ave Dover, NH Telephone #: 603-742-8107

Professional License #: 9903 E-mail address: RJS@TRITECHENG.COM

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Robert J. Stowell Tritech Engineering Corporation

Address 755 Central Ave Dover, NH Telephone #: 603-742-8107

Professional License #: 884 E-mail address: RJS@TRITECHENG.COM

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) _____

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) Mike Mariano

Address 75 Prospect Street, Somersworth NH, 03878 Telephone #: 603-692-4457

Professional License #: 076 E-mail address: highlandsoilservices@comcast.net

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/We submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 08/06/24

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: _____ Date: 08/06/24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 08-06-24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby authorize the City of Dover and its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 08-06-24

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: 08-06-24

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF PUBLIC ROADWAY ACCEPTANCE

I, and my successors, hereby certify that I understand that the acceptance of a roadway as a public road is an action of the City Council in its sole and complete discretion. In order for the City Council to consider accepting a road as public, it must be free of encumbrances. No roadway with private utility easements shall be accepted as a public road by the City unless the easements are expunged prior to the transfer of land to the City. License agreements for any and all private utilities within the right of way may be granted by the City upon acceptance of the unencumbered roadway consistent with applicable state law.

Signature of Property Owner: _____ Date: 08-06-24

Signature of Applicant (*if different from owner*): _____ Date: _____

CITY OF DOVER SUBDIVISION
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
D	9B	Estate of Marc K. Gagnon	18 Varney Street, Lebanon, ME 04027

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Steven Endsley		18 Varney Street, Lebanon, ME 04027

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Robert J. Stowell	Tritech Engineering Corporation	755 Central Ave, Dover, NH 03820
Mike Mariano	Highland Soil Services	75 Prospect Street, Somersworth, NH 03878

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
MINOR SUBDIVISION SUBMISSION CHECKLIST

[Revision Date: May 18, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, 3 weeks prior to the Planning Board meeting. Abutter/Notice Fees will be invoiced and are due 28 hours prior to Planning Board.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Steven Endsley File Number: _____

PROJECT TITLE: Estate of Marc Keith Gagnon

PROPERTY LOCATION: 48 Old Rochester Road Tax Map: D Lot: 9B

	Where/How Provided	Reviewed
1. Completed and signed Application form	Attached	
2. Plan Review Fees are provided	Hand Delivered	
3. Electronic copy of the surveyed plat layout	Attached	
4. Electronic copy of supplementary materials and application	Attached	
5. Waiver requests to the Subdivision Regulations, with written justification	N/A	
6. Conditional Use Permit applications		
7. Fifteen folded copies of subdivision plan w/scale of not less than 1"=50' or 1"=100' for larger subdivisions. Plans shall contain the following items as appropriate:	Hand Delivered	
Location map at appropriate scale	shown	
Proposed subdivision name and title and Planning File #	title block	
Date, north arrow and scale	Shown	
Names of all abutting property owners	Shown	
Name and address of owners and/or applicants	Notes	
Signature & stamp of NH licensed land surveyor and/or engineer	Shown	
Zoning District boundaries, including any special or overlay districts	Note	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	Shown	
Location and widths of existing & proposed easements & right of ways	N/A	
Location and widths of existing and proposed sidewalks	N/A	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Shown	
Existing and proposed lot areas in square feet	Shown	
Existing and proposed topographic information at two foot intervals	Shown	
Existing and proposed buildings and structure locations	N/A	
Minimum building setbacks or build to lines on all lots	Note	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Shown	

	Explain How Provided	Reviewed
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Shown	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	Shown	
Existing and proposed septic system, including test pit locations and results and NHDES subdivision permit number	N/A	
Existing and proposed stormwater lines and facilities	N/A	
Location of Flood Hazard Zone	Note	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Existing natural features and/or significant vegetation on property	N/A	
Soil types	N/A	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	Shown	
Location of all land offered for dedication for public use or land to be held in common by property owners of the subdivision	N/A	
Location, material and size of existing and proposed permanent monuments	Shown	
Existing railroad lines	N/A	
Note regarding solid waste disposal	N/A	
All applicable Dover Common Subdivision notes	Note	
8. Construction Detail Sheets shall contain the following information (if appropriate):		
Profiles showing existing & proposed elevations along the center lines of proposed streets & within 100' of intersections with existing streets	N/A	
Profiles showing the locations & a typical cross-section detail of streets	N/A	
Location of street trees, street lighting poles and street signs	N/A	
Location, size and invert elevations of existing and proposed sanitary sewers, stormwater drains and fire hydrants	N/A	
Location and size of all water, gas and other underground utilities	N/A	
9. Additional Information if appropriate		
Stormwater Management Plan depicting the existing and proposed storm drainage system and engineered drainage analysis		
Stormwater Management System Operation and Maintenance Plan		
Letter to Serve from Public and Private Utilities		
Erosion and Sedimentation Control Plan		
Proposed restrictive covenants or homeowners association documents		
Dates and permit numbers of all required state and federal permits		
If wetland buffer, indicate placards locations, as applicable		
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required		

REVIEWED BY: _____ DATE_____

SUBM-2024-0004 **48 Old Rochester Road**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
40026-000000	46 OLD ROCHESTER RD	OUELLETTE LAWRENCE D JR &	FRENCH NICOLE	46 OLD ROCHESTER RD	DOVER	NH	03820
40027-000000	44 OLD ROCHESTER RD	EMERSON DAVID L &	EMERSON APRIL D	44 OLD ROCHESTER RD	DOVER	NH	03820
40028-000000	42 OLD ROCHESTER RD	BEATS ANDREW S & LISA T TRUSTEES	BEATS ANDREW AND LISA T REVOCABLE LIVING	42 OLD ROCHESTER RD	DOVER	NH	03820
40042-000000	43 OLD ROCHESTER RD	ALLEN PETER J &	ALLEN KATHLEEN C	43 OLD ROCHESTER RD	DOVER	NH	03820
40043-000000	58 NEW ROCHESTER RD	STRAFFORD FARMS RESTAURANT INC		58 NEW ROCHESTER ROAD	DOVER	NH	03820
40044-000000	60 NEW ROCHESTER RD	GSED PROPERTIES LLC		9 ROBIN LANE	PEPPERELL	MA	01463
D0009-000000	50 OLD ROCHESTER RD	BRILLARD RICKY A & MARY S REV LIV TRUST	BRILLARD RICKY A AND MARY S TRUSTEES	167 VARNEY RD	DOVER	NH	03820
D0009-B00001	6 STRAFFORD RD	BRITTON DENNIS		18646 BELLORITA ST	ROWLAND HEIGHTS	CA	91748-3705
D0009-B00002	4 STRAFFORD RD	ASHTEKAR MIKHIL		285B WEBSTER ST	HUDSON	NH	03051-3257
D0009-G00000	5 STRAFFORD RD	WATKINS HANNELORE E TRUSTEE	WATKINS HANNELORE E REVOCABLE TRUST	5 STRAFFORD ROAD	DOVER	NH	03820
D0009-J00000	8 STRAFFORD RD	MICHEL AUDRA L		8 STRAFFORD RD	DOVER	NH	03820
D0010-P00000	3 STRAFFORD RD	KELLEHER DANIEL T TRUSTEE	KELLEHER D AND L REV TRUST	3 STRAFFORD RD	DOVER	NH	03820
D0010-T00000	1 STRAFFORD RD	GAGNON MARK A 52% & RONALD J 30% &	GAGNON TIFFANY 6% & WILLIAM 6% & JACK 6%	1 STRAFFORD RD	DOVER	NH	03820
D0009-B00000	48 OLD ROCHESTER RD	GAGNON MARC KEITH		48 OLD ROCHESTER ROAD	DOVER	NH	03820
		STEVEN ENDSLEY		18 VARNEY STREET	LEBANON	ME	04027

TRITECH
ENGINEERING CORPORATION

755 Central Avenue
Dover, New Hampshire 03820

Telephone 603.742.8107
Facsimile 603.742.3830

August 6, 2024

Donna Benton, AICP
Director of Planning & Community Development
City of Dover, Planning Department
288 Central Avenue
Dover, New Hampshire 03820

Subject: Minor Subdivision
Estate of Marc Keith Gagnon
48 Old Rochester Road & Strafford Road
Dover Tax Map D Lot 9B
Dover, New Hampshire
Job No. 24119

Dear Donna:

On behalf of our client, Steven Endsley the administrator of the Estate of Marc Keith Gagnon, we are submitting this Application for Minor Subdivision. The Applicant is proposing the Subdivision of 48 Old Rochester Road, aka Tax Map D Lot 9B into two (2) lots.

48 Old Rochester Road contain an existing single family residence serviced by city water and city sewer with access from Old Rochester Road. The new lot, shown as Lot 9B-1 is 10,000 square feet in size with 100 feet of frontage on Strafford Road. This new lot will be accessed from Strafford Road and will also be serviced by city water and city sewer.

In July of 2024 the property received a variance from the Zoning Board of Adjustment to allow for the 10,000 square foot lots where 12,000 square feet is required by the R-12 Zoning.

Enclosed please find the supporting documentation:

- Minor Subdivision Application,
- Minor Subdivision Plan,
- Letter of Administrator Appointment.

Please advise should you have any questions.

Very truly yours,
TRITECH ENGINEERING CORP.

Robert J. Stowell, P.E., L.L.S.
President

RJS / cmp
cc: Steven Endsley, Administrator

Attachments

\\24119PBSubmittalltr.docx

THE STATE OF NEW HAMPSHIRE
JUDICIAL BRANCH
NH CIRCUIT COURT

7th Circuit - Probate Division - Dover
259 County Farm Road, Suite 203
Dover NH 03820

Telephone: 1-855-212-1234
TTY/TDD Relay: (800) 735-2964
https://www.courts.nh.gov

CERTIFICATE OF APPOINTMENT
(Letter of Appointment)

Case Name: **Estate of Marc K. Gagnon**

Case Number: **319-2024-ET-00025**

On April 02, 2024, the following person(s) was/were appointed to administer the estate of Marc K. Gagnon. The named administrator(s) accepted this responsibility.

Administrator(s)

Steven E. Endsley	18 Varney Street Lebanon ME 04027	Home: 603-834-3351

This document, when signed under seal, certifies that this appointment did occur as stated and remains in effect as dated below.

April 03, 2024

/s/ Cheryll-Ann Andrews
Clerk of Court
State of New Hampshire
Strafford County



This electronic certification stamp meets the statutory requirement for certified or attested documents pursuant to Supplemental Rules of the Circuit Court of New Hampshire for Electronic Filing.

This is a Service Document For Case: 319-2024-ET-00025
7th Circuit - Probate Division - Dover

NOTES

1.) INTENT: TO SUBDIVIDE DOVER TAX MAP D LOT 9B INTO 2 LOTS, (1 NEW LOT).

2.) CURRENT OWNER OF RECORD: ESTATE OF MARC KEITH GAGNON
STEVEN E. ENDSLEY ADMN.
18 VARNEY ROAD
LEBANON, ME. 04027

_____
AUTHORIZED SIGNATURE

3.) THE PARCEL IS SHOWN AS LOT No. 9B, MAP D OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.

4.) THE SUBJECT PARCEL CONTAINS 0.469 ACRES OR 20,426 SQ.FT.

5.) TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, BOOK No. 2097, PAGE No. 334

6.) REFERENCE PLANS: PLAN OF LAND OF DOROTHY M. WIGGIN, DOVER, N.H., C. G. CROUCH, 11-5-45, SCRD Po 7, Fo 2, PL 7
RAYMOND G. SWEAT & PERLEY J. COLE, MICHAEL ROSHOLT AND OWEN R. BRYSON, DOVER, N.H., FREDERICK E. DREW ASSOCIATES, OCT 1989, SCRD #37A-116

7.) ALL APPLICABLE RIGHT OF WAY, CONSERVATION, SLOPE, CONSTRUCTION, POWER LINE, CROSS TRAVEL, OR OTHER EASEMENTS SHALL BE REFERENCED IN A NOTE.

8.) CURRENT ZONING DIMENSIONAL AND DENSITY REQUIREMENTS IN EFFECT ARE AS FOLLOWS:

REQUIRED:	PROVIDED:
a. ZONING DISTRICT R-12	a. ZONING DISTRICT R-12
b. MINIMUM LOT SIZE: 12,000 SQ.FT.	b. MINIMUM LOT SIZE: 10,000 SQ.FT.
c. MINIMUM LOT FRONTAGE: 100 FT	c. MINIMUM LOT FRONTAGE: 100 FT
d. MINIMUM YARD SETBACKS/BUILD TO LINES FRONT 15 FT MIN – 25 FT MAX SIDE 15 FT REAR 30 FT ABUT-A-STREET 15 FT MIN – 25 FT MAX	d. MINIMUM YARD SETBACKS/BUILD TO LINES FRONT 15 FT MIN – 25 FT MAX SIDE 15 FT REAR 30 FT ABUT-A-STREET 15 FT MIN – 25 FT MAX
e. MAXIMUM/MINIMUM LOT COVERAGE 30%	e. MAXIMUM/MINIMUM LOT COVERAGE 30%
f. MINIMUN/MAXIMUM BLDG HEIGHT 35 FT MAX	f. MINIMUN/MAXIMUM BLDG HEIGHT 35 FT MAX

THIS PROPERTY FALLS WITHIN THE FOLLOWING ZONING OVERLAY DISTRICTS: NONE

9.) ON JULY 18, 2024, (ZONE-2024-0032) THE DOVER ZONING BOARD OF ADJUSTMENT GRANTED A VARIANCE FROM SECTION 170-12 – SPECIFIC LOT SIZE REQUIREMENTS OF THE ZONING ORDINANCE WHICH MANDATES A MINIMUM LOT AREA OF 12,000 SQ.FT. IN ORDER TO SUBDIVIDE THE PARENT LOT INTO (2) TEN-THOUSAND (10,000) S.F. LOTS.

ON SEPTEMBER 19, 2024, (ZONE-2024-0033) THE DOVER ZONING BOARD OF ADJUSTMENT GRANTED A VARIANCE FROM SECTION 170-12 – SPECIFIC LOT SIZE REQUIREMENTS OF THE ZONING ORDINANCE WHICH MANDATES A MINIMUM REAR SETBACK OF 30 FEET. (PENDING)

10.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY TRITECH ENGINEERING CORPORATION ON JULY, 2024 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.

11.) SUBJECT PARCEL IS NOT WITHIN A FEDERALLY DESIGNATED SPECIAL FLOOD HAZARD ZONE (PANEL 0310E, MAP No. 33017C0310E,

12.) WETLANDS WERE DELINEATED BY MICHAEL MARIANO, CERTIFIED WETLAND SCIENTIST, CERTIFICATION NUMBER #183, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE IN JULY 2024. NO WETLANDS WERE OBSERVED.

13.) THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.

14.) ALL UNITS ARE PROPOSED TO BE SERVED BY MUNICIPAL WATER.

15.) BUILDING/MAILING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

16.) THE PROPOSED USE FOR THE SITE IS PER R-12 ZONING DISTRICT.

17.) THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY: NONE

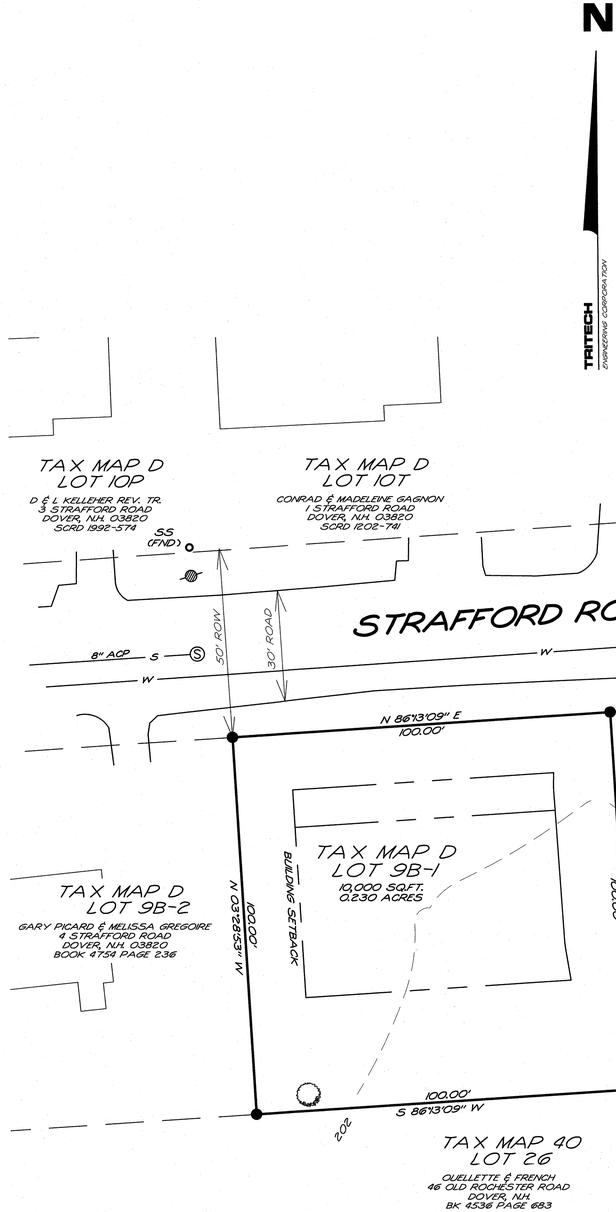
18.) ANY RETAINING WALL TALLER THAN (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

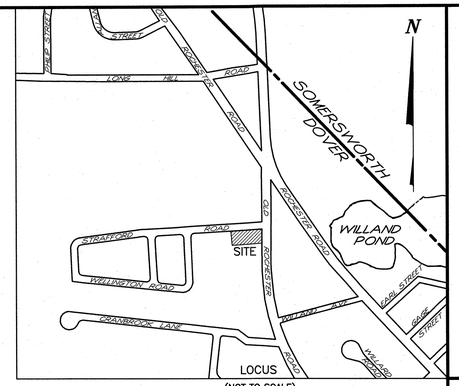
19.) ANY FENCE TALLER THAN (7') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

20.) TOPOGRAPHIC SURVEY PERFORMED BY TRITECH ENGINEERING CORPORATION JULY, 2024 AND ELEVATIONS ARE BASED ON U.S.G.S. DATUM.

21.) BASIS OF BEARING: BEARING SYSTEM BASED ON GPS FIELD OBSERVATIONS ON FEBRUARY 31, 2017 USING TOPCON HIPER SR RECEIVERS AND OPUS CORRECTED ON MARCH 13, 2017. DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATES SPC (2800 NH), (NAVD 88). COORDINATES SHOWN ARE DOVER GIS SYSTEM.

22.) EXISTING UTILITIES – ALL INFORMATION ON, AND LOCATION OF, EXISTING UTILITIES ARE APPROXIMATE AND BASED ON FIELD INFORMATION, AVAILABLE PLANS AND CONTRACTOR'S NOTES. EXACT LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION IN THESE AREAS. LOCATIONS OF UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED AND THIS PLAN DOES NOT CERTIFY TO THEIR LOCATION.





LEGEND

- 5/8" REBAR W-ID CAP SET
- UTILITY POLE
- TREE
- W — WATER LINE
- (S) SEWER MANHOLE
- S — SEWER LINE

TRITECH
ENGINEERING CORPORATION
755 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
TELEPHONE 603 742 8107
FAX 603 742 3890

REVISIONS
DATE: 9-3-24
DESCRIPTION: REVISED SETBACKS

LICENSED LAND SURVEYOR
NO. 884
ROBERT J. ROSHOLT
STATE OF NEW HAMPSHIRE

SUBDIVISION PLAN

ESTATE OF MARC KEITH GAGNON

STRAFFORD ROAD AND
48 OLD ROCHESTER ROAD
DOVER, NEW HAMPSHIRE
STRAFFORD COUNTY

AUGUST 6, 2024 JOB No. 24119
SCALE: 1" = 20'

SHEET No. **S-1**

(P24-00)

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #LOTA-2024-0011

Application Type:	Lot Line Adjustment
Applicant(s):	Richardson Estates of Dover, LLC
Owner(s):	Richardson Estates of Dover, LLC (141 Sixth St.) and Mohamed & Lisa Hamcha (5 Dowaliby Ct.)
Location:	141 Sixth St. (Map 35, Lot 64) and 5 Dowaliby Ct. (Map 35, Lot 72)
Meeting Date:	Tuesday, September 24, 2024

INTENT: Proposal is to revise the lot lines between abutting properties located at 141 Sixth St. (Map 35, Lot 64) and 5 Dowaliby Ct. (Map 35, Lot 72) adding approximately 39,496 s.f. from 5 Dowaliby Ct. to 141 Sixth St.

LOTS/UNITS PROPOSED: N/A

AGENDA ITEM #: 4-B

FILE: LOTA-2024-0011

SQUARE FOOTAGE:

	Existing/Proposed
141 Sixth St.	= 123,921 / 163,417 s.f.
5 Dowaliby Ct.	= 53,707 / 14,211 s.f.

ZONING DISTRICT: R-12

EXISTING USE: Residential

PROPOSED USE: Residential, No Change

SURROUNDING: Residential

ZBA ACTION: N/A

ATTACHMENTS: Application, Lot Line Adjustment Plan

APPLICATION IS COMPLETE: Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail for this meeting.

PERMITS / WAIVERS REQUIRED:
N/A

Summary of Request and Background
The applicant is submitting a proposed lot line adjustment to revise the lines between their parcel, 141 Sixth St. (Map 35, Lot 64), and their neighbor's parcel, 5 Dowaliby Ct. (Map 35, Lot 72), with the intent of adding approximately 39,496 s.f. from 5 Dowaliby Ct. to 141 Sixth St.

Each lot's frontage and compliance with the underlying R-12 zoning regulations will remain the same.

As a Lot Line Adjustment, this application did not appear before the TRC.

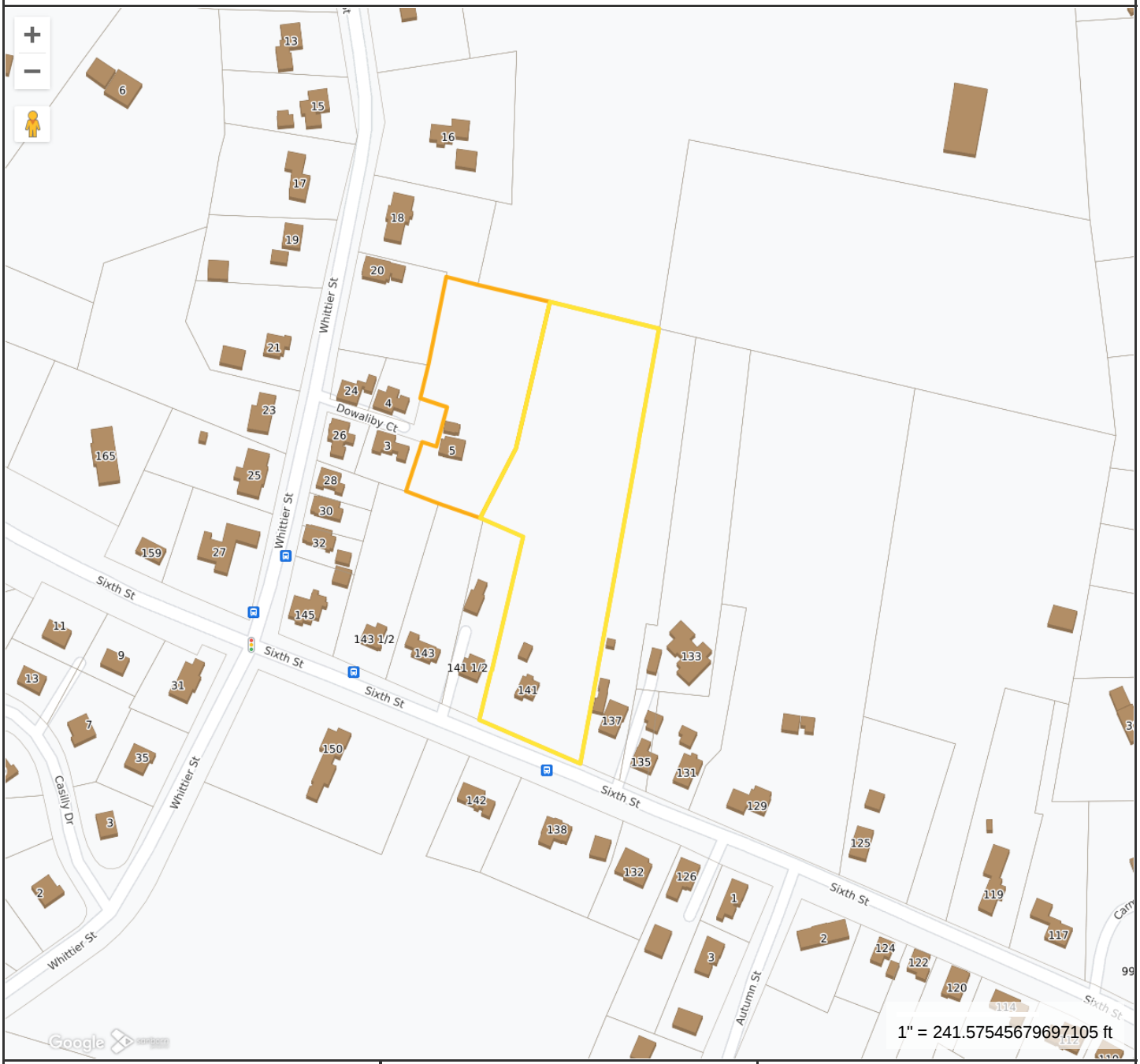
The post-adjustment area of the vacant lot on 141 Sixth St. would be 163,417 s.f. +/- sq. ft. and 5 Dowaliby Ct. would be 14,211 +/- sq. ft. if the lot line adjustment is approved.

Consistency with Land Use Regulations
§157-17 of the Land Subdivision Regulations of the City Code provides for the adjustment of existing lot lines between two or more lots. This plan is consistent with those regulations.

STAFF RECOMMENDATION:
The Planning Department recommends the Planning Board accept the application, open the public hearing, make findings, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of Plans:
1. Provide physical and digital copies (including CAD) of complete plan set for recording at Strafford County Registry of Deeds which additionally shall include:
   a. Planning File Number #LOTA-2024-0011
   b. The owner's signatures
   c. The LLS stamp and signature

LOTA-2024-0011 141 Sixth Street & 5 Dowaliby Court



Property Information

Location	141 SIXTH ST
Owner	RICHARDSON ESTATES OF DOVER LLC
Land Use	
Zoning Code	R-12
Property Id	35064-000000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

LOTA-2024-0011 **141 Sixth Street & 5 Dowaliby Court**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
34019-000000	138 SIXTH ST	RINEHART JACKSON		138 SIXTH ST	DOVER	NH	03820
34019-001000	132 SIXTH ST	O CONNOR JEFFREY M &	O CONNOR RENEA A	132 SIXTH ST	DOVER	NH	03820
34019-A00000	142 SIXTH ST	ROY ADAM T &	ROY KELSEY R	142 SIXTH ST	DOVER	NH	03820
34020-000000	SIXTH ST	LALIBERTE JOAN M TRUSTEE & EGAN CORNELIA	EGAN MICHAEL	150 SIXTH ST	DOVER	NH	04820
34020-A00000	150 SIXTH ST	EGAN CORNELIA M TRUSTEE	EGAN FAMILY REVOCABLE TRUST	150 SIXTH ST	DOVER	NH	03820
35060-000000	131 SIXTH ST	GALLOWAY-BURKE ABIGAIL CATHERINE	MUIRHEAD KEVIN ROBERT	131 SIXTH ST	DOVER	NH	03820
35060-A00000	133 SIXTH ST	COTE ROBERT H &	COTE JILLIAN K	133 SIXTH ST	DOVER	NH	03820
35061-000000	129 SIXTH ST	GRAY PAMALA	GRAY WALLACE	129 SIXTH STREET	DOVER	NH	03820
35062-000000	135 SIXTH ST	COTE ROBERT H JR &	COTE JILLIAN K	133 SIXTH ST	DOVER	NH	03820
35063-000000	137 SIXTH ST	RUEL FAMILY REVOCABLE TRUST	RUEL GEORGE A AND JACQUELINE L TRUSTEES	137 SIXTH STREET	DOVER	NH	03820
35065-000000	141 1/2 SIXTH ST	TOMFORDE CHAD G &	COLBY CARRIE L	141 1/2 SIXTH ST	DOVER	NH	03820-2644
35066-000000	143 SIXTH ST	FORD DAVID &	STRACUZZI NENA	143 SIXTH ST	DOVER	NH	03820
35067-000000	143 1/2 SIXTH ST	WONG ANDREW &	GOLIA JENNIFER A	143 1/2 SIXTH ST	DOVER	NH	03820
35068-000000	145 1-3 SIXTH ST	GOLICK ALAN L &	THOMPSON LISA K	136 OLDFIELDS RD	SOUTH BERWICK	ME	03908-1725
35069-000000	32 WHITTIER ST	COLGAN CAROL M		32 WHITTIER ST	DOVER	NH	03820
35070-000000	30 WHITTIER ST	FRYE SHANNA		30 WHITTIER ST	DOVER	NH	03820
35071-000000	28 WHITTIER ST	DANOWSKI JOHN D		14243 N 25TH AVE	PHOENIX	AZ	85023-5908
35072-A00000	24 WHITTIER ST	HIBSCHWEILER RITA A TRUSTEE	HIBSCHWEILER RITA A REVOCABLE LIVING TRU	24 WHITTIER ST	DOVER	NH	03820-2634
35072-B00000	26 WHITTIER ST	MA AMY & ALLEN GAHEIN &	MA HENRY GAHGATE	26 WHITTER ST	DOVER	NH	03820
35072-C00000	3 DOWALIBY CT	GAULIN ROBERT MARK TRUSTEE	THE ROBERT MARK GAULIN REV LIV TRUST	3 DOWALIBY CT	DOVER	NH	03820
35072-D00000	4 DOWALIBY CT	ROSE REALTY LLC		101 MILL ROAD	DURHAM	NH	03824
35073-000000	20 WHITTIER ST	FIELD KEIRSTAN	ENTRIKEN ANDREW	20 WHITTIER ST	DOVER	NH	03820
36022-000000	16 WHITTIER ST	LEWIS DOROTHY TRUSTEE	LEWIS ROBERT AND DOROTHY REVOCABLE LIVIN	16 WHITTIER ST	DOVER	NH	03820
36022-E00000	18 WHITTIER ST	BRENNAN BERNARD C		18 WHITTIER STREET	DOVER	NH	03820
36023-000000	SIXTH ST	SNIPER HOLDINGS LLC		35 BROADWAY	DOVER	NH	03820
36024-000000	HILLCREST DR	SNIPER HOLDINGS LLC		35 BROADWAY	DOVER	NH	03820
E0072-000000	21 WHITTIER ST	WARNOCK RUSSELL D &	WARNOCK AMY E	21 WHITTIER ST	DOVER	NH	03820
E0072-001000	23 WHITTIER ST	ST PETER SARAH &	JONES RUSSELL	23 WHITTIER ST	DOVER	NH	03820
E0072-A00000	17 WHITTIER ST	HASTINGS NATHANIEL M &	HASTINGS JENNIFER K	17 WHITTIER ST	DOVER	NH	03820
E0072-C00000	19 WHITTIER ST	COUTURE NANCY C &	COUTURE ALAN P	19 WHITTIER STREET	DOVER	NH	03820
35064-000000	141 SIXTH ST	RICHARDSON ESTATES OF DOVER LLC		688 CALEF HIGHWAY	BARRINTON	NH	03825
35072-000000	5 DOWALIBY CT	HAMCHA MOHAMED &	HAMCHA LISA K	5 DOWALIBY CT	DOVER	NH	03820
		BERRY SURVEYING & ENGINEERING	CHRIS BERRY	335 SECOND CROWN	BARRINTON	NH	03825

WHITTIER STREET

DOWALIBY COURT (PAVED CLASS V)

SIXTH STREET (PAVED CLASS V)

1" IRON PIPE IN CONCRETE ~FND~ (UP 0.4')

UP EVERSOURCE 67/11

1/2" REBAR ~FND~ (FLUSH)

1/2" REBAR ~FND~ (DOWN 0.1')

N/F THE ROBERT MARK GAULIN REVOCABLE LIVING TRUST
GAULIN, ROBERT MARK, TRUSTEE
3 DOWALIBY COURT
DOVER, NH 03820
TAX MAP 35, LOT 72-C
S.C.R.D. BOOK 5079, PAGE 858

N/F FIELD, KEIRSTAN & ENTRIKEN, ANDREW
20 WHITTIER STREET
DOVER, NH 03820
TAX MAP 35, LOT 73
S.C.R.D. BOOK 5123, PAGE 723

N/F NAVISH, SEAN & CHRISTIN
4 DOWALIBY COURT
DOVER, NH 03820
TAX MAP 35, LOT 72-D
S.C.R.D. BOOK 4603, PAGE 752
SEE PLAN REFERENCE # 2

UP PSNH 67/11A W/GUY WIRE & 1/2" REBAR ~FND~ (UP 0.7') HELD

1" IRON PIPE IN CONCRETE ~FND~ (UP 0.7')

EXISTING WIRE FENCE

1/2" IRON BOUND ~FND~ (UP 0.6') HELD LOCATED BASE

EXISTING CHAIRLINK FENCE

IRON BOUND ~FND~ LLS 1000 (FLUSH) HELD

N/F BRENNAN, BERNARD C.
18 WHITTIER STREET
DOVER, NH 03820
TAX MAP 36, LOT 22-E
S.C.R.D. BOOK 5126, PAGE 025
SEE PLAN REFERENCE # 1

N/F WONG, ANDREW & GOLIA, JENNIFER A.
143 1/2 SIXTH ST
DOVER, NH 03820
TAX MAP 35, LOT 67
S.C.R.D. BOOK 4799, PAGE 625

1/2" REBAR PIPE ~FND~ (UP 0.7') HELD

N 13°28'09" E 47.97'

N 10°11'17" E 150.44'

3/4" REBAR ~FND~ (UP 4.0') (NOT HELD)

EXISTING CHAINLINK FENCE

N/F LALIBERTE, JOAN M. TRUSTEE & EGAN, CORNELIA, EGAN, MICHAEL
150 SIXTH STREET
DOVER, NH 03820
TAX MAP 34, LOT 20
S.C.R.D. BOOK 4787, PAGE 683

N 17°02'54" E 82.54'

EX. 14' EASEMENT S.C.R.D. BOOK 951, PAGE 235

24.50' S 73°03'05" E

IRON BOUND ~FND~ (UP 0.2')

N 14°28'57" E 65.81'

N 73°29'35" W 44.91'

1/2" IRON BOUND ~FND~ (DOWN 0.3') HELD

52.79' S 78°17'46" E

14.01'

14.00' N 19°04'38" E

56.21' S 70°55'22" E

115.84' S 70°55'22" E

N/F FORD, DAVID & STRACUZZI, NENA
143 SIXTH ST
DOVER, NH 03820
TAX MAP 35, LOT 66
S.C.R.D. BOOK, 3058, PAGE 253

CHICKEN COOP

TAX MAP 35, LOT 72
EXISTING LOT AREA: 53,707 Sq.Ft., 1.23 Ac.
PROPOSED LOT AREA: 14,211 Sq.Ft., 0.33 Ac.

EXISTING GARAGE

EXISTING HOUSE

AREA TO BE TRANFERRED FROM TAX MAP 35, LOT 72 TO TAX MAP 35, LOT 64
AREA: 39,496 Sq.Ft., 0.91 Ac.

29.92' S 71°00'18" E

PROPOSED PROPERTY LINE

1" IRON PIPE ~FND~ (UP 0.7') NOT HELD

1 1/2" IRON PIPE ~FND~ (UP 1.9') HELD

HELD PER PLAN REFERENCE #4

10.07' N 70°55'22" W

1 1/2" IRON PIPE IN CONCRETE ~FND~ (UP 2.9') HELD

UP PSNH 36

5/8" IRON PIPE ~FND~ (DOWN 0.8')

299.98'

58.93' S 48°19'53" E

EXISTING GAZEBO

118.83' S 76°25'22" E

N/F ROY, ADAM T. & KELSEY R.
142 SIXTH STREET
DOVER, NH 03820
TAX MAP 34, LOT 19-A
S.C.R.D. BOOK 4693, PAGE 263

EXISTING DRIVEWAY

N/F TOMFORDE, CHAD G. & COLBY, CARRIE L.
141 1/2 SIXTH STREET
DOVER, NH 03820-2644
TAX MAP 35, LOT 65
S.C.R.D. BOOK 3783, PAGE 165

74.87'

EXISTING BUILDING (TYP)

N26°26'11"E 126.53'

127.32' S 12°12'46" W

PROPERTY LINE TO BE ABANDONED

N12°19'05"E 238.73'

N/F SNIPER HOLDINGS, LLC
35 BROADWAY
DOVER, NH 03820
TAX MAP 36, LOT 24
S.C.R.D. BOOK 4903, PAGE 386
SEE PLAN REFERENCE # 4

EXISTING SHED TO BE RELOCATED

1" IRON BOUND ~FND~ (DOWN 1.1') HELD

N 12°19'22" E 299.86'

1" IRON PIPE ~FND~ (DOWN 1.1') HELD

N 67°29'41" W 74.79'

1" IRON PIPE ~FND~ (DOWN 0.1') N259288.6139 E1191669.9015 ELEV. 127.75

EXISTING SIDEWALK

24.74' N 67°18'40" W

IRON BOUND LLS 661 ~FND~ (UP 0.2')

HELD PER PLAN REFERENCE #4

UP PSNH 5/35

EXISTING DRIVEWAY

DEED TRACT LINE (TYP.)

EXISTING DRIVEWAY

EXISTING GARAGE

5/8" IRON BOUND ~FND~ (UP 0.8')

1.5" IRON PIPE ~FND~ (DOWN 1.5') HELD

N 67°54'50" W 150.07'

180.00' S 76°49'53" E

EXISTING HOUSE

N/F RINEHART, JACKSON
138 SIXTH STREET
DOVER, NH 03820
TAX MAP 34, LOT 19
S.C.R.D. BOOK 5106, PAGE 997

TAX MAP 35, LOT 64
EXISTING LOT AREA: 123,954 Sq.Ft., 2.85 Ac.
PROPOSED LOT AREA: 159,488Sq.Ft., 3.66 Ac.

7"x9" GRANITE POST ~FND~ (UP 0.6') NOT HELD

EXISTING SHED

BUILDING SETBACK LINES (TYP.)

UP EVERSOURCE 5/34

S 09°25'57" W 316.45'

386.19' (DEED = 388±) S 09°29'26" W

5/8" IRON PIPE ~FND~ (DOWN 0.1') HELD N258554.5317 E1191729.6290 ELEV. 121.06

EXISTING DRIVEWAY

N/F RUEL FAMILY REV. TRUST
RUEL, GEORGE A. & JACQUELINE L. TRUSTEES
137 SIXTH STREET
DOVER, NH 03820
TAX MAP 35, LOT 63
S.C.R.D. BOOK 2545, PAGE 750

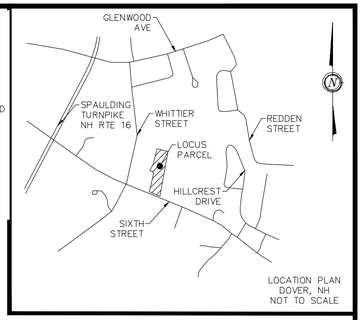
N/F SNIPER HOLDINGS, LLC
35 BROADWAY
DOVER, NH 03820
TAX MAP 36, LOT 23
S.C.R.D. BOOK 4903, PAGE 386

WETLAND NOTES:

WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN CWS IN JULY OF 2024 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).
4. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE, APRIL 2004, 3RD EDITION NEIWPCC LOWELL, MA.
5. CORPS OF ENGINEERS WETLAND DELINEATION MANUAL JANUARY 1987, WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1
6. CLASSIFICATION OF WETLANDS AND DEEP WATER HABITATS OF THE UNITED STATES, DECEMBER 1979, US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICES. FWS/OBS-79/31

STATE OF NEW HAMPSHIRE
DEIDRA L. BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: RICHARDSON ESTATES OF DOVER LLC
688 CALEF HIGHWAY
BARRINGTON, NH 03825

AUTHORIZED SIGNATURE – DEWAYNE WATSON MANAGING MEMBER

A.) TAX MAP 35, LOT 64
B.) S.C.R.D. BOOK 793, PAGE 418
C.) EXISTING LOT AREA: 123,921 Sq. Ft., 2.85 Ac.
D.) PROPOSED LOT AREA: 163,417 Sq. Ft., 3.75 Ac.

2.) OWNER: MOHAMED & LISA K. HAMCHA
5 DOWALIBY COURT
DOVER, NH 03820

AUTHORIZED SIGNATURE – MOHAMED HAMCHA

AUTHORIZED SIGNATURE – LISA K. HAMCHA

A.) TAX MAP 35, LOT 72
B.) S.C.R.D. BOOK 2717, PAGE 789
C.) EXISTING LOT AREA: 53,707 Sq. Ft., 1.23 Ac.
D.) PROPOSED LOT AREA: 14,211 Sq. Ft., 0.33 Ac.

3.) ZONING: MEDIUM DENSITY RESIDENTIAL (R12) WITH MUNICIPAL WATER AND SEWER
SETBACKS:
FRONT BUILD TO – 15' TO 25'
SIDE – 15'
REAR – 30'
MIN. LOT SIZE: 12,000 Sq.Ft.
MIN. FRONTAGE: 100'
MAX. LOT COVERAGE: 30%

4.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN. FLOOD HAZARD REF.: FEMA, COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

5.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY KENNETH A. BERRY, LLS, BERRY SURVEYING & ENGINEERING, IN MAY & JUNE OF 2024 WITH AN ERROR OF CLOSURE BETTER THAN 1 IN 10,000. HORIZONTAL COORDINATES BASED ON GPS DATA COLLECTED BY CARLSON BRX7 RECEIVERS AND ON NAD83 DATUM. VERTICAL DATUM IS NAVD88.

7.) THE INTENT OF THIS PLAN IS TO SHOW A LOT LINE REVISION BETWEEN TAX MAP 35, LOT 64 AND TAX MAP 35, LOT 72.

8.) BOTH LOTS ARE SERVED BY MUNICIPAL WATER AND SEWER.

9.) SEE EASEMENTS AS NOTED.

10.) NO VARIANCES, SPECIAL EXCEPTIONS, OR CONDITIONAL USES PERMITS REQUIRED FOR THE LINE LINE ADJUSTMENT.

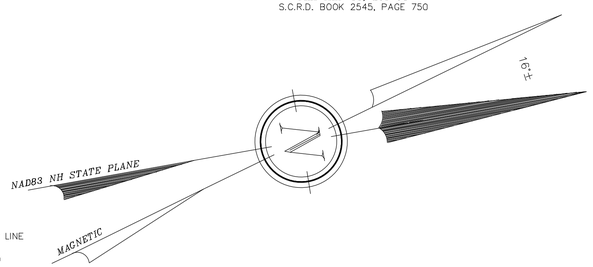
GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LEGEND:

- ● 3/4" REBAR W/ID CAP (TBS)
- ○ IRON BOUND/IRON ROD (FND)
- ○ IRON PIPE (FND)
- ▣ STONE/GRANITE BOUND (FND)
- ⊕ STEEL STAKE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- APPROXIMATE ABUTTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPERTY LINE TO BE ABANDONED
- DEED TRACT LINES
- BUILDING SETBACK LINES
- TYP TYPICAL
- FND FOUND
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS



PLAN REFERENCES:

1.) "LAND OF HERBERT L. & BEATRICE C. LEWIS, 16 WHITTIER STREET, DOVER, N.H." BY: THE BERRY CONST. CO., INC. DATED: DECEMBER 16, 1963 NOT RECORDED, ON FILE AT THIS OFFICE

2.) "DOWALIBY COURT SUBDIVISION" BY: NORMAN G. LECLERC APPROVED: JUNE 18, 1974 S.C.R.D. PLAN #51, POCKET #9, FOLDER #1

3.) "ROW PLAN" BY: NHDOT APPROVED: JUNE 1998 S.C.R.D. PLAN #55-70

4.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR ROBERT AND RUTH MURRAY WEDGEWOOD ROAD & BARTLETT STREET" BY: KEVIN M. MCENEANEY DATED: NOVEMBER 30, 2004 S.C.R.D. PLAN #78-22

5.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR PATRICK MURRAY TAX MAP 35 LOT NO'S 59 & 59A 125 SIXTH STREET" BY: KEVIN M. MCENEANEY DATED: OCTOBER 24, 2013 S.C.R.D. PLAN #106-81

APPROVED DOVER

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER – 1:10,000 –

9-3-24

KENNETH A. BERRY LLS 805 DATE

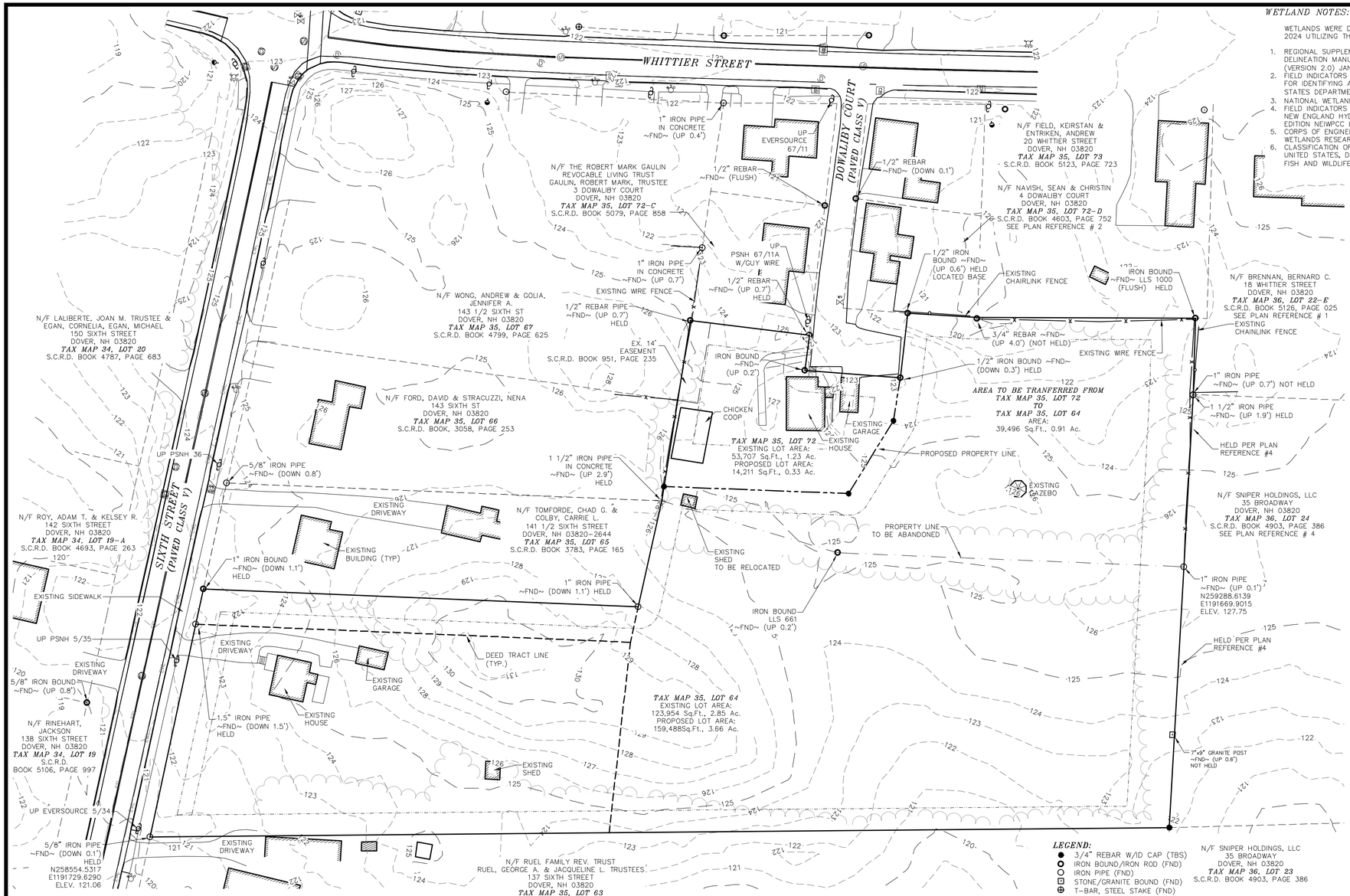
STATE OF NEW HAMPSHIRE NO. 805 KENNETH A. BERRY LICENSED LAND SURVEYOR SIGNATURE

REVISION	DATE	DESCRIPTION
		DOVER PLANNING FILE #

LOT LINE REVISION
LAND OF
RICHARDSON ESTATES OF DOVER LLC
141 SIXTH STREET, DOVER, N.H.
TAX MAP 35, LOT 64
AND
MOHAMED & LISA K. HAMCHA
5 DOWALIBY COURT, DOVER, N.H.
TAX MAP 35, LOT 72

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : SEPTEMBER 3, 2024
FILE NO. : DB 2024 – 018

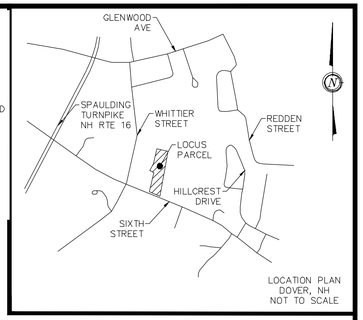


WETLAND NOTES:

WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN CWS IN JULY OF 2024 UTILIZING THE FOLLOWING STANDARDS:

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).
4. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE, APRIL 2004, 3RD EDITION NEIWPCC LOWELL, MA.
5. CORPS OF ENGINEERS WETLAND DELINEATION MANUAL JANUARY 1987, WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1
6. CLASSIFICATION OF WETLANDS AND DEEP WATER HABITATS OF THE UNITED STATES, DECEMBER 1979, US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICES. FWS/OBS-79/31

STATE OF NEW HAMPSHIRE
DEIDRA L. BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: RICHARDSON ESTATES OF DOVER LLC
688 CALEF HIGHWAY
BARRINGTON, NH 03825

AUTHORIZED SIGNATURE – DEWAYNE WATSON MANAGING MEMBER

A.) TAX MAP 35, LOT 64
B.) S.C.R.D. BOOK 793, PAGE 418
C.) EXISTING LOT AREA: 123,921 Sq. Ft., 2.85 Ac.
D.) PROPOSED LOT AREA: 163,417 Sq. Ft., 3.75 Ac.

2.) OWNER: MOHAMED & LISA K. HAMCHA
5 DOWALIBY COURT
DOVER, NH 03820

AUTHORIZED SIGNATURE – MOHAMED HAMCHA

AUTHORIZED SIGNATURE – LISA K. HAMCHA

A.) TAX MAP 35, LOT 72
B.) S.C.R.D. BOOK 2717, PAGE 789
C.) EXISTING LOT AREA: 53,707 Sq. Ft., 1.23 Ac.
D.) PROPOSED LOT AREA: 14,211 Sq. Ft., 0.33 Ac.

3.) ZONING: MEDIUM DENSITY RESIDENTIAL (R12) WITH MUNICIPAL WATER AND SEWER
SETBACKS:
FRONT BUILD TO – 15' TO 25'
SIDE – 15'
REAR – 30'
MIN. LOT SIZE: 12,000 Sq.Ft.
MIN. FRONTAGE: 100'
MAX. LOT COVERAGE: 30%

4.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN. FLOOD HAZARD REF.: FEMA, COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

5.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY KENNETH A. BERRY, LLS, BERRY SURVEYING & ENGINEERING, IN MAY & JUNE OF 2024 WITH AN ERROR OF CLOSURE BETTER THAN 1 IN 10,000. HORIZONTAL COORDINATES BASED ON GPS DATA COLLECTED BY CARLSON BRX7 RECEIVERS AND ON NAD83 DATUM. VERTICAL DATUM IS NAVD88.

7.) THE INTENT OF THIS PLAN IS TO SHOW A LOT LINE REVISION BETWEEN TAX MAP 35, LOT 64 AND TAX MAP 35, LOT 72.

8.) BOTH LOTS ARE SERVED BY MUNICIPAL WATER AND SEWER.

9.) SEE EASEMENTS AS NOTED.

10.) NO VARIANCES, SPECIAL EXCEPTIONS, OR CONDITIONAL USES PERMITS REQUIRED FOR THE LINE LINE ADJUSTMENT.

GRAPHIC SCALE

40 0 20 40 80 160

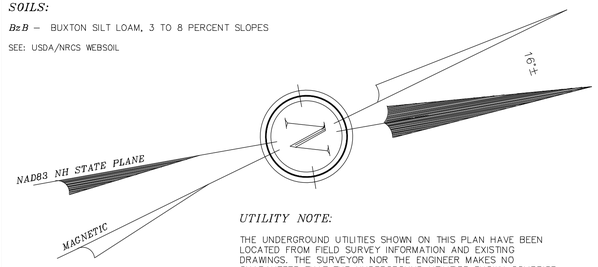
(IN FEET)
1 inch = 40 ft.

TOPOGRAPHY

SOILS:

BxB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES

SEE: USDA/NRCS WEBSOIL



UTILITY NOTE:

THE UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR NOR THE ENGINEER MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.

PLAN REFERENCES:

1.) "LAND OF HERBERT L. & BEATRICE C. LEWIS, 16 WHITTIER STREET, DOVER, N.H." BY: THE BERRY CONST. CO., INC. DATED: DECEMBER 16, 1963 NOT RECORDED, ON FILE AT THIS OFFICE

2.) "DOWALIBY COURT SUBDIVISION" BY: NORMAN G. LECLERC APPROVED: JUNE 18, 1974 S.C.R.D. PLAN #51, POCKET #9, FOLDER #1

3.) "ROW PLAN" BY: NHDOT APPROVED: JUNE 1998 S.C.R.D. PLAN #55-70

4.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR ROBERT AND RUTH MURRAY WEDGEWOOD ROAD & BARTLETT STREET" BY: KEVIN M. MCENEANEY DATED: NOVEMBER 30, 2004 S.C.R.D. PLAN #78-22

5.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR PATRICK MURRAY TAX MAP 35 LOT NO'S 59 & 59A 125 SIXTH STREET" BY: KEVIN M. MCENEANEY DATED: OCTOBER 24, 2013 S.C.R.D. PLAN #106-81

LEGEND:

- 3/4" REBAR W/ID CAP (TBS)
- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- STONE/GRANITE BOUND (FND)
- T-BAR, STEEL STAKE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- DRAIN MANHOLE
- SEWER MANHOLE

- PROPOSED PROPERTY LINES
- PROPERTY LINE TO BE ABANDONED
- DEED TRACT LINES
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR

FND FOUND
TYP TYPICAL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

APPROVED DOVER

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER – 1:10,000 –

9-3-24

KENNETH A. BERRY LLS 805 DATE

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
LICENSED LAND SURVEYOR
SIGNATURE

REVISION	DATE	DESCRIPTION
		DOVER PLANNING FILE #

LOT LINE REVISION
LAND OF
RICHARDSON ESTATES OF DOVER LLC
141 SIXTH STREET, DOVER, N.H.
TAX MAP 35, LOT 64
AND
MOHAMED & LISA K. HAMCHA
5 DOWALIBY COURT, DOVER, N.H.
TAX MAP 35, LOT 72

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : SEPTEMBER 3, 2024
FILE NO. : DB 2024 – 018

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0025

Application Type:	Conditional Use Permit
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Meeting Date:	September 24, 2024

INTENT: Proposal is for a Conditional Use Permit (CUP) to construct a 75' wide extension of Crosby Road that would result in 4,861 square feet of wetland buffer impact.

AGENDA ITEM #: 4-C

FILE: COND-2024-0025

APPLICANT/OWNER: Del Sol Dover, LLC

LOCATION: Crosby Road (Assessor's Map G, Lot 2-1)

LOTS/UNITS PROPOSED: Two (2) new lots and one (1) existing lot as part of a related minor subdivision.

ACREAGE: 20.80± acres before subdivision, proposed acreage following subdivision:
Assessor's Map G, Lot 2-1B (Lot 1) = 362,325± s.f. (8.32± acres)
Assessor's Map G, Lot 2-1 (Lot 2) = 267,845± s.f. (6.15± acres)
Assessor's Map G, Lot 2-1A (Lot 3) = 219,168± s.f. (5.03± acres)

ZONING DISTRICT: CM

EXISTING USE: Vacant

PROPOSED USE: Commercial, Warehouse

SURROUNDING USE: Commercial, Industrial Park

PERMITS: Two (2) City of Dover CUPs, NHDES Alteration of Terrain

WAIVERS REQUESTED: §153-13A(12), Landscape Plan prepared by LLA
§153-13A(17), Streetscape Renderings
§153-14K(1)(b), Parking Location

ZBA ACTION: None.

CONSERVATION COMMISSION: Reviewed and endorsed on 9/9/24.

TRC: Reviewed on 8/29/24.

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background
The applicant is proposing to construct a 75' wide extension of Crosby Road as part of a three-lot subdivision and site plan for the subject property. The applicant's intent is that, when completed, the proposed extension will be accepted by the City of Dover as a public right-of-way.

The proposed roadway will create 4,861± square feet of permanent impact to the wetland buffer. There are no impacts to the wetlands.

The applicant has also applied for an NHDES Alteration of Terrain permit for this project.

The Technical Review Committee reviewed the related applications at their August 29, 2024 meeting. *(minutes attached)*

The Conservation Commission reviewed and endorsed the application at their September 9, 2024 meeting. *(minutes attached)*

Consistency with Land Use Regulations – CUP 170.27.1.F
The Wetlands Protection District ordinance §170.27.1.F provides for Conditional Use Permits to allow impacts to the Wetlands Protection District if standards related to demonstration that no practicable alternative is available, impact avoidance was considered, impacts were minimized, mitigation has been sought, and approval of the wetlands impact from NHDES Wetlands Bureau has been granted.

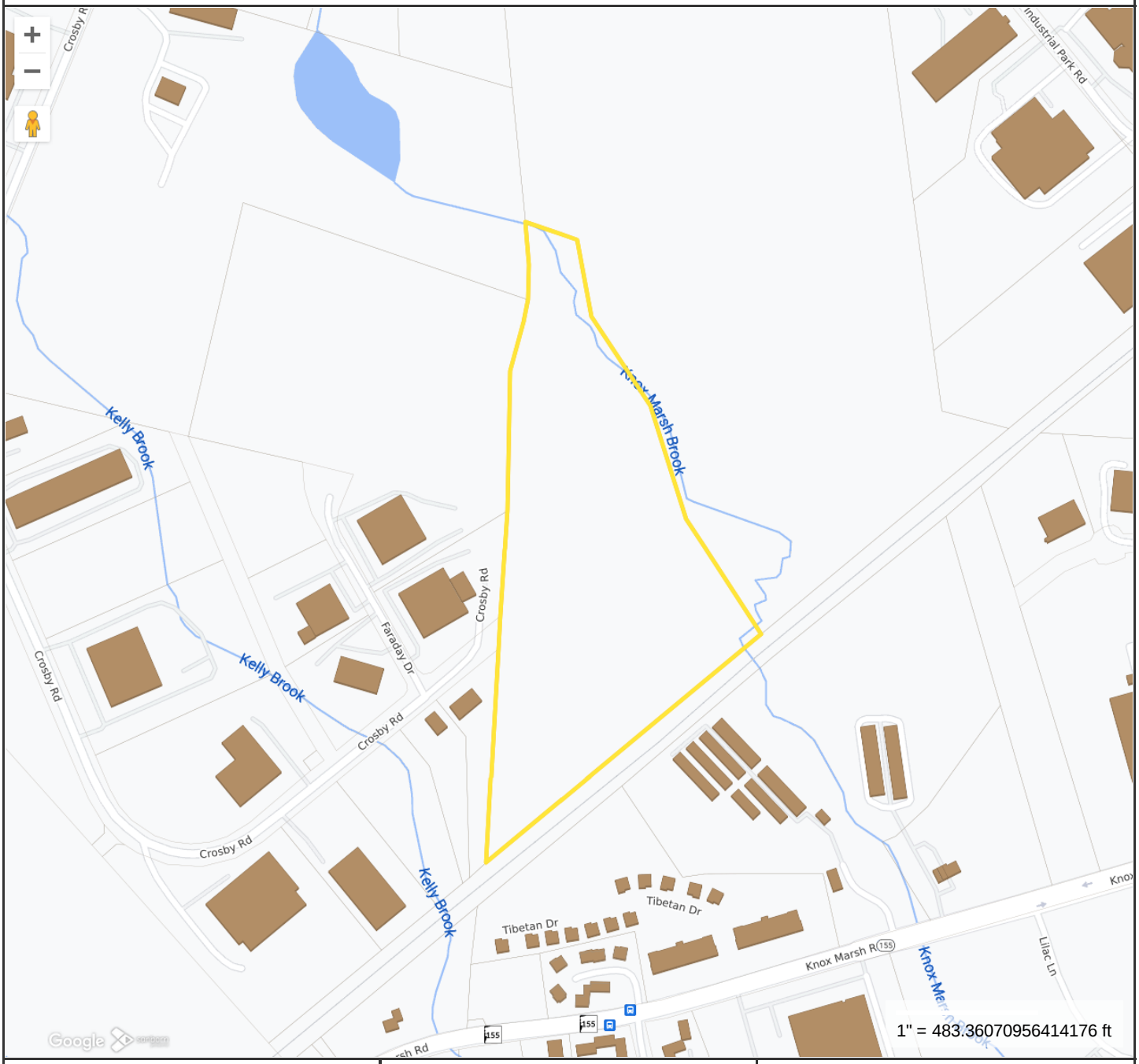
Planning Staff feels that the applicant considered and met all of the criteria as specified in §170-27.1.F per their narrative. The roadway as proposed minimizes wetland buffer impacts and avoids wetland impacts with buffer impacts related to grading, drainage, and design for emergency vehicle maneuvering. The proposed project does not require state mitigation, the applicant has applied for an NHDES Alteration of Terrain permit, and the project has been reviewed and endorsed by the Conservation Commission.

STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:
1. Approval of COND-2024-0026;
2. Approval of SUBM-2024-0003;
3. Approval of SITE-2024-0010;
4. Copies of the NHDES Alteration of Terrain submitted to the Planning Department.

COND-2024-0025 Crosby Road



Property Information

Location	LITTLEWORTH RD
Owner	DEL SOL DOVER LLC
Land Use	
Zoning Code	CM
Property Id	G0002-001000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PERMIT SNAPSHOT REPORT COND-2024-0025
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/06/2024
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	Fees Paid	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Wetland Buffer Impact (4861 sf) for construction of extension to Crosby Road.

Parcel:	**Address:**	**Zone:**
G0002-001000 Main	Littleworth Road Main Dover, NH 03820	CM(Non-Residential - Commercial Manuf

Plan Preparer
Stephen Haight
Business: (603) 749-0443

Surveyor
Kevin McEneaney
Business: (603) 742-0911

Owner
Chad Kageleiry
Business: (603) 749-2800

Wetlands Scientist
Bruce Gilday
Business: (603) 228-5775

Applicant
Civilworks New England
Steve Haight
181 Watson Road PO Box 1166
Dover, NH 03820
Business: (603) 749-0443
Mobile: (603) 817-6651

Permit Custom Fields

Select Permit Type	Wetland Protection District	General Purpose	New Construction	Project Zone	Non-Residential
What is the parcel zoned?	CM	New Change in Impervious/Paved Area (sq ft)	20818	Work	Construction of road extension to impact wetland buffer (4861 sf).
permitstatefed					

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Steve_Haight_8/6/2024.jpg	08/06/2024 12:51	Haight, Steve		Uploaded via CSS
Permit Snapshot Report.pdf	08/06/2024 12:52	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008885	Planning Impervious Paved Area Fee	$1,457.26	$1,457.26
	Planning General Application Fee	$200.00	$200.00
	Total for Invoice INV-00008885	$1,657.26	$1,657.26
	Grand Total for Permit	**$1,657.26**	**$1,657.26**

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	In Review	08/07/2024	09/04/2024		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	In Review	08/07/2024	09/04/2024	

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/07/2024 14:29	
Confirm application complete v.1	Generic Action		08/07/2024 14:30
Conditional Use Review v.1	Receive Submittal	08/07/2024 0:00	
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		

PERMIT SNAPSHOT REPORT (COND-2024-0025)

Planner Creates Staff Recommendations v.1	Permit Activity
Distribute Planning Board Materials v.1	Task
Planning Board Hearing v.1	Hold Hearing
Planning Board Decision v.1	Permit Activity
NOD Sent to Applicant v.1	Create Report
Issue Permit v.1	
Verify Fees Prior to Permit v.1	Generic Action
Issue and Review Permit v.1	Generic Action
Print and Email Permit v.1	Generic Action
Plans uploaded to Treeno v.1	Generic Action
Internal Notification of Plan Completion v.1	Generic Action
Recording v.1	Task

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Del Sol Dover, LLC Telephone # 603-749-2800

Address of Applicant: 340 Central Avenue, Suite 202 Dover, NH 03820

E-Mail Address: chad@summitlanddev.com

Name of Property Owner (if different from applicant): N/A Telephone #

Address of Property Owner:

PROPERTY INFORMATION

Assessor's Map # G Lot(s) # 2-1

Address of Property: Crosby Road

Zoning District(s) CM Overlay District(s) None

Existing Use of Property: Vacant, Industrial Park

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

To construct a 75' wide extension of Crosby Road that would result in 4,861 s.f. of wetland buffer impact. No wetlands will be disturbed.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: None

Name of Professional That Prepared Plans: Kevin McEneaney - McEneaney Survey Associates
Stehpen J. Haight, PE - Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH LLS #661
NH PE #7978 E-mail address: kevin@surveynh.com
shaight@civilworksne.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/5/24

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/5/24

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
G	2-1	Del Sol Dover, LLC	340 Central Avenue, Suite 202 Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, PE	Civilworks New England	P.O. Box 1166 Dover, NH 03821
Kevin McEneaney, LLS	McEneaney Survey Associates	P.O. Box 1166 Dover, NH 03821
Bruce A. Gilday, CWS	BAG Land Consultants	43 Rockingham Street Concord, NH 03301

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

DEL SOL DOVER, LLC
340 Central Avenue, Suite 202
Dover, New Hampshire 03820

August 5, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Re: Minor Subdivision (3 Lots)
Tax Map G, Lot 2-1, Crosby Road Extension
Dover, New Hampshire

LETTER OF AUTHORIZATION

As Owner and Applicant for the above referenced project, I hereby authorize Civilworks New England and McEneaney Survey Associates to represent Del Sol Dover, LLC to the State of New Hampshire, the City of Dover Planning Board and any other Dover Boards or Committees relative to the pursuit of permits for the development of the subject parcel.

Respectfully,

Charles P. Kageleiry, Manager
DEL SOL DOVER, LLC

COND-2024-0025 **LITTLEWORTH ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
G0001-C00001	CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00002	207 CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00003	211 CROSBY RD	COLBATH WILLIAM C TRUSTEE	COLBATH FAMILY REVOCABLE TRUST 2010	211 CROSBY RD	DOVER	NH	03820
G0001-E00000	5 FARADAY DR	VIRTUOUS REALTY LLC	C/O TURBOCAM INC	607 CALEF HIGHWAY #200	BARRINGTON	NH	03825-7237
G0001-L00000	15 FARADAY DR	CHAUVIN ARNOUX INC		15 FARADAY DR	DOVER	NH	03820
G0002-000000	LITTLEWORTH RD	WESTFIELD LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
G0005-000000	LITTLEWORTH RD	BOSTON & MAINE RR	IRON HORSE PARK	500 WATER STREET J-910	JACKSONVILLE	FL	32202
G0031-001000	50 52 CROSBY RD	MCGUIRE GROUP LLC		PO BOX 988	DOVER	NH	03821
H0036-B00001	221 KNOX MARSH RD	NSA OPTIVEST ACQUISITION HOLDINGS LLC		24901 DANA PT HARBOR DR #200	DANA POINT	CA	92629
H0037-A00000	239 KNOX MARSH RD	239 KNOX MARSH REALTY LLC		PO BOX 720	MIDDLETON	MA	01949
H0038-000000	289 KNOX MARSH RD	CRAGIN PATRICK J TRUSTEE	CRAGIN PATRICK J LIVING REV TRUST	PO BOX 250	DOVER	NH	03820
G0002-001000	LITTLEWORTH RD	DEL SOL DOVER LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
		CIVILWORKS NEW ENGLAND	STEVE HAIGHT	P.O. BOX 1166	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES	KEVIN MCENEANEY	P.O. BOX 1166	DOVER	NH	03820

CITY OF DOVER

DOVER CONSERVATION COMMISSION – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	City Council Conference Room - 288 Central Avenue, Dover, NH
Meeting Date:	Monday, September 9, 2024
Meeting Time:	**5:30 pm**

MEMBERS PRESENT: Steve Fellows (Vice Chair), Kristen Murphy, Brianna Group, Abigail Lyon, Russ Warnock (Alternate)
Absent (Excused):, Bill Hunt (Chair), Robert Atwood (Secretary)
Absent (Unexcused): Jake Geddes
STAFF PRESENT: Jackson Kaspari – Resilience Manager
OTHERS PRESENT: Councilor Williams, Steve Haight, Chad Kageleiry, Sam Hayden, Sarah Large

1. CALL TO ORDER AND ROLL CALL
The meeting was convened at 5:30 PM.

2. CITIZENS' FORUM
The Chair gave instructions for Citizens' forum
None

3. APPROVAL OF THE PRIOR MEETING MINUTES- August 12, 2024
K. Murphy moved to approve the minutes of August 12 as submitted. B. Group seconded. Vote: All in favor with A. Lyon abstaining

4. OLD BUSINESS:
None

5. NEW BUSINESS:
A. City of Dover Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at the end of Crosby Road. Proposal is to create a three-lot subdivision which will be accessed from an extension of Crosby Road with associated drainage and grading creating 4,861 square feet of permanent impact to the 50-foot wetland buffer.

S. Haight, CivilWorks and C. Kageleiry, owner represented the item and explained the proposal including location of property, wetland buffers and impacts, road and right-of-way extensions.

They, along with staff, clarified information to the commission relating to wetlands, no vernal pools on the site, open space audit criteria, and deed- restricted area being transferred to Fish and Game.

R. Warnock moved to endorse the proposal with the condition that a note be added to the plans indicating the date of the most recent wetlands delineation. A. Lyon seconded. Vote: All in favor

B. City of Dover Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at the end of Crosby Road. Proposal is to construct a 9,600 square foot warehouse building with associated parking and utility and drainage improvements creating 786.5 square feet of permanent impact to the 50-foot wetland buffer.

S. Haight, CivilWorks and C. Kageleiry, owner represented the item and explained the proposal including site description, plans for the site, stormwater details, and wetland buffer impacts.

DRAFT

They, along with staff, clarified information to the committee relating to containment of stored materials, monitoring wells, signage for wetlands, storm water management, planned vegetation, and snow removal.

Discussion with comission member and J. Kaspari regarding progress on the Plantings list- selecting for particular areas.

K. Murphy moved to endorse the proposal as presented. B. Group seconded. Vote: All in favor

C. NHDES Standard Dredge and Fill Wetlands Permit for Jenny L. Lang, Assessor's Map L, Lot 95-1L, zoned R-20, located at 15 Landing Way. Proposal is to construct a tidal docking structure consisting of a 4' x 24' accessway, a 4' x 120' fixed wood pier, a 3' x 40' gangway and a 10' x 30' float totaling 96 square feet of permanent impact to the previously developed 100' Tidal Buffer Zone and 900 square feet of permanent impact to tidal wetlands

Sam Hayden (in place of Steve Riker) presented the project for feedback which will be sent to NHDES. No local permit is being sought. He explained the logistics of the construction process and that it's a seasonal structure that is pulled up out of season.

He clarified additional information to the committee.

A. Lyon moved to endorse the proposal as presented. R. Warnock seconded. Vote: All in favor

D. New Meadows Rapid Ecological Assessment
Sarah Large presented the assessment to the committee.

Committee members asked some clarifying questions which were discussed: community trial locations and connectivity, American beech trees/ disease.

E. Additional Volunteer Opportunities – Planning Board and Cocheco River Local Advisory Committee
J. Kaspari noted there are vacancies on these boards and to reach out if anyone is able to join, or spread the word to others who might be interested.

Apple Harvest Day is Oct 5th and the Energy Commission is organizing a sustainability outreach event at City Hall and is looking for engagement from appropriate committees.

F. Conservation and Open Space Chapter Update
J. Kaspari noted the steering committee has reviewed the draft outline for the structure of the chapter and associated materials. Staff review is anticipated for November, then it will come before this commission and then the Planning Board hopefully by December.

Discussion continued about the Natural Resource Inventory

DRAFT

6. REPORT FROM THE CHAIR

A. Review of Correspondence Received from NH Department of Environmental Services

None

7. OTHER BUSINESS

A. Update from Forest Management Subcommittee

Topics discussed:

- Reviewed the findings of the fellow
- Upcoming site walk for forest management and recreational use
- Pocket forest postponed until an opportunity arises
- Land acquisition research

Update on donated tree which was installed.

Discussion about what is the best avenue to continue the work the fellow was doing on urban forestry/ species list. The conversation extended to ongoing grant preparation, plans if granted, and process for how lists are implemented.
Resources from other cities and the county were suggested to review.

8. ADJOURNMENT

A. Lyon moved to adjourn. R. Warnock seconded. Vote: U/A
The meeting was adjourned at 6:52 PM.

DRAFT

CONDITIONAL USE NARRATIVE
§170-27.1
WETLAND PROTECTION DISTRICT
for
DEL SOL DOVER, LLC
Crosby Road Extension (Minor Subdivision)
Tax Map G, Lot 2-1

F. Conditional use approval.

(1) Conditional use approval may be granted by the PLANNING BOARD (RSA 674:21II) after proper public notice and public hearing, for construction within the Wetland Protection District or buffer. Said construction may include but is not limited to a road or other accessway, utility right-of-way, communication lines, power lines and pipelines, STRUCTUREs, and parking LOTs provided that the proposed construction complies with the following standards:

(a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area. **The proposed roadway, side slopes, and bio-retention basin location were chosen to avoid wetland impacts and to minimize wetland buffer impacts. The areas of impervious impact to the wetland buffer were minimized by utilizing the site characteristics including existing slope information to minimize additional side slope impacts.**

(b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative. **There are 4,861 s.f. of wetland buffer impacts associated with the grading and drainage and the roadway extension and emergency vehicle maneuvering for the project. The design incorporates unique site characteristics including existing slope, and soil type to minimize wetland buffer impacts.**

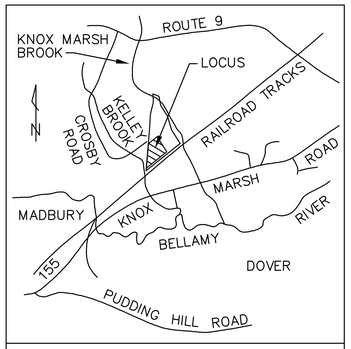
(c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland, or which has less detrimental impact on a wetland. Design, construction, and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade. **There are 4,861 s.f. of wetland buffer impacts for the roadway extension, grading and utilities. All impacts have been minimized to the greatest extent practicable.**

(d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review. **Mitigation is not required.**

(e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below. **A NHDES wetland permit application is not applicable.**

3 LOT MINOR SUBDIVISION
FOR
DEL SOL DOVER, LLC
"CROSBY ROAD EXTENSION"
TAX MAP G, LOT No. 2-1

CROSBY ROAD
DOVER, NH
AUGUST 2024



LOCATION PLAN
(NO SCALE)

OWNER
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

OWNER SIGNATURE

SITE CIVIL ENGINEER
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LAND SURVEYOR
MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 681
24 CHESTNUT STREET
DOVER, NH 03820
(603) 742-0911

WETLAND/SOIL SCIENTIST
BRUCE A. GILDAY, CWS
BAG LAND CONSULTANTS
43 ROCKINGHAM STREET
CONCORD, NH 03301
(603) 228-5775

PERMIT SUMMARY:

1. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:

   ALTERATION OF TERRAIN: PENDING

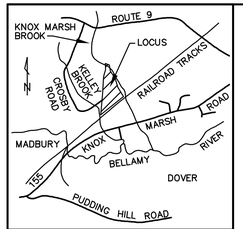
2. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.

   SUBDIVISION: PENDING
   CONDITIONAL USE PERMIT: PENDING

SHEET INDEX	SHEET

COVER SHEET	1
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	2
SUBDIVISION PLAN (BY MCENEANEY SURVEY)	3
TOPOGRAPHIC & SITE SPECIFIC SOILS SUBDIVISION PLAN (BY MCENEANEY SURVEY)	4
NOTE SHEET	5
CROSBY ROAD EXTENSION SITE & UTILITY PLAN	6
CROSBY ROAD EXTENSION PLAN & PROFILE	7
EROSION CONTROL NOTES	8
EROSION CONTROL DETAILS	9-10
DETAILS	11-12

PLANNING FILE NO.: .....



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

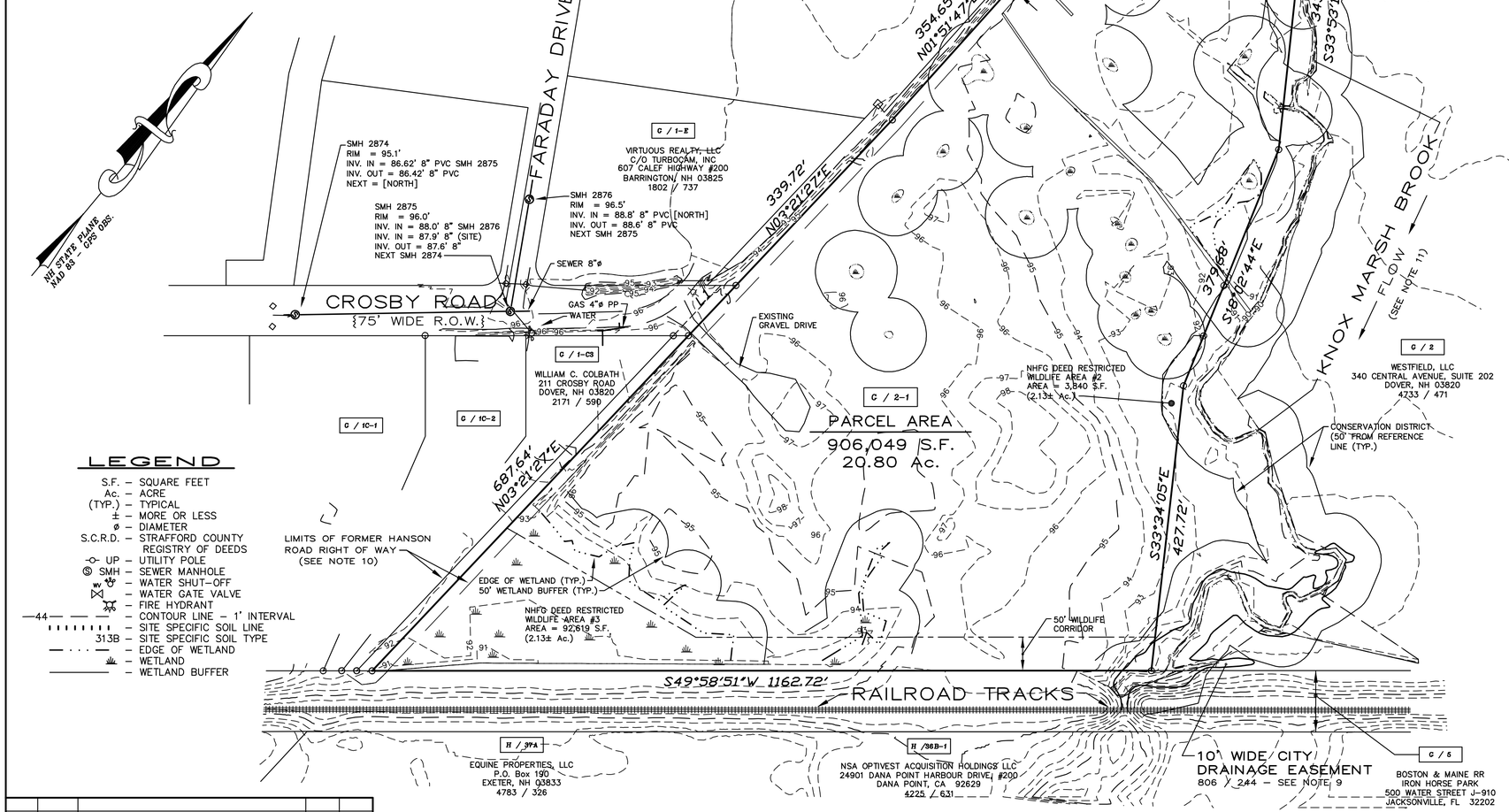
3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.



LEGEND

- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ø – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- SMH – SEWER MANHOLE
- WV – WATER SHUT–OFF
- WATER GATE VALVE
- FIRE HYDRANT
- 44 – CONTOUR LINE – 1' INTERVAL
- SITE SPECIFIC SOIL LINE
- 313B – SITE SPECIFIC SOIL TYPE
- EDGE OF WETLAND
- WETLAND
- WETLAND BUFFER

No.	Bearing	Distance
L1	N03°21'27"E	103.15'
L2	N08°02'33"E	109.95'
L3	N00°50'14"E	84.52'

NOTES:

1.) OWNERS OF RECORD:

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SHOW THE EXISTING SITE CONDITIONS. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL LOT CORNERS AND ANGLE POINTS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

SHEET 2 OF 12

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	EXIST. COND.	
PROJECT NO	TYPE	FIELDBOOK & PAGES

EXISTING CONDITIONS PLAN
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 EC
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

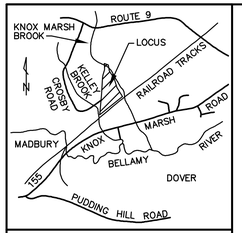
100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE – No. 661 – KEVIN M. McENEANEY – LICENSED LAND SURVEYOR – SIGNATURE

McEneaney Survey Associates
of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:13:09 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 EC 2022-09-19



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

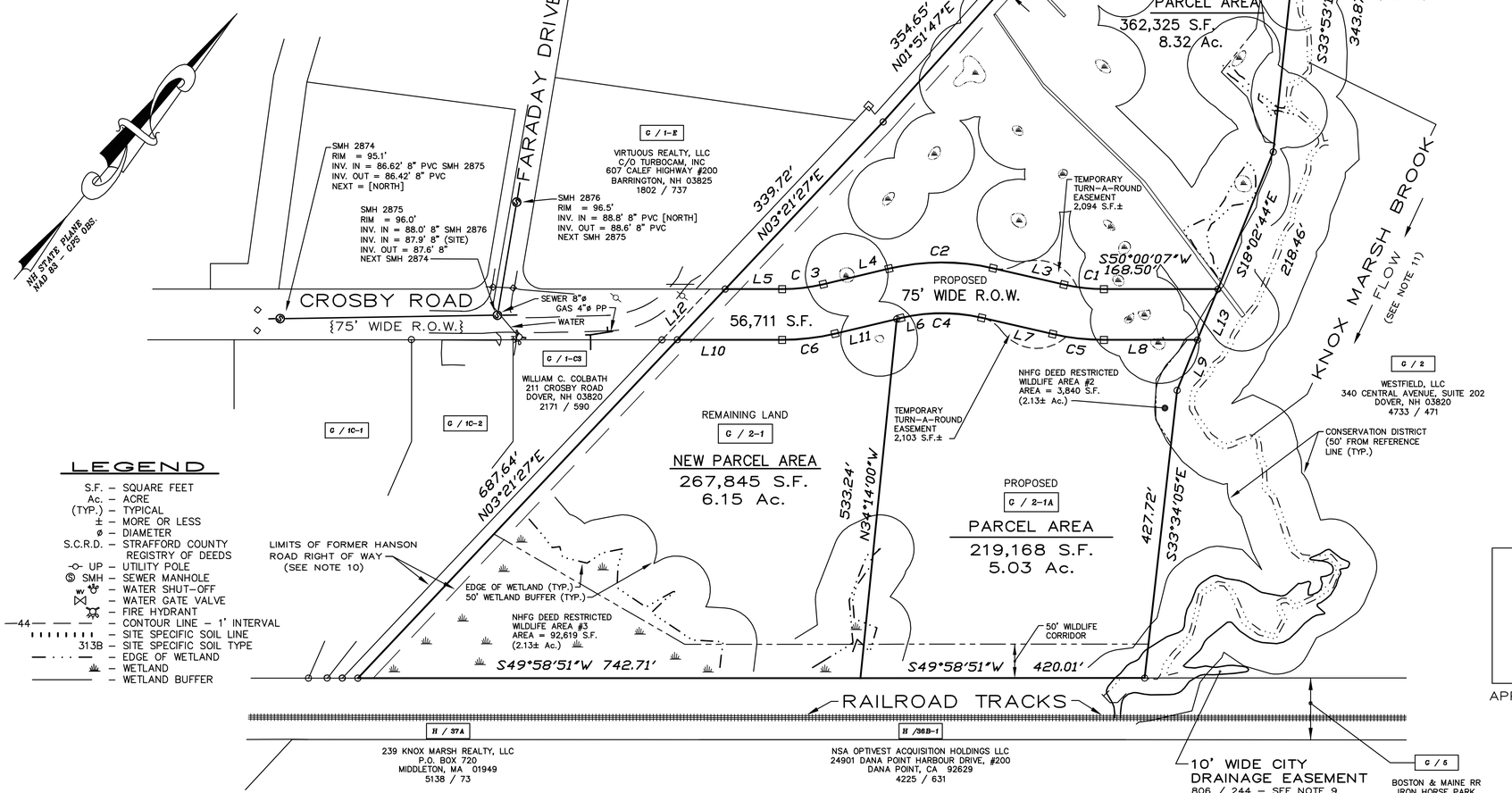
4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.

No.	Bearing	Distance
L1	N08°02'33"E	109.95'
L2	N00°50'14"E	84.52'
L3	S62°57'04"W	107.65'
L4	S36°37'58"W	100.00'
L5	S50°00'07"W	84.10'
L6	N36°37'58"E	6.22'
L7	N62°57'04"E	107.65'
L8	N50°00'07"E	138.27'
L9	S18°02'44"E	80.35'
L10	N50°00'07"E	154.91'
L11	N36°37'58"E	93.78'
L12	N03°21'27"E	103.15'
L13	S18°02'44"E	80.86'



LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
44 – CONTOUR LINE – 1' INTERVAL
– SITE SPECIFIC SOIL LINE
313B – SITE SPECIFIC SOIL TYPE
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	SUNDIV	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	12°56'58"	262.50	59.33	59.20	S56°28'36"W
C2	26°19'07"	337.50	155.03	153.67	S49°47'31"W
C3	13°22'09"	262.50	61.25	61.11	S43°19'02"W
C4	26°19'07"	262.50	120.58	119.52	N49°47'31"E
C5	12°56'58"	337.50	76.28	76.12	N56°28'36"E
C6	13°22'09"	337.50	78.75	78.57	N43°19'02"E

⊙ – IRON ROD WITH IDENTIFICATION CAP TO BET SET AT PROPERTY CORNERS
□ – GRANITE BOUND WITH DRILL HOLE TO BET SET AT RIGHT OF WAY POINTS OF CURVATURE

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NOTES:

1.) OWNERS OF RECORD:

OWNER SIGNATURE

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) TOTAL PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

APPROVAL BLOCK

SHEET 3 OF 12

SUBDIVISION PLAN OF LAND
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. SUBM–2024–00xx

DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 2024S
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

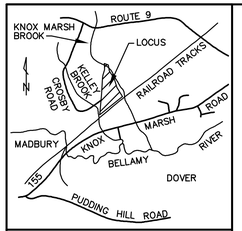
100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 661 KEVIN M. McENEANEY SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:14:25 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 3LOT



LOCATION PLAN
(NO SCALE)

LEGEND

- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ø – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- SMH – SEWER MANHOLE
- WV – WATER SHUT–OFF
- WG – WATER GATE VALVE
- FH – FIRE HYDRANT
- 44 – CONTOUR LINE – 1' INTERVAL
- SITE SPECIFIC SOIL LINE
- 313B – SITE SPECIFIC SOIL TYPE
- EDGE OF WETLAND
- WETLAND
- WETLAND BUFFER

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

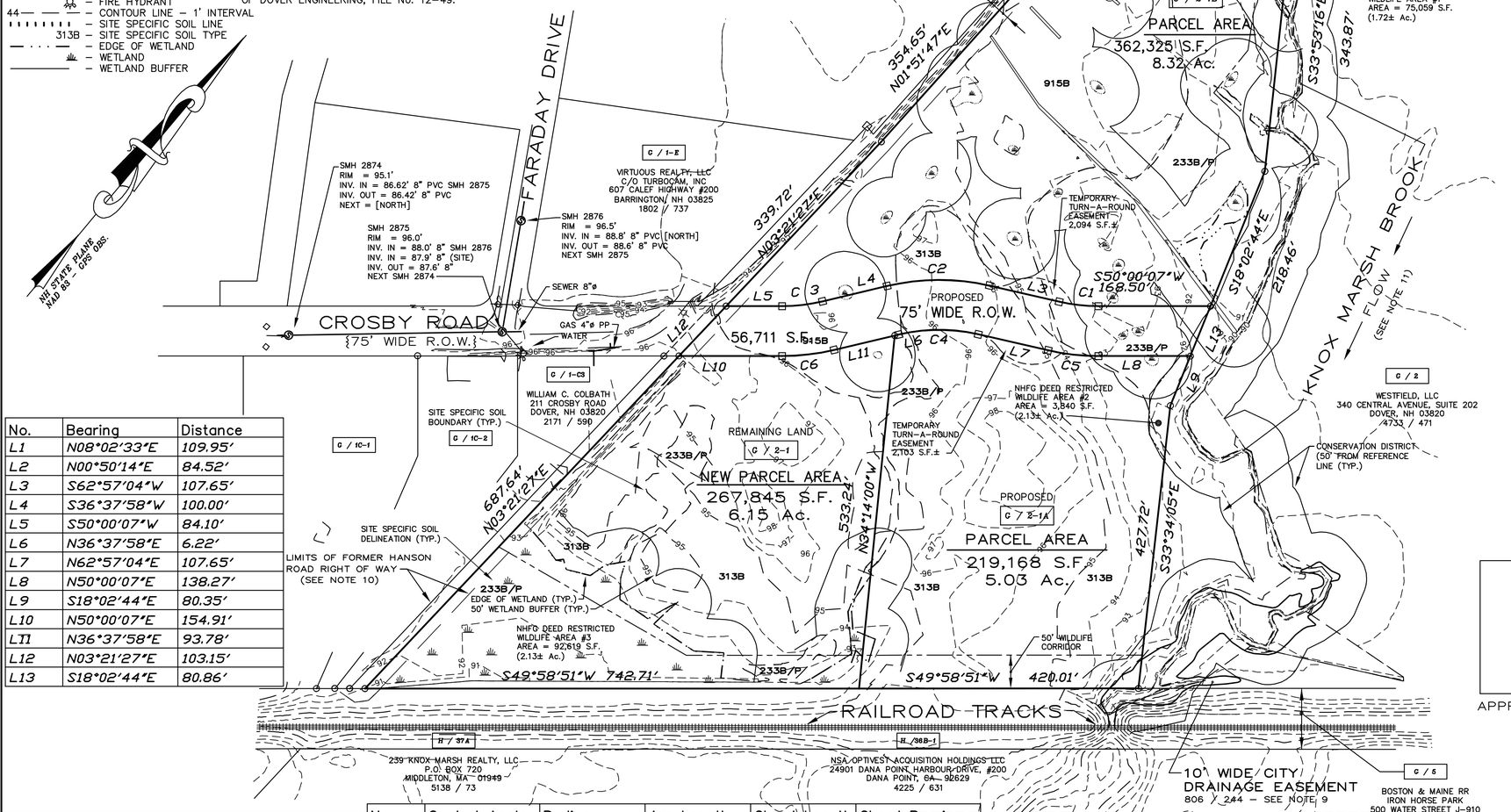
6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	SOIL TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
233B/P	SCANTIC	D	POORLY DRAINED (P)
313B	DEERFIELD	B	MODERATELY–WELL DRAINED
915B	DEERFIELD VARIANT	B	SOMEWHAT POORLY DRAINED

SLOPE	SLOPE DESIGNATION	PERCENT SLOPE
	B	0 TO 8 PERCENT



No.	Bearing	Distance
L1	N08°02'33"E	109.95'
L2	N00°50'14"E	84.52'
L3	S62°57'04"W	107.65'
L4	S36°37'58"W	100.00'
L5	S50°00'07"W	84.10'
L6	N36°37'58"E	6.22'
L7	N62°57'04"E	107.65'
L8	N50°00'07"E	138.27'
L9	S18°02'44"E	80.35'
L10	N50°00'07"E	154.91'
L11	N36°37'58"E	93.78'
L12	N03°21'27"E	103.15'
L13	S18°02'44"E	80.86'

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	12°56'58"	262.50	59.33	59.20	S56°28'36"W
C2	26°19'07"	337.50	155.03	153.67	S49°47'31"W
C3	13°22'09"	262.50	61.25	61.11	S43°19'02"W
C4	26°19'07"	262.50	120.58	119.52	N49°47'31"E
C5	12°56'58"	337.50	76.28	76.12	N56°28'36"E
C6	13°22'09"	337.50	78.75	78.57	N43°19'02"E

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	SUNDIV	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

⊙ – IRON ROD WITH IDENTIFICATION CAP TO BET SET AT PROPERTY CORNERS
□ – GRANITE BOUND WITH DRILL HOLE TO BET SET AT RIGHT OF WAY POINTS OF CURVATURE

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NOTES:

1.) OWNERS OF RECORD:

OWNER SIGNATURE

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) TOTAL PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

14.) SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024.

SHEET 4 OF 12
TOPOGRAPHIC & SITE SPECIFIC SOILS

APPROVAL BLOCK

SUBDIVISION PLAN OF LAND
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No.	SUBM–2024–00xx
DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 2024S
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE – LICENSED LAND SURVEYOR – No. 661 – KEVIN M. McENEANEY – SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:15:01 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 SLOT topo

GENERAL NOTES

1. OWNER OF RECORD:
   DEL SOL DOVER, LLC
   340 CENTRAL AVENUE, SUITE 302
   DOVER, NEW HAMPSHIRE 03820
   S.C.R.D. VOLUME 5075, PAGE 142.
2. G / 2-1 – DENOTES TAX MAP AND PARCEL NUMBER.
3. PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.
4. TOTAL PARCEL AREA = 906,049 S.F. / 20.80 Ac.
5. ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT
   DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET
REAR SETBACK	= 10 FEET
MAXIMUM BUILDING HEIGHT	= 50 FEET

6. A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX F; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.
7. BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.
   VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED NOVEMBER 18, 2022.
8. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND IN JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
9. HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R-2008.05.14-80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.
10. THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170-27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.
11. IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.
12. WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS UPDATED IN JULY 2024 BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.
13. SITE SPECIFIC SOIL MAPPING WAS UPDATED IN JULY 2024 BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT AND POLES.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
9. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
10. EXISTING ("OLD") WATER SERVICES TO THE SUBJECT SITE SHALL BE DISCONNECTED AND SHUT-OFF AT THE WATER MAIN.
11. EXISTING SEWER SERVICES TO BE CUT AND PERMANENTLY CAPPED AT PROPERTY LINE AS APPLICABLE.
12. ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
13. ALL STONEWALLS THAT NEED TO BE REMOVED FOR CONSTRUCTION SHALL BE STOCKPILED AND REUSED ON SITE.

SUBDIVISION NOTES:

1. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A PLAN REFERENCED AND PREPARED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND (SEE EXISTING CONDITIONS PLAN IN THIS PLAN SET).
2. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH A 3 LOT SUBDIVISION, THE CONSTRUCTION OF CROSBY ROAD EXTENSION, PUBLIC WATER AND SEWER, UNDERGROUND UTILITY IMPROVEMENTS, AND GRADING & DRAINAGE IMPROVEMENTS.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
4. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS, AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
5. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
6. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
7. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
8. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
10. BUILDING ADDRESSES TO BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
11. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
12. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBANCE ACTIVITY OCCURS.
13. AS-BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON PAPER AND IN A DIGITAL FORMAT IN PDF AND AUTOCAD DWG, AUTOCAD DXF OR AN ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
14. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY HOURS 7 AM-6 PM, AND NO SUNDAY AND NO FEDERAL HOLIDAY WORK HOURS. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
15. A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
16. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
17. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
18. THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN, THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
19. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
20. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
21. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
22. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
23. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. (HTTPS://WWW.UNH.EDU/UNHSC/PTAPP)
24. NO ROADWAY WITH PRIVATE UTILITY EASEMENTS SHALL BE ACCEPTED AS A PUBLIC ROAD BY THE CITY UNLESS THE EASEMENTS ARE EXPUNGED PRIOR TO THE TRANSFER OF LAND TO THE CITY. LICENSE AGREEMENTS FOR ANY AND ALL PRIVATE UTILITIES WITHIN THE RIGHT OF WAY MAY BE GRANTED BY THE CITY UPON ACCEPTANCE OF THE UNENCUMBERED ROADWAY CONSISTENT WITH APPLICABLE STATE LAW.
25. INDIVIDUAL AND SHARED DRIVEWAYS THAT ARE LONGER THAN 150 LF FROM THE ACCESS ROAD SHALL BE THE STANDARD WIDTH AS SPECIFIED IN NFPA1.
26. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.

GRADING NOTES:

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OF REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
12. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP'S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS. THE DESIGN ENGINEER MUST CERTIFY THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
14. DENSITY REQUIREMENTS:

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

   *ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
9. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
17. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
23. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.

UTILITY CONTACTS

NATURAL GAS: – UNITIL CORPORATION
CONTACT: DAVID MACLEAN
325 WEST ROAD
PORTSMOUTH, NH 03801
TEL: (603)-294-5261
EMAIL: MACLEAND@UNITIL.COM

WATER & SEWER: – CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
PUBLIC WORKS & UTILITIES
CONTACT: KEN MAVROGEORGE, PE
271 MAST ROAD
DOVER, NH 03820
TEL: (603)-516-6450
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV

ELECTRIC: – EVERSOURCE
CONTACT: TREVER EMMONS
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)-332-7515
EMAIL: TREVER.EMMONS@EVERSOURCE.COM

PLANNING FILE NO.: SUBD-2024-

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

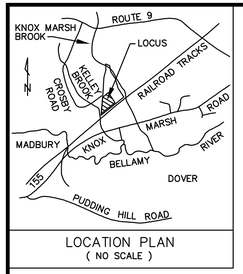
NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

NOTE SHEET

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANIFOLD IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

WATER - DOVER FARAD1-020-MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER MAIN

TIE INTO EXISTING SEWER STUB

SEWER 8"ø

TAPPING SADDLE WITH THRUST BLOCK (SIZE V.I.F).

WATER - DOVER FARAD1-020-MI

HYDRANT #319

GAS 4"ø PP

CROSBY ROAD
{75' WIDE R.O.W.}

C / 1-C1

C / 1-C2

C / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

UTILITY POLE 364A/1Y UGU DROP

EXISTING EDGE OF PAVEMENT

OHU

UTILITY POLE 364A/1 1140-22

MEET/MATCH EXISTING PAVEMENT

PROPOSED OVERHEAD UTILITIES

PSMH1

PROPOSED 8" CL D.I. WATERLINE

2" GAS STUB

6" CL D.I WATERLINE STUB

6" PVC SEWER STUB

PROPOSED UNDERGROUND UTILITES

PROPOSED TRANSFORMER PAD

FORMER HANSON ROAD

50' WETLAND BUFFER

C / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

PSMH3

BEGIN SGC

END SGC

PROPOSED 4" GAS LINE

PAVED SLUICE

C / 2-1
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

75' PUBLIC ROW

6" PVC SEWER STUB

2" GAS STUB

6" CL D.I WATERLINE STUB

C / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

END SGC

PROPOSED GRAVEL (TYP)

PROPOSED HYDRANT

PROPOSED 6" REDUCER WITH GATE VALVE

PROPOSED 20' 8" CL D.I. WATERLINE STUB

PROPOSED GAS LINE STUB

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

LEGEND

Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
– FIRE HYDRANT
– WETLAND
– EDGE OF WETLAND
– WETLAND BUFFER
312'R – PAVEMENT RADUIS
SGC – SLOPED GRANITE CURB
PEOP – PROPOSED EDGE OF PAVEMENT
PW – PROPOSED WATER
PG – PROPOSED GAS
PE – PROPOSED ELECTRIC
PS – PROPOSED SEWER
– PROPOSED GRAVEL

PLANNING FILE NO.: SUBD-2024-

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

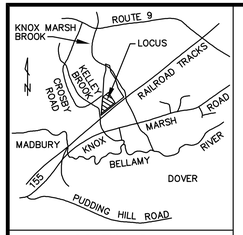
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

CROSBY ROAD EXTENSION SITE & UTILITY PLAN

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

6



LOCATION PLAN
(NO SCALE)

NH STATE PLANE NAD 83 GPS OBS.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

50' WETLAND BUFFER

CATCH BASIN #7080 RIM = 96.0'

CATCH BASIN #7081 RIM = 95.9'

TBM CB7081 RIM=95.9

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

WETLAND BUFFER IMPACT "A"

WETLAND BUFFER IMPACT "B"

WETLAND BUFFER IMPACT "C"

CONSTRUCTION ENTRANCE

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

PROPOSED 8" SILTSOXX (TYP)

WETLAND BUFFER INCLUDED ON "SITE PLAN–LOT 2"

BIORETENTION POND 3 W/ ISR (BIO3 W/ ISR)

WETLAND BUFFER IMPACT:

IMPACT "A"	= 4,437 SF
IMPACT "B"	= 27 SF
IMPACT "C"	= 397 SF
TOTAL	**= 4,861 SF**

CROSBY ROAD EXTENSION
PLAN VIEW
HORIZONTAL SCALE: 1"=40'

HIGH PT. STA.7+50.00
HIGH PT. ELEV.98.89
PVI STA.7+50.00
PVI ELEV.99.02
AD=–1.00
K=100.00
100.00' VC

PVC STA.7+00.00
PVC ELEV.98.77

PVT STA.8+00.00
PVT ELEV.98.77

EOP CROSBY ROAD EXTENSION
STA. 8+55.50

CROSBY ROAD EXTENSION
PROPOSED CUL-DE-SAC EASEMENT

EXISTING SMH 2875
STA. 0+00.32
INV.OUT=87.32

PROPOSED INV.IN=87.9' TIE INTO EXISTING SEWER STUB

EXISTING CROSBY ROAD

EOP CROSBY ROAD EXTENSION (MATCH EXISTING GRADE)

PSMH 1
STA. 3+06.78
RIM=96.9'
INV.IN=89.2'
INV.OUT=89.1'

PSMH2
STA. 3+77.00
RIM=97.2'
INV.IN=89.6'
INV.OUT=89.5'

EXISTING GRADE

PROPOSED GRADE

0.50%

MINIMUM 30'

PSMH3
STA.6+13.43
RIM=98.2'
INV.IN=90.60'
INV.OUT=90.50'

MINIMUM 5'

0.50%

4" GAS MAIN

8" D.I. CL WATERLINE

8" SDR35 L=300' S=.004

8" SDR35 L=66' S=.004

8" SDR35 L=230' S=.004

4" GAS MAIN

8" D.I. CL WATERLINE

DATUM=84

96.2	95.9	95.8	96.0	96.3	96.5	95.8	95.2	95.5	95.4	96.0	95.4	95.3	96.0	96.9	96.0	95.0	93.6	93.3
96.22	96.27	96.32	96.38	96.43	96.52	96.77	97.02	97.27	97.52	97.77	98.02	98.27	98.52	98.77	98.89	98.77	98.52	94.68

0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00 6+50 7+00 7+50 8+00 8+50 8+70.48

CROSBY ROAD EXTENSION
PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

LEGEND
S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
– – – 92 – – – – CONTOUR LINE – 1' INTERVAL
———— – EDGE OF WETLAND
– WETLAND
———— – WETLAND BUFFER
96 – PROPOSED CONTOUR
X 96 – PROPOSED FINISH GRADE
– PROPOSED CONDITIONAL USE IMPACT

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SUBD–2024–

CROSBY ROAD EXTENSION PLAN & PROFILE

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

7

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:JH
PROJECT NO: 18043
FILE: SUB

DESCRIPTION

1. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH A 3 LOT SUBDIVISION, THE CONSTRUCTION OF CROSBY ROAD EXTENSION, PUBLIC WATER AND SEWER, UNDERGROUND UTILITY IMPROVEMENTS, AND GRADING & DRAINAGE IMPROVEMENTS.

PROJECT NAME AND LOCATION

DEL SOL DOVER, LLC
3 LOT SUBDIVISION CROSBY RD EXTENSION — *LATITUDE N43° 10' 49"*
DOVER, NEW HAMPSHIRE 03820 — *LONGITUDE W70° 54' 41"*

DISTURBED AREA

±56,000 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL FOUNDATION FOOTINGS AND WALLS.
10. INSTALL UTILITIES.
11. PLACE GRAVELS AND FINE GRADE.
12. STABILIZE ROADWAYS AND PARKING AREAS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
13. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
14. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
15. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
16. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   e. CURVE THE END OF THE SILT BARRIER UP-GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   c. REMOVE SEDIMENT WHEN IT REACHES ONE-THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
   c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 150-200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   d. EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
      i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
      ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   c. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE @ 138 LBS. PER 1,000 S.F.
      LOW PHOSPHATE (N-P2O5-K2O) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND-DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
b. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
c. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PROPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
   1. THE CONSTRUCTION PROJECT:
      a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
      b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
      d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
      e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
      f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   2. HAZARDOUS PRODUCTS:
      a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
      c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
      d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
   1. PETROLEUM PRODUCTS:
      a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
   2. FERTILIZERS:
      a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
   3. PAINTS:
      a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   4. CONCRETE TRUCKS:
      a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
   IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV-A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST: A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV-A 1002 FUGITIVE DUST: PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV-A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECUATIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   I) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   II) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   III) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT.
2. ALL DITCHES & SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD AND PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3-INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

EROSION CONTROL NOTES

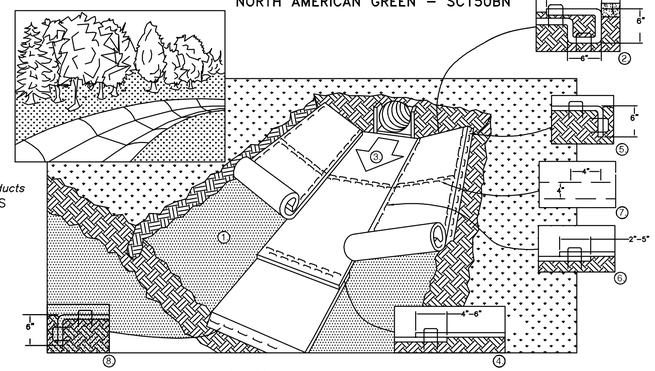
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

8

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



CRITICAL POINTS

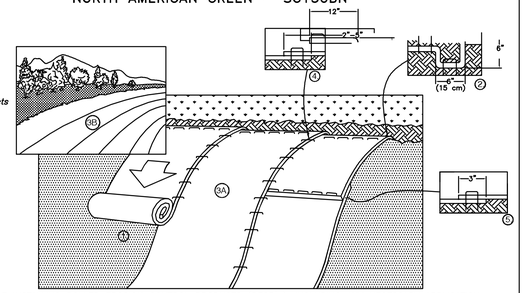
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

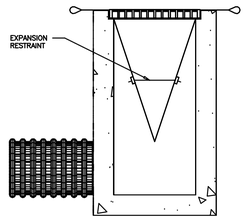
SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM®, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:



Blanding's turtle (state endangered)
- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land



Wood turtle (special concern)
- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land



Eastern box turtle (state endangered)
- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base

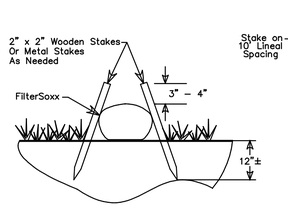


Spotted turtle (state threatened)
- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

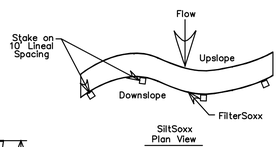
Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 *Please report promptly, noting specific location and date – Photographs strongly encouraged*

NOTES:
1. ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.
2. THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED
3. ~~THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT~~ SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE
4. IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271–1738 or JOSH MEGYESY AT 271–1125 FOR FURTHER INSTRUCTIONS.

DETAIL OF INLET SEDIMENT CONTROL DEVICE



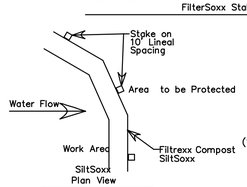
FilterSoxx Section
At Ends of Run
Cross Stakes

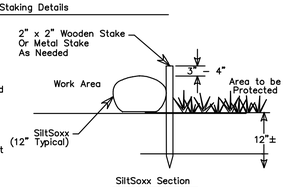


SiltSoxx
Plan View

Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details

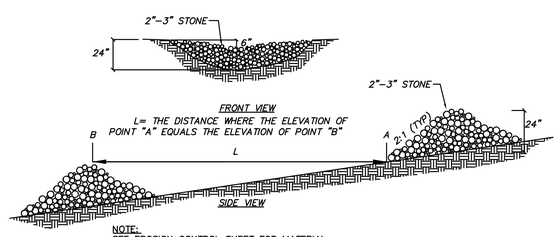




SiltSoxx Section

Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SILTSOXX DETAILS
NOT TO SCALE



NOTE:
SEE EROSION CONTROL SHEET FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.

STONE CHECK DAM
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	SUB	REVISION	APP'D	DATE

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

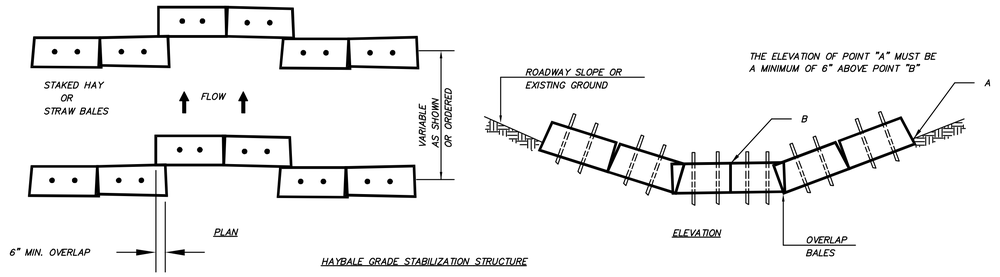
PLANNING FILE NO.: SUBD–2024–

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

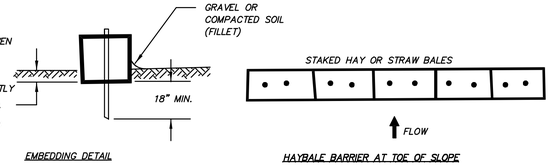
9



HAYBALE GRADE STABILIZATION STRUCTURE

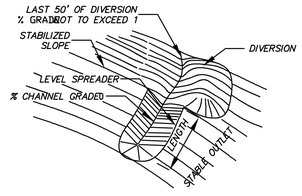
CONSTRUCTION SPECIFICATIONS

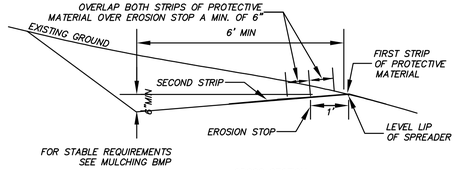
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.



HAYBALE NOTES AND DETAILS

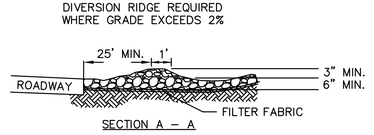
NOT TO SCALE

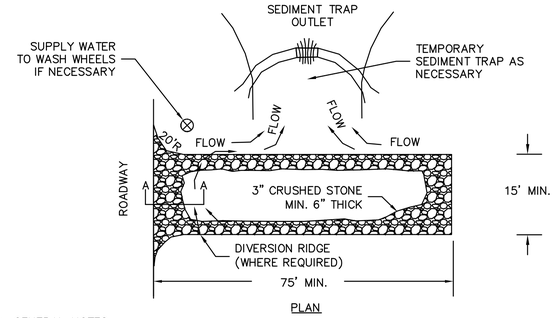




LEVEL SPREADER DETAIL

NOT TO SCALE





A. GENERAL NOTES:

1. A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS
2. ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
3. LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
4. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

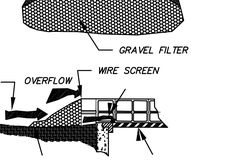
1. STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
3. THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6" THICK.
6. A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF–SITE.
8. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).

1. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT–TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

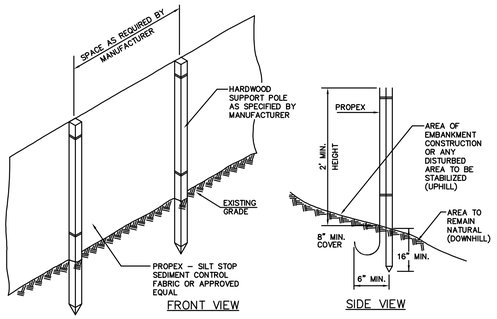
TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE



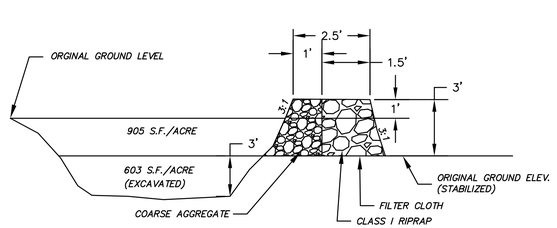
TEMPORARY EROSION CONTROL

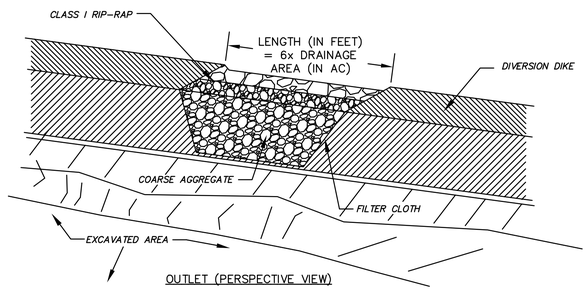
NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE





NOTES:
1. COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
2. FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
3. CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
4. THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
5. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
6. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

TEMPORARY SEDIMENT TRAP

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 18043
FILE: SUB

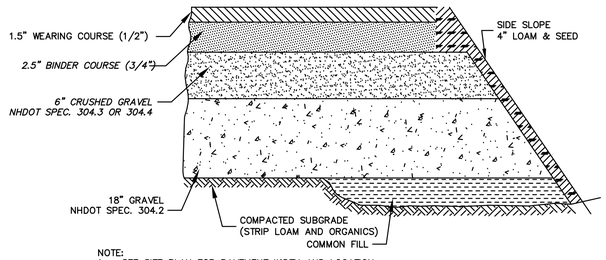
PLANNING FILE NO.: SUBD–2024–

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

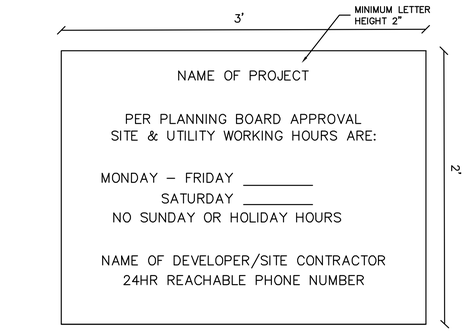
10



NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

HEAVY DUTY TYPICAL PAVEMENT SECTION

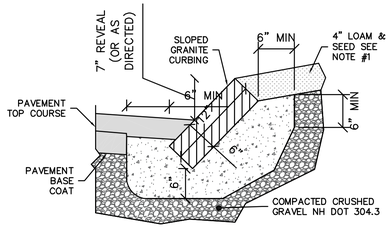
NOT TO SCALE



NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. HOURS ON THE SIGN SHALL COMPLY WITH ALL PLANNING BOARD CONDITIONS OF APPROVAL.

CITY OF DOVER D-2
CONSTRUCTION SIGN

NOT TO SCALE



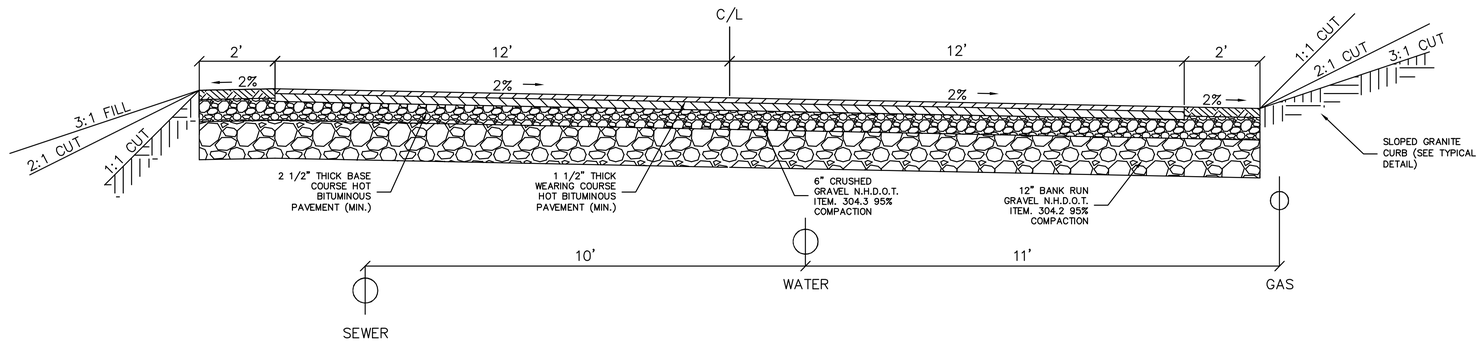
SLOPED GRANITE CURB

RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

NOTES:
1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
2. CONCRETE CURB SUPPORT SHOULD BE SET 1/2" BELOW THE TOP OF THE PAVEMENT BASE COURSE.

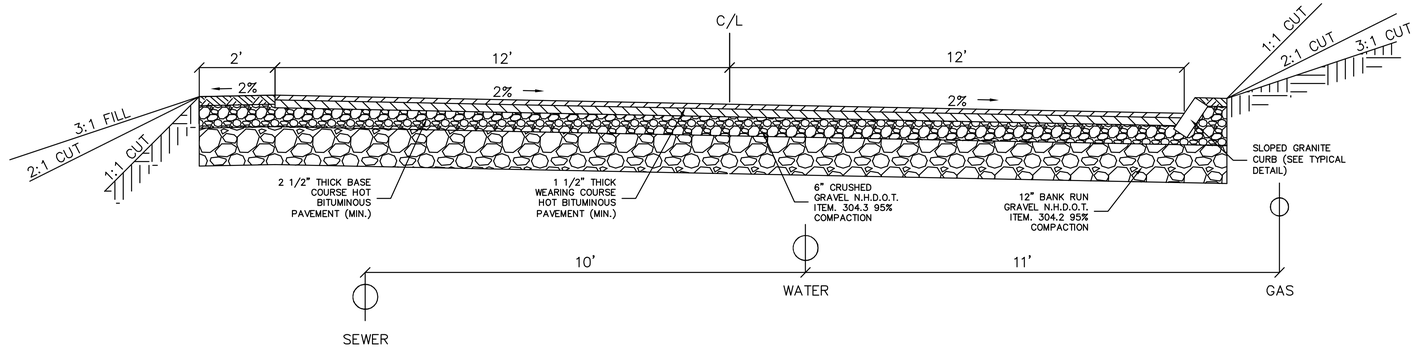
CITY OF DOVER D-8 GRANITE CURB DETAIL

NOT TO SCALE



PROPOSED CROSBY ROAD EXTENTSION
TYPICAL CROSS SECTION
STATION 2+40.29 TO 3+28.00

NOT TO SCALE



PROPOSED CROSBY ROAD EXTENTSION
TYPICAL CROSS SECTION
STATION 3+28.00 TO 8+56.10

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & MUNICIPAL ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

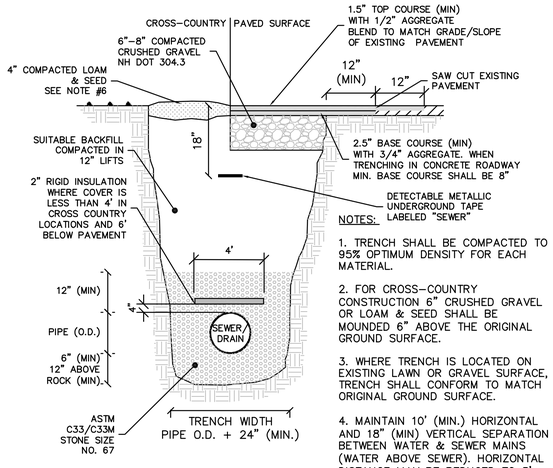
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

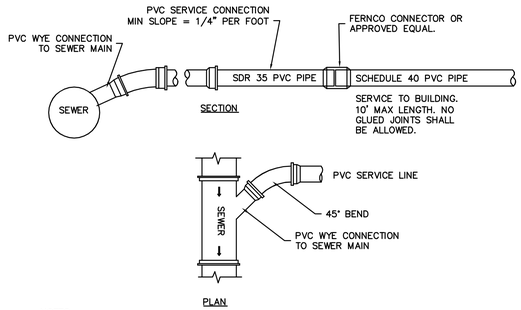


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-3
SEWER TRENCH DETAIL

NOT TO SCALE

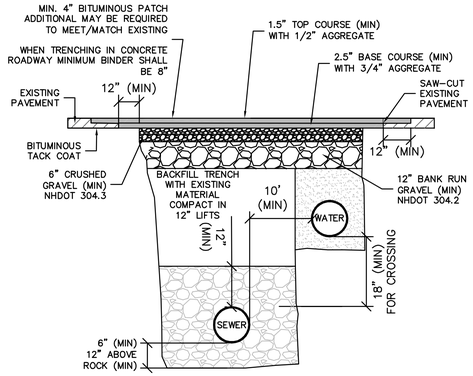


NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

CITY OF DOVER D-17
SEWER SERVICE DETAIL

NOT TO SCALE

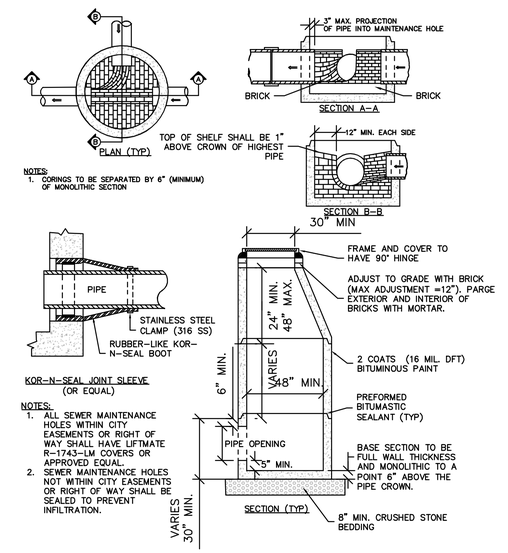


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

CITY OF DOVER
TYPICAL TRENCH DETAIL

NOT TO SCALE

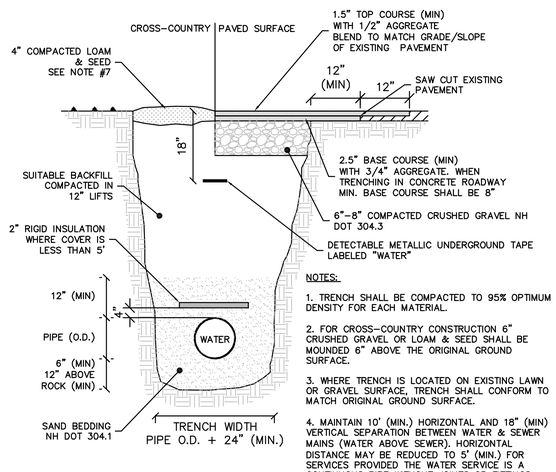


NOTES:

1. ALL SEWER MAINTENANCE HOLES WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL HAVE LIFTMATE R-1743-LM COVERS OR APPROVED EQUAL.
2. SEWER MAINTENANCE HOLES NOT WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL BE SEALED TO PREVENT INFILTRATION.

CITY OF DOVER
TYPICAL SEWER MANHOLE DETAIL

NOT TO SCALE

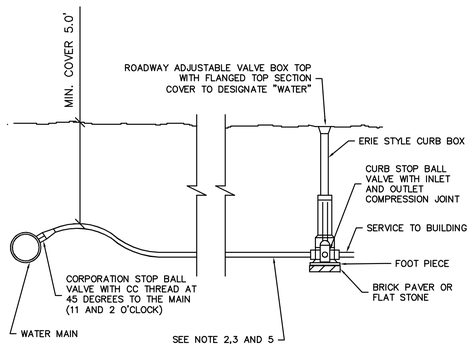


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-4
WATER TRENCH DETAIL

NOT TO SCALE

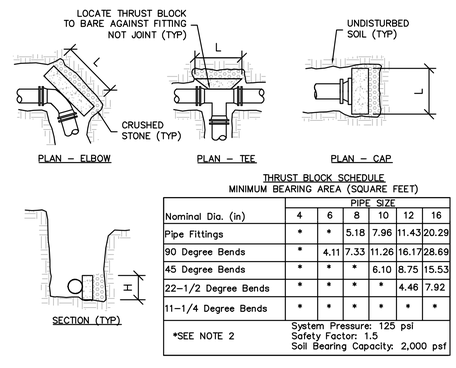


NOTES:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. 3/4"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

CITY OF DOVER D-13
WATER SERVICE CONNECTION DETAIL

NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

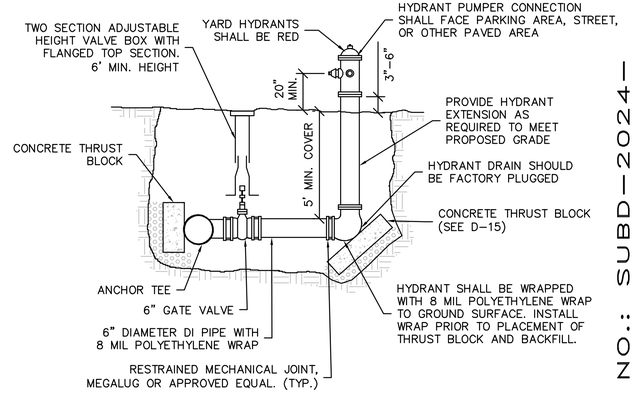
	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*
*SEE NOTE 2	System Pressure: 125 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf					

NOTES:

1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

CITY OF DOVER D-15
THRUST BLOCK DETAIL

NOT TO SCALE



NOTES:

1. FIRE HYDRANTS SHALL BE FACTORY SEALED EDDY STYLE 2641.
2. HYDRANT SHALL BE PAINTED RED WITH EPOXY PAINT AS RECOMMENDED BY THE HYDRANT MANUFACTURER.
3. HYDRANT SHALL OPEN LEFT.

CITY OF DOVER
TYPICAL HYDRANT DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0026

Application Type:	Conditional Use Permit
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Meeting Date:	September 24, 2024

INTENT: Proposal is for a Conditional Use Permit (CUP) to create a three-lot subdivision which will be accessed from an extension of Crosby Road with associated drainage and grading creating 786.5± s.f. of permanent impact to the 50-foot wetland buffer.

AGENDA ITEM #: 4-D

FILE: COND-2024-0026

APPLICANT/OWNER: Del Sol Dover, LLC

LOCATION: Crosby Road (Assessor's Map G, Lot 2-1)

LOTS/UNITS PROPOSED: Two (2) new lots and one (1) existing lot as part of a related minor subdivision.

ACREAGE: 20.80± acres before subdivision, proposed acreage following subdivision:
Assessor's Map G, Lot 2-1B (Lot 1) = 362,325± s.f. (8.32± acres)
Assessor's Map G, Lot 2-1 (Lot 2) = 267,845± s.f. (6.15± acres)
Assessor's Map G, Lot 2-1A (Lot 3) = 219,168± s.f. (5.03± acres)

ZONING DISTRICT: CM

EXISTING USE: Vacant

PROPOSED USE: Commercial, Warehouse

SURROUNDING USE: Commercial, Industrial Park

PERMITS: Two (2) City of Dover CUPs, NHDES Alteration of Terrain

WAIVERS REQUESTED: §153-13A(12), Landscape Plan prepared by LLA
§153-13A(17), Streetscape Renderings
§153-14K(1)(b), Parking Location

ZBA ACTION: None.

CONSERVATION COMMISSION: Reviewed and endorsed on 9/9/24.

TRC: Reviewed on 8/29/24.

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background
The applicant is proposing a three-lot subdivision which will create two new lots and maintain one existing lot and the three lots will be accessed from an extension of Crosby Road. As part of the project, the applicant is proposing the development of Lot 2, (Assessor's Map G, Lot 2-1).

The proposed development of Lot 2, which includes a 9,600± square foot warehouse building with associated parking and infrastructure, will create 786.5± square feet of permanent impact to the 50-foot wetland buffer.

The applicant has also applied for an NHDES Alteration of Terrain permit for this project.

The Technical Review Committee reviewed the application at their August 29, 2024 meeting. *(minutes attached)*

The Conservation Commission reviewed and endorsed the application at their September 9, 2024 meeting. *(minutes attached)*

Consistency with Land Use Regulations – CUP 170.27.1.F
The Wetlands Protection District ordinance §170.27.1.F provides for Conditional Use Permits to allow impacts to the Wetlands Protection District if standards related to demonstration that no practicable alternative is available, impact avoidance was considered, impacts were minimized, mitigation has been sought, and approval of the wetlands impact from NHDES Wetlands Bureau has been granted.

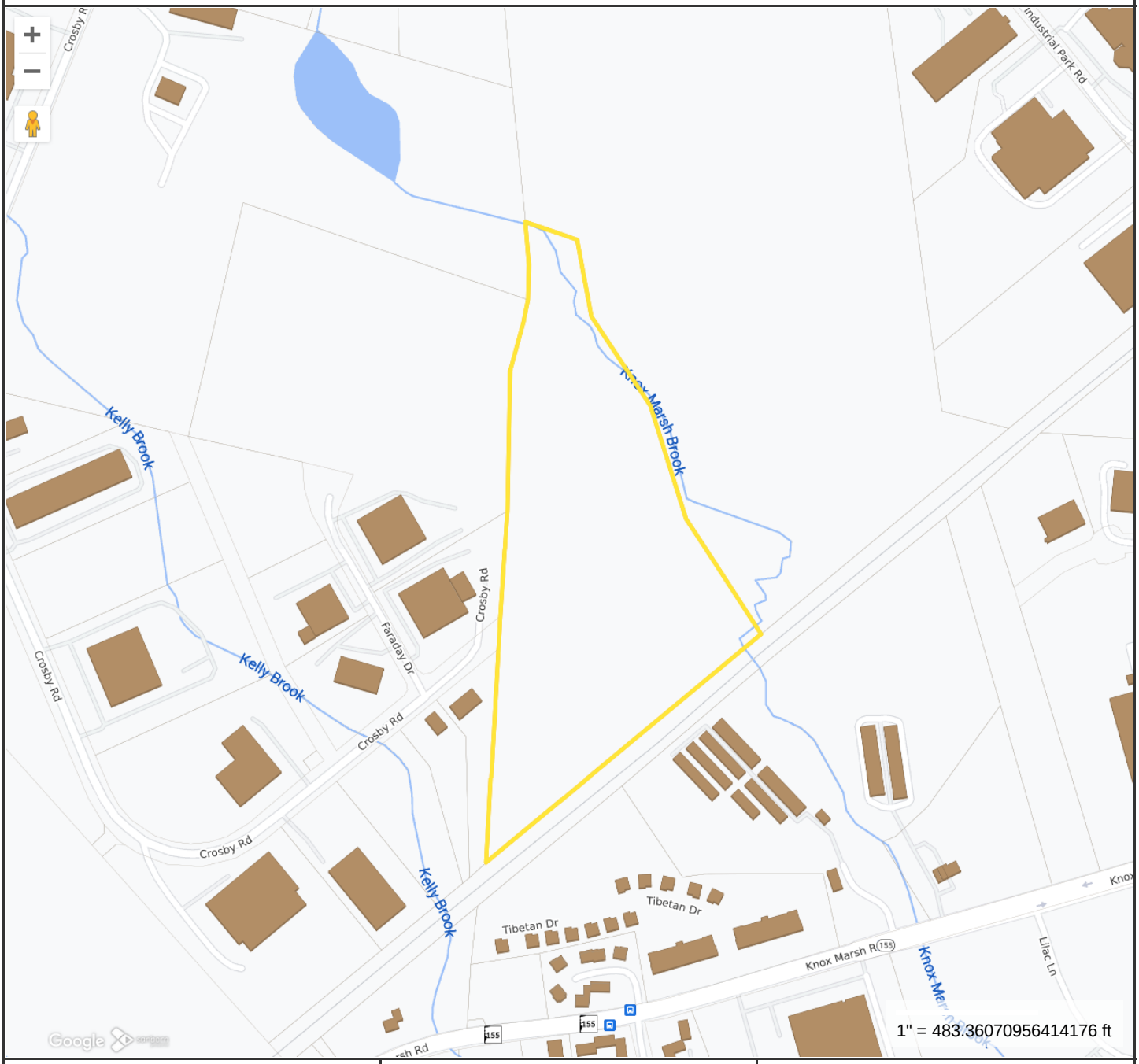
Planning Staff feels that the applicant considered and met all of the criteria as specified in §170-27.1.F per their narrative. The development as proposed has incorporated unique site characteristics to minimize wetland buffer impacts and avoid direct wetland impacts. The proposed project does not require state mitigation, the applicant has applied for an NHDES Alteration of Terrain permit, and the project has been reviewed and endorsed by the Conservation Commission.

STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:
1. Approval of COND-2024-0025;
2. Approval of SUBM-2024-0003;
3. Approval of SITE-2024-0010;
4. Copies of the NHDES Alteration of Terrain submitted to the Planning Department.

COND-2024-0026 Crosby Road



Property Information

Location	LITTLEWORTH RD
Owner	DEL SOL DOVER LLC
Land Use	
Zoning Code	CM
Property Id	G0002-001000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PERMIT SNAPSHOT REPORT COND-2024-0026
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/06/2024
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	Fees Paid	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	
Description:	Wetland Buffer Impact 786.5 s.f.				

Parcel:	G0002-001000 Main	**Address:**	Littleworth Road Dover, NH 03820 Main	**Zone:**	CM(Non-Residential - Commercial Manuf

Surveyor
Kevin McEneaney
Business: (603) 742-0911

Plan Preparer
Stephen Haight
Business: (603) 749-0443

Wetlands Scientist
Bruce Gilday
Business: (603) 228-5775

Applicant
Civilworks New England
Steve Haight
181 Watson Road PO Box 1166
Dover, NH 03820
Business: (603) 749-0443
Mobile: (603) 817-6651

Owner
Chad Kageleiry
Business: (603) 749-2800

Applicant
Chad Kageleiry
Business: (603) 749-2800

Permit Custom Fields

Select Permit Type	Wetland Protection District	General Purpose	New Construction	Project Zone	Non-Residential
What is the parcel zoned?	CM	New Change in Impervious/Paved Area (sq ft)	18095	Work	Wetland buffer impacts totaling 786.5 s.f to accommodate site development construction of building, parking, utility and drainage improvements.
permitstatefed	NH DES Alteration of Terrain (pending)				

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Steve_Haight_8/6/2024.jpg	08/06/2024 19:21	Haight, Steve		Uploaded via CSS
Permit Snapshot Report.pdf	08/06/2024 19:21	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008890	Planning Impervious Paved Area Fee	$1,266.65	$1,266.65
	Planning General Application Fee	$200.00	$200.00
	Total for Invoice INV-00008890	**$1,466.65**	**$1,466.65**
	Grand Total for Permit	**$1,466.65**	**$1,466.65**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1			
Confirm application complete v.1	Generic Action		
Conditional Use Review v.1	Receive Submittal		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Permit Activity		
Distribute Planning Board Materials v.1	Task		

Planning Board Hearing v.1	Hold Hearing
Planning Board Decision v.1	Permit Activity
NOD Sent to Applicant v.1	Create Report
Issue Permit v.1	
Verify Fees Prior to Permit v.1	Generic Action
Issue and Review Permit v.1	Generic Action
Print and Email Permit v.1	Generic Action
Plans uploaded to Treeno v.1	Generic Action
Internal Notification of Plan Completion v.1	Generic Action
Recording v.1	Task

DEL SOL DOVER, LLC
340 Central Avenue, Suite 202
Dover, New Hampshire 03820

August 5, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Re: Crosby Road Extension Site Plan
Tax Map G, Lot 2-1, Crosby Road Extension
Dover, New Hampshire

LETTER OF AUTHORIZATION

As Owner and Applicant for the above referenced project, I hereby authorize Civilworks New England and McEneaney Survey Associates to represent Del Sol Dover, LLC to the State of New Hampshire, the City of Dover Planning Board and any other Dover Boards or Committees relative to the pursuit of permits for the development of the subject parcel.

Respectfully,

Charles P. Kageleiry, Manager
DEL SOL DOVER, LLC

COND-2024-0026 **LITTLEWORTH ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
G0001-C00001	CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00002	207 CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00003	211 CROSBY RD	COLBATH WILLIAM C TRUSTEE	COLBATH FAMILY REVOCABLE TRUST 2010	211 CROSBY RD	DOVER	NH	03820
G0001-E00000	5 FARADAY DR	VIRTUOUS REALTY LLC	C/O TURBOCAM INC	607 CALEF HIGHWAY #200	BARRINGTON	NH	03825-7237
G0001-L00000	15 FARADAY DR	CHAUVIN ARNOUX INC		15 FARADAY DR	DOVER	NH	03820
G0002-000000	LITTLEWORTH RD	WESTFIELD LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
G0005-000000	LITTLEWORTH RD	BOSTON & MAINE RR	IRON HORSE PARK	500 WATER STREET J-910	JACKSONVILLE	FL	32202
G0031-001000	50 52 CROSBY RD	MCGUIRE GROUP LLC		PO BOX 988	DOVER	NH	03821
H0036-B00001	221 KNOX MARSH RD	NSA OPTIVEST ACQUISITION HOLDINGS LLC		24901 DANA PT HARBOR DR #200	DANA POINT	CA	92629
H0037-A00000	239 KNOX MARSH RD	239 KNOX MARSH REALTY LLC		PO BOX 720	MIDDLETON	MA	01949
H0038-000000	289 KNOX MARSH RD	CRAGIN PATRICK J TRUSTEE	CRAGIN PATRICK J LIVING REV TRUST	PO BOX 250	DOVER	NH	03820
G0002-001000	LITTLEWORTH RD	DEL SOL DOVER LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
		CIVILWORKS NEW ENGLAND	STEVE HAIGHT	P.O. BOX 1166	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES	KEVIN MCENEANEY	P.O. BOX 1166	DOVER	NH	03820

CITY OF DOVER

DOVER CONSERVATION COMMISSION – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	City Council Conference Room - 288 Central Avenue, Dover, NH
Meeting Date:	Monday, September 9, 2024
Meeting Time:	**5:30 pm**

MEMBERS PRESENT: Steve Fellows (Vice Chair), Kristen Murphy, Brianna Group, Abigail Lyon, Russ Warnock (Alternate)
Absent (Excused):, Bill Hunt (Chair), Robert Atwood (Secretary)
Absent (Unexcused): Jake Geddes
STAFF PRESENT: Jackson Kaspari – Resilience Manager
OTHERS PRESENT: Councilor Williams, Steve Haight, Chad Kageleiry, Sam Hayden, Sarah Large

1. CALL TO ORDER AND ROLL CALL
The meeting was convened at 5:30 PM.

2. CITIZENS' FORUM
The Chair gave instructions for Citizens' forum
None

3. APPROVAL OF THE PRIOR MEETING MINUTES- August 12, 2024
K. Murphy moved to approve the minutes of August 12 as submitted. B. Group seconded. Vote: All in favor with A. Lyon abstaining

4. OLD BUSINESS:
None

5. NEW BUSINESS:
A. City of Dover Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at the end of Crosby Road. Proposal is to create a three-lot subdivision which will be accessed from an extension of Crosby Road with associated drainage and grading creating 4,861 square feet of permanent impact to the 50-foot wetland buffer.

S. Haight, CivilWorks and C. Kageleiry, owner represented the item and explained the proposal including location of property, wetland buffers and impacts, road and right-of-way extensions.

They, along with staff, clarified information to the commission relating to wetlands, no vernal pools on the site, open space audit criteria, and deed- restricted area being transferred to Fish and Game.

R. Warnock moved to endorse the proposal with the condition that a note be added to the plans indicating the date of the most recent wetlands delineation. A. Lyon seconded. Vote: All in favor

B. City of Dover Conditional Use Permit for Del Sol Dover, LLC, Assessor's Map G, Lot 2-1, zoned CM, located at the end of Crosby Road. Proposal is to construct a 9,600 square foot warehouse building with associated parking and utility and drainage improvements creating 786.5 square feet of permanent impact to the 50-foot wetland buffer.

S. Haight, CivilWorks and C. Kageleiry, owner represented the item and explained the proposal including site description, plans for the site, stormwater details, and wetland buffer impacts.

DRAFT

They, along with staff, clarified information to the committee relating to containment of stored materials, monitoring wells, signage for wetlands, storm water management, planned vegetation, and snow removal.

Discussion with comission member and J. Kaspari regarding progress on the Plantings list- selecting for particular areas.

K. Murphy moved to endorse the proposal as presented. B. Group seconded. Vote: All in favor

C. NHDES Standard Dredge and Fill Wetlands Permit for Jenny L. Lang, Assessor's Map L, Lot 95-1L, zoned R-20, located at 15 Landing Way. Proposal is to construct a tidal docking structure consisting of a 4' x 24' accessway, a 4' x 120' fixed wood pier, a 3' x 40' gangway and a 10' x 30' float totaling 96 square feet of permanent impact to the previously developed 100' Tidal Buffer Zone and 900 square feet of permanent impact to tidal wetlands

Sam Hayden (in place of Steve Riker) presented the project for feedback which will be sent to NHDES. No local permit is being sought. He explained the logistics of the construction process and that it's a seasonal structure that is pulled up out of season.

He clarified additional information to the committee.

A. Lyon moved to endorse the proposal as presented. R. Warnock seconded. Vote: All in favor

D. New Meadows Rapid Ecological Assessment
Sarah Large presented the assessment to the committee.

Committee members asked some clarifying questions which were discussed: community trial locations and connectivity, American beech trees/ disease.

E. Additional Volunteer Opportunities – Planning Board and Cocheco River Local Advisory Committee
J. Kaspari noted there are vacancies on these boards and to reach out if anyone is able to join, or spread the word to others who might be interested.

Apple Harvest Day is Oct 5th and the Energy Commission is organizing a sustainability outreach event at City Hall and is looking for engagement from appropriate committees.

F. Conservation and Open Space Chapter Update
J. Kaspari noted the steering committee has reviewed the draft outline for the structure of the chapter and associated materials. Staff review is anticipated for November, then it will come before this commission and then the Planning Board hopefully by December.

Discussion continued about the Natural Resource Inventory

DRAFT

6. REPORT FROM THE CHAIR

A. Review of Correspondence Received from NH Department of Environmental Services

None

7. OTHER BUSINESS

A. Update from Forest Management Subcommittee

Topics discussed:

- Reviewed the findings of the fellow
- Upcoming site walk for forest management and recreational use
- Pocket forest postponed until an opportunity arises
- Land acquisition research

Update on donated tree which was installed.

Discussion about what is the best avenue to continue the work the fellow was doing on urban forestry/ species list. The conversation extended to ongoing grant preparation, plans if granted, and process for how lists are implemented.
Resources from other cities and the county were suggested to review.

8. ADJOURNMENT

A. Lyon moved to adjourn. R. Warnock seconded. Vote: U/A
The meeting was adjourned at 6:52 PM.

DRAFT

CONDITIONAL USE NARRATIVE
§170-27.1
WETLAND PROTECTION DISTRICT
for
DEL SOL DOVER, LLC
Lot 2 Development
Tax Map G, Lot 2-1

F. Conditional use approval.

(1) Conditional use approval may be granted by the PLANNING BOARD (RSA 674:21II) after proper public notice and public hearing, for construction within the Wetland Protection District or buffer. Said construction may include but is not limited to a road or other accessway, utility right-of-way, communication lines, power lines and pipelines, STRUCTUREs, and parking LOTs provided that the proposed construction complies with the following standards:

(a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area. **The proposed driveways, buildings, side slopes, and bio-retention basin location were chosen to avoid wetland impacts and to minimize wetland buffer impacts. The areas of impervious impact to the wetland buffer were minimized by utilizing the site characteristics including existing slope information to minimize additional side slope impacts.**

(b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative. **There are 786.5 sf of wetland buffer impacts associated with the grading and drainage and development of Lot 2 for the project. The design incorporates unique site characteristics including existing slope, and soil type to minimize wetland buffer impacts.**

(c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland, or which has less detrimental impact on a wetland. Design, construction, and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade. **There are 786.5 sf of wetland buffer impacts for the development of Lot 2, with associated grading, drainage, and utilities. All impacts have been minimized to the greatest extent practicable.**

(d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review. **Mitigation is not required.**

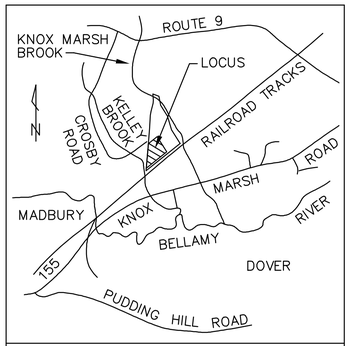
(e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below. **A NHDES wetland permit application is not applicable.**

SITE PLAN - LOT 2
FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2-1

CROSBY ROAD

DOVER, NH

AUGUST 2024



LOCATION PLAN
(NO SCALE)

OWNER

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

OWNER SIGNATURE

SITE CIVIL ENGINEER

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LAND SURVEYOR

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 1166
181 WATSON ROAD
DOVER, NH 03821
(603) 742-0911

WETLAND/SOIL SCIENTIST

BRUCE A. GILDAY, CWS
BAG LAND CONSULTANTS
43 ROCKINGHAM STREET
CONCORD, NH 03301
(603) 228-5775

PERMIT SUMMARY/ WAIVER SUMMARY:

1. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:

   NHDES ALTERATION OF TERRAIN: PENDING

2. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.

   SITE PLAN: PENDING

   CONDITIONAL USE PERMIT: PENDING

2. WAIVERS REQUESTED: THE PLANNING BOARD HAS FOUND THE CRITERIA OF CHAPTER 153-21 HAVE BEEN MET AND HAVE BEEN APPROVED THE FOLLOWING WAIVERS:

   * A WAIVER REQUEST FROM 153-13A (12) TO ALLOW A LANDSCAPE PLAN NOT SIGNED BY A NH LANDSCAPE ARCHITECT.

   * A WAIVER REQUEST FROM 153-13K (1)(b) TO ALLOW PARKING IN FRONT OF BUILDING.

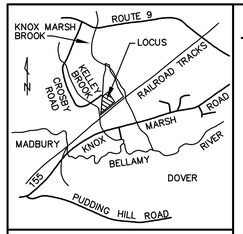
   * A WAIVER REQUEST FROM 153--13A (17) TO ALLOW RELIEF FROM PROVIDING STREETSCAPE PLANS.

WILDLIFE PROTECTION NOTES:

- ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, EMAIL SUBJECT LINE: NHBXX-XXXX, DEL SOL DOVER LLCE, WILDLIFE SPECIES OBSERVATION.
- PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
- IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04.
- THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

SHEET IND	SHEET
COVER SHEET	1
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	2
NEIGHBORHOOD PLAN	3
NOTE SHEET	4
DEMOLITION PLAN	5
SITE PLAN	6
GRADING, DRAINAGE & EROSION CONTROL PLAN	7
UTILITY PLAN	8
LIGHTING PLAN	9
LIGHTING DETAILS	10
LANDSCAPING PLAN	11
EROSION CONTROL NOTES	12
EROSION CONTROL DETAILS	13 - 14
DETAILS	15 - 19
TRUCK MOVEMENT PLAN	20

PLANNING FILE NO.: ....



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR DEL SOL DOVER, LLC TAX MAP G, LOT No. 2–1, CROSBY ROAD, CITY of DOVER, COUNTY of STRAFFORD, STATE of NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: AUGUST 5, 2024; BY THIS OFFICE.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

WATER – DOVER FARAD1–020–MI
SEWER MAIN 169' SMH TO SMH

DMH RIM = 95.7'

36" RCP
INV. IN = 91.2'

18" RCP CULVERT
INV. IN = 92.7'
INV. OUT = 92.6'

UTILITY POLE
364A/1 1140–22

C / 1–E

VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

C / 2–1B

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

50' WETLAND BUFFER

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. OUT = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7081 RIM = 95.9'
#7080 RIM = 96.0'

EXISTING EDGE OF PAVEMENT

UTILITY POLE
364A/1Y UGU DROP

SMH 2874
RIM = 95.1'
INV. IN = 86.62' 8" PVC SMH 2875
INV. OUT = 86.42' 8" PVC
NEXT = [NORTH]

UTILITY POLE

SEWER 8"ø

CROSBY ROAD
{75' WIDE R.O.W.}

SEWER MAIN 321' SMH TO SMH

GAS 4"ø PP

WATER – DOVER FARAD1–020–MI

HYDRANT #319

PROPOSED
75' WIDE R.O.W.

313B

915B

N36°37'58"E
93.78'

N50°00'07"E
154.91'

C1

233B/P

C / 1–C1

C / 1–C2

C / 1–C3

WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

GRAVEL LANDING AREA

NW STATE PLANE NAD 83 / GPS OBS.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	SOIL TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
233B/P	SCANTIC	D	POORLY DRAINED (P)
313B	DEERFIELD	B	MODERATELY–WELL DRAINED
915B	DEERFIELD VARIANT	B	SOMEWHAT POORLY DRAINED

SLOPE

SLOPE DESIGNATION	PERCENT SLOPE
B	0 TO 8 PERCENT

SITE SPECIFIC SOIL DELINEATION (TYP.)

687.64'
N03°21'27"E

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

SITE SPECIFIC SOIL BOUNDARY (TYP.)

LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
92 – CONTOUR LINE – 1' INTERVAL
– SITE SPECIFIC SOIL LINE
313B – SITE SPECIFIC SOIL TYPE
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER

C / 2–1

PARCEL AREA
267,845 S.F.
6.15 Ac.

NHFG DEED RESTRICTED WILDLIFE AREA #3
AREA = 92,619 S.F.
(2.13± Ac.)

WETLAND BAG 2024

50' WETLAND BUFFER

C / 2–1A

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

50' WILDLIFE CORRIDOR

533.24'
S34°14'00"E

C / 5 S49°58'51"W 742.71'

BOSTON & MAINE RR
IRON HORSE PARK
500 WATER STREET J–910
JACKSONVILLE, FL 32202

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	13°22'09"	337.50	78.75	78.57	N43°19'02"E

NOTES:

1.) OWNERS OF RECORD:
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO DEPICT THE PARCEL EXISTING CONDITIONS.

4.) PARCEL AREA = 267,845 S.F. / 6.15 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) THE SUBJECT PARCEL IS LOCATED OUTSIDE OF THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

10.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

11.) SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024.

NO.	DATE	DESCRIPTION	BY	CHK

CNE 18043 REVISIONS

24–2210	EXIST. COND.	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

EXISTING CONDITIONS PLAN
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. SITE 2024

DRAWN BY: RJM	FILE: 2210\D\G–2–13LOTROAD40sc
SCALE: 1" = 40'	DATE: AUGUST 5, 2024

40 20 0 20 40 80 120 160

STATE OF NEW HAMPSHIRE No. 661 KEVIN M. McENEANEY LICENSED LAND SURVEYOR SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 09:22:48 File: M:\2210\Drawings\G-2-1 3LOT ROAD 40sc.dwg Layout: G-2-1 EC 2024



ABUTTERS LIST
(WITHIN 200 FT)

TAX MAP	LOT NO.	NAME & ADDRESS
G 2-1-0	2-1-0	DEL SOL DOVER LLC 340 CENTRAL AVE STE 202Y DOVER, NH 03820
G 2-0-0	2-0-0	WESTFIELD LLC 340 CENTRAL AVE STE 202 DOVER, NH 03820
G 1-L-0	1-L-0	CHAUVIN ARNOUX INC. 15 FARADAT DRIVE DOVER, NH 03820
G 1-E-0	1-E-0	VIRTOUS REALITYLLC C/O TURBOCAM INC. 607 CALEF HIGHWAY #200 BARRINGTON, NH 03825-7237
G 1-D-0	1-D-0	BETTS-LEVINE DEREK S TRUSTEE R AND R REAL ESTATE TRUST FARADAY DRIVE DOVER, NH 0382
G 1-B-0	1-B-0	MCQUADE REALTY INC. P.O. BOX 1409 DOVER, NH 03820
G 1-C-1	1-C-1	AI SOLUTIONS INC 1735 FIFTH AVENUE MCKEESPORT, PA 15132
G 1-C-2	1-C-2	AI SOLUTIONS INC 1735 FIFTH AVENUE MCKEESPORT, PA 15132
G 1-C-3	1-C-3	COLBATH WILLIAM C 211 CROSBY ROAD DOVER, NH 03820
G 5-0-0	5-0-0	BOSTON & MAINE RR IRON HORSE PARK 500 WATER STREET J-910 JACKSON, FL 32202
H 38-0-0	38-0-0	CRAGIN PATRICK J TRUSTEE CRAGIN PATRICK J LIVING REV TRUST P.O. BOX 250 DOVER, NH 03820
H 37-A-0	37-A-0	239 KNOX MARSH REALTY LLC P.O. OX 720 MIDDLETON, MA 01949
H 36-B-1	36-B-1	NSA OPTIVEST ACQUISITION HOLDINGS LLC 24901 DANA PT HARBOR DRIVE #200 DANA POINT, CA 92629

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=80'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

NEIGHBORHOOD PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3

DOVER NOTES:

1. THE OWNERS OF RECORD:
   DEL SOL DOVER, LLC
   340 CENTRAL AVENUE, SUITE 202
   DOVER, NEW HAMPSHIRE 03820
   S.C.R.D. VOL. 5075, PAGE 142
2. D/11-8 – DENOTES TAX MAP AND PARCEL NUMBER.
3. PLAN INTENT: TO DEPICT THE PARCEL EXISTING CONDITIONS.
4. PARCEL AREA = 267,845 S.F. / 6.15 Ac.
5. ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

	REQUIRED	PROPOSED
MINIMUM LOT SIZE	= 20,000 S.F.	267,845
LOT COVERAGE	= 50 PERCENT	±19%
MINIMUM FRONTAGE	= 100 FEET	327 FEET
FRONT SETBACK	= 35 FEET	67 FEET
SIDE SETBACK	= 10 FEET MIN.	77 FEET
REAR SETBACK	= 10 FEET MIN.	353 FEET
BUILDING HEIGHT	= 50 FEET MAX.	24'8"

6. THE SUBJECT PARCEL IS LOCATED OUTSIDE OF THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015,
7. BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.
8. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
9. HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33'WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R-2008.05.14-80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.
10. WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301. JULY 2024.
11. SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024. UPDATED JULY 2024.
12. LIST ANY VARIANCE OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS. (SEE PROJECT VARIANCE/PERMIT SECTION)
13. AS-BUILT PLANS OF THE SUBDIVISION SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT IF A STREET IS PROPOSED FOR CITY ACCEPTANCE. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
14. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
15. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
16. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
17. EROSION CONTROL NOTES INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
18. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
19. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
20. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
21. A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
22. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR PLANNING DIRECTOR. WORK PRECLUDED ON SUNDAYS AND FEDERAL HOLIDAYS.
23. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS, IF APPLICABLE) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT. THE PROPOSED USE FOR THE SITE IS LIGHT MANUFACTURING.
24. THE FOLLOWING FEDERAL AND STATE PERMINTS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY: (SEE PROJECT VARIANCE/PERMIT SECTION)

DOVER NOTES CONTINUED:

25. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
26. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
27. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
28. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
    HTTPS://PTAPP.UNH.EDU/
29. IF APPLICABLE, THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
30. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
31. THE MAXIMUM PARKING SPACE CALCULATION IS 59, INCLUDING 3 ACCESSIBLE SPACES, AND 45, INCLUDING 4 ACCESSIBLE SPACES, ARE PROVIDED.
32. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
33. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATE, OCTOBER 2022.
34. ELEVATIONS DEPICTED ARE BASED ON INFORMATION OBTAINED FROM THE CITY ENGINEER'S OFFICE AND WAS DERIVED FROM COORDINATES FOR CONTROL STATIONS TR390 AND TR391A. THESE COORDINATES HAVE NOT BEEN ADJUSTED TO 1983 DATUM.
35. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER. (AS APPLICABLE)
36. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
37. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81- 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.
38. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.
39. FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
40. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.
41. DESIGN ENGINEER SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
42. ALL MANHOLE COVERS SHALL BE LIFTMATE R-1743-LM OR APPROVED EQUAL WITH 90 DEGREE HINGE.
43. REQUIRED BLASTING AND EXCAVATION – DOVER FIRE DEPARTMENT SHALL BE NOTIFIED PRIOR TO ANY BLASTING ACTIVITIES AND A BLASTING PERMIT FROM THE DOVER FIRE DEPARTMENT MUST BE OBTAINED.
44. THE WATER MAIN SHALL BE POLY WRAPPED IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS.
45. ALL SEWER MAINS AND MANHOLES SHALL BE TESTED IN ACCORDANCE WITH NHDES ENV-WQ 700 REQUIREMENTS. COPIES OF TEST RESULTS SHALL BE PROVIDED TO THECITY OF DOVER ENGINEERING DEPARTMENT.
46. WETLAND PLACARDS SHOULD IDENTIFY THE NO CUT WETLAND BUFFER AND SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION AND AFTER.
47. ALL FITTINGS MUST BE CLASS 140 WATER FITTINGS.
48. ALL GATE VALVES MUST BE MANUFACTURED BY MUELLER OR CLOW.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. STONES FROM REMOVED STONEWALLS SHALL REMAIN ON-SITE. STONES SHALL BE REPURPOSED ON-SITE AND SHALL NOT BE USED AS FILL.
9. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
10. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
11. LEDGE REMOVAL VOLUMES ARE ENGINEERS ESTIMATES. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING ADDITIONAL SUBSURFACE INVESTIGATIONS IF NECESSARY TO DETERMINE ESTIMATED VOLUMES.

SITE NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
3. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
4. SEE DETAILS FOR SIGN LEGENDS.
5. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNERS REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
7. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
9. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
10. REFUSE PICKUP WILL BE BY PRIVATE CONTRACTOR AND WILL BE VIA DUMPSTER ON-SITE.
11. SNOW STORAGE WILL BE ACCORDING TO THE OPERATION AND MAINTENANCE PLAN AND WITHIN AREAS AS INDICATED. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
12. ALL EXTERIOR DOORS ARE MANUAL AND OPENED FROM THE INTERIOR BY PANIC HARDWARE. ALL EXTERIOR DOORS SHALL COMPLY WITH ADA AND ALL LOCAL BUILDING CODE REQUIREMENTS.

GRADING NOTES:

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OF REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
12. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP'S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS. THE DESIGN ENGINEER MUST CERTIFY THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
14. DENSITY REQUIREMENTS:

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

*ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
9. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
17. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
23. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
24. THE PROPOSED STRUCTURE SHALL COMPLY WITH CHAPTER 81, ARTICLE IV, SECTION 81-27 AND THE STATE BUILDING CODES OF THE CODE OF THE CITY OF DOVER.
25. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION AS APPROPRIATE.
26. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
27. SEWAGE LOADING
    9,600 S.F. SPECIALTY TRADE CONTRACTOR BUILDING
    4,600 S.F. OFFICE
    5,000 S.F. WAREHOUSE
    ESTIMATED # EMPLOYEES = 30
    PER NHDES ENV-WQ1008.03 TABLE 1008-1:
    UNSPECIFIED OFFICE SPACE = 5 GPD/100 S.F.
    WAREHOUSE = 10 GPD/ PERSON
    DESIGN FLOW
    OFFICE = 4,600 S.F. x 5 GPD/100 S.F. = 230 GPD
    WAREHOUSE = 30 EMP'S x 10 GPD/EMPL. = 300 GPD
    TOTAL = 530 GPD
28. PUMP CHAMBERS ARE UNCLASSIFIED.
29. AN EASEMENT WILL BE GRANTED TO THE CITY ALONG THE WATER LINES TO ALLOW ACCESS FOR OPERATION OF THE WATER INFRASTRUCTURE TO MAINTAIN WATER QUALITY.

UTILITY CONTACTS

NATURAL GAS: –
CONTACT: UNITIL CORPORATION
DAVID MACLEAN
325 WEST ROAD
PORTSMOUTH, NH 03801
TEL: (603)-294-5261
EMAIL: MACLEAND@UNITIL.COM

WATER & SEWER: –
CONTACT: CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
PUBLIC WORKS & UTILITIES
KEN MAVROGEORGE, PE
271 MAST ROAD
DOVER, NH 03820
TEL: (603)-516-6450
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV

ELECTRIC: –
CONTACT: EVERSOURCE
TREVER EMMONS
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)-332-7515
EMAIL: TREVER.EMMONS@EVERSOURCE.COM

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

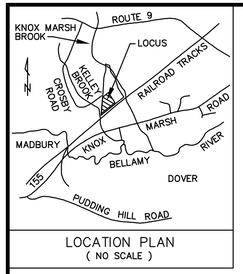
NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: N.T.S
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

NOTE SHEET



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

50' WETLAND BUFFER

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

WATER – DOVER FARAD1–020–MI

SEWER MAIN

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN #7080 RIM = 96.0'

CATCH BASIN #7081 RIM = 95.9'

UTILITY POLE 364A/1Y UGU DROP

EXISTING EDGE OF PAVEMENT

UTILITY POLE 364A/1 1140–22

CROSBY ROAD
{75' WIDE R.O.W.}

PUBLIC R.O.W. 75'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER 8"ø

SEWER MAIN

PW — GAS 4"PW/PP — PW — PW — PW

LOCATION PLAN
(NO SCALE)

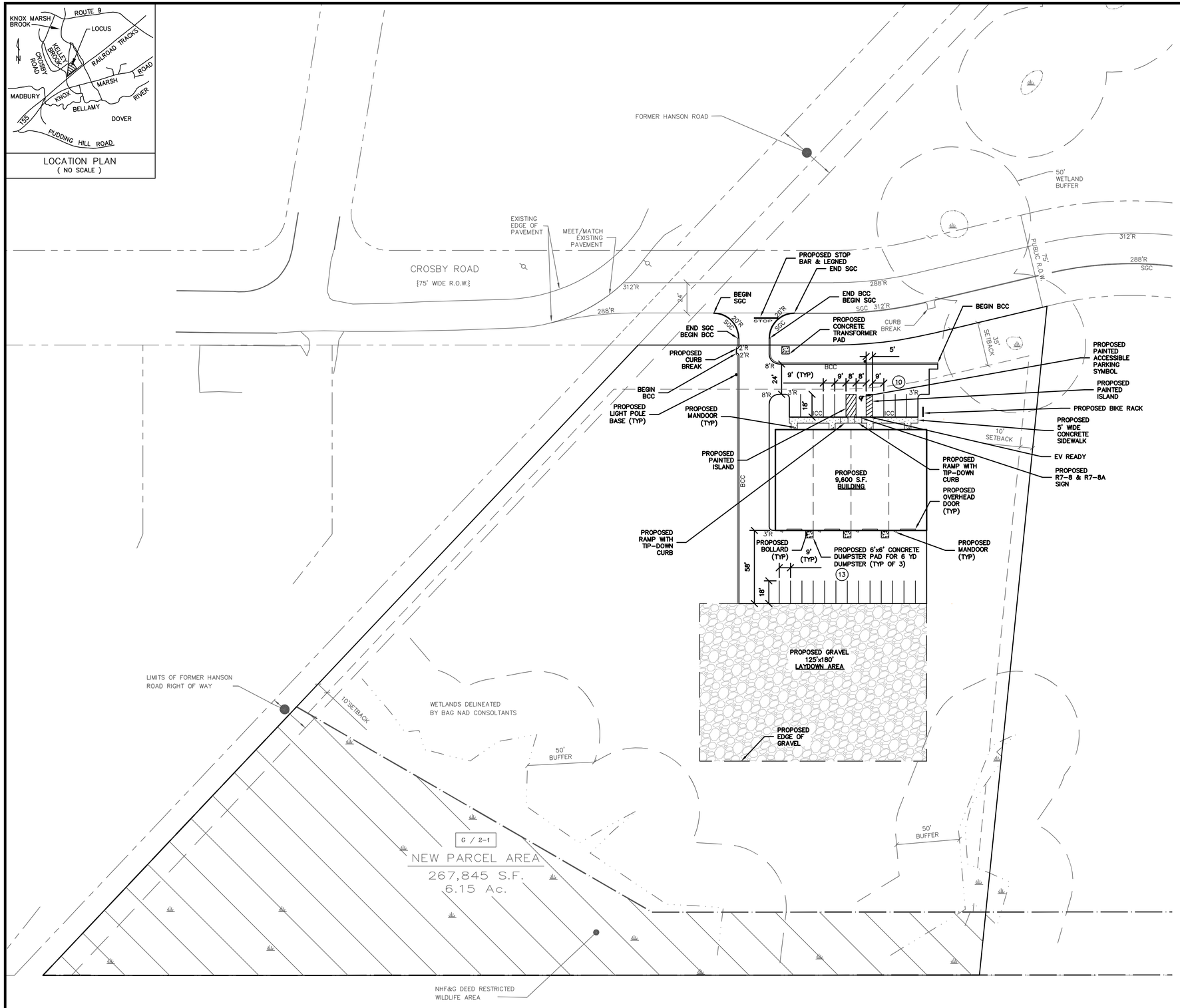
LEGEND

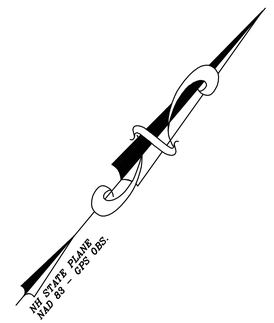
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ⌀ – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- FIRE HYDRANT
- WETLAND
- EDGE OF WETLAND
- WETLAND BUFFER
- 312'R – PAVEMENT RADUIS
- SGC – SLOPED GRANITE CURB
- ICC – INTERGRATED CONCRETE CURB
- BCC – BITUMINOUS CONRETE CURB
- ACCESIBLE PARKING SYMBOL
- PROPOSED SIDEWALK
- PROPOSED GRAVEL

PARKING CALCULATIONS

OFFICE 1 SPACE/300 S.F.
INDUSTRIAL 1 SPACE/800 S.F.

OFFICE: 4,600 S.F./300	= 16
INDUSTRIAL: 5,200 S.F./800	= 7
ALLOWED	= 23
PROVIDED	= 23





GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

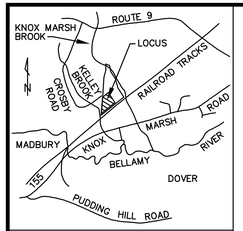
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

SITE PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

6



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

WATER – DOVER PARAD1–020–MI

CATCH BASIN #7080 RIM = 96.0'

CATCH BASIN #7081 RIM = 95.9'

TBM RIM =96.0

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

GAS 4"ø PP

WATER – DOVER PARAD1–026–MI

HYDRANT #319

50' WETLAND BUFFER

PUBLIC R.O.W. 75'

PROPOSED CONSTRUCTION ENTRANCE

35' SETBACK

10' SETBACK

BUFFER IMPACT "A"

BUFFER IMPACT "B"

BUFFER IMPACT "C"

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

BIORETENTION POND 2 W/ ISR (BIO2 W/ ISR)

PROPOSED 9,600 S.F. BUILDING
F.F.=98.75

TC=98.65
BC=98.15

H.P.

INV. 93.0

INV. 92.75

PROPOSED RIP–RAP 1

PROPOSED RIP–RAP 2

PROPOSED SILTSOXX

MON WELL 1

MON WELL 2

MON WELL 3

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

WETLANDS DELINEATED BY BAG NAD CONSOLTANTS

TP 2A

TP2

TP3

TP5

50' BUFFER

C / 2–1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
92 – CONTOUR LINE – 1' INTERVAL
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER
92.0 – PROPOSED FINISH GRADE
x 92.0 – PROPOSED SPOT ELEVATIONS
PD – PROPOSED DRAIN LINE

CONDITIONAL USE PERMIT
WETLAND BUFFER IMPACTS

IMPACT	AREA
A	104.3 S.F.
B	354.7 S.F.
C	327.5 S.F.
TOTAL	786.5 S.F.

NH STATE PLANE NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

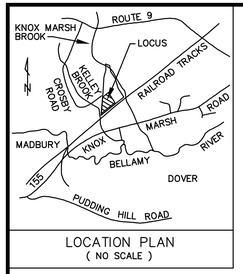
DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

GRADING, DRAINAGE & EROSION CONTROL PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

7



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

WATER – DOVER FARAD1–020–MI

SEWER MAIN

UTILITY POLE 364A/1Y UGU DROP

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER 8"ø

SEWER MAIN

GAS 4" HDPE

WATER – DOVER FARAD1–020–MI

HYDRANT #319

8" WATERLINE

PROPOSED OVERHEAD UTILITIES

UTILITY POLE 364A/1 1140–22

PROPOSED 2" TAP WITH SHUT–OFF

PSMH2
RIM97.2
INV.IN=89.6
INV.OUT=89.5
8" SDR35
L=230'
S=.004

PROPOSED UTILITY POLE

PSMH 3
RIM=98.2
INV.IN=90.60
INV.OUT= 90.50

50' WETLAND BUFFER

PUBLIC R.O.W. 75'

PSMH 1
RIM=96.9
INV.IN=89.2
INV.OUT=89.1
8" SDR35
L=66
S=.004

PROPOSED UNDERGROUND UTILITIES

PROPOSED TRANSFORMER

35' SETBACK

PROPOSED 93 LF 6" PVC S=1%

PROPOSED 2" DOMESTIC WATER SERVICE

PROPOSED 2" GAS SERVICE

PROPOSED 9,600 S.F. BUILDING

F.F.=98.75

10' SETBACK

PROPOSED FUTURE EV CHARGING STATION ELECTRICAL LINE

GAS STUB

WATER L STUB

SEWER LINE STUB

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

10' SETBACK

WETLANDS DELINEATED BY BAG NAD CONSOLTANTS

50' BUFFER

50' BUFFER

G / 2–1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
– WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER
PD – PROPOSED RAIN LINE
PW – PROPOSED WATER
PE – PROPOSED UTILITY LINES
PS – PROPOSED SEWER LINE
PG – PROPOSED GAS LINE

NH STATE PLANE NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

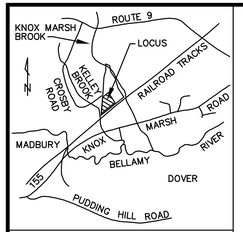
DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

UTILITY PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

8



LOCATION PLAN
(NO SCALE)

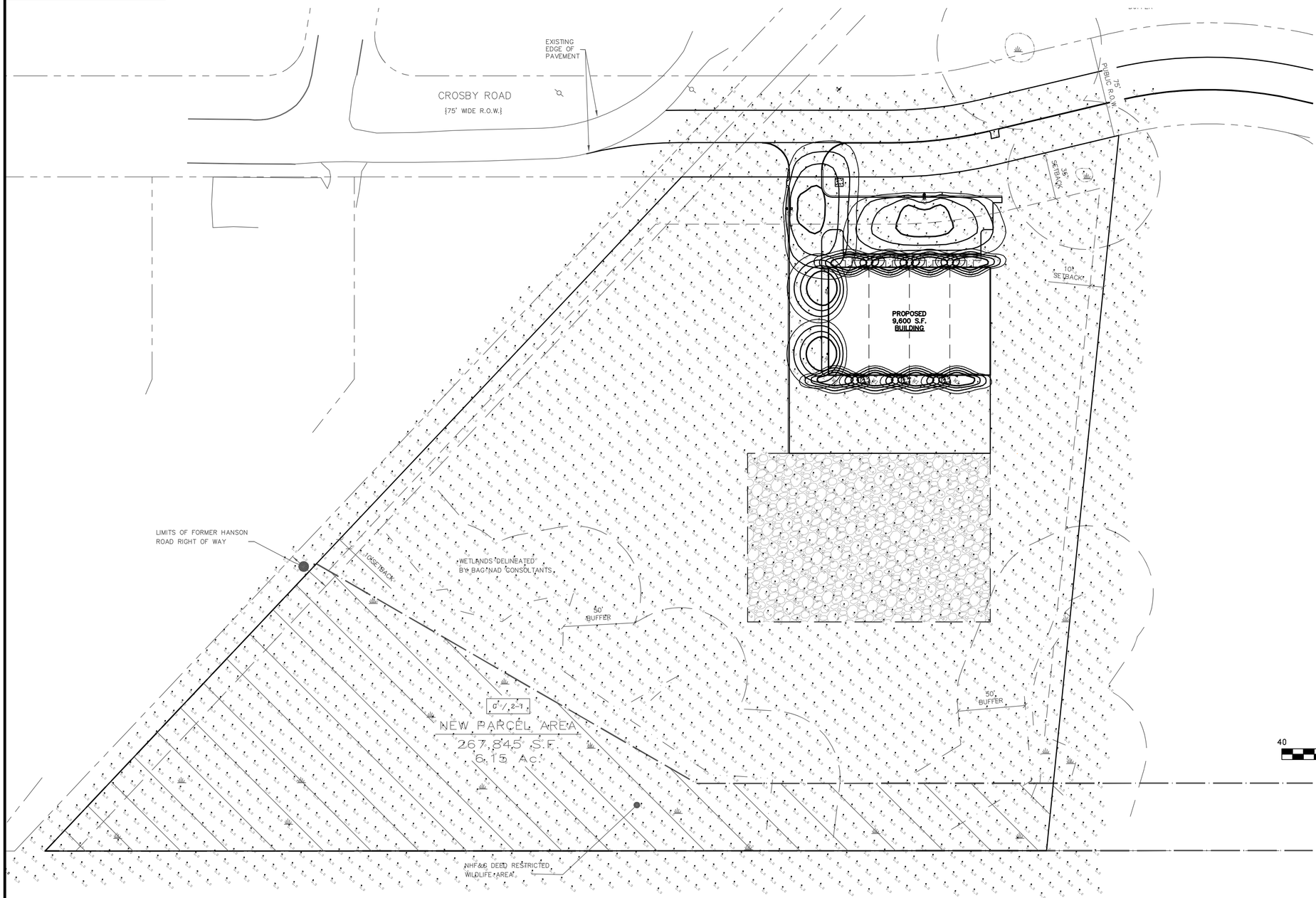
Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Description	Tag	[MANUFAC]
	1	S2	Single	MRM-LED-09L-SIL-FT-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	1	S3	Single	MRM-LED-09L-SIL-3-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	2	W	Single	XWS-LED-03L-MTD-UNV-DIM-30-80CRI-CXX	WALL MOUNTED 12' AFG	LSI INDUSTRIES, INC.
	8	W1	Single	EOF1MV3KCXXPSC	WALL MOUNTED 9' AFG	NICOR, Inc.

FRONT PARKING LOT AREA

Illuminance (Fc)
Average = 1.29
Maximum = 2.8
Minimum = 0.5
Avg/Min Ratio = 2.58
Max/Min Ratio = 5.60

REAR PARKING LOT AREA

Illuminance (Fc)
Average = 0.49
Maximum = 6.1
Minimum = 0.0
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

LIGHTING PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

9

EOF

LED Emergency Outdoor Full Cutoff

Project

Catalog

Type

Date

Product Description

The LED Emergency Outdoor Full Cutoff combines 90-minute emergency lighting with a low-profile, architectural design. The EOF is designed for outdoor use, with an optional cold-weather kit for added reliability in northern climates. The EOF comes standard with a photocell, with an optional motion sensor adding even more energy efficiency. An internal selector switch allows bypassing the photocell to control the unit from a wall switch. A non-emergency unit is available for locations not requiring battery-backup, providing a uniform look for all fixtures.

Construction
- IP65 Rated enclosure
- Durable die-cast Aluminum body
- Separable backplate for easy installation and maintenance

Optical System
- Polycarbonate lens
- Utilizes advanced LED technology with CCT of 3000K and 5000K
- CRI 70+

Electrical
- Input voltage of 120/277VAC
- Maintenance-free NiCad battery provides 90-minute emergency operation
- LED indicator light & test button with self-testing, self-diagnostic option
- Photocell standard with wall switch control
- Motion sensor option for additional energy saving
- Operating Temperature:
  - EM: 32°F to 122°F (0°C to +50°C)
  - Non-EM and EM Cold Weather: -13°F to +122°F (-25°C to +50°C)

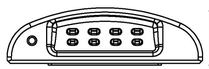
Mounting and Installation
- Fixture mounts directly to J Boxes and walls with screws
- Wiring possible through backplate or 1/2" conduit knockout
- For installations where power surge may be possible, NICOR recommends installing additional surge protection at the electrical distribution panel

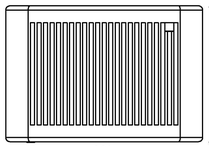
Finish
- Fine-textured, UV-stabilized powder coat bronze finish

Listings
- LM-79, LM-80 testing performed in accordance with IESNA standards.
- UL & cUL 924 Listed
- Meets or exceeds requirements of NFPA 70 & NFPA 101
- Meets FCC Part 15, Subpart B, Class B standards for conducted and radiated emissions
- TM-21 Projected L70(9k) life >72,000 hours

Warranty
- 1-year limited system warranty standard
- Warranty does not cover product failure due to an overvoltage event (power surge.)







NICOR, Inc. 2200 Midtown Place NE, Albuquerque, NM 87107 P: 800.821.6283 F: 800.892.8393
www.nicorlighting.com April 2, 2021 9:17 AM

Catalog # : _____ Project : _____ Type : _____

Prepared By : _____ Date : _____

Mirada Medium (MRM)

Outdoor LED Area Light

IP66 IK08



OVERVIEW	
Lumen Package	9,000 - 55,000
Wattage Range	62 - 438
Efficacy Range (LPW)	115 - 162
Weight lbs(kg)	30 (13.6)
Control Options	IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System
- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated sealed optical chamber in 1 component.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in IES Types 2, 3, 4, 5W, FT, FTA, AM, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377. Also Available in Phosphor Converted Amber with Peak intensity at 610nm.
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz or optional High Voltage (347-480 Vac).
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L and 48L lumen packages rated to +40°C. 55L lumen package rate to +35°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls
- Optional integral passive infrared Bluetooth™ motion. Fixtures operate independently and can be commissioned via iOS or Android configuration app
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7. (see controls section for more details).

Installation
- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional 3" drill pattern B3 for easy fastening of LSI products.

Warranty
- LSI LED Fixtures carry a 5-year warranty.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet Locations.
- IP66 rated Luminaire per IEC 60598.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2)
- IK08 rated luminiare per IEC 66262 mechanical impact code

Catalog #: _____ Project: _____

Prepared By: _____ Date: _____ Type: _____

Mirada Small Wall Sconce (XWS)

Outdoor LED Wall Light

IP65 IK10



OVERVIEW	
Lumen Output Range	2,000 - 6,000
Wattage Range	15 - 52
Efficacy Range (LPW)	119 - 151
Luminaire Weight lbs (kg)	8 (3.6)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: 10 lbs in carton.
- Max luminaire shipping weight (with back housing): 20 lbs in carton.

Optical System
- Choice of acrylic lens or high impact resistant polycarbonate lens
- The lens is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP65 rating for the luminaire
- Reflector system with recessed light engine reduces glare and brightness.
- Forward Throw Wide and Medium distributions available.
- Optional diffused lens for reduced LED pixilation over the lens and maximum visual comfort.
- Zero uplight.
- Available in 5000K, 4000K, 3500K, 3000K and 2700K color temperatures per ANSI C78.377.
- Minimum CRI of 80

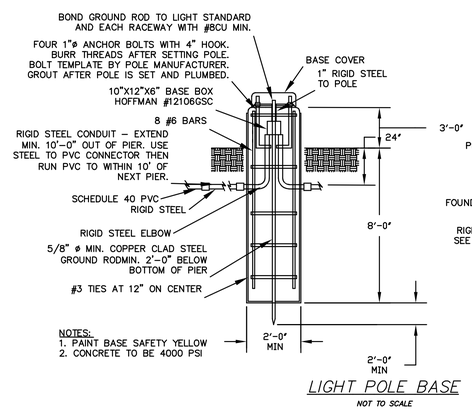
Electrical
- High-performance driver features over-voltage under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F).
- Power factor: >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance. Driver complies with FCC standards. Accessible driver and electrical components.
- Optional Dual Drivers/Circuit/Power Feeds.
- Optional battery backup provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. Standard battery rated for 0° to 50° with cold weather battery rated for -20°C to 50°. 120-277V Only.

Controls
- Optional integral passive infrared Bluetooth™ motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7.

Installation
- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 2700K or 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- IK10 rated luminaire per IEC 66262 mechanical impact code with clear polycarbonate lens (MTP).
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product are DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

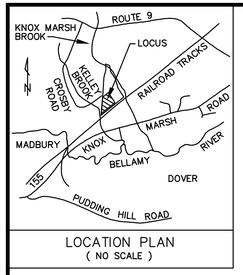
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

LIGHTING DETAILS

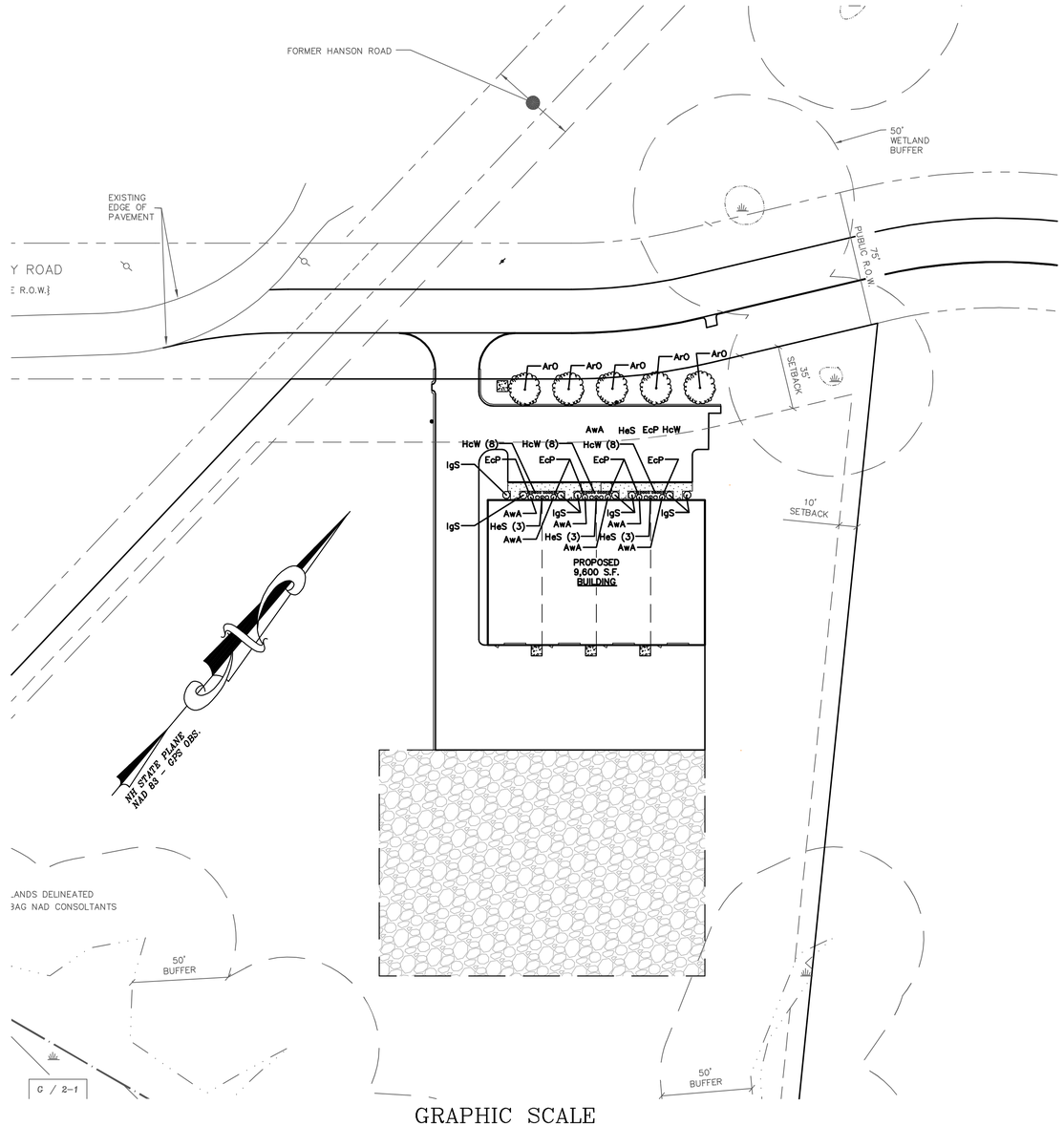
10



LOCATION PLAN
(NO SCALE)

PLANT SCHEDULE

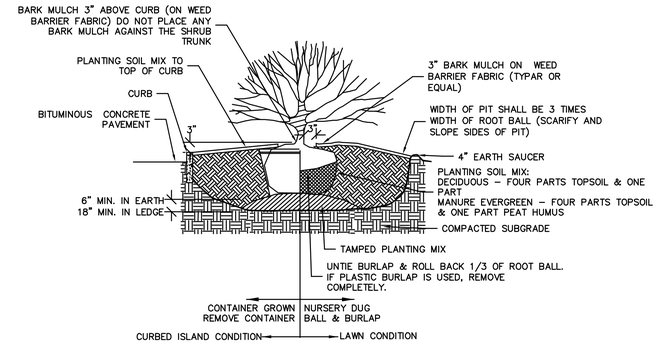
QTY	SYMBOL	BITINICAL NAME	COMMON NAME	SIZE
5	ARO	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3 -3.5" C
8	IGS	ILEX GLABRA 'SHAMROCK'	SHAMROCK HOLLY	#5
6	AMA	ARONIA MELANOCARPA 'AUTUMN MAGIC'	AUTUMN MAGIC CHOKEBERRY	#5
9	HES	HYDRANGEA 'ENDLESS SUMMER'	ENDLESS SUMMER HYDRANGEA	#3
6	ECP	ECHINACEA PURPUREZ	CONEFLOWER	#1
24	HCW	HEMEROCALLIS 'CATHERINE WOODBURY'	CAHTERINE WOODBURY DAYLILY	#1



GRAPHIC SCALE

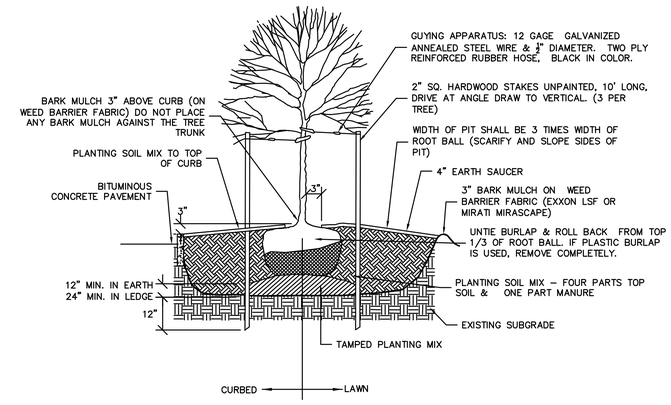
40 0 20 40 80 160

(IN FEET)



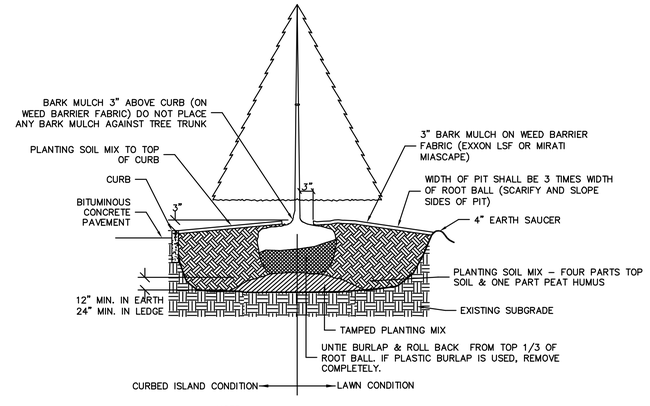
NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING
NOT TO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

DECIDUOUS PLANTING
NOT TO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

EVERGREEN TREE PLANTING
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

LANDSCAPING PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

11

DESCRIPTION

1. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS FOR A 9,600 S.F. COMMERICAL BUILDING WITH THE ASSOCIATED WATER, SEWAGE, AND ELECTRIC UTILITY IMPROVEMENTS.

PROJECT NAME AND LOCATION

DEL SOL DOVER, LLC
3 LOT SUBDIVISION CROSBY RD EXTENSION — *LATITUDE N43° 10' 49"*
DOVER, NEW HAMPSHIRE 03820 — *LONGITUDE W70° 54' 41"*

DISTURBED AREA

±142,500 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL FOUNDATION FOOTINGS AND WALLS.
10. INSTALL UTILITIES.
11. PLACE GRAVELS AND FINE GRADE.
12. STABILIZE ROADWAYS AND PARKING AREAS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
13. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
14. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
15. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
16. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   - a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   - b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   - c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   - d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   - e. CURVE THE END OF THE SILT BARRIER UP-GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   - a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   - a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   - b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   - c. REMOVE SEDIMENT WHEN IT REACHES ONE-THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   - d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   - e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   - f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   - g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   - a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   - b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
   - c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   - a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   - b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 150-200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   - a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   - b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   - c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   - d. EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   - a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   - b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   - c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
     - i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
     - ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   - a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   - b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   - c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   - d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   - a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   - a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   - b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   - c. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
     AGRICULTURAL LIMESTONE @ 138 LBS. PER 1,000 S.F.
     LOW PHOSPHATE (N-P2O5-K20) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   - a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   - b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   - c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   - a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   - b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   - c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   - a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   - b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   - c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   - d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   - e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   - a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   - b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   - a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND-DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   - b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   - c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   - d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   - a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   - b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   - c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   - d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   - e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.

b. HAZARDOUS WASTE
ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.

c. SANITARY WASTE
ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PROPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
GOOD HOUSEKEEPING:
THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
1. THE CONSTRUCTION PROJECT:
   - a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
   - b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
   - c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
   - d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
   - e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
   - f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
2. HAZARDOUS PRODUCTS:
   - a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
   - b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
   - c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
   - d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
1. PETROLEUM PRODUCTS:
   - a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
2. FERTILIZERS:
   - a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
3. PAINTS:
   - a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
4. CONCRETE TRUCKS:
   - a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   - a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   - b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   - c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   - d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   - e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   - f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   - g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV-A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST: A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV-A 1002 FUGITIVE DUST: PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV-A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECUATIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   - I) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   - II) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   - III) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   - iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   - v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT.
2. ALL DITCHES & SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD AND PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3-INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SIT-DWG

PLANNING FILE NO.: SITE-2024-

EROSION CONTROL NOTES

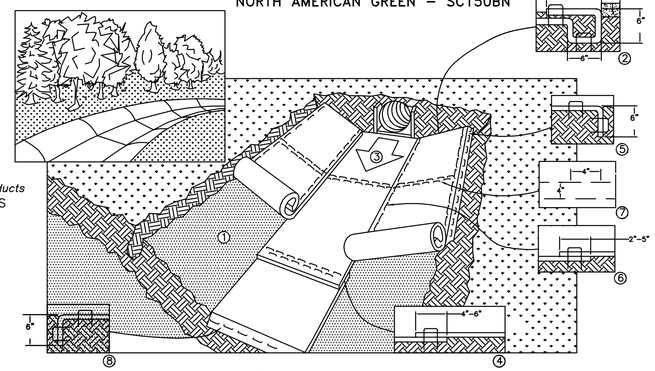
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

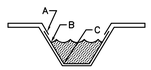
12

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



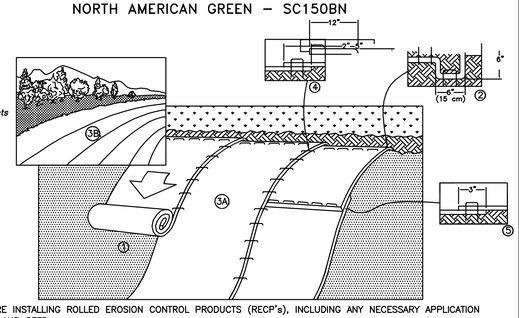
CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

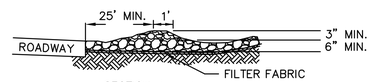
NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



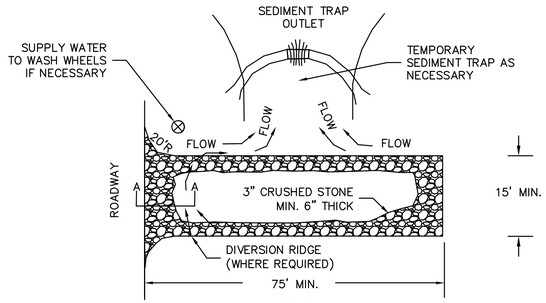
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™ STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.

DIVERSION RIDGE REQUIRED
WHERE GRADE EXCEEDS 2%



SECTION A – A



PLAN

A. GENERAL NOTES:

1. A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS
2. ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
3. LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
4. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

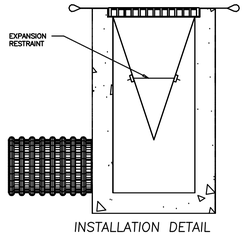
1. STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
3. THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6" THICK.
6. A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF–SITE.
8. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).

1. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT–TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®

(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

DETAIL OF INLET SEDIMENT CONTROL DEVICE

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:



Blanding's turtle (state endangered)
- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land



Wood turtle (special concern)
- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land



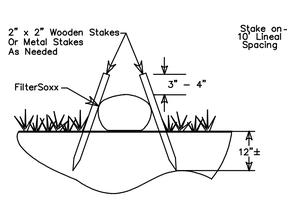
Eastern box turtle (state endangered)
- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base



Spotted turtle (state threatened)
- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 *Please report promptly, noting specific location and date – Photographs strongly encouraged*

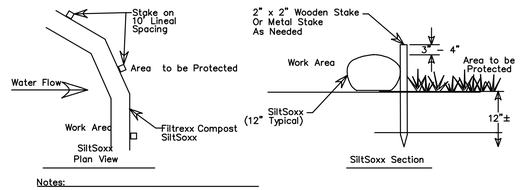
NOTES:
1. ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.
2. THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED
3. THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE
4. IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271–1738 or JOSH MEGYESY AT 271–1125 FOR FURTHER INSTRUCTIONS.



FilterSoxx Section
At Ends of Run Cross Stakes

Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details



Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SILTSOXX DETAILS

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:24085
FILE: SITE.DWG

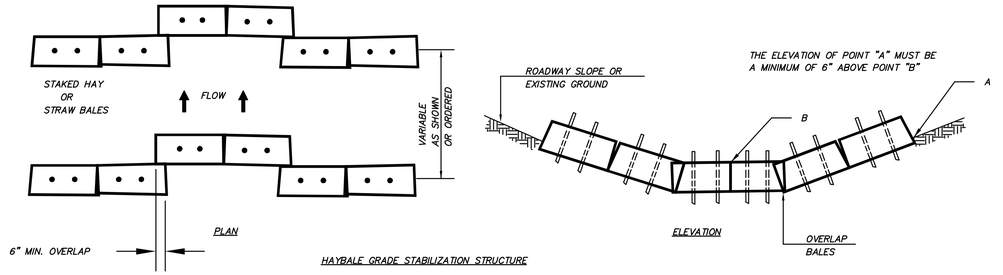
PLANNING FILE NO.: SITE–2024–

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

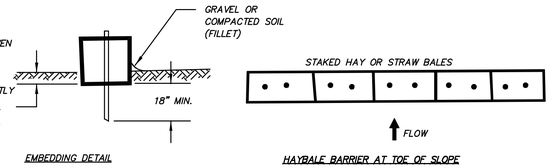
13



HAYBALE GRADE STABILIZATION STRUCTURE

CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.

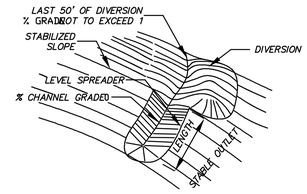


EMBEDDING DETAIL

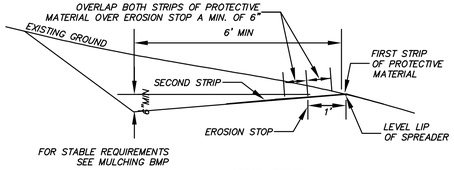
HAYBALE BARRIER AT TOE OF SLOPE

HAYBALE NOTES AND DETAILS

NOT TO SCALE



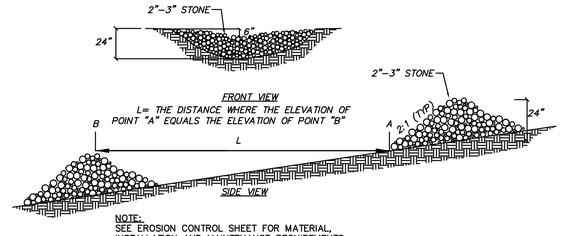
ISOMETRIC VIEW



CROSS SECTION

LEVEL SPREADER DETAIL

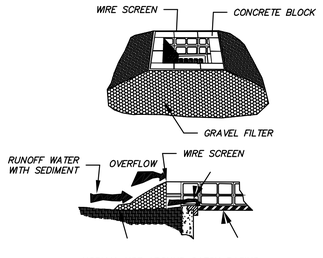
NOT TO SCALE



NOTE:
SEE EROSION CONTROL SHEET FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.

STONE CHECK DAM

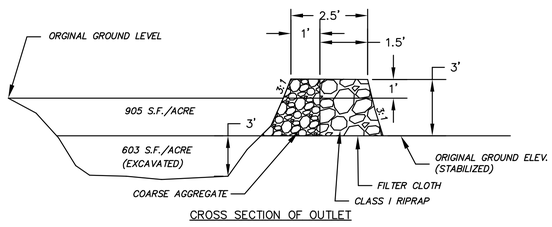
NOT TO SCALE



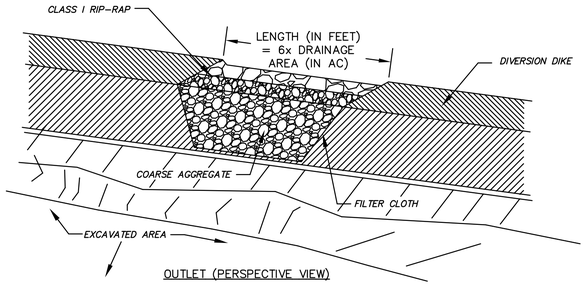
NORMAL USE AROUND CATCH BASINS

TEMPORARY EROSION CONTROL

NOT TO SCALE



CROSS SECTION OF OUTLET

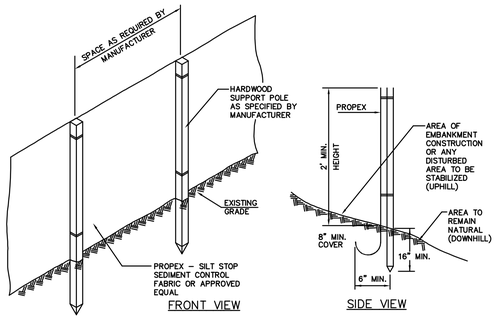


OUTLET (PERSPECTIVE VIEW)

NOTES:
1. COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
2. FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
3. CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
4. THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
5. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
6. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

TEMPORARY SEDIMENT TRAP

NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

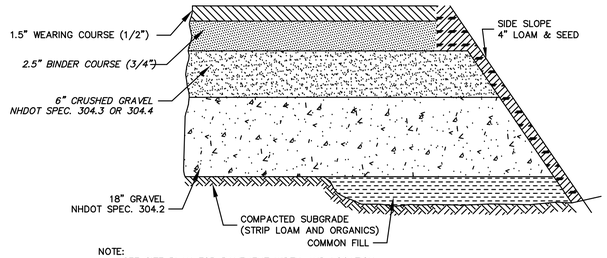
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JPG
APPROVED BY:SJH
PROJECT NO:24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-

EROSION CONTROL DETAILS

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

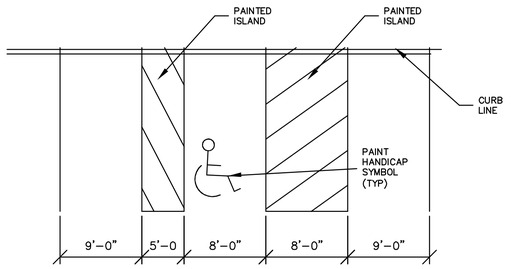
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820



NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

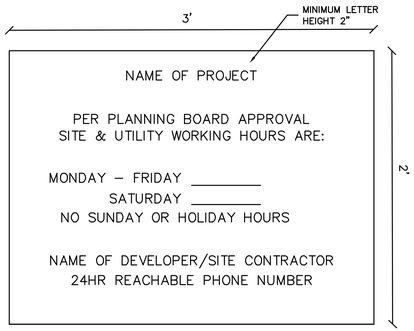
HEAVY DUTY TYPICAL PAVEMENT SECTION

NOT TO SCALE



ACCESSIBLE PARKING LAYOUT

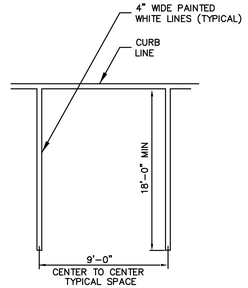
NOT TO SCALE



NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. HOURS ON THE SIGN SHALL COMPLY WITH ALL PLANNING BOARD CONDITIONS OF APPROVAL.

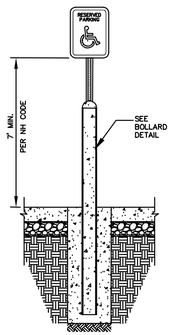
CITY OF DOVER D-2 CONSTRUCTION SIGN

NOT TO SCALE



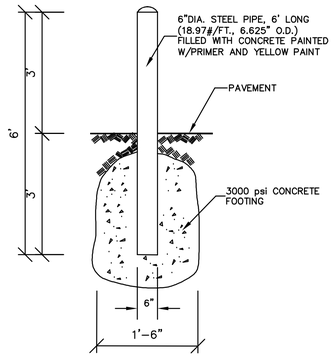
STANDARD PARKING STALL

NOT TO SCALE



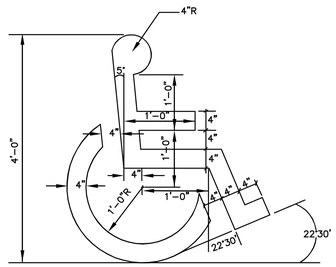
SIGN IN BOLLARD

NOT TO SCALE



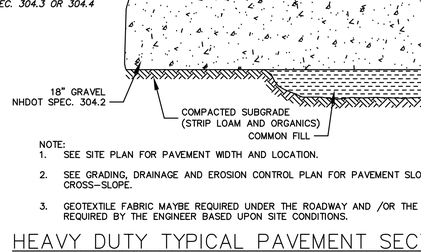
BOLLARD DETAIL

NOT TO SCALE



PAINTED ACCESSIBLE PARKING SYMBOL

NOT TO SCALE



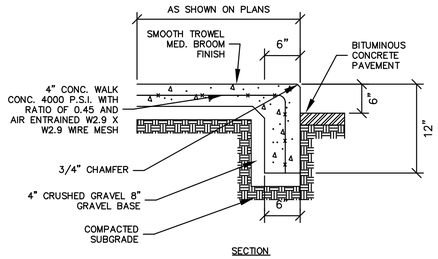
SLOPED GRANITE CURB

RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

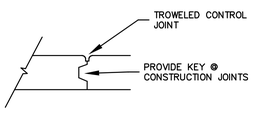
NOTES:
1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
2. CONCRETE CURB SUPPORT SHOULD BE SET 1/2" BELOW THE TOP OF THE PAVEMENT BASE COURSE.

CITY OF DOVER D-8 GRANITE CURB DETAIL

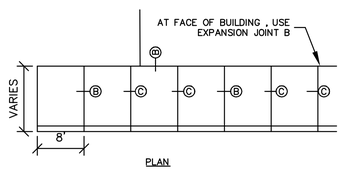
NOT TO SCALE



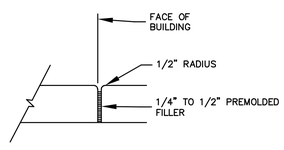
SECTION



CONSTRUCTION CONTROL JOINT C



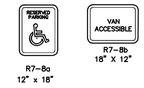
PLAN



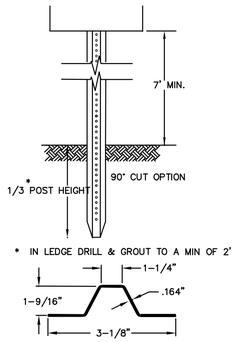
EXPANSION JOINT B

CONCRETE WALKWAY WITH MONLITHIC CONCRETE CURB

NOT TO SCALE



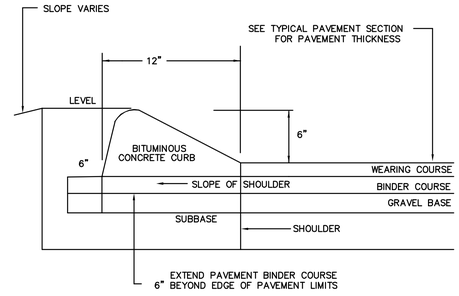
NOTE:
1. ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.



LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 – 1080)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN
BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY.
ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

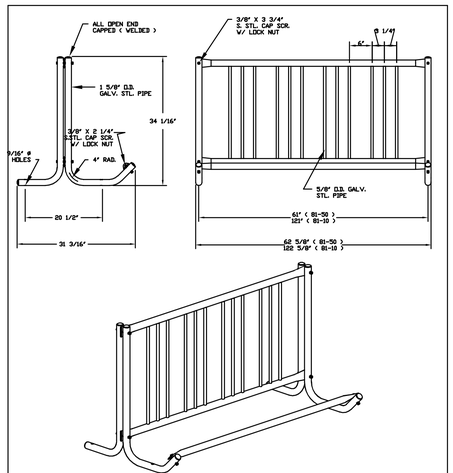
SIGN LEGEND & SIGN POST

NOT TO SCALE



BITUMINOUS CONCRETE CURB

NOT TO SCALE



BIKE RACK DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

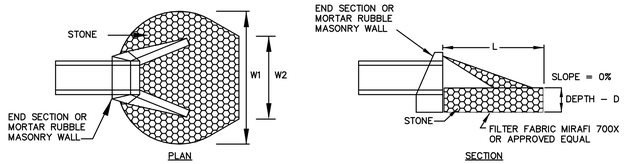
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-

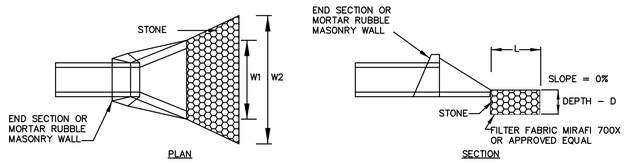
DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO DEFINED CHANNEL



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO FLAT AREA, NON DEFINED CHANNEL

MAINTENANCE

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

STONE GRADATION

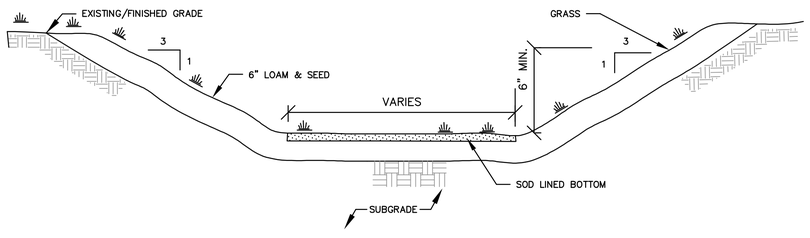
% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100	1.5 TO 2.0 D50
85	1.3 TO 1.8 D50
50	1.0 TO 1.5 D50
15	0.3 TO 0.5 D50

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

OUTLET FROM	W1(ft)	W2(ft)	L(ft)	D (ft)	D50(IN)	CHANNEL TYPE
BIO-1	8	2	20	1	6	DEFINED
BIO-2	3	13	10	1	6	UNDEFINED
BIO-3	3	11	8	1	6	UNDEFINED

RIP RAP OUTLET PROTECTION
NOT TO SCALE



MAINTENANCE
TIMELY MAINTENANCE IS IMPORTANT TO KEEP THE VEGETATION IN THE SWALE IN GOOD CONDITION. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO KEEP THE VEGETATION IN VIGOROUS CONDITION AND TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION, HOWEVER IT SHOULD NOT BE MOWED TOO CLOSELY, MAINTAIN A MINIMUM 4" STAND OF VEGETATION. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.

THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE SWALE. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

GRASS LINED CONVEYANCE SWALE DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

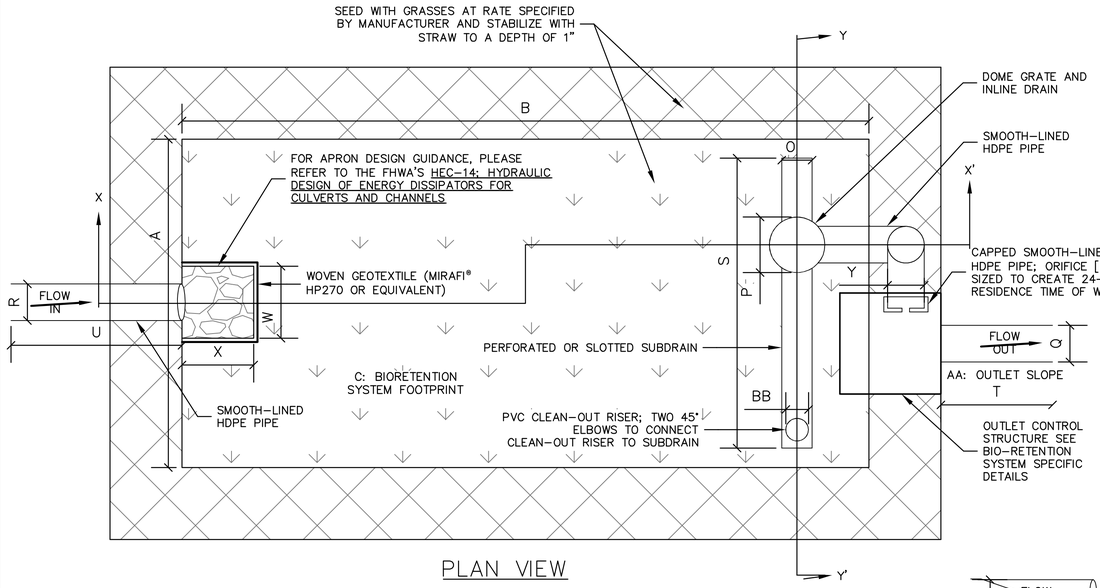
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-

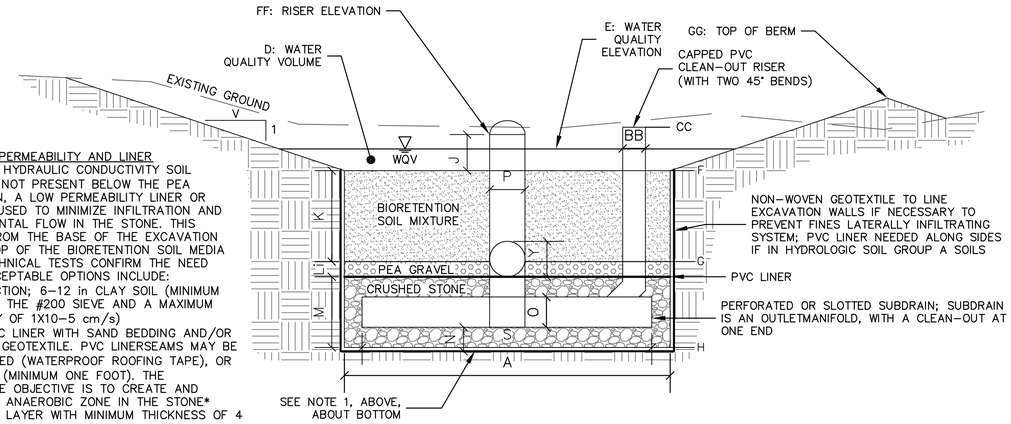
DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH



PLAN VIEW



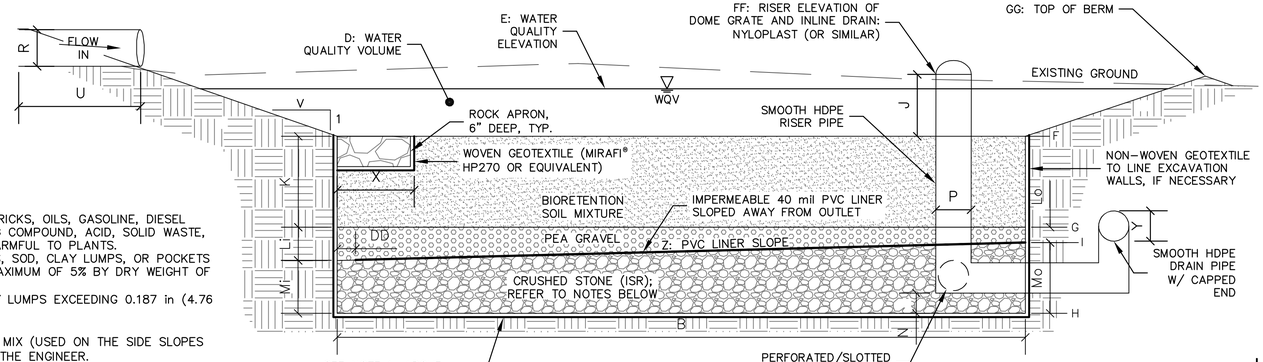
SECTION Y-Y'

NOTE 1: BOTTOM PERMEABILITY AND LINER
IF A NATIVE, LOW HYDRAULIC CONDUCTIVITY SOIL ($k \leq 0.03$ft/day) IS NOT PRESENT BELOW THE PEA GRAVEL ELEVATION, A LOW PERMEABILITY LINER OR SOIL SHOULD BE USED TO MINIMIZE INFILTRATION AND PRESERVE HORIZONTAL FLOW IN THE STONE. THIS LINER EXTENDS FROM THE BASE OF THE EXCAVATION TO ABOVE THE TOP OF THE BIORETENTION SOIL MEDIA LAYER. IF GEOTECHNICAL TESTS CONFIRM THE NEED FOR A LINER, ACCEPTABLE OPTIONS INCLUDE:

a. SOIL COMPACTION; 6-12 in CLAY SOIL (MINIMUM 15% PASSING THE #200 SIEVE AND A MAXIMUM PERMEABILITY OF 1X10-5 cm/s)
b. A 40 mil PVC LINER WITH SAND BEDDING AND/OR NON-WOVEN GEOTEXTILE. PVC LINERSEAMS MAY BE WELDED, TAPED (WATERPROOF ROOFING TAPE), OR OVERLAPPED (MINIMUM ONE FOOT). THE PERFORMANCE OBJECTIVE IS TO CREATE AND MAINTAIN AN ANAEROBIC ZONE IN THE STONE*
c. A BENTONITE LAYER WITH MINIMUM THICKNESS OF 4 in
d. USE OF CHEMICAL ADDITIVES (SEE NRCS AGRICULTURAL HANDBOOK #386, DATED 1961)
e. OR AN OTHERWISE PREPARED DESIGN BY A PROFESSIONAL ENGINEER

*IF ENGINEER BELIEVES THE PVC LINER IS AT RISK OF PUNCTURE, THE LINER MAY BE SANDWICHED BETWEEN NON-WOVEN GEOTEXTILE OR SAND (3 in THICKNESS)

NOTE: ADDITIONAL OUTLET STRUCTURES ABOVE THE ELEVATION OF THE WQV OR DESIGN VOLUME MAY BE NECESSARY TO CONVEY LARGE FLOWS.



SECTION X-X'

NOTES:

1. FOR FULL BIORETENTION STORMWATER SYSTEM SPECIFICATIONS, PLEASE REFER TO THE UNH STORMWATER CENTER'S BIORETENTION SPECIFICATIONS PUBLICATION, DATED FEBRUARY 2017, FOUND AT: https://www.unh.edu/unhsc/sites/default/files/media/unhsc_bsm_spec_2-28-17_0.pdf
2. SYSTEM FOOTPRINT NEED NOT BE RECTANGULAR, ANY SHAPE IS POSSIBLE. THESE DETAILS USE THE RECTANGULAR SHAPE AS AN EXAMPLE.
3. THESE DETAILS ARE NOT TO SCALE; FOR DIMENSIONS AND SPECIFICATIONS, REFERENCE EACH LETTER TO THE TABLE OF METRICS.
4. BIORETENTION SOIL MIX SHALL NOT BE PLACED UNTIL AFTER ENGINEERING APPROVAL AND INSPECTION OF SUBGRADE.
5. BIORETENTION SYSTEM IS RECOMMENDED TO HAVE PRETREATMENT (FOREBAY, SWALE, OR OTHER APPROVED STRUCTURE). PRETREATMENT IS REQUIRED FOR PROJECTS REQUIRING ALTERATION OF TERRAIN (AOT) PERMITTING.
6. PLANT THE SYSTEM AS SPECIFIED; AT A MINIMUM, SEED THE SYSTEM FLOOR AND SIDE SLOPES WITH RYE GRASS MIXTURE CONTAINING PERENNIAL AND WINTER RYES, AT A RATE SPECIFIED BY THE MANUFACTURER. STABILIZE THE SLOPES WITH STRAW TO A DEPTH OF 1".
7. GENERAL CONSTRUCTION GUIDELINES:
   - 7.1. VERIFY THAT NO FOREIGN OR DELETERIOUS MATERIAL OR LIQUID SUCH AS PAINT, PAINT WASHOUT, CONCRETE SLURRY, ASPHALT/CONCRETE LAYERS OR CHUNKS. CEMENT, PLASTER, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, SOLID WASTE, OR ACID HAS BEEN DEPOSITED IN PLANTING SOIL (BIORETENTION MEDIA OR LOAM ON SIDE SLOPES).
   - 7.2. PROCEED WITH PLACEMENT OF ANY SUBSURFACE MATERIALS ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
   - 7.3. COMPACT EACH BLENDED LIFT OF BIORETENTION SOIL MEDIA TO 75% OF MAXIMUM STANDARD PROCTOR DENSITY ACCORDING TO ASTM D698.
   - 7.4. GRADE SOIL MEDIA TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
   - 7.5. LIGHTLY COMPACT FINISHED FLOOR ELEVATION AND FINISHED SLOPES USING THE BUCKET OF AN EXCAVATOR, NON-MOTORIZED ROLLER, HAND TAMP, OR OTHER MEANS, THEN ROUGHEN SURFACE WITH A RAKE TO LOOSEN SOILS BEFORE SEEDING.
   - 7.6. DO NOT COMPACT THE SUBGRADE AT THE BOTTOM OF EXCAVATION UNLESS PERMEABILITY EXCEEDS $1x10^{-5}$ cm/s
8. BIORETENTION SOIL MEDIA (BSM) MIXTURE SPECIFICATIONS:
   - 8.1. STICKS AND ROOTS SHOULD BE MINIMIZED IN THE BSM MIXTURE, AND PREFERABLY LIMITED TO NOTHING LARGER THAN 4.76 mm (0.187 in).
   - 8.2. DEBRIS AND OTHER FOREIGN MATERIALS SHOULD BE MINIMIZED.
   - 8.3. ORGANIC MATTER SHOULD MAKE UP A MINIMUM OF 3% BY VOLUME AND A MAXIMUM 8% BY VOLUME OF THE BSM.
   - 8.4. BSM MIXTURE SHOULD HAVE A SOIL REACTION pH OF 6 TO 7.
   - 8.5. CATION EXCHANGE CAPACITY (CEC) OF BSM SHOULD BE A MINIMUM OF 10 meq PFR 100 ml AT A pH OF 7.0.
9. IF BSM IS PURCHASED FROM A MANUFACTURER, BSM MIXTURE SHALL NOT CONTAIN THE FOLLOWING:
   - 9.1. UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, OR OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANTS.
   - 9.2. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, OR POCKETS OF COARSE SAND THAT EXCEEDS A COMBINED MAXIMUM OF 5% BY DRY WEIGHT OF THE MANUFACTURED SOIL.
   - 9.3. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS EXCEEDING 0.187 in (4.76 mm) IN ANY DIMENSION.
10. ORGANIC SOIL AMENDMENTS:
    - 10.1. NO COMPOST SHOULD BE USED IN THE PLANTING MIX (USED ON THE SIDE SLOPES AND SURROUNDING AREA) UNLESS SPECIFIED BY THE ENGINEER.
    - 10.1. SPHAGNUM PEAT: PARTIALLY DECOMPOSED SPHAGNUM PEAT MOSS, FINELY DIVIDED OR OF GRANULAR TEXTURE WITH 100% PASSING THROUGH A 1/2-in (13 mm) SIEVE, WITH A pH OF 3.4 TO 4.8.
    - 10.2. WOOD DERIVATIVES: SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIAL.
11. THE CRUSHED STONE LAYER SHOULD CONSIST OF AASHTO #5 STONE (3/4-in).
12. THE VOLUME OF WATER CONTAINED ABOVE THE BSM ELEVATION AND BELOW THE HIGH FLOW SPILLWAY IS STATISTICALLY DESIGNED TO HOLD A SPECIFIC RUNOFF VOLUME.
13. THE DESIGN VOLUME ABOVE THE BSM IS PREFERABLY THE WQV. THIS VOLUME MAY NOT BE ACHIEVABLE FOR RETROFIT INSTALLATIONS

BIORETENTION SYSTEM DESIGN METRICS

ID	DESIGN PARAMETER	MIN	BIO 1	BIO 2	BIO 3	UNITS
A	SYSTEM FLOOR WIDTH		14	19	10	FT
B	SYSTEM FLOOR LENGTH		49	60	28	FT
C	BIORETENTION FOOTPRINT AREA		686	1,140	280	SF
D	WATER QUALITY VOLUME		1,274	2,203	435	CF
E	WQV ELEVATION		95.42	95.09	95.16	FT
F	SYSTEM FLOOR ELEVATION		94.85	94.60	94.60	FT
G	BOTTOM BSM ELEVATION		93.35	93.10	93.10	FT
H	BOTTOM STONE ELEVATION		91.85	91.60	91.60	FT
I	TOP STONE/OUTLET INVERT ELEVATION		93.10	92.85	92.85	FT
J	PONDING DEPTH BELOW LOWEST INV.		0.65	0.50	0.60	FT
K	BSM MEDIA DEPTH	18	18	18	18	IN
Li	INLET END PEA GRAVEL DEPTH		6	7	5	IN
Lo	OUTLET END PEA GRAVEL DEPTH	3	3	3	3	IN
Mi	INLET END CRUSHED STONE DEPTH		12	11	13	IN
Mo	OUTLET END CRUSHED STONE DEPTH	14	15	15	15	IN
N	SUBDRAIN DEPTH ABOVE BOTTOM	4	4	4	4	IN
O	PERFORATED SUBDRAIN DIAMETER	6	6	6	6	IN

BIORETENTION SYSTEM DESIGN METRICS

ID	DESIGN PARAMETER	MIN	BIO 1	BIO 2	BIO 3	UNITS
P	RISER PIPE DIAMETER	6	12	12	12	IN
Q	OUTLET PIPE DIAMETER	6	12	12	12	IN
R	INFLOW PIPE DIAMETER		N/A	N/A	N/A	IN
S	PERFORATED SUBDRAIN LENGTH		12	16	7	FT
T	OUTLET PIPE LENGTH		10	10	10	FT
U	INFLOW PIPE LENGTH		N/A	N/A	N/A	FT
V	SLOPE GRADE (RUN PER 1ft RISE)		3	3	3	FT
W	ROCK APRON WIDTH		N/A	N/A	N/A	FT
X	ROCK APRON LENGTH		N/A	N/A	N/A	FT
Y	SMOOTH LINED HDPE PIPE DIAMETER		6	6	6	IN
Z	PVC LINER SLOPE		0.51	0.56	0.60	%
AA	OUTLET PIPE SLOPE		1.0	1.0	1.0	%
BB	CLEAN-OUT RISER DIAMETER		6	6	6	IN
CC	CLEAN-OUT RISER ELEVATION		95.75	95.75	95.75	FT
DD	PVC LINER GAP	0.1*B	5	6	3	FT
EE	OUTLET PIPE ORIFICE DIAMETER		7/8	1-1/8	1/2	IN
FF	RISER ELEVATION		95.50	95.10	95.20	FT
GG	TOP OF BERM		96.25	96.25	96.25	FT

ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX

MEDIA TYPE	SIEVE #	SIZE (in)	SIZE (mm)	% PASSING
COARSE SAND	4	0.187	4.76	100
MEDIUM SAND	10	0.079	2.00	95
FINE SAND	40	0.017	0.42	40-15
SILTS	200	0.003	0.075	10-20
CLAYS	<200	PAN	PAN	0-5

BIORETENTION SOIL MEDIA COMPONENTS: *

- AMOUNTS MIXED BY TOTAL VOLUME
- 60-85% - SAND (0.5 TO 2.0 mm) (SEE SPECS ABOVE)
- 15-25% - LOAM OR TOPSOIL
- 3-8% - ORGANIC MATTER
- 0-5% - WATER TREATMENT RESIDUALS OR IRON FILINGS**

*ALTERNATELY, USE MEDIA SPECIFIED IN THE ALTERATION OF TERRAIN RULES, Env-Wq 1508.07(k)
**THIS IS AN AMENDMENT USED FOR ENHANCED PHOSPHORUS ADSORPTION

INTERNAL STORAGE RESERVOIR (ISR) NOTES:

- THE HYBRID BIORETENTION SYSTEM HARBORS AN ANAEROBIC INTERNAL STORAGE RESERVOIR FOR NITROGEN REMOVAL.
- THE ISR IS SEPARATED BY AN IMPERMEABLE PVC LINER BETWEEN THE PEA GRAVEL AND CRUSHED STONE LAYERS.
- THE PVC LINER SLOPES FROM THE OUTLET TOWARDS THE INLET TO MAXIMIZE STORAGE RETENTION AND PROVIDE EXTRA TREATMENT/FILTER TIME VIA PLUG FLOW THROUGH CRUSHED STONE.
- DESIGN GUIDELINES FOR THE SUBSURFACE GRAVEL WETLAND SPECIFICATIONS (UNHSC, 2016) IDENTIFIED THAT THE WATER VOLUME IN THE ISR BE AT LEAST 0.26*WQV [WATER QUALITY VOLUME], OR 26% OF THE WQV.
- PVC LINER THICKNESS OF 40 TO 60 MIL, PREFERABLY SEAMLESS. IF SEAMS ARE UNAVOIDABLE, THE SEAMS SHOULD BE SEALED.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

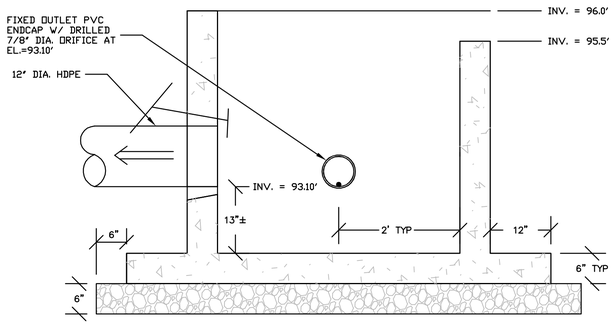
PLANNING FILE NO.: SITE-2024-

DETAILS

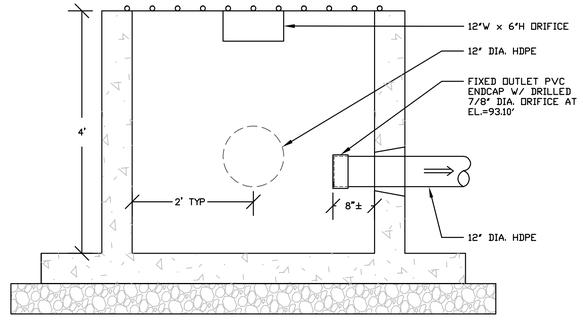
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

17



SIDE VIEW

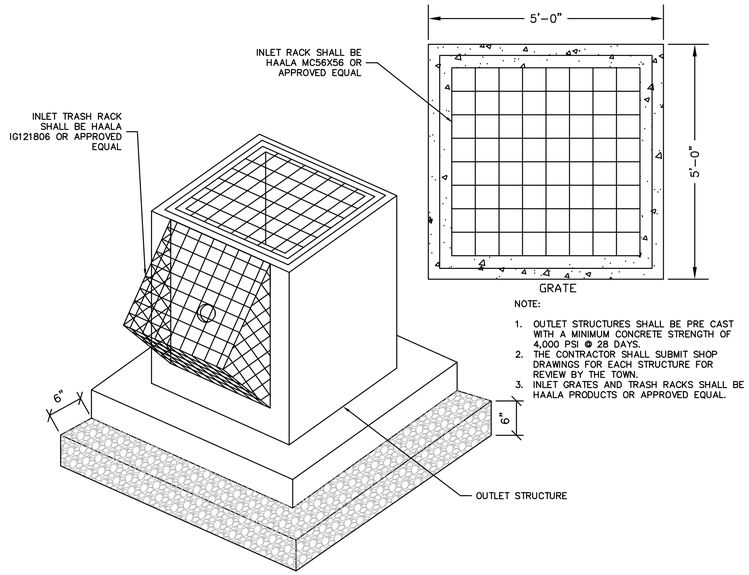


FRONT VIEW

NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.

BIORETENTION POND 1 (BIO1) OUTLET STRUCTURE DETAIL

NOT TO SCALE

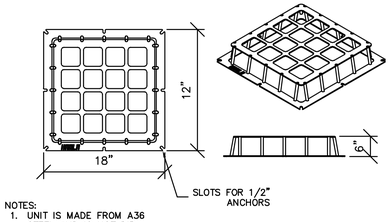


NOTE:

1. OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3. INLET GRATES AND TRASH RACKS SHALL BE HAALA PRODUCTS OR APPROVED EQUAL.

TYPICAL INLET TRASH RACKS

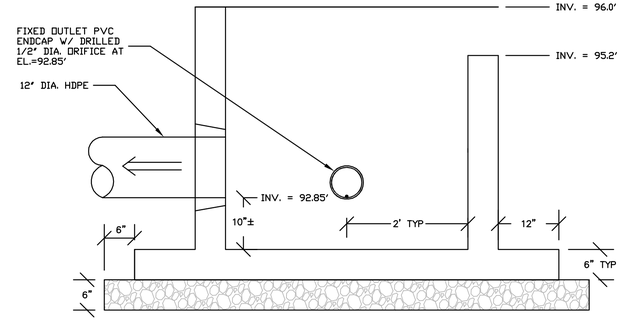
NOT TO SCALE



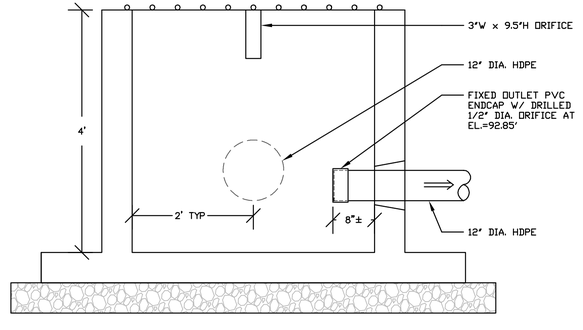
NOTES:
1. UNIT IS MADE FROM A36 STEEL AND IS HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

HAALA IG121806

NOT TO SCALE



SIDE VIEW



FRONT VIEW

NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.

BIORETENTION POND 2 (BIO2) OUTLET STRUCTURE DETAIL

NOT TO SCALE

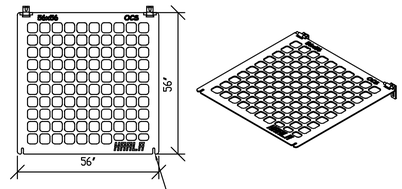
SIDE VIEW

FRONT VIEW

NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.

BIORETENTION POND 3 (BIO3) OUTLET STRUCTURE DETAIL

NOT TO SCALE



NOTES:
1. UNIT IS MADE FROM A36 STEEL AND IS HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

HAALA MC56X56

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

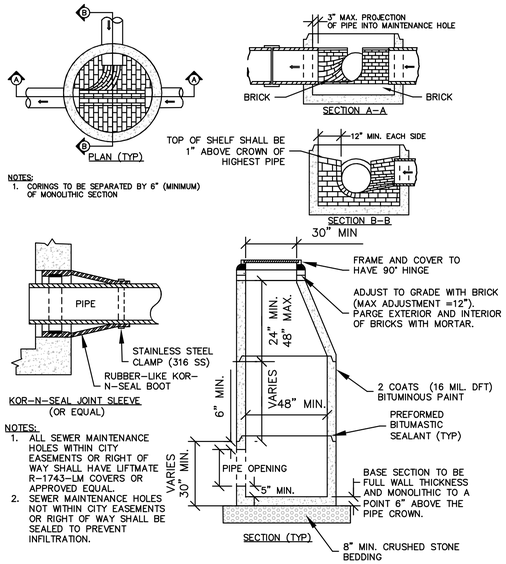
DATE: 8-6-24
SCALE: N.T.S
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

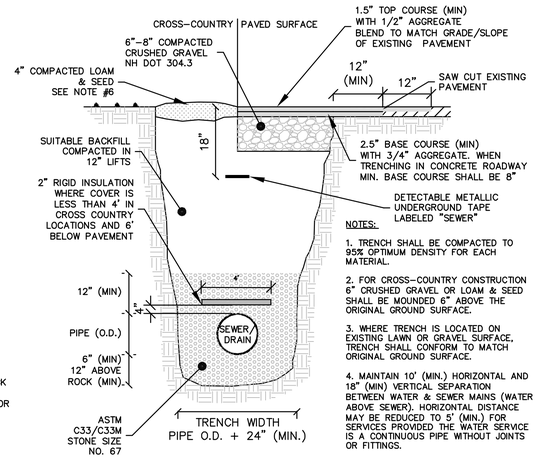
LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH



NOTES:
1. CORINGS TO BE SEPARATED BY 6" (MINIMUM) OF MONOLITHIC SECTION

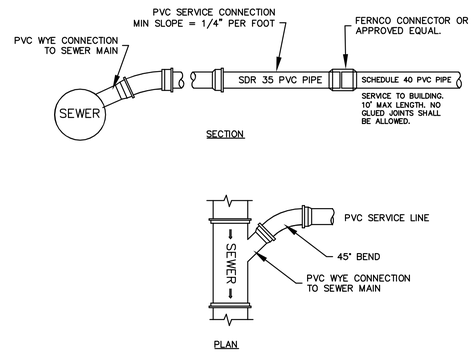
NOTES:
1. ALL SEWER MAINTENANCE HOLES WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL HAVE LIFTMATE R-1743-LM COVERS OR APPROVED EQUAL.
2. SEWER MAINTENANCE HOLES NOT WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL BE SEALED TO PREVENT INFILTRATION.

CITY OF DOVER D-16
SEWER MANHOLE DETAIL
NOT TO SCALE



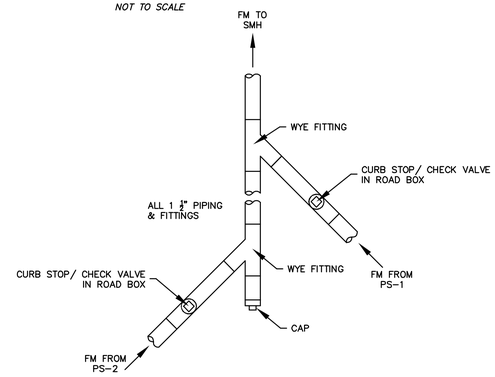
NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-3
SEWER TRENCH DETAIL
NOT TO SCALE

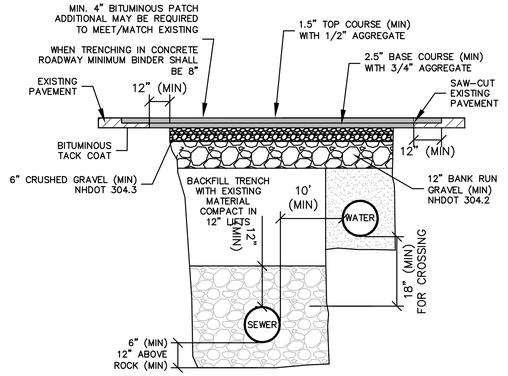


NOTES:
1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

CITY OF DOVER D-17
SEWER SERVICE DETAIL
NOT TO SCALE



FORCE MAIN CONNECTION DETAIL
NOT TO SCALE



NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

CITY OF DOVER
TYPICAL TRENCH DETAIL
NOT TO SCALE

TRELLEBORG PIPE SEALS

TRELLEBORG

Kor-N-Seal® I Stainless Steel Wedge Connector (WS Series)

Installation Instructions

CONNECTOR INSTALLATION

1. Check to be sure the Stainless Steel Waveband® is properly located in Connector groove.
2. Inspect the inside surface of the cored/formed hole. If there is porosity or wire-to-concrete separation, use patching or hydraulic cement to smooth the surface.
3. Insert Connector Assembly into hole with Wedge Expander at top of hole.
4. Position Connector so it is square to manhole both vertically and horizontally.
5. Tighten Wedge Expander using 1/2" socket wrench to 12 foot pounds.
6. Retorquing prior to shipment is recommended but not required.

Note if Vacuum Testing

Testing should be done prior to backfilling so that leaks can be easily located and repaired.

All lift holes need to be plugged with a nonshrinking mortar.

Plug all pipes entering the manhole, taking care to securely brace the pipes and plugs.

Patented Waveband technology "captures" the rubber between itself and the concrete, creating a more effective seal.



*Covered under US Patent No.: 5,738,359

PIPE INSTALLATION

1. Be sure sealing area of pipe is smooth and free of defects. Repair if needed.
2. Center pipe in Connector opening. (Pipe must not rest on Connector Korband)
3. Position the Pipe Clamp in the Connector's Pipe Clamp groove with the screw at the top.
4. Tighten the Pipe Clamp screw to 60 inch pounds with a T-handle Torque Wrench, P/N 80090

Note:

On minimum pipe O.D. installations, tension the rubber under the pipe clamp by lifting the rubber toward pipe clamp screw housing by hand. This will help prevent the rubber from wrinkling or folding over during tightening of hose clamp. Application of a very small amount pipe lube on the pipe clamp track will allow the pipe clamp to slide on the rubber and improve the performance of the hose clamp. Make sure to torque all screw locations on the pipe clamps.

Caution:

Do not use an impact wrench for installation.

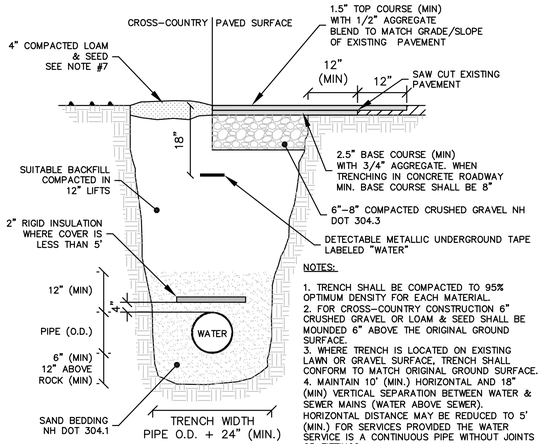
All pipe stubs must be restrained.

Adapters are required when using Corrugated Pipe. Refer to the Corrugated Pipe Adapter Data Sheet for more information.

Check calibration of torque limiters monthly

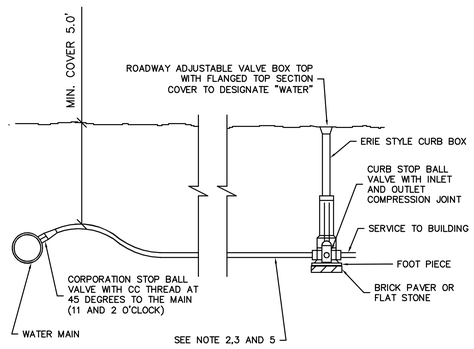
Torque limiters are available for connectors that can be used with cordless drills and hand or air ratchets.

Call 800-626-2180 for information.



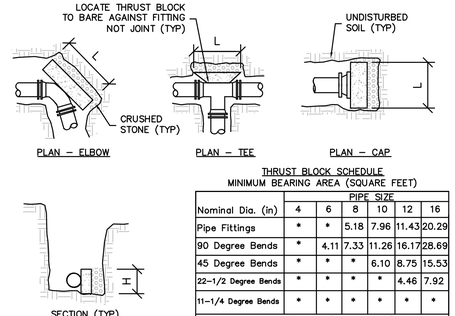
NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
8. CLASS 52 DUCTILE IRON PIPE

CITY OF DOVER D-4
WATER TRENCH DETAIL
NOT TO SCALE



NOTES:
1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. 3/4"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

CITY OF DOVER D-13
WATER SERVICE CONNECTION DETAIL
NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*
*SEE NOTE 2	System Pressure: 125 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf					

NOTES:
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

CITY OF DOVER D-15
THRUST BLOCK DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

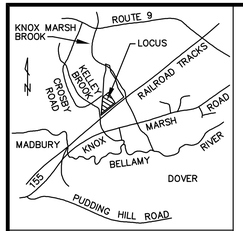
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH



LOCATION PLAN
(NO SCALE)

FORMER HANSON ROAD

50' WETLAND BUFFER

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

PUBLIC R.O.W. 75'

312'R

288'R

SGC

STOP

20'R

12'R

8'R

BCC

3'R

ICC

35' SETBACK

10' SETBACK

PROPOSED 9,600 S.F. BUILDING

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

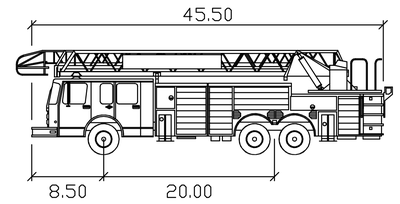
WETLANDS DELINEATED BY BAG NAD CONSOLTANTS

50' BUFFER

G / 2-1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA



Dover ladder

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0

NH STATE PLANE NAD 83 GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

TRUCK MOVEMENT PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

20

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SUBM-2024-0003

Application Type:	Minor Subdivision
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Meeting Date:	September 24, 2024

INTENT: Proposal is to subdivide the subject property into three lots.

AGENDA ITEM #: 4-E

FILE: SUBM-2024-0003

APPLICANT/OWNER: Del Sol Dover, LLC

LOCATION: Crosby Road (Assessor's Map G, Lot 2-1)

LOTS/UNITS PROPOSED: Two (2) new lots and one (1) existing lot as part of a related minor subdivision.

ACREAGE: 20.80± acres before subdivision, proposed acreage following subdivision:
Assessor's Map G, Lot 2-1B (Lot 1) = 362,325± s.f. (8.32± acres)
Assessor's Map G, Lot 2-1 (Lot 2) = 267,845± s.f. (6.15± acres)
Assessor's Map G, Lot 2-1A (Lot 3) = 219,168± s.f. (5.03± acres)

ZONING DISTRICT: CM

EXISTING USE: Vacant

PROPOSED USE: Commercial, Warehouse

SURROUNDING USE: Commercial, Industrial Park

PERMITS: Two (2) City of Dover CUPs, NHDES Alteration of Terrain

WAIVERS REQUESTED: §153-13A(12), Landscape Plan prepared by LLA
§153-13A(17), Streetscape Renderings
§153-14K(1)(b), Parking Location

ZBA ACTION: None.

CONSERVATION COMMISSION: Reviewed and endorsed on 9/9/24.

TRC: Reviewed on 8/29/24.

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background
The applicant is proposing to subdivide lot G/2-1 into three lots, resulting in the creation of two new lots. The three lots will be accessed from a proposed extension of Crosby Road.

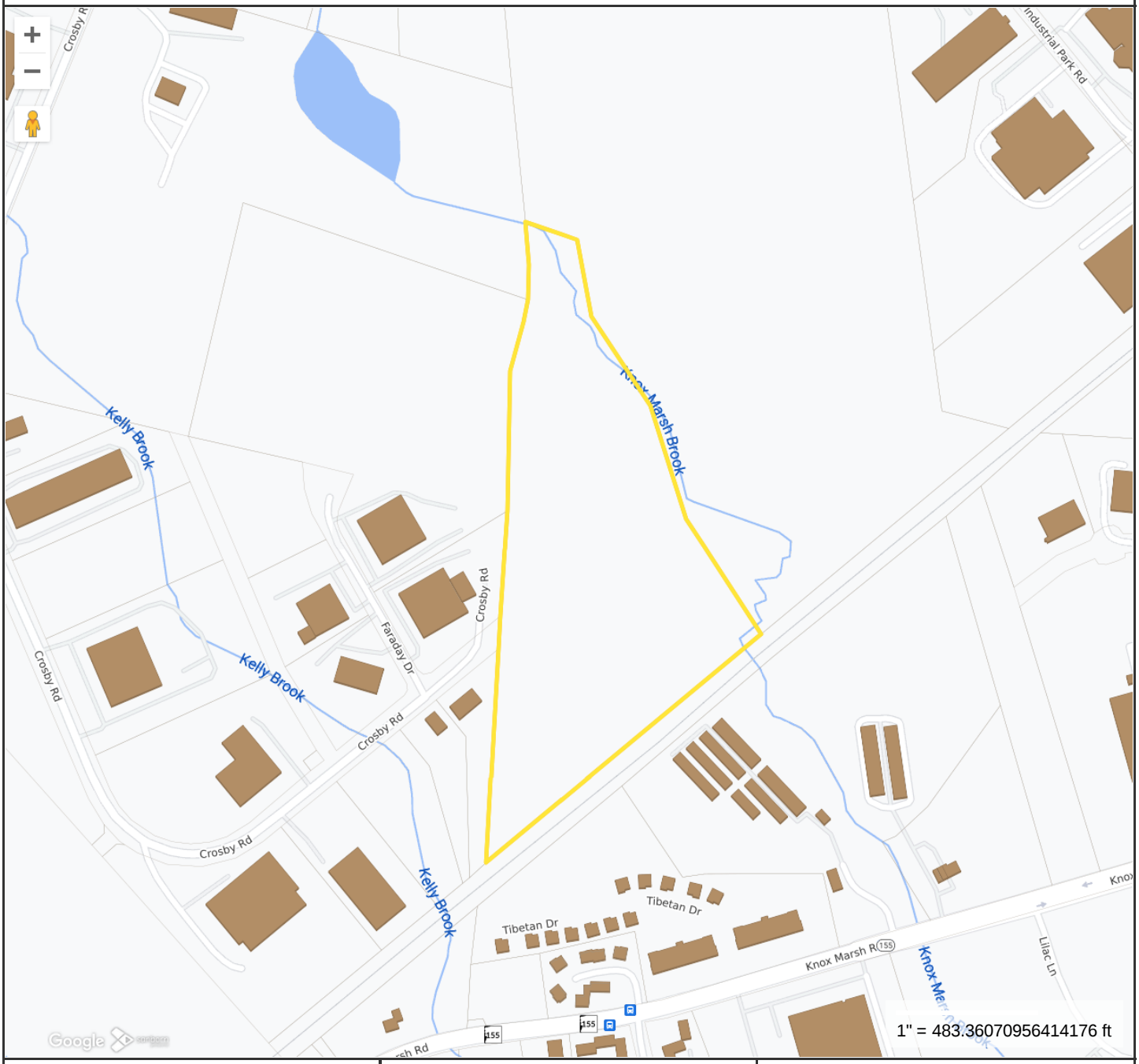
The Technical Review Committee reviewed the project at their August 29, 2024 meeting. *(minutes attached)*

Consistency with Land Use Regulations:
The plan is consistent with Chapter 157-15 of the City of Dover's Land Subdivision Regulations, which provides for subdivision of existing lots.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board vote to accept the application and determine it not to have regional impact, open a public hearing, close the public hearing, make the necessary and supporting findings of fact, and vote to approve the minor subdivision with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of Plans:
1. Provide physical and digital copies (including CAD) of complete plan set for recording at Strafford Country Registry of Deeds, which additionally shall include:
    1.1. The owner's signatures
    1.2. Include the Planning File #SUBM-2024-0003
    1.3. The stamp and signature of the LLS on the final plans
    1.4. Confirm lot numbering with City Assessor
2. Confirm the sizes and locations of utilities between site plan (SITE-2024-0010) and roadway plan (SUBM-2024-0003);
3. Confirm elevations for sewer to new lots with City Engineer;
4. Approval of COND-2024-0025;
5. Approval of COND-2024-0026;
6. Approval of SITE-2024-0010.

SUBM-2024-0003 Crosby Road



Property Information

Location	LITTLEWORTH RD
Owner	DEL SOL DOVER LLC
Land Use	
Zoning Code	CM
Property Id	G0002-001000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PLAN SNAPSHOT REPORT SUBM-2024-0003
FOR CITY OF DOVER, N.H.

Plan Type:	Subdivision Plan - Minor	**Project:**		**App Date:**	08/06/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	10/10/2024
Status:	Fees Paid	**Square Feet:**	906,049.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**		**Approval Expire Date:**	
Description:	3 Lot Subdivision with Road Extension				

Parcel:	G0002-001000	Main	**Address:**	Littleworth Road Dover, NH 03820	Main

Zone:
- IT(Non-Residential - Innovative Technolo
- CM(Non-Residential - Commercial Manuf
- R-40(Residential - Rural)
- IT(Non-Residential - Innovative Technolo
- R-40(Residential - Rural)

Owner
Route 108 LLC
Chad Kageleiry
340 Central Avenue 202
Dover, NH 03820
Business: (603) 749-2800

Applicant
Civilworks New England
Steve Haight
181 Watson Road PO Box 1166
Dover, NH 03820
Business: (603) 749-0443
Mobile: (603) 817-6651

Wetlands Scientist
Bruce Gilday
Business: (603) 228-5775

Applicant
Chad Kageleiry
Business: (603) 749-2800

Surveyor
Kevin McEneaney
Business: (603) 749-2091

Plan Custom Fields

Proposed Number of New Lots	2	Existing Number of Lots	1	Parcel Map/Lot	G-2-1-0
Parcel Zoning Overlay		Select Subdivision Type	Conventional	Parcel Zoning	CM
Property Address	Crosby Road	Existing Parcel Size (Ac)	20.8	Existing Parcel Size (sqft)	906048
Proposed Use Detail	General Commercial/Industrial	Owner Name	Del Sol Dover, LLC	Deed Page	142
Deed Book	5075	Owner Address	340 Central Avenue, Suite 202 Dover, NH 03820	Deed Date	20221031
Refuse Removal	Private	Estimated Construction Value	738000.00	Owner Phone	603-749-2800
Parcel Feedback		Owner EMail	chad@summitlanddev.com	Existing Use Detail	Vacant, Industrial Park
TDR Detail		subdroadtype	Municipal	Water Source?	Municipal
Distance to City Water (ft)	300	Distance to City Sewer (ft)	300	Sewer Service?	Municipal
Proposed Road Length (ft)	615	Subdivision Regulations section(s) to be waived		Justification for waiver request(s)	

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Steve_Haight_8/6/2024.jpg	08/06/2024 12:39	Haight, Steve		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008884	Planning Subdivision Application Fee	$200.00	$200.00

PLAN SNAPSHOT REPORT (SUBM-2024-0003)

Planning Subdivision Lot Fee		$300.00	$300.00
	Total for Invoice INV-00008884	**$500.00**	**$500.00**
	Grand Total for Plan	**$500.00**	**$500.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1			
Confirm application complete v.1	Generic Action		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Final Review v.1	Receive Submittal		
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		

DEL SOL DOVER, LLC
340 Central Avenue, Suite 202
Dover, New Hampshire 03820

August 5, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Re: Minor Subdivision (3 Lots)
Tax Map G, Lot 2-1, Crosby Road Extension
Dover, New Hampshire

LETTER OF AUTHORIZATION

As Owner and Applicant for the above referenced project, I hereby authorize Civilworks New England and McEneaney Survey Associates to represent Del Sol Dover, LLC to the State of New Hampshire, the City of Dover Planning Board and any other Dover Boards or Committees relative to the pursuit of permits for the development of the subject parcel.

Respectfully,

Charles P. Kageleiry, Manager
DEL SOL DOVER, LLC

SUBM-2024-0003 **LITTLEWORTH ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
G0001-C00001	CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00002	207 CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00003	211 CROSBY RD	COLBATH WILLIAM C TRUSTEE	COLBATH FAMILY REVOCABLE TRUST 2010	211 CROSBY RD	DOVER	NH	03820
G0001-E00000	5 FARADAY DR	VIRTUOUS REALTY LLC	C/O TURBOCAM INC	607 CALEF HIGHWAY #200	BARRINGTON	NH	03825-7237
G0001-L00000	15 FARADAY DR	CHAUVIN ARNOUX INC		15 FARADAY DR	DOVER	NH	03820
G0002-000000	LITTLEWORTH RD	WESTFIELD LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
G0005-000000	LITTLEWORTH RD	BOSTON & MAINE RR	IRON HORSE PARK	500 WATER STREET J-910	JACKSONVILLE	FL	32202
G0031-001000	50 52 CROSBY RD	MCGUIRE GROUP LLC		PO BOX 988	DOVER	NH	03821
H0036-B00001	221 KNOX MARSH RD	NSA OPTIVEST ACQUISITION HOLDINGS LLC		24901 DANA PT HARBOR DR #200	DANA POINT	CA	92629
H0037-A00000	239 KNOX MARSH RD	239 KNOX MARSH REALTY LLC		PO BOX 720	MIDDLETON	MA	01949
H0038-000000	289 KNOX MARSH RD	CRAGIN PATRICK J TRUSTEE	CRAGIN PATRICK J LIVING REV TRUST	PO BOX 250	DOVER	NH	03820
G0002-001000	LITTLEWORTH RD	DEL SOL DOVER LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
		CIVILWORKS NEW ENGLAND	STEVE HAIGHT	P.O. BOX 1166	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES	KEVIN MCENEANEY	P.O. BOX 1166	DOVER	NH	03820

PROJECT NARRATIVE
for
DEL SOL DOVER, LLC
Minor Subdivision Application
Crosby Road Extension
Tax Map G, Lot 2-1

PROJECT OVERVIEW & SITE CHARACTERISTICS
The project parcel is shown on Tax Map G, as Lot 2-1, is located within the CM District and consists of 20.80± acres, currently undeveloped. This proposal is for a minor (3 lot) subdivision.

The project will create 2 additional lots from the existing lot in the following configuration:

- Map G Lot 2-1B (LOT 1) consisting of 362,325 s.f .(8.32 acres)
- Map G Lot 2-1 (LOT 2) consisting of 267,845 s.f. (6.15 acres)
- Map G Lot 2-1A (LOT 3) consisting of 219,168 s.f. (5.03 acres)

These lots will be accessed from a proposed 75' wide right-of-way being shown as an extension of Crosby Road which is currently 75' wide. The intent is that, when completed, the 75' wide extension will be accepted by the City of Dover as a public right-of-way. The proposed road extension design will include associated drainage improvements and public utilities. The proposed lots, when developed, will be served by proposed utilities extending from the existing Crosby Road ROW, including municipal water and sewer connections, underground electric service, natural gas service. There will be wetland buffer impacts associated with the ROW extension. Please see Conditional Use Permit application and narrative.

WETLAND SETBACK IMPACT TYPE
The project road design will require a Conditional Use Permit from the City of Dover. Approximately 4,861 s.f. of wetland buffer will be impacted by construction of the proposed road extension and its associated drainage and grading. The project does not impact bogs, marshes, sand dunes, tidal wetlands, cedar swamps, undisturbed tidal buffer zone, or involve any work within 50 feet of a salt marsh. The project is not located within 100 feet of prime wetlands.

DRAINAGE
The parcel is located at the end of Crosby Road within an established industrial park. The proposed subdivision of the 20.80-acre lot abuts other commercial properties to the west, an active railroad track to the south and Knox Marsh Brook to the east. The site is currently undeveloped. The 20.80-acre watershed of the parcel includes the project site as well as a portion of Crosby Road. On site soils are a mix of Scantic, Deerfield, and Deerfield Variant soils. The Scantic series soils are HSG D with Deerfield and Deerfield Variant series soils being classified as HSG B.

The post development watershed is modeled utilizing the same points of analysis as the predevelopment watershed, allowing direct comparison of the peak runoff between the pre- and post- developed conditions (see drainage report).

UTILITIES
The proposed project will connect to City of Dover water and sewer as well as Unitil for natural gas, and Eversource for electricity. Water, sewer, electric lines, and natural gas lines are currently located within Crosby Road. Building connections will be made per the City's Community Services Utility Division and Fire Department requirements and standards.

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Del Sol Dover, LLC Telephone # 603-749-2800

Address of Applicant: 340 Central Avenue, Suite 202 Dover, NH 03820

E-Mail Address: chad@summitlanddev.com

Name of Property Owner (if different from applicant): N/A Telephone #

Address of Property Owner:

PROPERTY INFORMATION

Assessor's Map # G Lot(s) # 2-1

Address of Property: Crosby Road

Zoning District(s) CM Overlay District(s) None

Existing Use of Property: Vacant, Industrial Park

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

To construct a 75' wide extension of Crosby Road that would result in 4,861 s.f. of wetland buffer impact. No wetlands will be disturbed.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: None

Name of Professional That Prepared Plans: Kevin McEneaney - McEneaney Survey Associates
Stehpen J. Haight, PE - Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH LLS #661
NH PE #7978 E-mail address: kevin@surveynh.com
shaight@civilworksne.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/5/24

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/5/24

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
G	2-1	Del Sol Dover, LLC	340 Central Avenue, Suite 202 Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, PE	Civilworks New England	P.O. Box 1166 Dover, NH 03821
Kevin McEneaney, LLS	McEneaney Survey Associates	P.O. Box 1166 Dover, NH 03821
Bruce A. Gilday, CWS	BAG Land Consultants	43 Rockingham Street Concord, NH 03301

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

CONDITIONAL USE NARRATIVE
§170-27.1
WETLAND PROTECTION DISTRICT
for
DEL SOL DOVER, LLC
Crosby Road Extension (Minor Subdivision)
Tax Map G, Lot 2-1

F. Conditional use approval.

(1) Conditional use approval may be granted by the PLANNING BOARD (RSA 674:21II) after proper public notice and public hearing, for construction within the Wetland Protection District or buffer. Said construction may include but is not limited to a road or other accessway, utility right-of-way, communication lines, power lines and pipelines, STRUCTUREs, and parking LOTs provided that the proposed construction complies with the following standards:

(a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area. **The proposed roadway, side slopes, and bio-retention basin location were chosen to avoid wetland impacts and to minimize wetland buffer impacts. The areas of impervious impact to the wetland buffer were minimized by utilizing the site characteristics including existing slope information to minimize additional side slope impacts.**

(b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative. **There are 4,861 s.f. of wetland buffer impacts associated with the grading and drainage and the roadway extension and emergency vehicle maneuvering for the project. The design incorporates unique site characteristics including existing slope, and soil type to minimize wetland buffer impacts.**

(c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland, or which has less detrimental impact on a wetland. Design, construction, and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade. **There are 4,861 s.f. of wetland buffer impacts for the roadway extension, grading and utilities. All impacts have been minimized to the greatest extent practicable.**

(d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review. **Mitigation is not required.**

(e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below. **A NHDES wetland permit application is not applicable.**

SITE DEVELOPMENT DESIGN CRITERIA NARRATIVE
§153-14
STORMWATER MANAGEMENT
for
DEL SOL DOVER, LLC
Crosby Road Extension
Tax Map G, Lot 2-1

A. Stormwater management, erosion control and flood hazards.

(1) Purpose and objective. These regulations establish standards to manage the discharge of runoff to the City of Dover's municipal storm sewer system and water bodies, in a manner compliant with the requirements of state and federal law, including provisions of the federal stormwater management legislation for municipal separate storm sewer systems (MS4), as amended. These provisions and standards are implemented for the purpose of:

(a) Managing stormwater runoff to protect water quality and quantity. **The proposed roadway development has been designed in accordance with NH DES AoT permitting requirements to include the treatment and mitigation of stormwater runoff from the roadway.**

(b) Minimizing the contribution of a pollutant for which a water body is impaired to the maximum extent practicable (MEP). **The proposed development has been designed in accordance with NH DES AoT permitting requirements to include the treatment of stormwater runoff from all impervious areas of the roadway to minimize pollutant runoff.**

(c) Causing no discharge of runoff to an adjacent property in excess of runoff discharge in the existing developed or undeveloped condition. **The proposed development does not propose an increase in the peak rate of runoff from the project site.**

(d) Encouraging the use of low-impact development (LID) strategies. **The project proposes the use of bioretention practices for stormwater treatment.**

(2) Applicability of the stormwater standards.

(a) All projects requiring site plan or major subdivision approval shall be subject to the following set of stormwater standards according to the amount and type of disturbance. Applicability is as follows: **The project does not qualify for the redevelopment standards but is a precursor to future development, as such, the stormwater standards apply.**

[1] The minimum protections and management standards shall apply to all projects. **The design incorporates these standards.**

[2] The stormwater management for new development standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area. **The design incorporates these standards.**

[3] The stormwater management for redevelopment standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area where the existing land use has been previously developed as commercial, industrial, institutional, governmental, recreational, or multifamily. **The redevelopment standards are not applicable to this project.**

(b) All projects of such magnitude as to require a permit from the National Pollutant Discharge Elimination System (NPDES) Program or the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Program shall also comply with the standards of the Environmental Protection Agency (EPA) and/or NHDES permits and this section, whereas the stricter standards shall apply. **The project will require NH DES AoT permitting, a NH DES Wetland Permit, and a NPDES CGP through the EPA. The design of the project has incorporated the associated standards of these agencies.**

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended. **The project complies with the City's design and stormwater requirements.**

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter 170, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. **The project proposes a wetland crossing for access to the site and wetland buffer impacts as part of the construction. A Conditional Use Permit application has been submitted as part of the application process.**

[3] Low-impact development (LID) site planning and design strategies shall be used to the MEP in order to reduce the generation of the stormwater runoff Volume for both new and redevelopment projects. An owner/applicant must document why LID strategies are not appropriate if not used to manage stormwater. **LID strategies were implemented to the maximum extent practicable. The site was evaluated for infiltration practices but the site characteristics, including soil types, topography, depth to the SHWT and depth to ledge prevent the use of infiltration practices.**

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on The NHDES website. **The project incorporates stormwater BMP designed in accordance with NH DES AoT permitting requirements. Details provided for construction are aligned with the NH Stormwater Manual and the engineer of design will be required to review material submittals and witness the installation of the practices. NH DES AoT will require a letter from the design engineer indicating the site stormwater BMP's were installed as designed and permitted.**

[5] All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the regulations of the NHDES, including but not limited to those involving underground storage tanks, aboveground storage tanks, hazardous waste, and best management practices for groundwater protection (Part Env Wq 401). **The project does not propose the storage of the referenced materials onsite.**

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal. **The project does not propose the storage of deicing materials onsite.**

[7] The use of sodium-chloride-based materials for winter maintenance shall be the minimum necessary for safety. The use of sodium-chloride-based materials is discouraged within the groundwater protection districts. **The roadway is an extension of the existing Crosby Road and is being proposed as a City road. The City currently practices salt minimization plan as part of their winter maintenance practices.**

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible. **The project design incorporated the minimization of impervious areas to the maximum extent possible. All aspects of the design including road width, and turning areas were evaluated.**

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration. **The proposed design includes the treatment of stormwater runoff from all impervious areas of the proposed roadway.**

(b) Stormwater management for new development.

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website. **The project utilizes bioretention basins for treatment of all impervious areas. This system provides 90% removal of TSS and 65% removal of both total nitrogen and phosphorous per the NH Stormwater Manual.**

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center. **The design incorporates NRCC precipitation amounts and the associated storm distribution data. As the project will require a NH DES AoT permit, the precipitation amounts have been increased by 15% accordingly.**

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. **The proposed design mitigates post-development peak rate runoff to the pre-developed conditions.**

[4] Measures shall be taken to control the post-development surface water runoff volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. For sites where infiltration/recharge is limited or not practicable, the owner/applicant must demonstrate that the project will not cause or contribute to flooding or functional impairments to streets, adjacent properties, and downstream properties. **The site was evaluated for the inclusion of infiltration practices but the site characteristics, including soil types, topography, depth to the SHWT prevent the use of infiltration practices. The project proposes a slight**

increase in the volume of runoff from the site. The increased volume of runoff will be discharged directly to a large wetland complex associated with Knox Marsh Brook. The increase in volume will not cause flooding to adjacent or downstream properties.

[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14. **The site was not feasible for infiltration practices and as such infiltration rates were not calculated.**

[6] Stormwater conveyance practices shall be sized appropriately to convey the ten-year, twenty-four-hour storm event without overtopping or causing flooding on the property. **Stormwater conveyance practices are designed to ensure they pass the 50-yr, 24-hour storm events without overtopping.**

[7] For large projects adding greater than or equal to 10 acres of impervious cover, or projects located in known areas of flooding concern, or specifically within areas with a 1% chance of being inundated by water in any given year, the owner/applicant shall submit a supplementary report that describes how the project will not increase the future flooding potential and complies with the AoT requirements pertaining to floodplain impacts as described in Section Env-Wq 1503.09, regardless of whether an AoT permit is required. **The project is located outside of the 0.2 percent annual chance floodplain. The project does not propose permanent or temporary disturbance or alteration of terrain within the flood plain.**

[8] The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff. **The project has incorporated offsite and upgradient stormwater runoff in support of the design for the wetland crossing culvert and the area of Quality Way captured by the closed drainage system.**

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria. **Test pit information was utilized in determining the SHWT associated with the bioretention basin design.**

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required. **Stormwater facilities are included with the roadway and will be incorporated into each of the sites as they get developed. Stormwater access easements may be required for this project.**

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment. **N/A**

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces. **The project does not meet redevelopment requirements and this section is Not Applicable (N/A).**

[1] For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as new development projects, with the important distinction that the applicant can meet those requirements either on site or at an approved off-site location (i.e., off-site mitigation). The applicant must satisfactorily demonstrate that impervious area reduction, LID strategies and BMPs have been implemented on site to the MEP. **N/A**

[2] For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, stormwater shall be managed in accordance with one or more of the following techniques, listed in order of preference: **N/A**

[a] Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or

[b] Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area.

[3] The owner/applicant may utilize off-site mitigation to meet the redevelopment requirements when the following standards have been met. **N/A**

[a] The owner/applicant shall demonstrate, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the MEP.

[b] The owner/applicant shall find an approved, off-site location within the same watershed as the project site or within the drainage area of the same receiving water body.

[c] Off-site mitigation shall be equivalent to no less than the total area of pervious cover not treated on site.

[d] The owner/applicant shall submit a full design of the proposed off-site measures for review and approval.

[e] The owner/applicant must also demonstrate that there is no downstream drainage or flooding impact as a result of not providing on-site management.

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity: **The plan set includes temporary and permanent sediment and erosion control practice notes and details in support of meeting the erosion control standards.**

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website. **The sediment and erosion control details provided in the plan set are all designed in accordance with the NH Stormwater Manual.**

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department. **If required, a SWPPP will be provided prior to construction.**

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**

[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction and that in no case shall greater than 5 acres be disturbed at any time.**

[5] Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or measures to convey stormwater through the project area without causing erosion of sediment must be included. The integrity of downstream drainage systems shall be maintained. **Direction to ensure that stormwater conveyance practices shall be stabilized prior to receiving stormwater runoff is included on the Erosion Control Notes sheet provided as part of this submittal.**

[6] Appropriate erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the Community Services Department. **Construction scheduling and inspections will be discussed with Community Services at the required pre-construction meeting.**

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers. **This project will require a City of Dover Conditional Use Permit for work within wetland buffers. Sediment and erosion control will be limited within the wetland buffer as identified and approved through these permits.**

[8] Disturbed soil areas shall be either temporarily or permanently stabilized. In areas where final grading has not occurred, temporary stabilization measures should be in place within seven calendar days for exposed soil areas that are within 100 feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas. **The definitions of, and direction for, stabilization of the site is provided on the Erosion Control Notes sheet provided as part of this submittal.**

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal. **The erosion control inspection scheduling requirements are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department. **The NH DES AoT winter construction notes are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1. **Slopes greater than 3:1 require erosion control matting and a detail is provided in the plan set.**

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise. **Temporary practice details identify the need to remove sediment and/or stabilize the area once the practices have been removed.**

[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where attainable, until final stabilization of the site. Alternatively, the sediment of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations. **The project does not propose the disturbance of greater than 10 acres of area.**

[14] Use of temporary sediment basins should avoid any additional vegetation clearing or site land disturbance not otherwise needed for post-construction. Sediment basin locations must be reviewed by the Community Services Department prior to construction and must consider the potential for off-site impacts, including public safety, especially as it relates to sediment movement and/or sediment basin failure, and alternative sediment controls must be used where site limitations preclude a safe design. **Temporary sediment basin locations, if constructed, will be discussed with Community Services prior to the construction of the practices. These discussions will occur upon submission/review of the SWPPP, if required.**

(e) Installation and construction inspections. The owner/applicant shall be responsible for inspection requirements as follow:

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections. **Community Services access and inspection requirements will be discussed at the pre-construction meeting.**

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours. **The project notes provide direction for the contractor to notify the design engineer and the Community Services Department as required.**

[3] The Planning Board or Community Services Department may require the design engineer and/or an independent third party to provide inspection and oversight of the construction of the stormwater management facilities and erosion and sediment control measures at its discretion. Such oversight may be especially important for implementing techniques such as porous pavement or subsurface stormwater infiltration systems. The owner/applicant shall be responsible for all fees associated with third-party inspections. **NH DES AoT permitting requires the design engineer to provide a letter at the completion of work that indicates the stormwater practices were installed as designed.**

[4] All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be

submitted to the Community Services Department. **The project notes provide direction for the inspector to be qualified and for all reports to be submitted to the Community Services Department.**

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. **The project notes identify the owner as having the responsibility for ensuring the stormwater management and erosion control measures are installed as approved.**

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant. **The SWMP is a comprehensive set of documents that include, at a minimum, a drainage report, plan set, and Stormwater I&M Manual. These documents each serve a role in presenting the necessary information to the appropriate audience. The information required in this section is provided within the SWMP documents.**

[1] For projects requiring minimum protection standards, a plan including the following information shall be submitted:

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site. **This information is provided within the Erosion Control Notes within the plan set.**

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided within the drainage report and the Pre/Post Development Watershed Plans.**

[c] Description of LID proposed measures. **This information is provided in the drainage report and throughout the plan set and details.**

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted: **The SWMP documents include the proposed information when applicable.**

[a] Description of construction period and earth movement schedule, including anticipated project start and completion dates, sequence and duration of grading and construction activities, sequence, and timing of installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site. **The SWMP documents include the proposed information when applicable.**

[b] Description of the on-site and adjacent wetlands, streams and other water resources, including methods used to identify these resources, and a description of any buffer setbacks that may apply, steep slopes, critical habitat, existing vegetation, areas with a 1% chance of being inundated by water in any given year, and whether any downstream water bodies are listed as impaired according to NHDES's most recent 303(d) list. **The SWMP documents include the proposed information when applicable.**

[c] Soils information for proposed disturbed areas shall be delineated by a certified soil scientist. For all other areas that contribute runoff to the project site, soil types may be identified in accordance with Natural Resources Conservation Service (NRCS) countywide soil survey. **The SWMP documents include the proposed information when applicable.**

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential. **The SWMP documents include the proposed information when applicable.**

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure. **The SWMP documents include the proposed information when applicable.**

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **The SWMP documents include the proposed information when applicable.**

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events. **The SWMP documents include the proposed information when applicable.**

[h] Methods and assumptions used to calculate the pollutant load removal. **The SWMP documents include the proposed information when applicable.**

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible. **The SWMP documents include the proposed information when applicable.**

[j] If not used, provide rationale why LID measures are not practical for the site. **The SWMP documents include the proposed information when applicable.**

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site. **The SWMP documents include the proposed information when applicable.**

[l] Provide calculations for the infiltration or exfiltration system. **The SWMP documents include the proposed information when applicable.**

[m] If an increase in post-development runoff volume is anticipated due to limited applicability for LID measures and site constraints, provide an assessment and supporting calculations to demonstrate no adverse impacts to downstream infrastructure, adjacent properties, or aquatic habitat. **The SWMP documents include the proposed information when applicable.**

[n] Descriptions, details, and design criteria and calculations for all structural, nonstructural, permanent, and temporary erosion and sedimentation control measures and BMPs. This information should include seeding mixtures and rates, types of sod, methods of seedbed preparation, expected seeding dates (or limitations on seeding time frames), type and rate of lime and fertilizer application, and type and quantity of mulching for temporary and permanent

control facilities. **The SWMP documents include the proposed information when applicable.**

[o] Where proposed changes are anticipated within mapped limits of the areas with a 1% chance of being inundated by water in any given year, provide hydrologic and hydraulic analysis to show no net increase in flood elevations. **The SWMP documents include the proposed information when applicable.**

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization. **The SWMP documents include the proposed information when applicable.**

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures. **The SWMP documents include the proposed information when applicable.**

[r] Any other specific study, calculation, or investigation as requested by the City. **Additional information is provided as requested and may include traffic studies, structural designs, septic/sewer designs, geotechnical reports, etc. These documents are provided on a case-by-case basis and as requested by the City.**

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater. **The Stormwater I&M Manual includes the implementation of a salt minimization plan.**

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required. **A Stormwater I&M Manual is provided as part of the submission.**

[u] Provide copies of pertinent state and federal permits. **Copies of permits will be provided to the City.**

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements. **An I&M Manual that identifies the owner's responsibilities has been provided as a part of the submission.**

[1] An operation and maintenance manual shall be created with the following information:

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities. **The Owner, Responsible Party, and the Management Company are identified in the I&M Manual.**

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance. **Inspection requirements and maintenance thresholds are identified in the I&M Manual.**

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials. **The I&M Manual requires the use of a Green SnowPro contractor.**

[d] Deicing log to track amount and type of deicing material applied. **The I&M Manual requires the implementation of a salt minimization plan that also requires the owner or operator to track salt usage onsite through a quantity usage log.**

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained. **The approved Grading and Drainage Plan accompanies the I&M Manual.**

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year. **The I&M Manual identifies this requirement.**

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved stormwater management plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance and reporting. **Not Applicable.**

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

LOT 2 SITE DEVELOPMENT
Map G, Lot 2-1

Crosby Road
Dover, New Hampshire
Strafford County

AUGUST 2024

Owner of Record:

DEL SOL DOVER, LLC
340 Central Avenue
Suite 202
Dover, New Hampshire 03820

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Del Sol Dover, LLC.** The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Chad Kageleiry
Phone: (603) 749 2800
Email: chad@summitlanddev.com

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NHDES in writing.

Management Company:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. Inspections shall include a photograph of each practice that is subject to the I&M requirements each time it is inspected. A copy of the completed Stormwater Management System's Inspection & Maintenance Log, inspection photographs, and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NHDES upon request and to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structures
- Energy Dissipation Structures (Rip Rap)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Grassed Lined Conveyance Swale
- Stone Lined Conveyance Swale
- Pre-Treatment Structures
  - Sediment Forebay
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas, they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

BIORETENTION BASIN W/ ISR:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

GRASS LINED CONVEYANCE SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swale (at least twice annually), maintain a 4" stand of vegetative growth.

STONE LINED CONVEYANCE SWALE

- Inspect once per year.
- Inspect for erosion, sediment accumulation, woody vegetation and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and woody vegetation.
- Reset any dislodged stones.

PRE-TREATMENT STRUCTURES:

SEDIMENT FOREBAY:

- Vegetated areas shall be mowed to maintain a 4" start of vegetative growth.
- Inspect at least once per year.
- Inspect for sediment accumulation.
- Remove all debris immediately.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.

- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for clogging • Check for sediment accumulation	Remove when noticed Clean when necessary
Outlet Structure(s)	Annually	• Inspect once per year. • Inspect for clogging and sediment accumulation. • Remove all debris immediately and sediment accumulations ≥ 2 inches.	≥ 2 in. sediment Remove immediately
Energy Dissipation (ED) Structures (Rip Rap)	Annually	• Check for erosion • Check for displaced stones • Check for woody vegetation • Check for sediment accumulation	≥ 3 in. sediment Remove annually Replace/ reset Dislodged stones immediately
Bioretention Basin w/ ISR • Inlet/Outlet Piping • Pond • Sediment • Drawdown • Trash/Debris • Vegetation (Veg.) • Embankments	Bi-Annually “ “ Annually Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accum. in pond • Check drainage time • Check for and remove trash/debris • Maintain >75% veg. (pond & slopes) Maintain healthy stand of veg.	Repair immediately ≥ 2 in sediment >72 hours Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Grass Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., min 4” • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore vegetation in-kind Mow twice per year Remove/Dispose of accordingly
Stone Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Inspect for woody/ invasive vegetation • Check for dislodged stones	≥ 1 in. sediment Repair immediately Remove/Dispose of accordingly
Pre-Treatment Structures: Sediment Forebay	Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris • Vegetated areas shall be mowed to maintain a 4” start of vegetation growth.	Remove/ Dispose of accordingly Mow twice per year
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x’s Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance_____ Inspector:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

DRAINAGE ANALYSIS

Del Sol Dover, LLC
CROSBY ROAD EXTENSION &
LOT 2 DEVELOPMENT
TAX MAP G, LOT 2-1
DOVER, NH

August 2024

Prepared For:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Prepared By:

Civilworks NE
PO Box 1166
181 Watson Road
Dover, NH 03820

CONTENTS

1.0 INTRODUCTION

2.0 DRAINAGE ANALYSIS

2.1 DRAINAGE DESIGN PARAMETERS
- 2.1.1 Watersheds
- 2.1.2 Soils
- 2.1.3 Rainfall Data
- 2.1.4 Runoff Curve Numbers

2.2 EXISTING CONDITIONS
- 2.2.1 Table A – Existing Conditions Hydrology

2.3 DEVELOPED CONDITIONS
- 2.3.1 Table B – Developed Conditions Hydrology

2.4 HYDROLOGIC COMPARISON
- 2.4.1 Table C – Existing vs. Developed Conditions Hydrology

2.5 STORMWATER DESIGN
- 2.5.1 Stormwater Best Management Practices
- 2.5.2 Pollutant Removal
- 2.5.3 Groundwater Recharge
- 2.5.4 Outlet Protection

3.0 APPENDIX A – HYDROLOGIC CALCULATIONS
- A Extreme Precipitation Table
- A-1 Existing Watersheds
  - Drainage Diagram, Area, and Soil Listings
  - Node Listing – 2-yr
  - Node Listing – 10-yr
  - 10-yr Storm Summary Hydrographs
  - Node Listing – 25-yr
  - Node Listing – 50-yr
- A-2 Developed Watersheds
  - Drainage Diagram, Area, and Soil Listings
  - Node Listing – 2-yr
  - Node Listing – 10-yr
  - 10-yr Storm Summary Hydrographs
  - Node Listing – 25-yr
  - Node Listing – 50-yr

4.0 APPENDIX B – DESIGN
- B-1 Stormwater Best Management Practices
- B-2 Pollutant Removal
- B-3 Outlet Protection

5.0 APPENDIX C – INSPECTION AND MAINTENANCE
- C-1 Stormwater Management System Inspection & Maintenance Plan

6.0 APPENDIX D – WATERSHED PLANS
- D-1 Pre-Development Conditions
- D-2 Post-Development Conditions

1.0 INTRODUCTION

This is a hydrologic analysis of a portion of the subject parcel located on Crosby Road in Dover, NH. The 20.80± acre lot is identified as Tax Map G, Lot 2-1. The parcel is being subdivided into three (3) lots (Lot 2-1, 2-1A, & 2-1B) ranging in size from approximately 5.0 to 8.3 acres. This hydrologic analysis analyzes the land development associated with construction of the proposed road and the development of the newly formed (6.15+/- acre) Lot 2-1. The area of analysis is currently undeveloped and primarily consists of mowed fields with a small, graveled area for site access. The project parcel, Lot 2-1, is relatively flat and slopes to the railroad tracks located along the south easterly property line. The parcel is bound by commercial lots to the North, East, and West, and the railroad tracks to the South and Southeast.

This analysis includes the construction of an 807 foot, 24-foot-wide paved road (Crosby Road extension) and the full build out of one (Tax Map G Lot 2-1) of the three (3) commercial lots. The commercial development consists of the construction of a 9,600-sf building, site access from the newly constructed Crosby Road extension, associated parking, gravel lay down area, underground utilities, and grading and drainage improvements. The proposed drainage system incorporates grassed and stone lined swales for stormwater conveyance, sediment forebays for pre-treatment, and three (3) bioretention basins with internal storage reservoirs (ISR's) for stormwater treatment. A large portion of stormwater runoff from the proposed roadway is designed to drain into the stormwater drainage structures located on Lot 2-1 while the last 50+/- ft will be treated be treated within the proposed right-of-way and proposed Lot 2-1A. The proposed stormwater system captures, stores, and treats the stormwater runoff from the site and roadway, then redirects it to the existing discharge points. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management System Inspection & Maintenance Manual (Stormwater I&M Manual) in Appendix C.

To effectively analyze the pre-development subject parcel and proposed roadway, a 12.19 ac area was analyzed and divided into three (3) watersheds, A, B, & C. The remaining 8.61 acres of the original larger lot is not being developed as part of this project. Watershed A drains to the south to an existing drainage ditch along the railroad tracks; Watershed B drains to the country drainage associated with the former Hanson Road, prior to discharge from a cross culvert under the driveway of an abutting lot; and Watershed C drains to Knox Marsh Brook. The site is located within a Great Bay Community; therefore, this analysis includes a 15% increase to the extreme precipitation data obtained from the Northeast Regional Climate Center.

The post development condition maintains the same three (3) watersheds as the pre-development condition. Watersheds A & B are further divided into subcatchments, three (3) and two (2) respectively, to account for the proposed stormwater management system. The post-development watersheds utilize the same points of discharge as the existing conditions, and they provide a direct comparison to the pre-development model. Bioretention Basins with ISR's were utilized for stormwater treatment as the site is located

within a “Class A – All Features” watershed as identified on the NHDES OneStop Data Mapper. This analysis indicates that the proposed stormwater measures, and stormwater management plan will treat and mitigate stormwarer runoff in general accordance with ENV-Wq 1500 of the New Hampshire Code of Administrative Rules and the City of Dover’s Subdivision and Site Review Regulations. The proposed development of the site, in conjunction with the implementation of the Stormwater I&M Manual, will have minimal impact on the watersheds.

2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

“Stormwater Management and Erosion Sediment Control Handbook for Urban and Developing Areas in New Hampshire”

“New Hampshire Stormwater Manual Volume 2 - Post-Construction Best Management Practices Selection & Design”

“Civil Engineering Reference Manual, Fifth Edition”

“Open-Channel Hydraulics” Chow.

“Stormwater Modeling System” HydroCAD Ver. 10.10

2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

2.1.1 Watersheds

The watershed was delineated using on site topographic and as built survey data field located by McEneaney Survey Associates of New England.

2.1.2 Soils

Soil types were determined utilizing a site specific soils map prepared by BAG Land Consultants, Bruce A. Gilday, CSS#012. The hydrologic soil drainage classifications used for this analysis are Class B and D.

Hydrologic Drainage Class B:

Map Unit Symbol	Soil Taxonomic Name	Drainage Class
313B	Deerfield	Moderately-Well Drained
915B	Deerfield Variant	Somewhat Poorly Drained

Hydrologic Drainage Class D:

Map Unit Symbol	Soil Taxonomic Name	Drainage Class
233B/P	Scantic	Poorly Drained (P)

2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center were utilized in this analysis. The analysis has been performed for the 2-year, 10-year, 25-year, and 50-year storm events with 3.60", 5.44", 6.88", and 8.23" rainfall depths respectively. The rainfall data has been peaked by 15% in accordance with NHDES Alteration of Terrain requirements as the site is located within the Coastal Region.

2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used and are summarized within each sub-catchment drainage summary in Appendix A.

2.2 EXISTING CONDITIONS

For the purposes of this analysis, the subject parcel was analyzed as three (3) watersheds.

2.2.1 Table A – Existing Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Pre-Development Volume (af)**	**Pre Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.625	2.8	6.6	9.8	12.7
B	0.080	0.4	1.2	1.8	2.5
C	0.223	1.4	3.0	4.2	5.3

2.3 DEVELOPED CONDITIONS

The post development model was analyzed utilizing the same summing points as the pre-development analysis.

2.3.1 Table B – Developed Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Post-Development Volume (af)**	**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.915	2.5	6.3	9.7	12.7
B	0.055	0.3	0.8	1.3	1.7
C	0.261	1.4	3.0	4.2	5.3

2.4 HYDROLOGIC COMPARISON

The analysis indicates that the proposed project will have negligible impact on the developed watersheds.

2.4.1 Table C – Pre/Post Development Comparison (2, 10, 25, and 50-year storm events)

Watershed	Pre/**Post-Development Volume (af)**	Pre/**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.625/**0.915**	2.8/**2.5**	6.6/**6.3**	9.8/**9.7**	12.7/**12.7**
B	0.080/**0.055**	0.4/**0.3**	1.2/**0.8**	1.8/**1.3**	2.5/**1.7**
C	0.223/**0.261**	1.4/**1.4**	3.0/**3.0**	4.2/**4.2**	5.3/**5.3**

2.5 STORMWATER DESIGN

The project incorporates best management practices to mitigate runoff as well as treat and convey stormwater.

2.5.1 Stormwater Best Management Practices (BMP's)

This project incorporates three (3) bioretention basins with ISR's to mitigate flow and water quality from the proposed development. Pre-treatment for the proposed

stormwater BMP's will utilize sediment forebays. See Appendix B-1 for the BMP design calculations and supporting documentation.

2.5.2 Pollutant Removal

This project treats 1.65+/- acres of proposed impervious area. The project incorporates the following practice and associated pollutant removal efficacy as identified in the New Hampshire Stormwater Management Manual Volume 2, Appendix B:

	TSS	TN	TP
Bioretention Basin with ISR:	90%	65%	65%

The pollutant removal meets or exceeds The City of Dover's Site Review Regulations. See Appendix B-2 for the removal efficiency data as provided in Volume 1.

2.5.3 Groundwater Recharge

The site was evaluated for infiltration practices in support of groundwater recharge. The site's characteristics were not conducive for infiltration. The site limitations prevent infiltration and therefore will influence the project's ability to meet City and State requirements to attenuate volume and meet channel protection requirements respectively.

Site characteristics including soil type, topography, and depth to SHWT prevent the infiltration of stormwater. However, the project's stormwater infrastructure is designed to attenuate flow from the development of the parcel in support of meeting the spirit of the channel protection criteria to the greatest extent practicable. The discharge from the site is directed to large wetland complexes associated with Kelley and Knox Marsh Brooks and the proposed project will not contribute to flooding or functional impairments to streets, adjacent properties, or downstream properties.

2.5.4 Outlet Protection

BMP's, conveyance structures, and outlet protection have been sized to convey the 50-year, 24 hour storm event. All proposed rip-rap applications shall consist of min. d50 = 6" stone with a stone layer thickness of 12" (min) on a filter fabric layer over a 6" thick (min) gravel base. See Appendix B-3 for design calculations and supporting data, the plan set for rip-rap locations and the drainage details for additional information.

APPENDIX A

HYDROLOGIC CALCULATIONS

Extreme Precipitation in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project | Data & Products | Daily Monitoring | Documentation

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address → | Locate by Lat/Lon 43.17° N -70.91° W → | Locate by State/County



Select Options

Smoothing: Yes

Delivery: Popup

Submit

Version 2.0 Copyright 2010-2022

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.180 degrees North
Longitude	70.911 degrees West
Elevation	20 feet
Date/Time	Mon Jun 24 2024 14:58:45 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day		+15%
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	1.99	~~2.60~~	2.85	**1yr**	2.30	2.74	3.14	3.87	4.44	**1yr**	2.99
2yr	0.32	0.49	0.61	0.81	1.01	1.28	**2yr**	0.87	1.17	1.50	1.91	2.44	~~3.13~~	3.48	**2yr**	2.77	3.35	3.84	4.57	5.21	**2yr**	3.60
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.06	3.96	4.46	**5yr**	3.50	4.29	4.90	5.78	6.54	**5yr**	
10yr	0.40	0.63	0.80	1.09	1.41	1.84	**10yr**	1.22	1.69	2.17	2.82	3.65	~~4.73~~	5.38	**10yr**	4.19	5.17	5.90	6.90	7.77	**10yr**	5.44
25yr	0.46	0.74	0.94	1.29	1.72	2.26	**25yr**	1.48	2.09	2.69	3.51	4.59	~~5.98~~	6.90	**25yr**	5.30	6.64	7.54	8.73	9.76	**25yr**	6.88
50yr	0.51	0.82	1.06	1.48	1.99	2.66	**50yr**	1.72	2.45	3.17	4.17	5.47	~~7.16~~	8.33	**50yr**	6.33	8.01	9.08	10.43	11.61	**50yr**	8.23
100yr	0.58	0.93	1.20	1.70	2.31	3.11	**100yr**	1.99	2.88	3.73	4.94	6.51	~~8.56~~	10.07	**100yr**	7.57	9.68	10.94	12.47	13.81	**100yr**	9.84
200yr	0.64	1.04	1.35	1.94	2.69	3.65	**200yr**	2.32	3.39	4.41	5.87	7.77	10.24	12.17	**200yr**	9.06	11.70	13.18	14.91	16.44	**200yr**	
500yr	0.75	1.24	1.61	2.34	3.28	4.51	**500yr**	2.83	4.20	5.47	7.34	9.79	12.98	15.64	**500yr**	11.49	15.04	16.87	18.91	20.72	**500yr**	

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.25	1.55	2.04	2.48	**1yr**	1.81	2.38	2.92	3.35	4.05	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.38	**2yr**	2.69	3.25	3.73	4.45	5.06	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.70	4.11	**5yr**	3.27	3.96	4.58	5.40	6.10	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.57	1.82	2.45	3.14	4.26	4.78	**10yr**	3.77	4.59	5.31	6.24	7.01	**10yr**
25yr	0.44	0.67	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.85	3.67	5.04	5.79	**25yr**	4.46	5.57	6.48	7.56	8.43	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.19	**50yr**	1.53	2.14	2.36	3.21	4.12	5.78	6.69	**50yr**	5.11	6.44	7.53	8.74	9.68	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.51	**100yr**	1.74	2.46	2.64	3.59	4.61	6.61	7.73	**100yr**	5.85	7.43	8.76	10.09	11.08	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.88	**200yr**	1.99	2.81	2.93	4.02	5.16	7.57	8.93	**200yr**	6.70	8.58	10.19	11.67	12.72	**200yr**
500yr	0.70	1.04	1.34	1.94	2.77	3.47	**500yr**	2.39	3.39	3.40	4.67	6.01	9.01	10.78	**500yr**	7.97	10.37	12.44	14.15	15.20	**500yr**

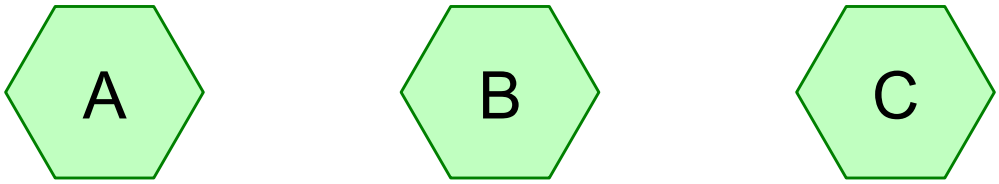
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.23	1.74	2.21	2.83	3.05	**1yr**	2.50	2.93	3.37	4.17	4.76	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.24	**2yr**	0.90	1.22	1.48	1.95	2.50	3.25	3.59	**2yr**	2.87	3.45	3.96	4.72	5.39	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.54	1.85	2.49	3.19	4.22	4.80	**5yr**	3.73	4.61	5.23	6.17	6.94	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.87	2.23	3.04	3.84	5.19	5.98	**10yr**	4.59	5.75	6.55	7.58	8.46	**10yr**
25yr	0.55	0.84	1.05	1.49	1.96	2.47	**25yr**	1.69	2.41	2.87	3.95	4.92	6.93	8.02	**25yr**	6.13	7.71	8.73	9.96	11.02	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.98	**50yr**	2.02	2.91	3.48	4.80	5.97	8.55	10.03	**50yr**	7.57	9.64	10.87	12.25	13.47	**50yr**
100yr	0.74	1.12	1.40	2.03	2.78	3.59	**100yr**	2.40	3.51	4.21	5.87	7.24	10.55	12.55	**100yr**	9.34	12.07	13.52	15.08	16.47	**100yr**
200yr	0.86	1.29	1.63	2.37	3.30	4.35	**200yr**	2.85	4.26	5.12	7.18	8.78	13.06	15.72	**200yr**	11.56	15.11	16.83	18.54	20.18	**200yr**
500yr	1.05	1.56	2.00	2.91	4.13	5.59	**500yr**	3.57	5.46	6.61	9.39	11.34	17.35	21.17	**500yr**	15.36	20.36	22.49	24.42	26.41	**500yr**

Powered by ACIS
Northeast Regional Climate Center

A – 1

EXISTING WATERSHEDS



A

B

C

Subcat Reach Pond Link

Routing Diagram for 24085 - Pre
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.549	61	>75% Grass cover, Good, HSG B (A, B, C)
3.457	80	>75% Grass cover, Good, HSG D (A, C)
0.186	96	Gravel surface, HSG B (A)
12.192	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.735	HSG B	A, B, C
0.000	HSG C	
3.457	HSG D	A, C
0.000	Other	
12.192		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	8.549	0.000	3.457	0.000	12.005	>75% Grass cover, Good	A, B, C
0.000	0.186	0.000	0.000	0.000	0.186	Gravel surface	A
0.000	**8.735**	**0.000**	**3.457**	**0.000**	**12.192**	**TOTAL AREA**	

A – 1

NODE LISTING – 2-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=0.91"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=2.8 cfs 0.625 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=0.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.4 cfs 0.080 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=1.13"
Flow Length=402' Tc=20.7 min CN=71 Runoff=1.4 cfs 0.223 af

Total Runoff Area = 12.192 ac Runoff Volume = 0.928 af Average Runoff Depth = 0.91"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

NODE LISTING – 10-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=2.12"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=6.6 cfs 1.458 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.2 cfs 0.211 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=2.45"
Flow Length=402' Tc=20.7 min CN=71 Runoff=3.0 cfs 0.486 af

Total Runoff Area = 12.192 ac Runoff Volume = 2.155 af Average Runoff Depth = 2.12"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

10-YR STORM SUMMARY

Summary for Subcatchment A: A

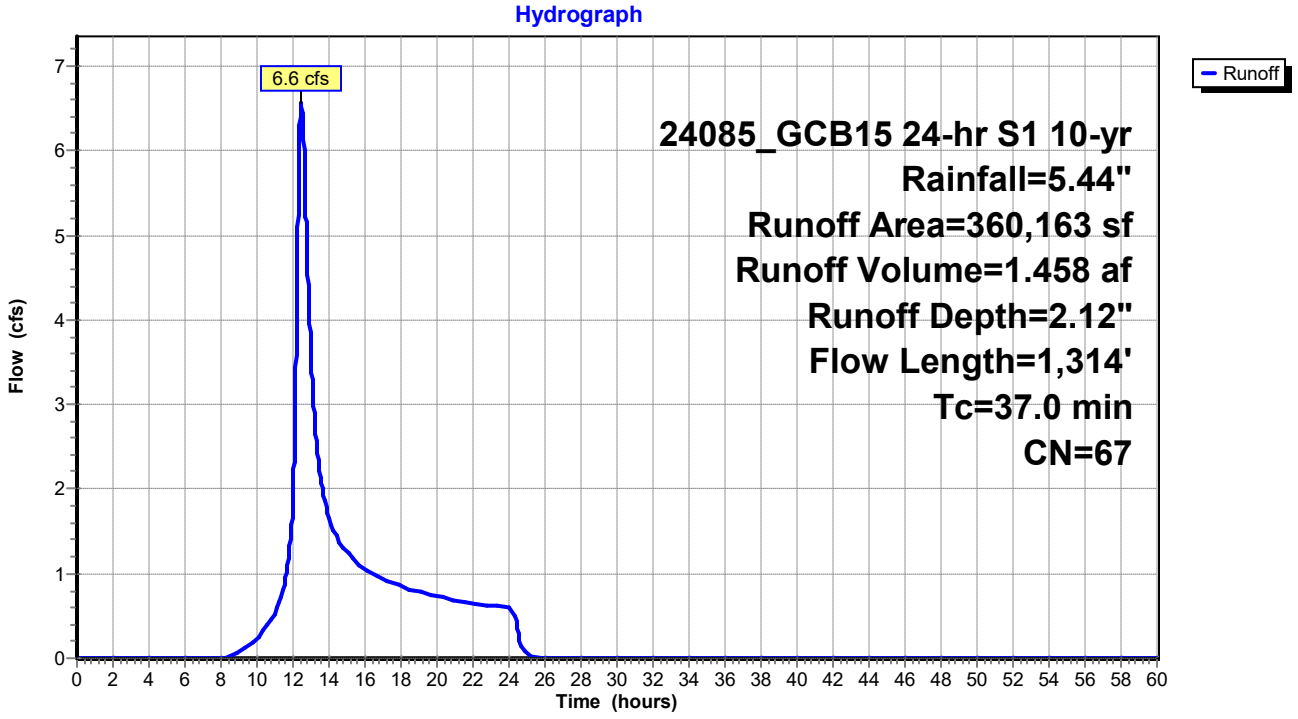
Runoff = 6.6 cfs @ 12.46 hrs, Volume= 1.458 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
253,585	61	>75% Grass cover, Good, HSG B
8,114	96	Gravel surface, HSG B
98,464	80	>75% Grass cover, Good, HSG D
360,163	67	Weighted Average
360,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
16.1	479	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	735	0.0050	4.00	35.96	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 2.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
37.0	1,314	Total			

Subcatchment A: A



Summary for Subcatchment B: B

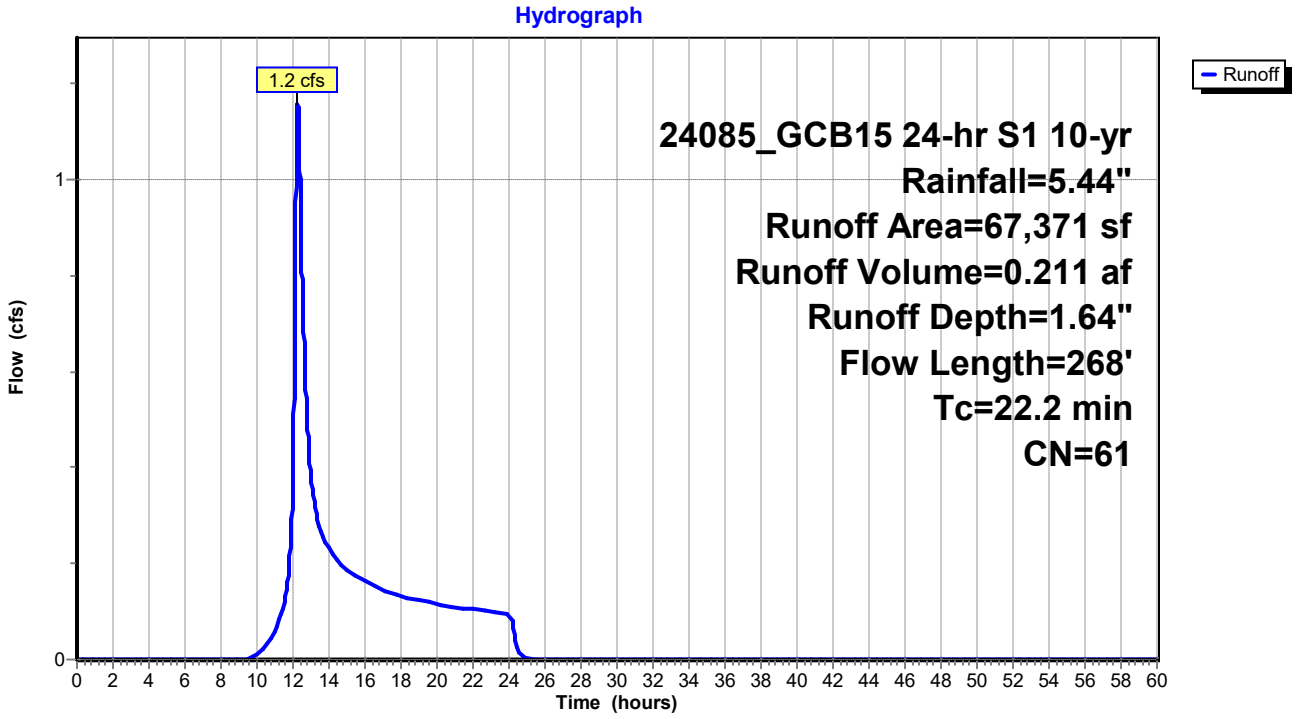
Runoff = 1.2 cfs @ 12.26 hrs, Volume= 0.211 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
67,371	61	>75% Grass cover, Good, HSG B
67,371		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
5.7	168	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	268	Total			

Subcatchment B: B



Summary for Subcatchment C: C

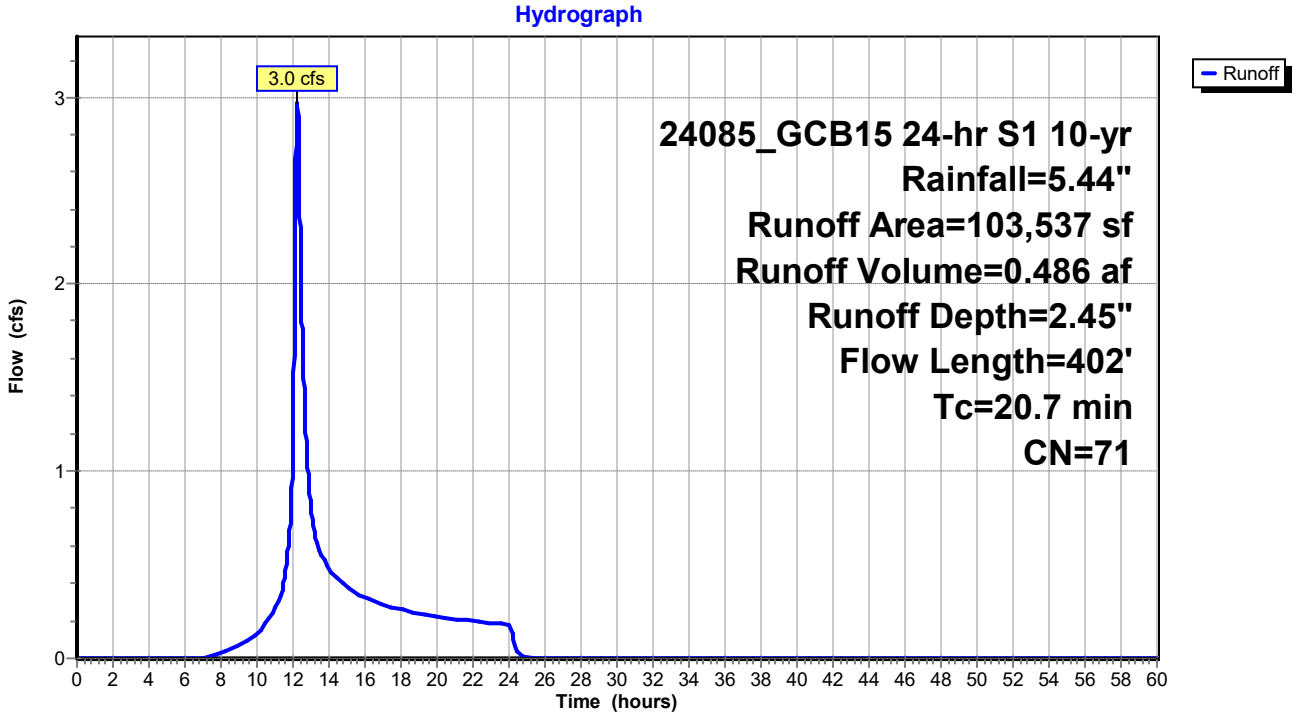
Runoff = 3.0 cfs @ 12.24 hrs, Volume= 0.486 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
51,429	61	>75% Grass cover, Good, HSG B
52,108	80	>75% Grass cover, Good, HSG D
103,537	71	Weighted Average
103,537		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
7.2	302	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.7	402	Total			

Subcatchment C: C



A – 1

NODE LISTING – 25-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=9.8 cfs 2.213 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=2.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.8 cfs 0.337 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=402' Tc=20.7 min CN=71 Runoff=4.2 cfs 0.718 af

Total Runoff Area = 12.192 ac Runoff Volume = 3.268 af Average Runoff Depth = 3.22"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

NODE LISTING – 50-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=4.31"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=12.7 cfs 2.972 af

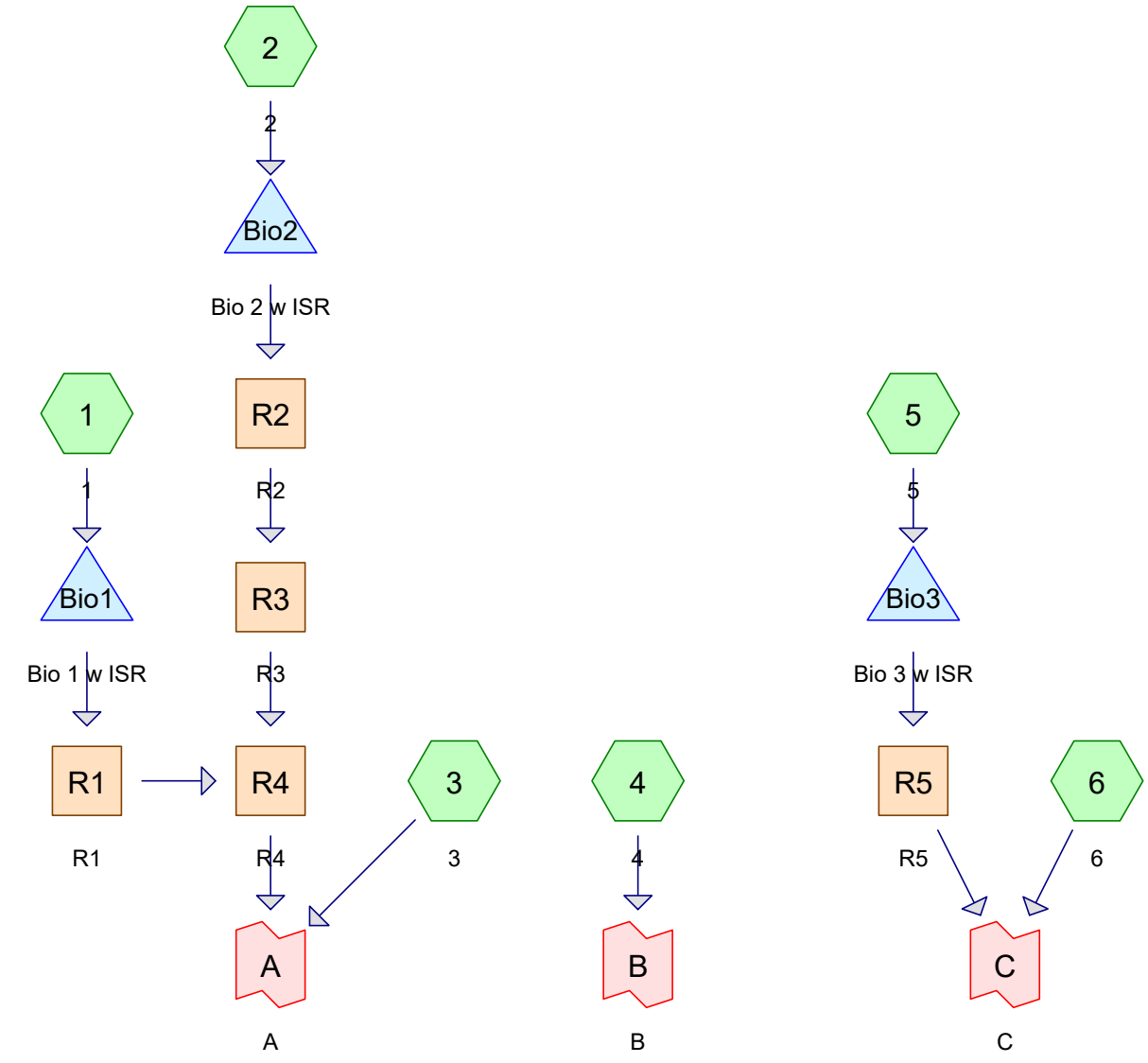
Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=2.5 cfs 0.467 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=4.78"
Flow Length=402' Tc=20.7 min CN=71 Runoff=5.3 cfs 0.947 af

Total Runoff Area = 12.192 ac Runoff Volume = 4.385 af Average Runoff Depth = 4.32"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 2

DEVELOPED WATERSHEDS



Subcat Reach Pond Link

Routing Diagram for 24085 - Post
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.025	61	>75% Grass cover, Good, HSG B (1, 2, 3, 4, 5, 6)
3.517	80	>75% Grass cover, Good, HSG D (1, 2, 3, 5, 6)
0.576	96	Gravel surface, HSG B (2, 5)
0.017	96	Gravel surface, HSG D (5)
0.524	98	Paved parking, HSG B (2, 5)
0.008	98	Paved parking, HSG D (5)
0.305	98	Paved roads w/curbs & sewers, HSG B (1)
0.220	98	Roofs, HSG B (1, 2)
12.192	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.650	HSG B	1, 2, 3, 4, 5, 6
0.000	HSG C	
3.541	HSG D	1, 2, 3, 5, 6
0.000	Other	
12.192		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	7.025	0.000	3.517	0.000	10.542	>75% Grass cover, Good	1, 2, 3, 4, 5, 6
0.000	0.576	0.000	0.017	0.000	0.593	Gravel surface	2, 5
0.000	0.524	0.000	0.008	0.000	0.531	Paved parking	2, 5
0.000	0.305	0.000	0.000	0.000	0.305	Paved roads w/curbs & sewers	1
0.000	0.220	0.000	0.000	0.000	0.220	Roofs	1, 2
0.000	**8.650**	**0.000**	**3.541**	**0.000**	**12.192**	**TOTAL AREA**	

A – 2

NODE LISTING – 2-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=2.27"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=1.2 cfs 0.102 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=2.02"
Flow Length=468' Tc=14.5 min CN=84 Runoff=2.4 cfs 0.293 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=0.96"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=2.3 cfs 0.520 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=0.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.3 cfs 0.055 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=2.54"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=0.8 cfs 0.054 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=402' Tc=20.7 min CN=72 Runoff=1.3 cfs 0.207 af

Reach R1: R1 Avg. Flow Depth=0.04' Max Vel=0.44 fps Inflow=0.0 cfs 0.102 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.0 cfs 0.102 af

Reach R2: R2 Avg. Flow Depth=0.10' Max Vel=1.28 fps Inflow=0.3 cfs 0.293 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=0.3 cfs 0.293 af

Reach R3: R3 Avg. Flow Depth=0.12' Max Vel=0.72 fps Inflow=0.3 cfs 0.293 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=0.3 cfs 0.293 af

Reach R4: R4 Avg. Flow Depth=0.16' Max Vel=0.61 fps Inflow=0.3 cfs 0.395 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=0.3 cfs 0.395 af

Reach R5: R5 Avg. Flow Depth=0.08' Max Vel=0.44 fps Inflow=0.1 cfs 0.054 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.1 cfs 0.054 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.52' Storage=2,961 cf Inflow=1.2 cfs 0.102 af
Outflow=0.0 cfs 0.102 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.30' Storage=6,200 cf Inflow=2.4 cfs 0.293 af
Outflow=0.3 cfs 0.293 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.41' Storage=1,126 cf Inflow=0.8 cfs 0.054 af
Outflow=0.1 cfs 0.054 af

Link A: A Inflow=2.5 cfs 0.915 af
Primary=2.5 cfs 0.915 af

Link B: B Inflow=0.3 cfs 0.055 af
Primary=0.3 cfs 0.055 af

Link C: C

Inflow=1.4 cfs 0.261 af
Primary=1.4 cfs 0.261 af

Total Runoff Area = 12.192 ac Runoff Volume = 1.231 af Average Runoff Depth = 1.21"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

NODE LISTING – 10-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=3.98"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=1.8 cfs 0.179 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=3.68"
Flow Length=468' Tc=14.5 min CN=84 Runoff=3.8 cfs 0.532 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=2.20"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=5.4 cfs 1.192 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.8 cfs 0.145 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=4.30"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.1 cfs 0.092 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=2.54"
Flow Length=402' Tc=20.7 min CN=72 Runoff=2.7 cfs 0.443 af

Reach R1: R1 Avg. Flow Depth=0.13' Max Vel=0.85 fps Inflow=0.3 cfs 0.179 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.3 cfs 0.179 af

Reach R2: R2 Avg. Flow Depth=0.18' Max Vel=1.85 fps Inflow=0.9 cfs 0.532 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=0.9 cfs 0.532 af

Reach R3: R3 Avg. Flow Depth=0.23' Max Vel=1.07 fps Inflow=0.9 cfs 0.532 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=0.9 cfs 0.532 af

Reach R4: R4 Avg. Flow Depth=0.33' Max Vel=0.94 fps Inflow=1.1 cfs 0.711 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=1.1 cfs 0.711 af

Reach R5: R5 Avg. Flow Depth=0.14' Max Vel=0.64 fps Inflow=0.3 cfs 0.092 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.3 cfs 0.092 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.68' Storage=3,572 cf Inflow=1.8 cfs 0.179 af
Outflow=0.3 cfs 0.179 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.55' Storage=9,733 cf Inflow=3.8 cfs 0.532 af
Outflow=0.9 cfs 0.532 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.72' Storage=1,548 cf Inflow=1.1 cfs 0.092 af
Outflow=0.3 cfs 0.092 af

Link A: A Inflow=6.3 cfs 1.903 af
Primary=6.3 cfs 1.903 af

Link B: B Inflow=0.8 cfs 0.145 af
Primary=0.8 cfs 0.145 af

Link C: C

Inflow=3.0 cfs 0.535 af
Primary=3.0 cfs 0.535 af

Total Runoff Area = 12.192 ac Runoff Volume = 2.583 af Average Runoff Depth = 2.54"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

10-YR STORM SUMMARY

Summary for Subcatchment 1: 1

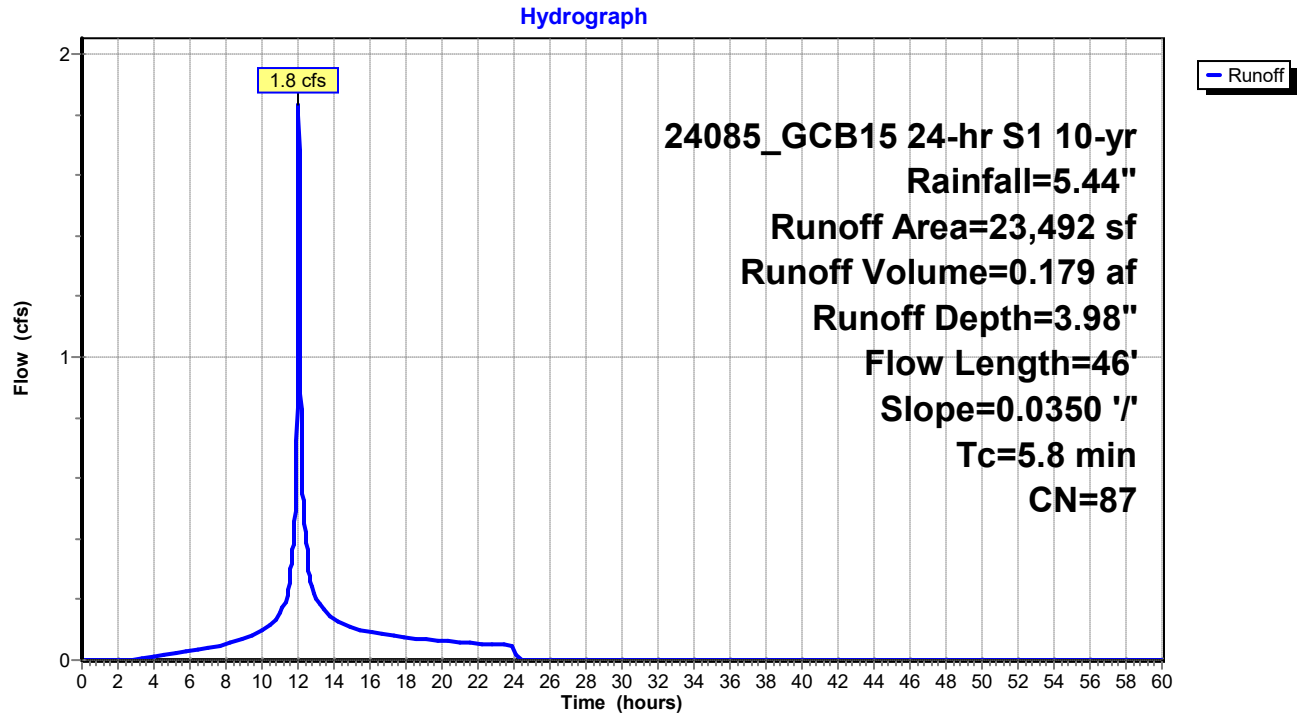
Runoff = 1.8 cfs @ 12.03 hrs, Volume= 0.179 af, Depth= 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
6,277	61	>75% Grass cover, Good, HSG B
13,295	98	Paved roads w/curbs & sewers, HSG B
2,400	98	Roofs, HSG B
1,520	80	>75% Grass cover, Good, HSG D
23,492	87	Weighted Average
7,797		33.19% Pervious Area
15,695		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	46	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"

Subcatchment 1: 1



Summary for Subcatchment 2: 2

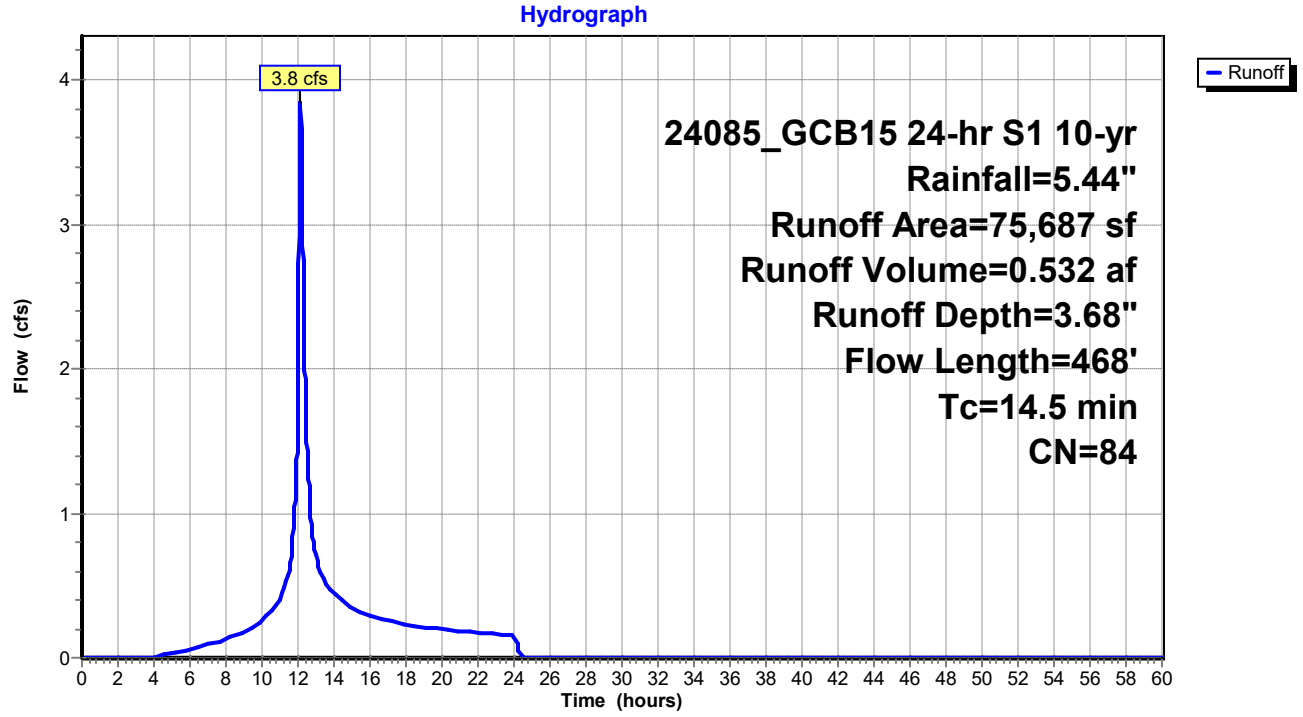
Runoff = 3.8 cfs @ 12.15 hrs, Volume= 0.532 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
26,404	61	>75% Grass cover, Good, HSG B
22,500	96	Gravel surface, HSG B
17,963	98	Paved parking, HSG B
7,200	98	Roofs, HSG B
1,620	80	>75% Grass cover, Good, HSG D
75,687	84	Weighted Average
50,524		66.75% Pervious Area
25,163		33.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	65	0.0110	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
2.4	403	0.0040	2.80	16.81	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
14.5	468	Total			

Subcatchment 2: 2



Summary for Subcatchment 3: 3

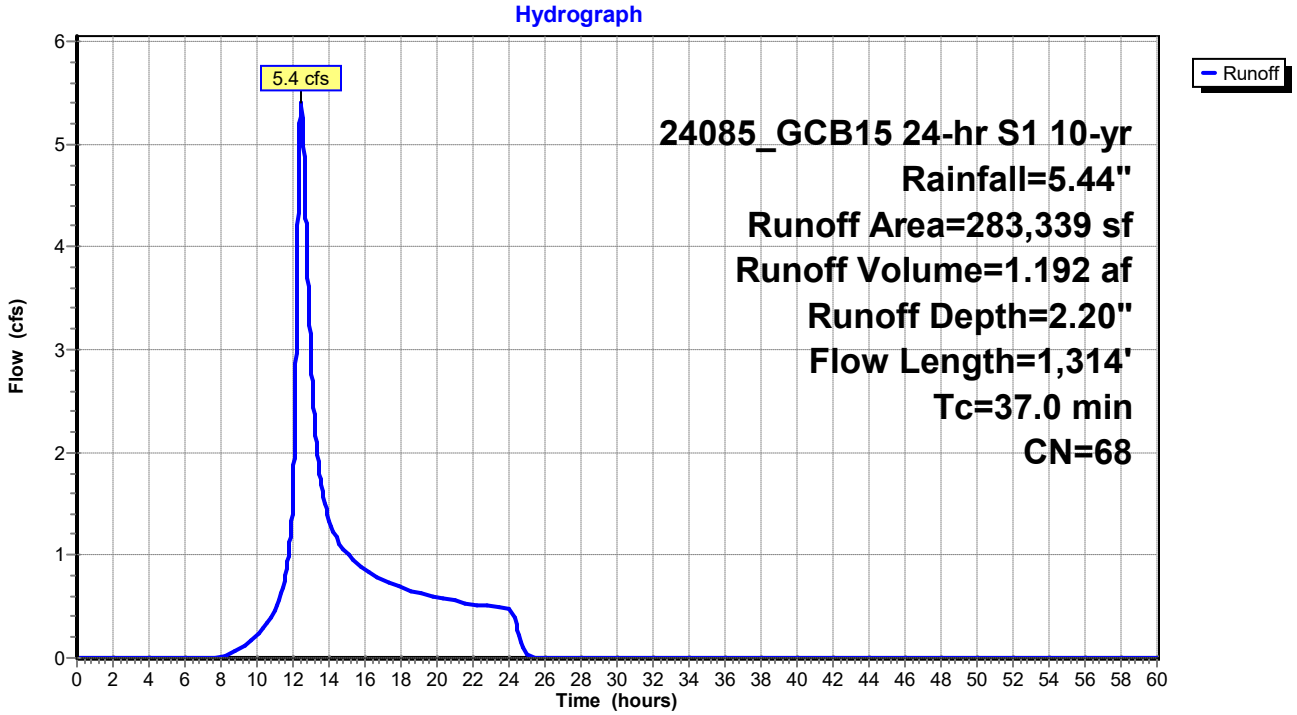
Runoff = 5.4 cfs @ 12.46 hrs, Volume= 1.192 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
184,875	61	>75% Grass cover, Good, HSG B
98,464	80	>75% Grass cover, Good, HSG D
283,339	68	Weighted Average
283,339		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
16.1	479	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	735	0.0050	4.00	35.96	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 2.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
37.0	1,314	Total			

Subcatchment 3: 3



Summary for Subcatchment 4: 4

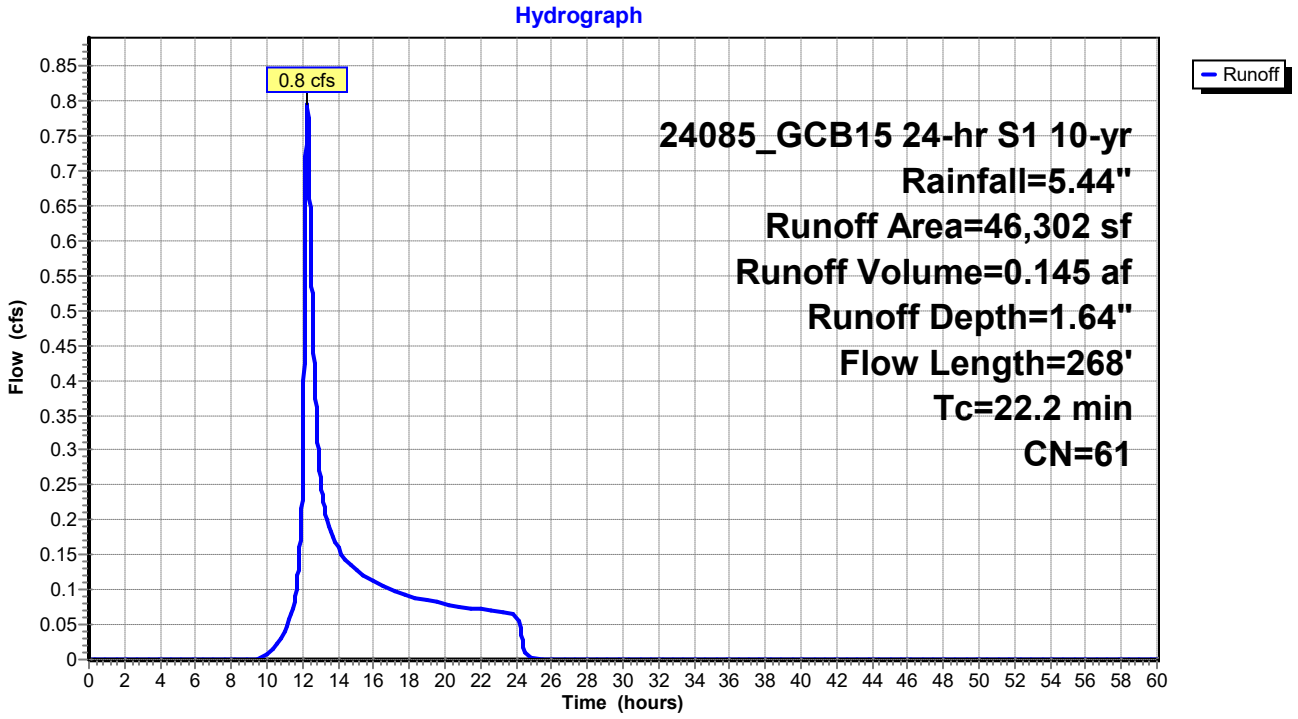
Runoff = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
46,302	61	>75% Grass cover, Good, HSG B
46,302		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
5.7	168	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	268	Total			

Subcatchment 4: 4



Summary for Subcatchment 5: 5

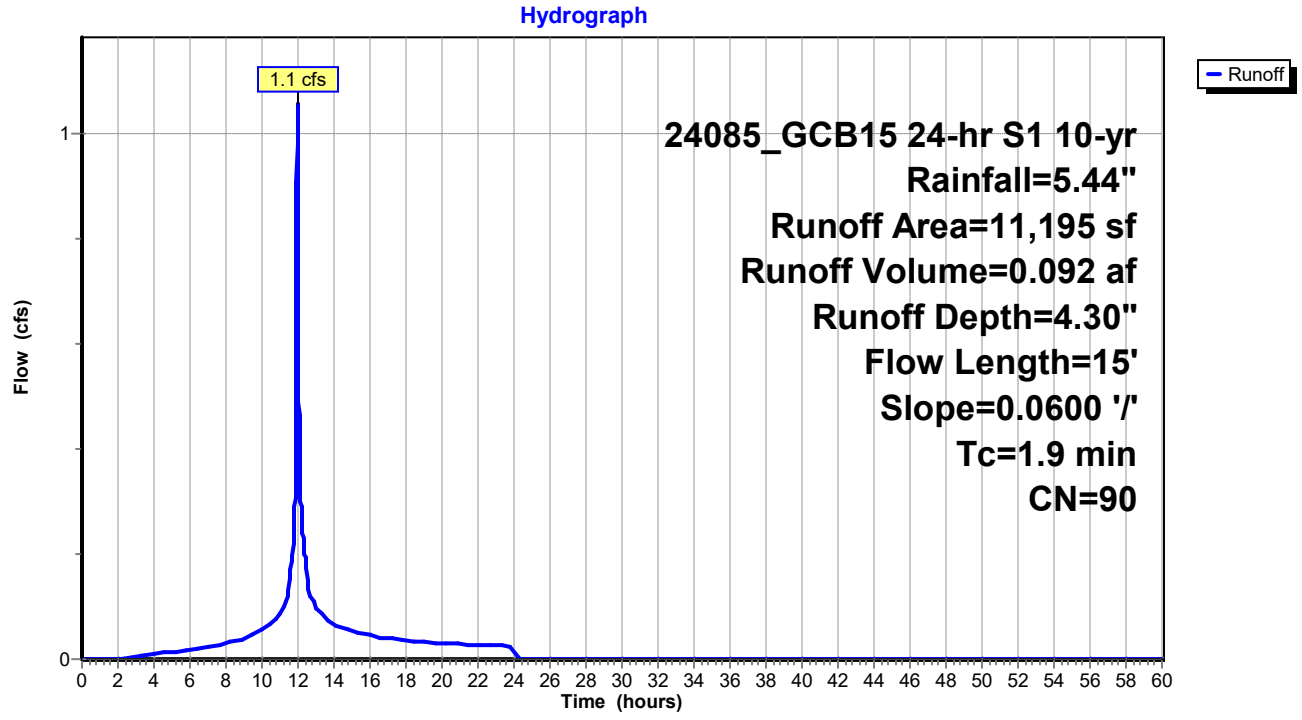
Runoff = 1.1 cfs @ 12.00 hrs, Volume= 0.092 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
1,995	61	>75% Grass cover, Good, HSG B
2,606	96	Gravel surface, HSG B
4,843	98	Paved parking, HSG B
678	80	>75% Grass cover, Good, HSG D
743	96	Gravel surface, HSG D
330	98	Paved parking, HSG D
11,195	90	Weighted Average
6,022		53.79% Pervious Area
5,173		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	15	0.0600	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"

Subcatchment 5: 5



Summary for Subcatchment 6: 6

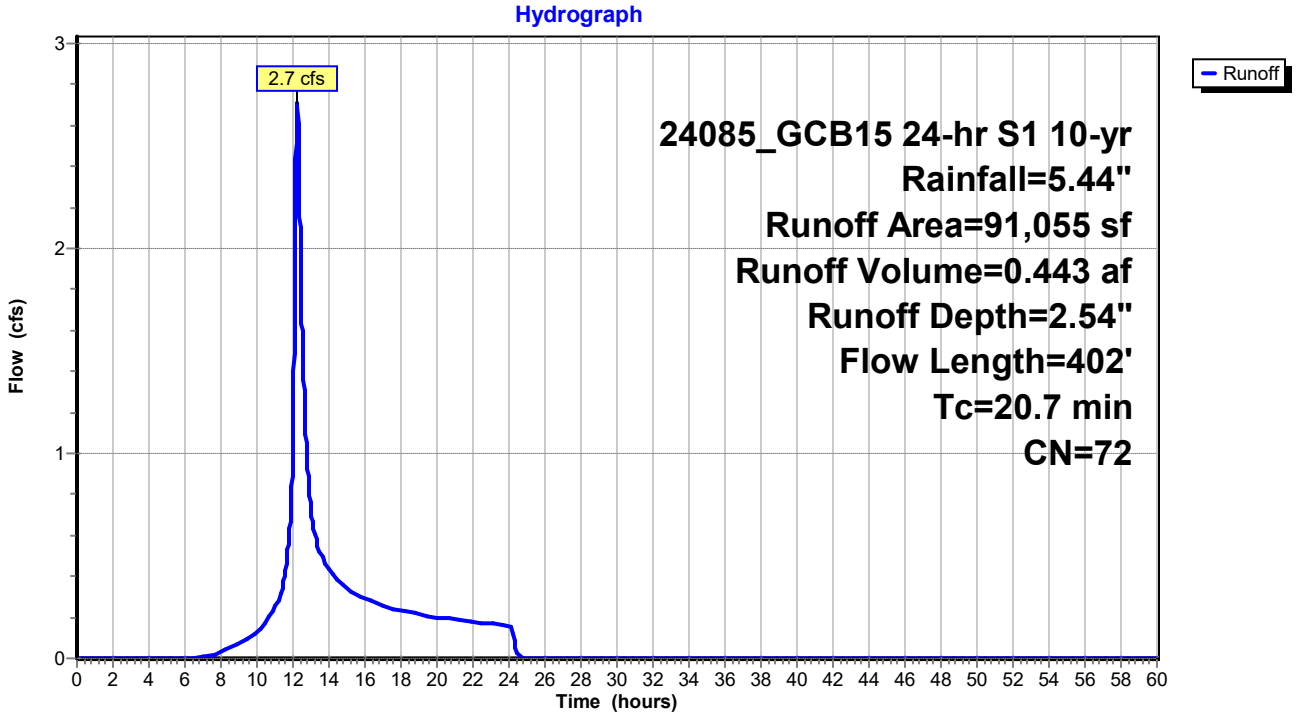
Runoff = 2.7 cfs @ 12.24 hrs, Volume= 0.443 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
40,145	61	>75% Grass cover, Good, HSG B
50,910	80	>75% Grass cover, Good, HSG D
91,055	72	Weighted Average
91,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
7.2	302	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.7	402	Total			

Subcatchment 6: 6



Summary for Reach R1: R1

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth > 3.98" for 10-yr event
Inflow = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af
Outflow = 0.3 cfs @ 12.84 hrs, Volume= 0.179 af, Atten= 3%, Lag= 11.2 min

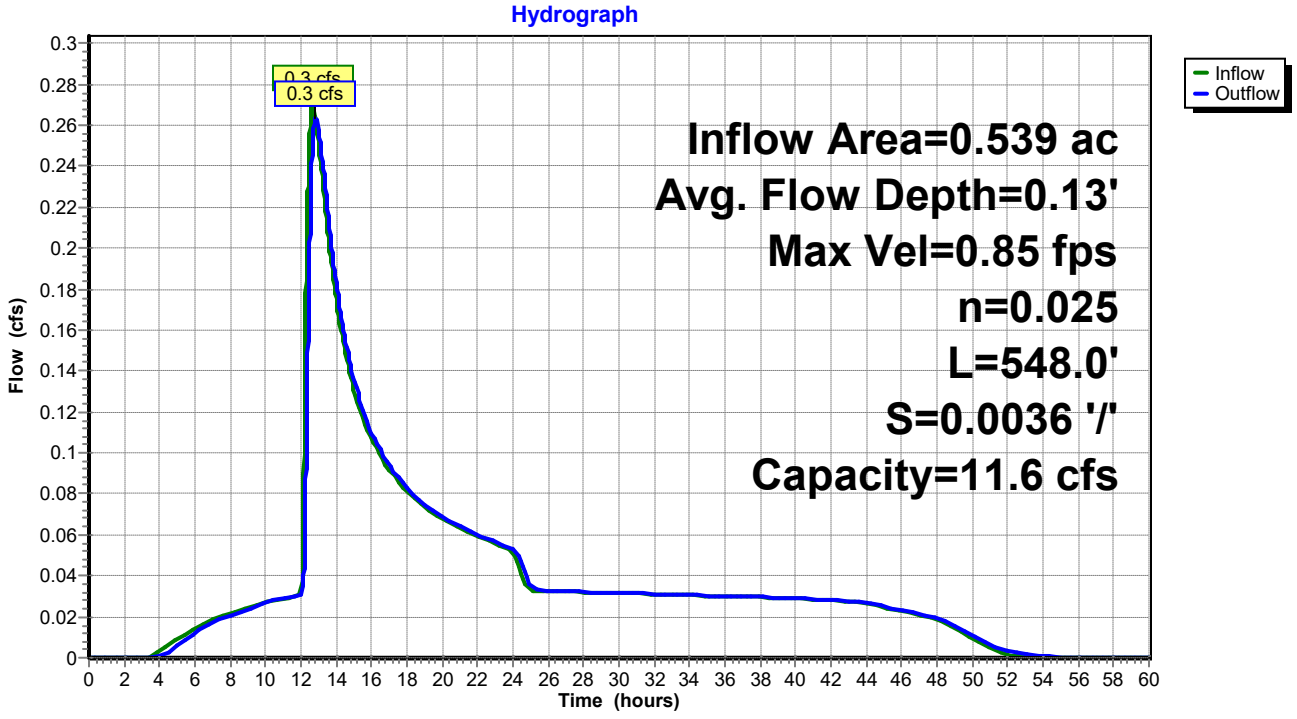
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 10.8 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 24.2 min

Peak Storage= 171 cf @ 12.84 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 2.67'
Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 11.6 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'
Length= 548.0' Slope= 0.0036 '/'
Inlet Invert= 93.00', Outlet Invert= 91.00'



Reach R1: R1



Summary for Reach R2: R2

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth > 3.67" for 10-yr event
Inflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.85 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 1.5 min

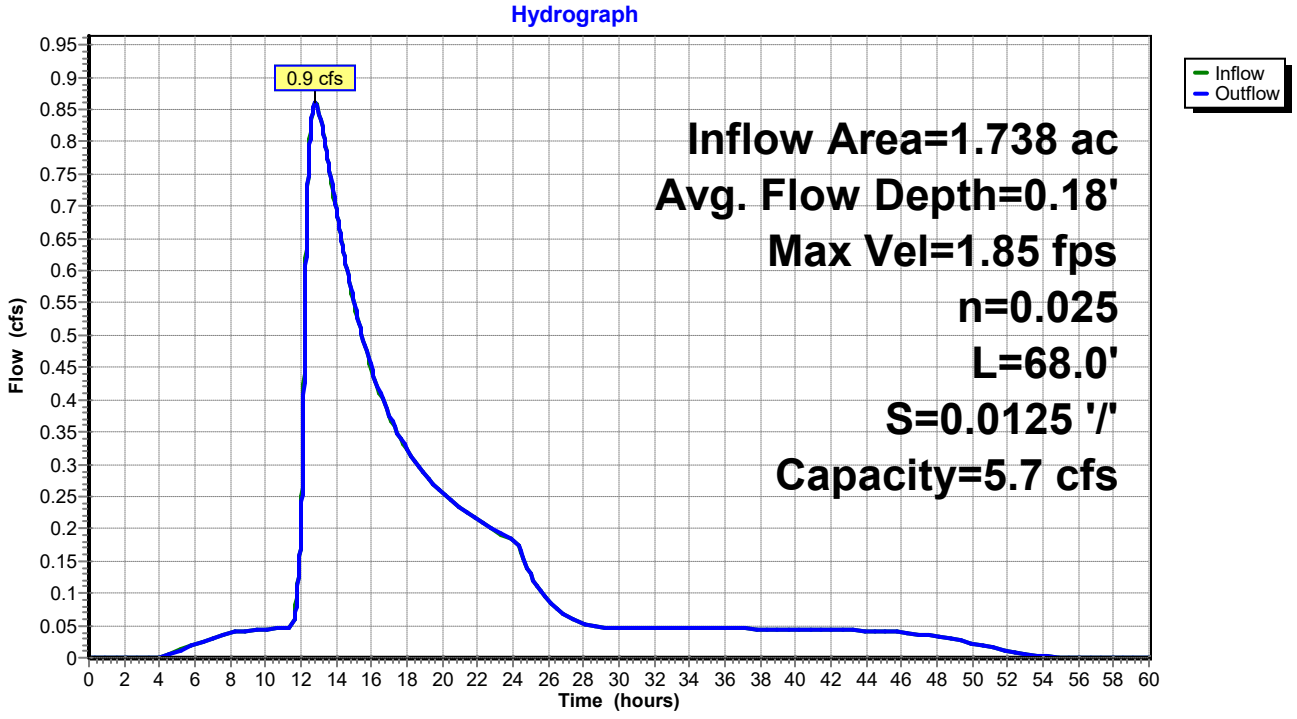
Peak Storage= 32 cf @ 12.80 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 3.09'
Bank-Full Depth= 0.50' Flow Area= 1.8 sf, Capacity= 5.7 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 5.00'
Length= 68.0' Slope= 0.0125 '/'
Inlet Invert= 92.75', Outlet Invert= 91.90'



‡

Reach R2: R2



Summary for Reach R3: R3

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth > 3.67" for 10-yr event
Inflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.87 hrs, Volume= 0.532 af, Atten= 0%, Lag= 4.0 min

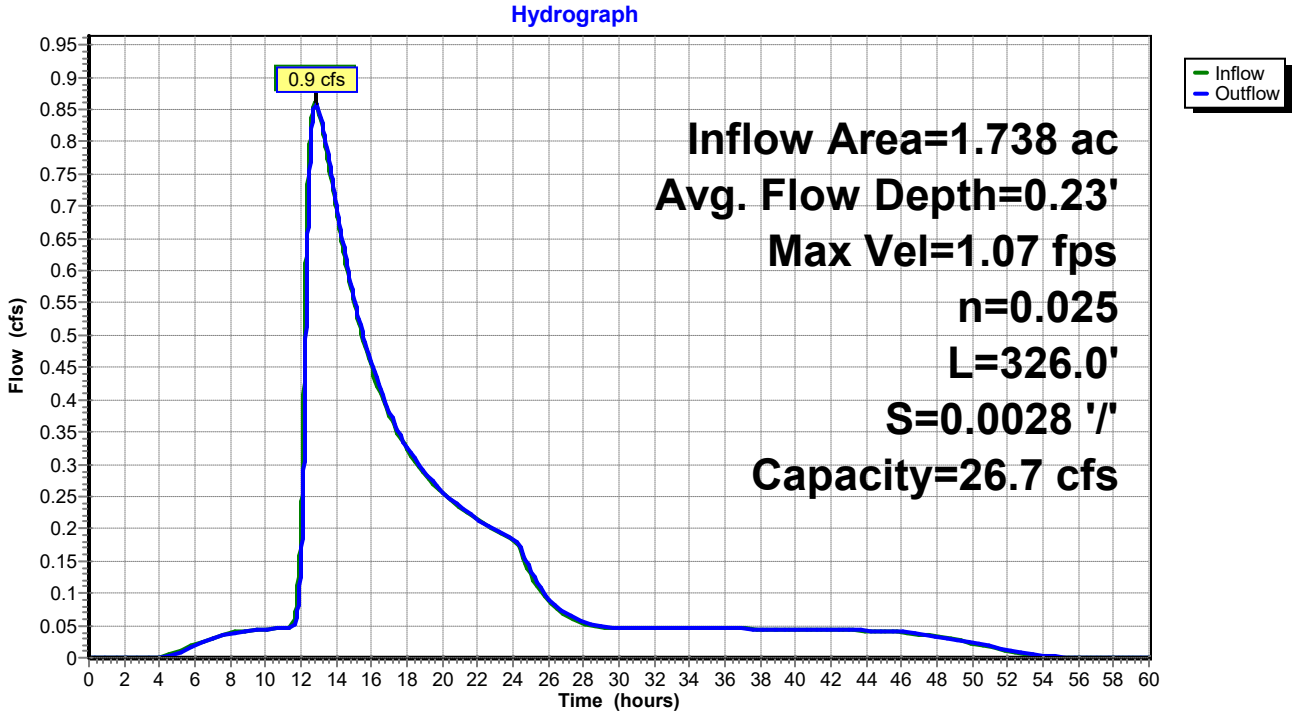
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.07 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 12.8 min

Peak Storage= 263 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 3.93'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 26.7 cfs

3.00' x 1.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 326.0' Slope= 0.0028 '/'
Inlet Invert= 91.90', Outlet Invert= 91.00'



Reach R3: R3



Summary for Reach R4: R4

Inflow Area = 2.277 ac, 41.20% Impervious, Inflow Depth > 3.75" for 10-yr event
Inflow = 1.1 cfs @ 12.86 hrs, Volume= 0.711 af
Outflow = 1.1 cfs @ 12.90 hrs, Volume= 0.711 af, Atten= 0%, Lag= 2.2 min

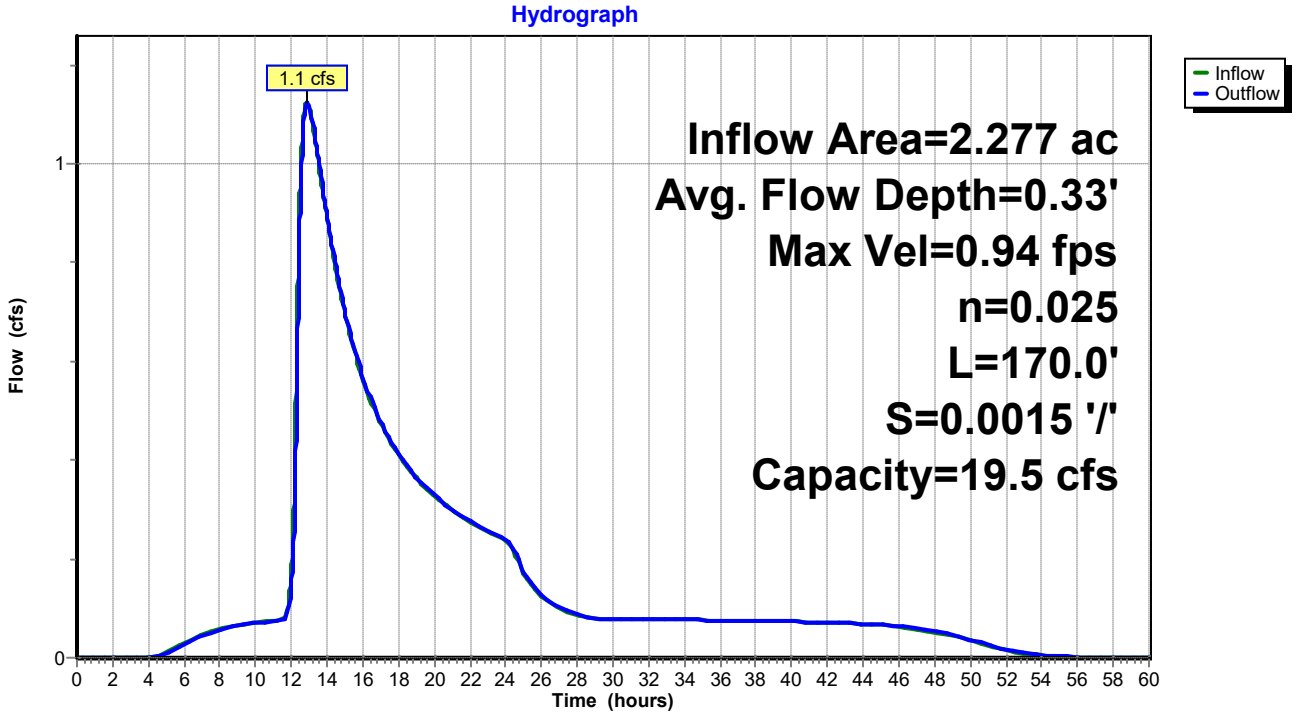
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.94 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 7.3 min

Peak Storage= 202 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 4.30'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 19.5 cfs

3.00' x 1.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 170.0' Slope= 0.0015 '/'
Inlet Invert= 91.00', Outlet Invert= 90.75'



Reach R4: R4



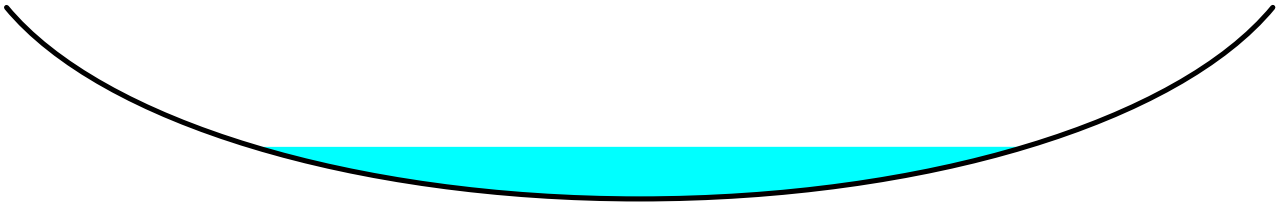
Summary for Reach R5: R5

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 4.30" for 10-yr event
Inflow = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af
Outflow = 0.3 cfs @ 12.23 hrs, Volume= 0.092 af, Atten= 1%, Lag= 5.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.64 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 11.3 min

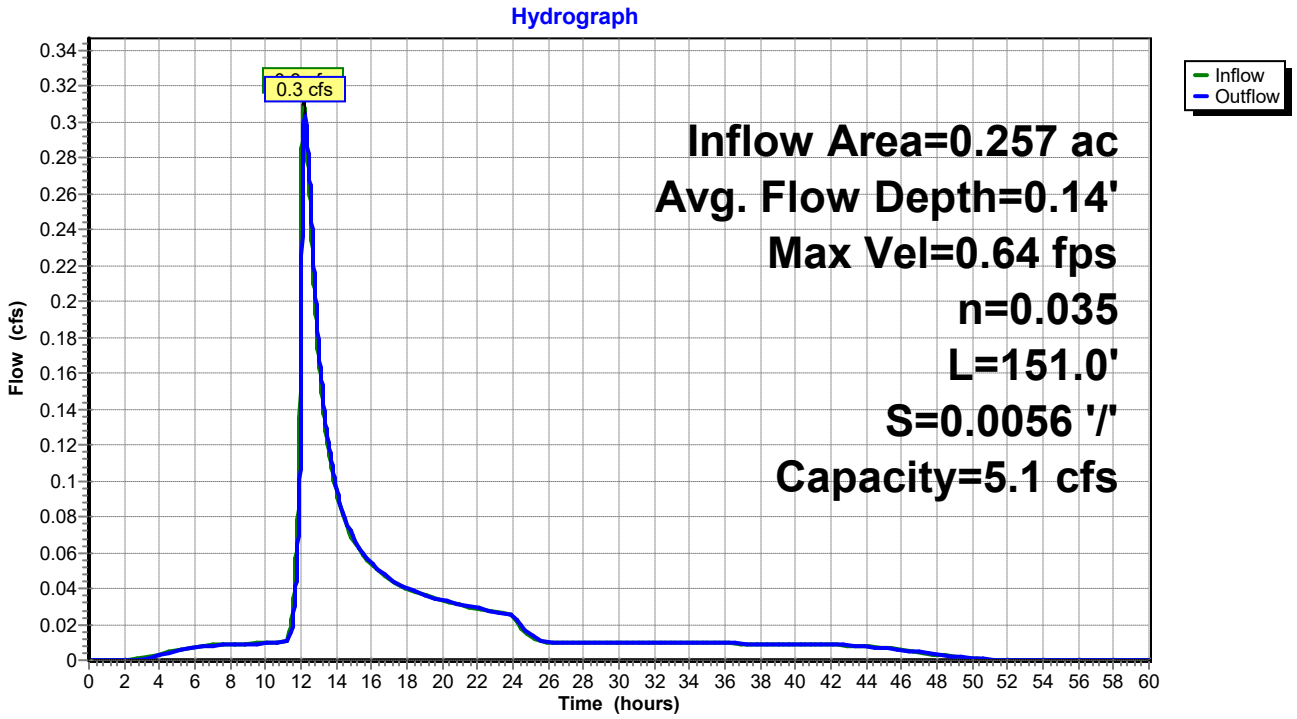
Peak Storage= 72 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 5.22'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 5.1 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 151.0' Slope= 0.0056 '/'
Inlet Invert= 92.75', Outlet Invert= 91.90'



‡

Reach R5: R5



Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 3.98" for 10-yr event
Inflow = 1.8 cfs @ 12.03 hrs, Volume= 0.179 af
Outflow = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af, Atten= 85%, Lag= 37.3 min
Primary = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.68' @ 12.66 hrs Surf.Area= 3,982 sf Storage= 3,572 cf (3,229 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 601.0 min calculated for 0.171 af (96% of inflow)
Center-of-Mass det. time= 533.0 min (1,354.8 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

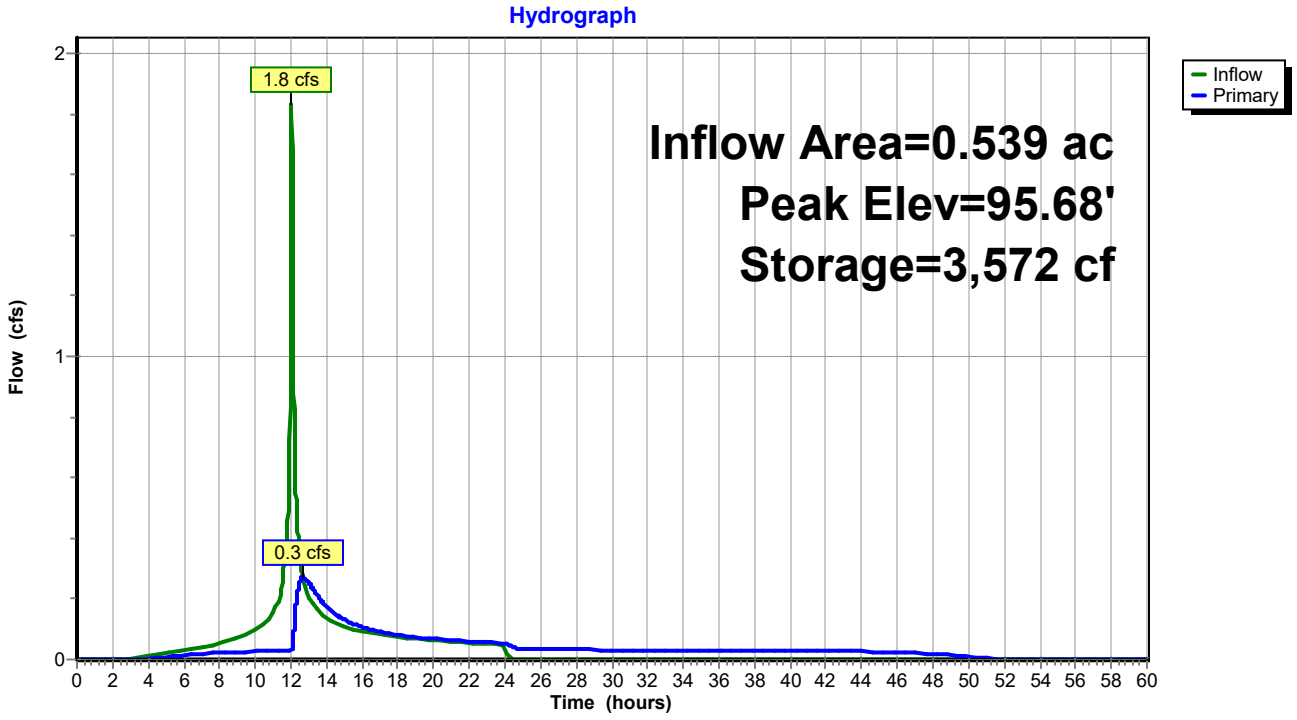
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.3 cfs @ 12.66 hrs HW=95.68' TW=93.13' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.3 cfs of 5.4 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.67 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 0.8 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.2 cfs @ 1.35 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio1: Bio 1 w ISR



Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 3.68" for 10-yr event
Inflow = 3.8 cfs @ 12.15 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af, Atten= 78%, Lag= 38.8 min
Primary = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.55' @ 12.80 hrs Surf.Area= 14,356 sf Storage= 9,733 cf (9,163 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 394.3 min calculated for 0.519 af (98% of inflow)
Center-of-Mass det. time= 361.2 min (1,205.2 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

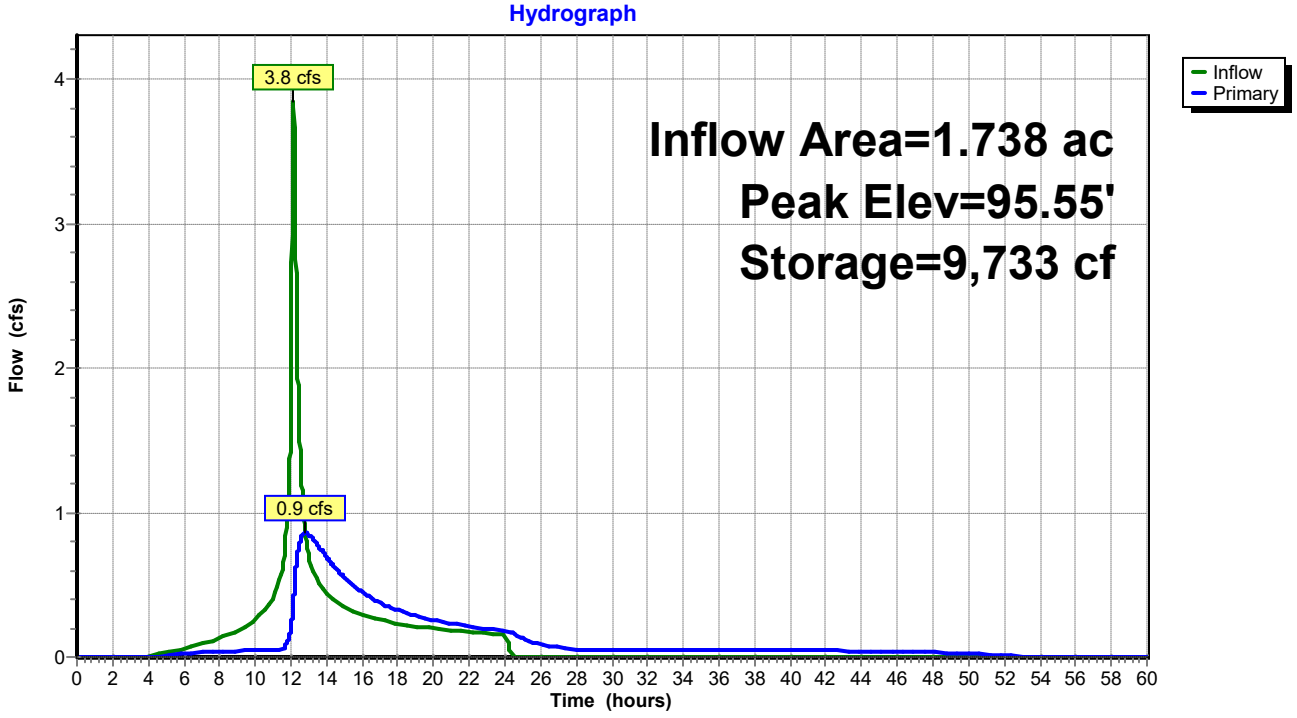
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.9 cfs @ 12.80 hrs HW=95.55' TW=92.93' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.9 cfs of 5.6 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 7.79 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio2: Bio 2 w ISR



Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 4.30" for 10-yr event
Inflow = 1.1 cfs @ 12.00 hrs, Volume= 0.092 af
Outflow = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af, Atten= 71%, Lag= 8.8 min
Primary = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.72' @ 12.14 hrs Surf.Area= 1,501 sf Storage= 1,548 cf (1,408 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 376.5 min calculated for 0.089 af (97% of inflow)
Center-of-Mass det. time= 328.6 min (1,131.2 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

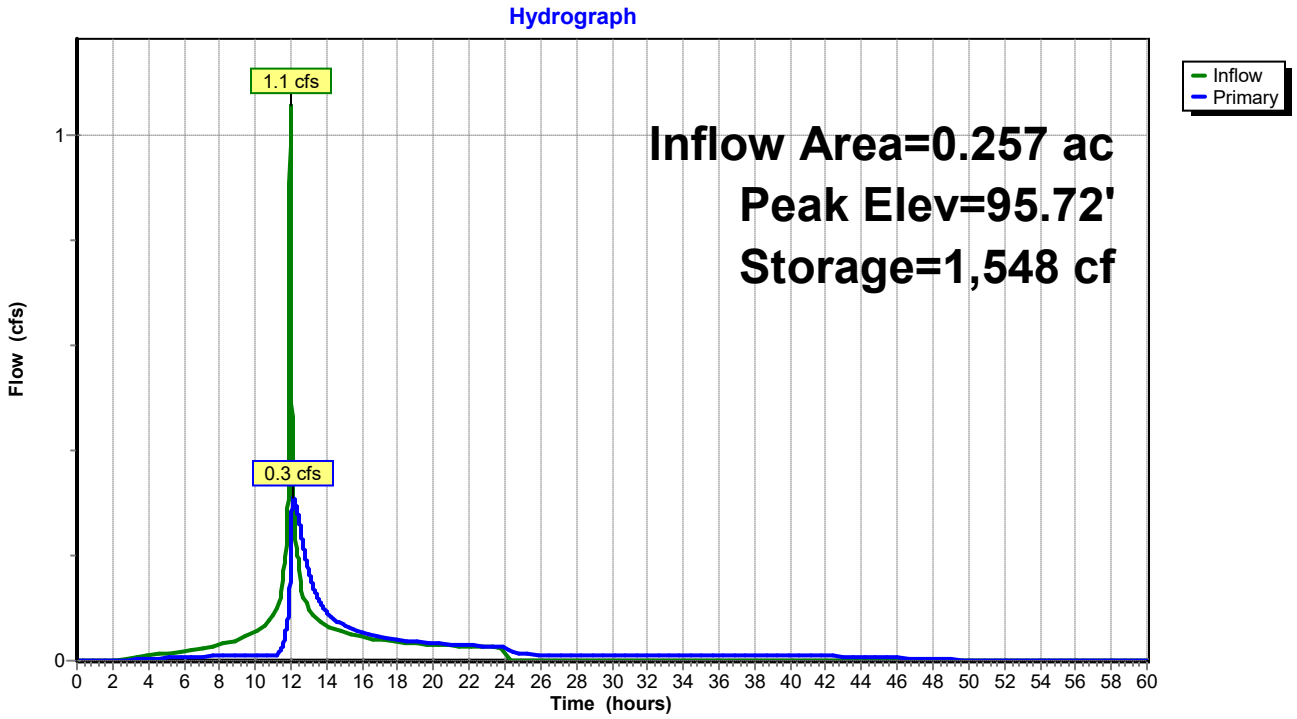
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.3 cfs @ 12.14 hrs HW=95.72' TW=92.88' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.3 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.10 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.7 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.3 cfs @ 2.31 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio3: Bio 3 w ISR

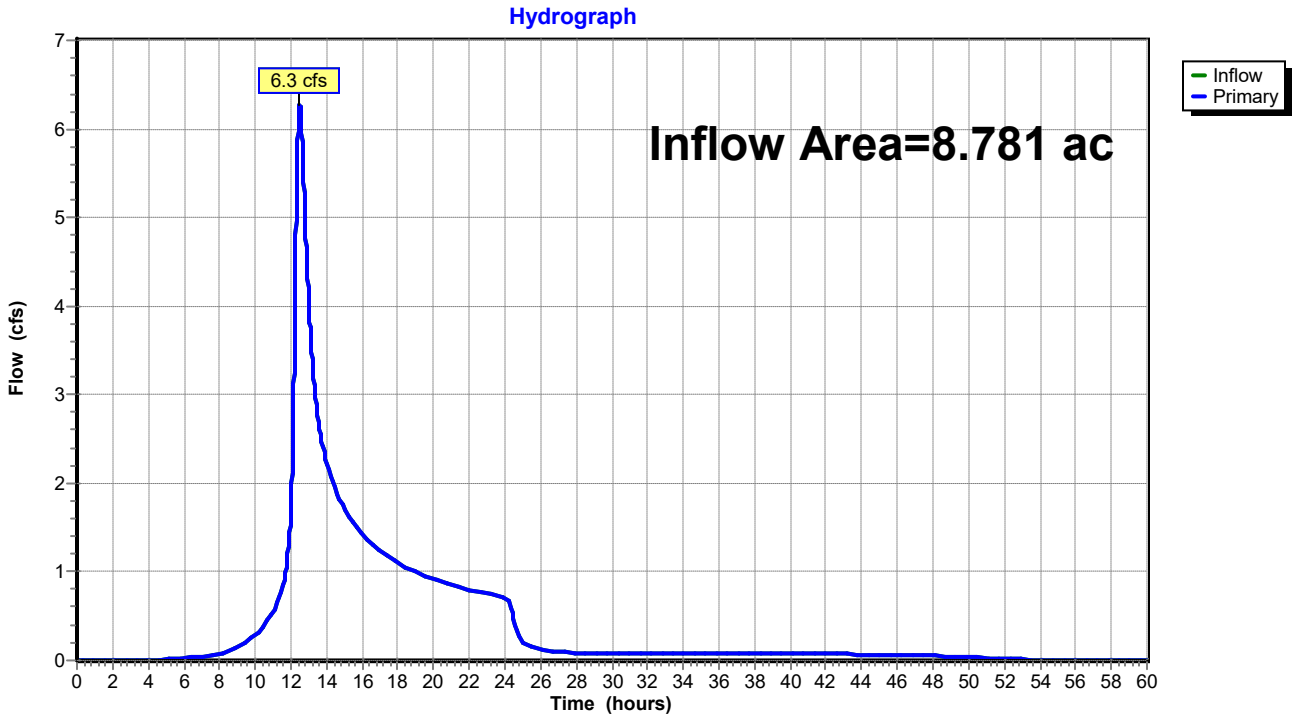


Summary for Link A: A

Inflow Area = 8.781 ac, 10.68% Impervious, Inflow Depth = 2.60" for 10-yr event
Inflow = 6.3 cfs @ 12.50 hrs, Volume= 1.903 af
Primary = 6.3 cfs @ 12.50 hrs, Volume= 1.903 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link A: A

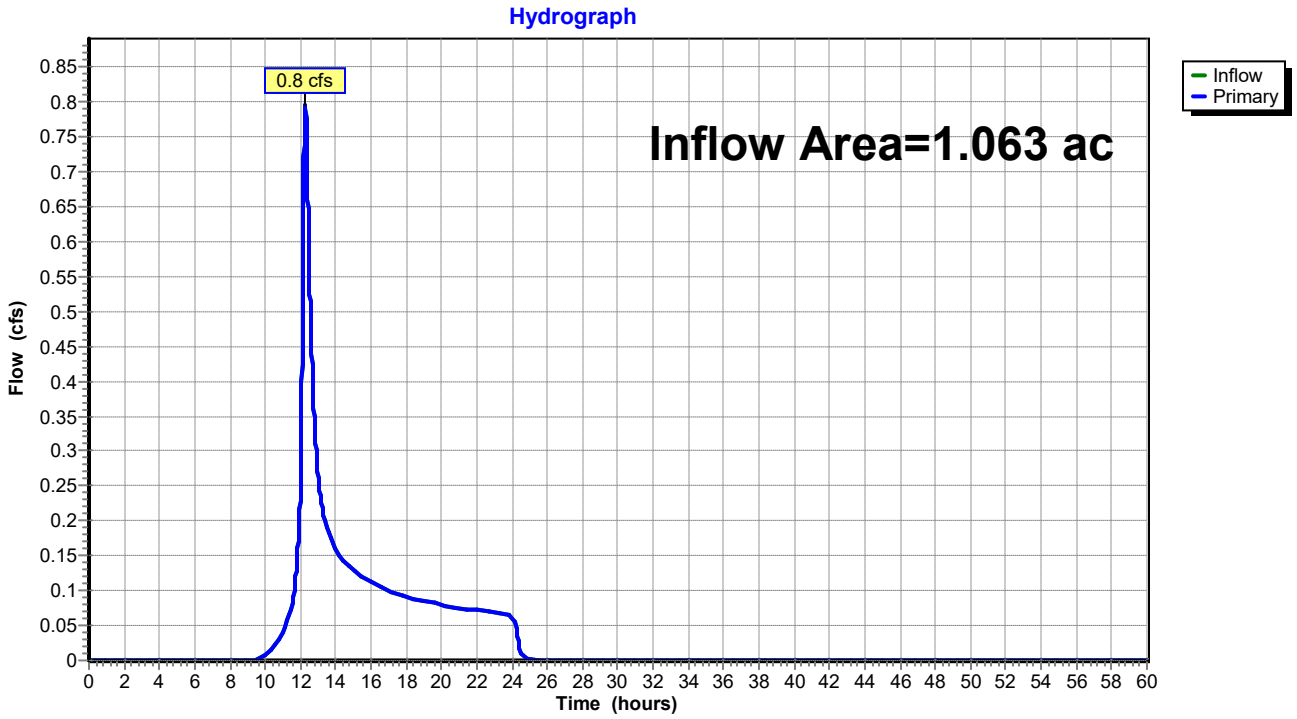


Summary for Link B: B

Inflow Area = 1.063 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-yr event
Inflow = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af
Primary = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link B: B

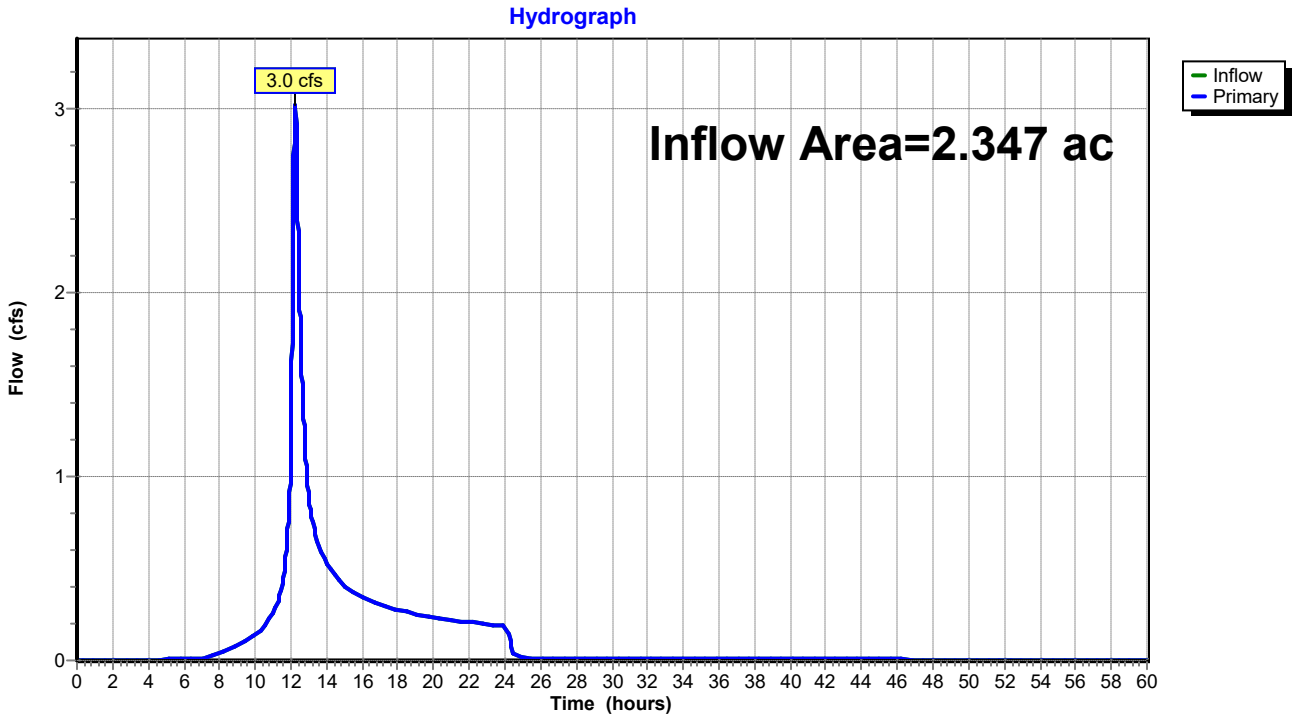


Summary for Link C: C

Inflow Area = 2.347 ac, 5.06% Impervious, Inflow Depth = 2.73" for 10-yr event
Inflow = 3.0 cfs @ 12.24 hrs, Volume= 0.535 af
Primary = 3.0 cfs @ 12.24 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link C: C



A – 2

NODE LISTING – 25-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=5.36"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=2.3 cfs 0.241 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=5.03"
Flow Length=468' Tc=14.5 min CN=84 Runoff=4.9 cfs 0.728 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=7.9 cfs 1.796 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=2.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.3 cfs 0.232 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=5.71"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.3 cfs 0.122 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=3.73"
Flow Length=402' Tc=20.7 min CN=72 Runoff=3.8 cfs 0.649 af

Reach R1: R1 Avg. Flow Depth=0.22' Max Vel=1.12 fps Inflow=0.6 cfs 0.241 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.6 cfs 0.241 af

Reach R2: R2 Avg. Flow Depth=0.23' Max Vel=2.10 fps Inflow=1.3 cfs 0.728 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=1.3 cfs 0.728 af

Reach R3: R3 Avg. Flow Depth=0.29' Max Vel=1.22 fps Inflow=1.3 cfs 0.728 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=1.3 cfs 0.728 af

Reach R4: R4 Avg. Flow Depth=0.43' Max Vel=1.11 fps Inflow=1.9 cfs 0.969 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=1.9 cfs 0.969 af

Reach R5: R5 Avg. Flow Depth=0.16' Max Vel=0.72 fps Inflow=0.4 cfs 0.122 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.4 cfs 0.122 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.83' Storage=4,231 cf Inflow=2.3 cfs 0.241 af
Outflow=0.6 cfs 0.241 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.74' Storage=12,418 cf Inflow=4.9 cfs 0.728 af
Outflow=1.3 cfs 0.728 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.86' Storage=1,770 cf Inflow=1.3 cfs 0.122 af
Outflow=0.4 cfs 0.122 af

Link A: A Inflow=9.7 cfs 2.765 af
Primary=9.7 cfs 2.765 af

Link B: B Inflow=1.3 cfs 0.232 af
Primary=1.3 cfs 0.232 af

Link C: C

Inflow=4.2 cfs 0.771 af
Primary=4.2 cfs 0.771 af

Total Runoff Area = 12.192 ac Runoff Volume = 3.768 af Average Runoff Depth = 3.71"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

NODE LISTING – 50-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=6.67"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=2.6 cfs 0.300 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=6.32"
Flow Length=468' Tc=14.5 min CN=84 Runoff=5.8 cfs 0.915 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=4.43"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=10.3 cfs 2.401 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.7 cfs 0.321 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=7.03"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.5 cfs 0.151 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=4.90"
Flow Length=402' Tc=20.7 min CN=72 Runoff=4.8 cfs 0.853 af

Reach R1: R1 Avg. Flow Depth=0.28' Max Vel=1.28 fps Inflow=1.0 cfs 0.300 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=1.0 cfs 0.300 af

Reach R2: R2 Avg. Flow Depth=0.25' Max Vel=2.22 fps Inflow=1.5 cfs 0.914 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=1.5 cfs 0.914 af

Reach R3: R3 Avg. Flow Depth=0.33' Max Vel=1.30 fps Inflow=1.5 cfs 0.914 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=1.5 cfs 0.914 af

Reach R4: R4 Avg. Flow Depth=0.50' Max Vel=1.20 fps Inflow=2.4 cfs 1.214 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=2.4 cfs 1.214 af

Reach R5: R5 Avg. Flow Depth=0.18' Max Vel=0.76 fps Inflow=0.5 cfs 0.151 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.5 cfs 0.151 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.95' Storage=4,792 cf Inflow=2.6 cfs 0.300 af
Outflow=1.0 cfs 0.300 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.91' Storage=14,772 cf Inflow=5.8 cfs 0.915 af
Outflow=1.5 cfs 0.914 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.95' Storage=1,917 cf Inflow=1.5 cfs 0.151 af
Outflow=0.5 cfs 0.151 af

Link A: A Inflow=12.7 cfs 3.615 af
Primary=12.7 cfs 3.615 af

Link B: B Inflow=1.7 cfs 0.321 af
Primary=1.7 cfs 0.321 af

Link C: C

Inflow=5.3 cfs 1.004 af
Primary=5.3 cfs 1.004 af

Total Runoff Area = 12.192 ac Runoff Volume = 4.940 af Average Runoff Depth = 4.86"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

APPENDIX B

DESIGN

B – 1

STORMWATER BEST MANAGEMENT PRACTICES

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

Type/Node Name: **Bioretention Pond 1 w/ ISR (Bio 1 w ISR)**

Enter the node name in the drainage analysis if applicable.

0.54 ac	A = Area draining to the practice	
0.36 ac	A_I = Impervious area draining to the practice	
0.67 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.65 unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.35 ac-in	WQV= 1" x Rv x A	
1,274 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
127 cf	10% x WQV (check calc for sediment forebay)	
319 cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay	Method of Pretreatment	
1,065 cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
1,498 cf	Volume below lowest orifice[1]	**≥ 100%WQV**
343 cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.03 cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.42 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.03 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
24.41 hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00 in	Depth of Filter Media	**≥ 18"**
3.00 :1	Pond side slopes	**≥ 3:1**
Top Grate	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.95 ft	Peak elevation of the 50-year storm event (E_{50})	
96.25 ft	Berm elevation of the pond	
YES	E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 6.67" for 50-yr event
Inflow = 2.6 cfs @ 12.03 hrs, Volume= 0.300 af
Outflow = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af, Atten= 62%, Lag= 10.8 min
Primary = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.95' @ 12.21 hrs Surf.Area= 6,011 sf Storage= 4,792 cf (4,449 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 399.5 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 361.0 min (1,163.0 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

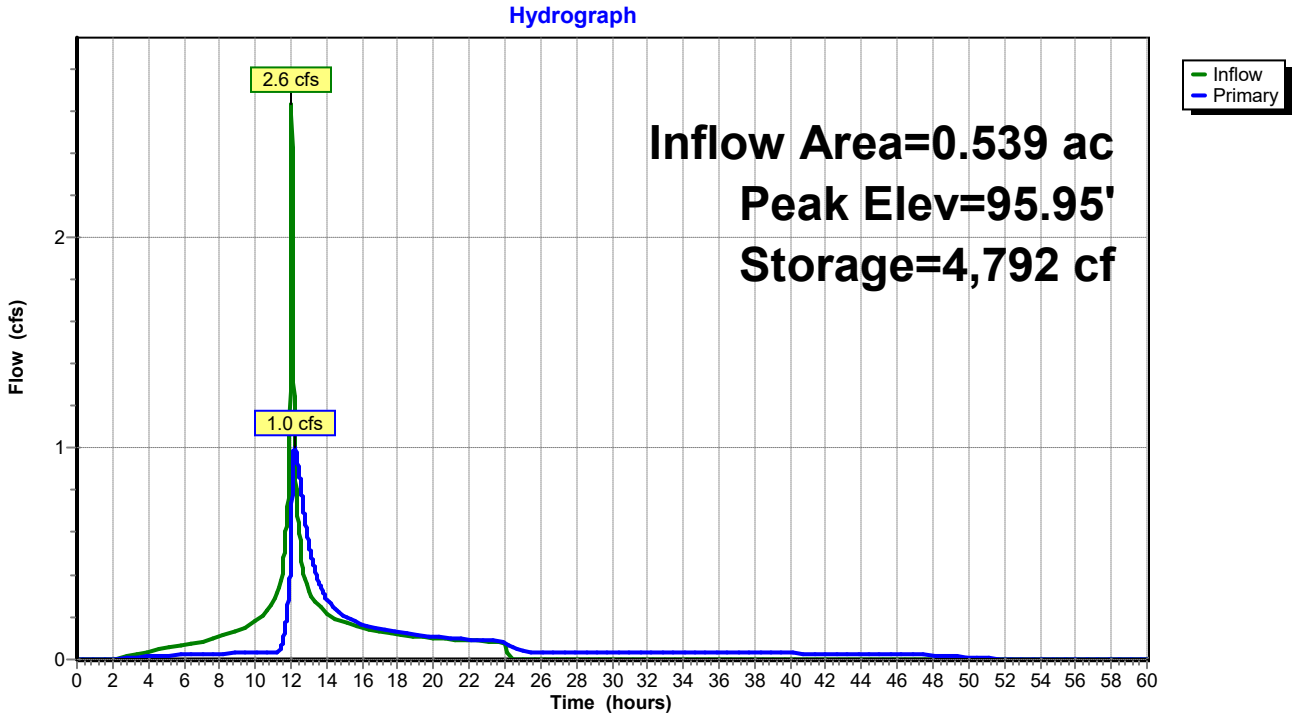
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.21 hrs HW=95.95' TW=93.26' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.0 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.89 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.0 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio1: Bio 1 w ISR



Stage-Discharge for Pond Bio1: Bio 1 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.0
92.60	0.0	95.20	0.0
92.65	0.0	95.25	0.0
92.70	0.0	95.30	0.0
92.75	0.0	95.35	0.0
92.80	0.0	95.40	0.0
92.85	0.0	95.45	0.0
92.90	0.0	95.50	0.0
92.95	0.0	95.55	0.1
93.00	0.0	95.60	0.1
93.05	0.0	95.65	0.2
93.10	0.0	95.70	0.3
93.15	0.0	95.75	0.4
93.20	0.0	95.80	0.6
93.25	0.0	95.85	0.7
93.30	0.0	95.90	0.8
93.35	0.0	95.95	1.0
93.40	0.0	96.00	1.2
93.45	0.0	96.05	1.9
93.50	0.0	96.10	3.1
93.55	0.0	96.15	4.6
93.60	0.0	96.20	6.1
93.65	0.0	96.25	**6.2**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		
94.20	0.0		
94.25	0.0		
94.30	0.0		
94.35	0.0		
94.40	0.0		

Stage-Area-Storage for Pond Bio1: Bio 1 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.85	686	0
91.90	686	14
91.95	686	27
92.00	686	41
92.05	686	55
92.10	686	69
92.15	686	82
92.20	686	96
92.25	686	110
92.30	686	123
92.35	686	137
92.40	686	151
92.45	686	165
92.50	686	178
92.55	686	192
92.60	686	206
92.65	686	220
92.70	686	233
92.75	686	247
92.80	686	261
92.85	686	274
92.90	686	288
92.95	686	302
93.00	686	316
93.05	686	329
93.10	686	343
93.15	686	353
93.20	686	364
93.25	686	374
93.30	686	384
93.35	686	394
93.40	686	401
93.45	686	408
93.50	686	415
93.55	686	422
93.60	686	429
93.65	686	436
93.70	686	442
93.75	824	449
93.80	838	463
93.85	852	478
93.90	867	494
93.95	883	510
94.00	899	527
94.05	912	545
94.10	926	564
94.15	940	583
94.20	955	603
94.25	970	623
94.30	985	645
94.35	1,001	667
94.40	1,017	690
94.45	1,034	714
94.50	1,051	739
94.55	1,069	764
94.60	1,086	791
94.65	1,105	818
94.70	1,123	846
94.75	1,142	875
94.80	1,162	906
94.85	1,182	937
94.90	1,786	1,036
94.95	2,391	1,136
95.00	2,996	1,237
95.05	3,054	1,392
95.10	3,114	1,549
95.15	3,174	1,708
95.20	3,236	1,869
95.25	3,299	2,032
95.30	3,363	2,197
95.35	3,428	2,364
95.40	3,494	2,534
95.45	3,589	2,710
95.50	3,703	2,891
95.55	3,780	3,081
95.60	3,859	3,274
95.65	3,939	3,469
95.70	4,021	3,666
95.75	4,103	3,866
95.80	5,798	4,091
95.85	5,869	4,325
95.90	5,940	4,560
95.95	6,012	4,795
96.00	6,083	5,030
96.05	6,226	5,291
96.10	6,369	5,552
96.15	6,513	5,813
96.20	6,656	6,074
96.25	**6,799**	**6,335**

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

Type/Node Name: **Bioretention Pond 2 w/ ISR (Bio 2 w ISR)**

Enter the node name in the drainage analysis if applicable.

1.74 ac	A = Area draining to the practice	
0.58 ac	A_I = Impervious area draining to the practice	
0.33 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.35 unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.61 ac-in	WQV= 1" x Rv x A	
2,203 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
220 cf	10% x WQV (check calc for sediment forebay)	
551 cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay	Method of Pretreatment	
724 cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
2,334 cf	Volume below lowest orifice[1]	**≥ 100%WQV**
570 cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.05 cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.09 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.05 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
26.04 hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00 in	Depth of Filter Media	**≥ 18"**
3.00 :1	Pond side slopes	**≥ 3:1**
Grates	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.91 ft	Peak elevation of the 50-year storm event (E_{50})	
96.25 ft	Berm elevation of the pond	
YES	E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 6.32" for 50-yr event
Inflow = 5.8 cfs @ 12.15 hrs, Volume= 0.915 af
Outflow = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af, Atten= 73%, Lag= 34.6 min
Primary = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.91' @ 12.72 hrs Surf.Area= 16,279 sf Storage= 14,772 cf (14,202 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 295.4 min calculated for 0.901 af (99% of inflow)
Center-of-Mass det. time= 275.6 min (1,098.1 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

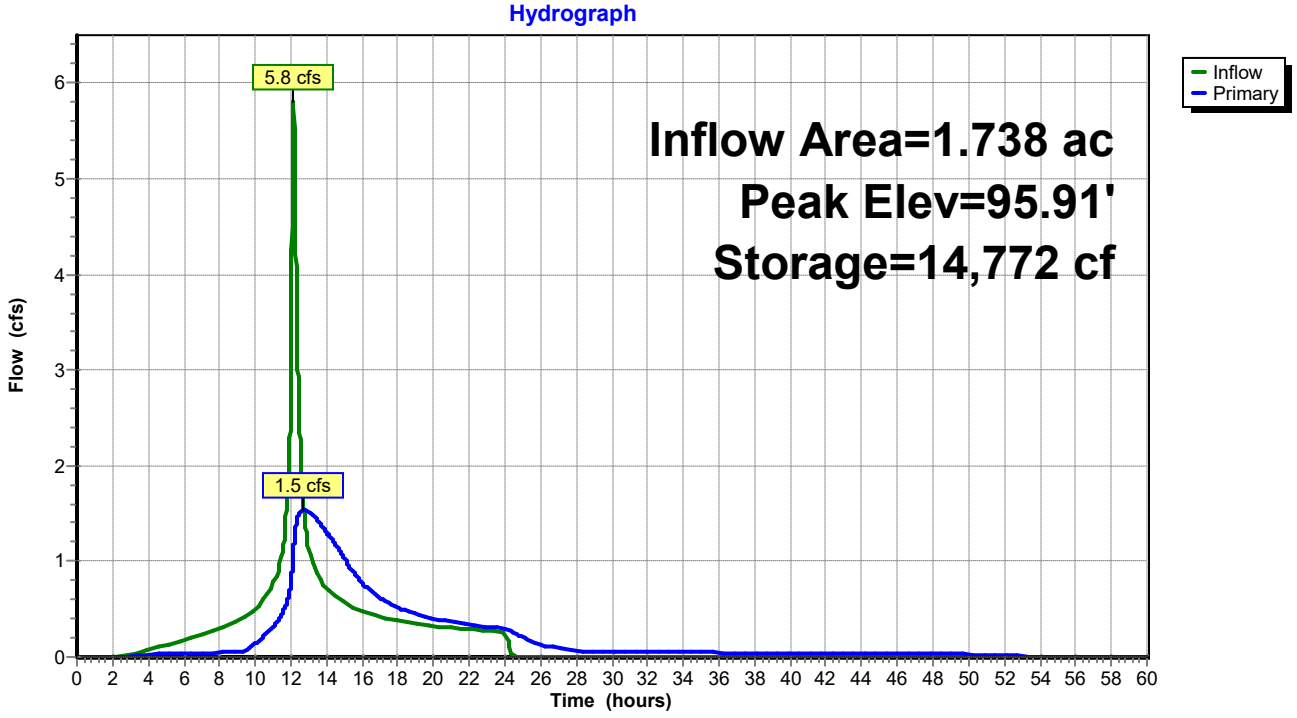
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.5 cfs @ 12.72 hrs HW=95.91' TW=93.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.21 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.4 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.5 cfs @ 3.58 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio2: Bio 2 w ISR



Stage-Discharge for Pond Bio2: Bio 2 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.60	0.0	94.20	0.0
91.65	0.0	94.25	0.0
91.70	0.0	94.30	0.0
91.75	0.0	94.35	0.0
91.80	0.0	94.40	0.0
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.1
92.60	0.0	95.20	0.1
92.65	0.0	95.25	0.2
92.70	0.0	95.30	0.3
92.75	0.0	95.35	0.4
92.80	0.0	95.40	0.5
92.85	0.0	95.45	0.6
92.90	0.0	95.50	0.7
92.95	0.0	95.55	0.9
93.00	0.0	95.60	1.0
93.05	0.0	95.65	1.1
93.10	0.0	95.70	1.2
93.15	0.0	95.75	1.3
93.20	0.0	95.80	1.4
93.25	0.0	95.85	1.5
93.30	0.0	95.90	1.5
93.35	0.0	95.95	1.6
93.40	0.0	96.00	1.7
93.45	0.0	96.05	2.3
93.50	0.0	96.10	3.4
93.55	0.0	96.15	4.9
93.60	0.0	96.20	6.4
93.65	0.0	96.25	**6.4**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		

Stage-Area-Storage for Pond Bio2: Bio 2 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	1,140	0
91.65	1,140	23
91.70	1,140	46
91.75	1,140	68
91.80	1,140	91
91.85	1,140	114
91.90	1,140	137
91.95	1,140	160
92.00	1,140	182
92.05	1,140	205
92.10	1,140	228
92.15	1,140	251
92.20	1,140	274
92.25	1,140	296
92.30	1,140	319
92.35	1,140	342
92.40	1,140	365
92.45	1,140	388
92.50	1,140	410
92.55	1,140	433
92.60	1,140	456
92.65	1,140	479
92.70	1,140	502
92.75	1,140	524
92.80	1,140	547
92.85	1,140	570
92.90	1,140	587
92.95	1,140	604
93.00	1,140	621
93.05	1,140	638
93.10	1,140	656
93.15	1,140	667
93.20	1,140	678
93.25	1,228	690
93.30	1,235	706
93.35	1,242	722
93.40	1,250	739
93.45	1,258	756
93.50	1,266	773
93.55	1,274	791
93.60	1,283	809
93.65	1,291	828
93.70	1,301	847
93.75	1,310	867
93.80	1,320	887
93.85	1,330	908
93.90	1,340	929
93.95	1,350	951
94.00	1,361	973
94.05	1,378	996
94.10	1,395	1,019
94.15	1,413	1,044
94.20	1,432	1,070
94.25	1,451	1,096
94.30	1,471	1,123
94.35	1,491	1,152
94.40	1,512	1,181
94.45	1,534	1,212
94.50	1,556	1,244
94.55	1,579	1,276
94.60	1,602	1,310
94.65	2,402	1,524
94.70	3,203	1,738
94.75	4,005	1,954
94.80	4,807	2,171
94.85	5,609	2,390
94.90	6,413	2,610
94.95	7,217	2,831
95.00	8,021	3,054
95.05	8,876	3,492
95.10	9,734	3,940
95.15	10,605	4,469
95.20	11,476	4,999
95.25	11,576	5,576
95.30	13,025	6,246
95.35	13,291	6,942
95.40	13,556	7,637
95.45	13,822	8,333
95.50	14,087	9,028
95.55	14,353	9,724
95.60	14,618	10,420
95.65	14,884	11,115
95.70	15,149	11,811
95.75	15,415	12,506
95.80	15,680	13,202
95.85	15,946	13,898
95.90	16,211	14,593
95.95	16,477	15,289
96.00	16,742	15,984
96.05	16,983	16,811
96.10	17,223	17,637
96.15	17,464	18,463
96.20	17,704	19,289
96.25	**17,945**	**20,115**

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

Type/Node Name: **Bioretention Pond 3 w/ ISR (Bio 3 w ISR)**

Enter the node name in the drainage analysis if applicable.

0.26	ac	A = Area draining to the practice	
0.12	ac	A_I = Impervious area draining to the practice	
0.46	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.47	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
435	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
43	cf	10% x WQV (check calc for sediment forebay)	
109	cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay		Method of Pretreatment	
247	cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
477	cf	Volume below lowest orifice[1]	**≥ 100%WQV**
140	cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.01	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.16	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.01	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
24.15	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00	in	Depth of Filter Media	**≥ 18"**
3.00	:1	Pond side slopes	**≥ 3:1**
Grate		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.95	ft	Peak elevation of the 50-year storm event (E_{50})	
96.25	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 7.03" for 50-yr event
Inflow = 1.5 cfs @ 12.00 hrs, Volume= 0.151 af
Outflow = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af, Atten= 64%, Lag= 7.7 min
Primary = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.95' @ 12.13 hrs Surf.Area= 1,942 sf Storage= 1,917 cf (1,777 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 266.2 min calculated for 0.147 af (98% of inflow)
Center-of-Mass det. time= 236.9 min (1,021.7 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

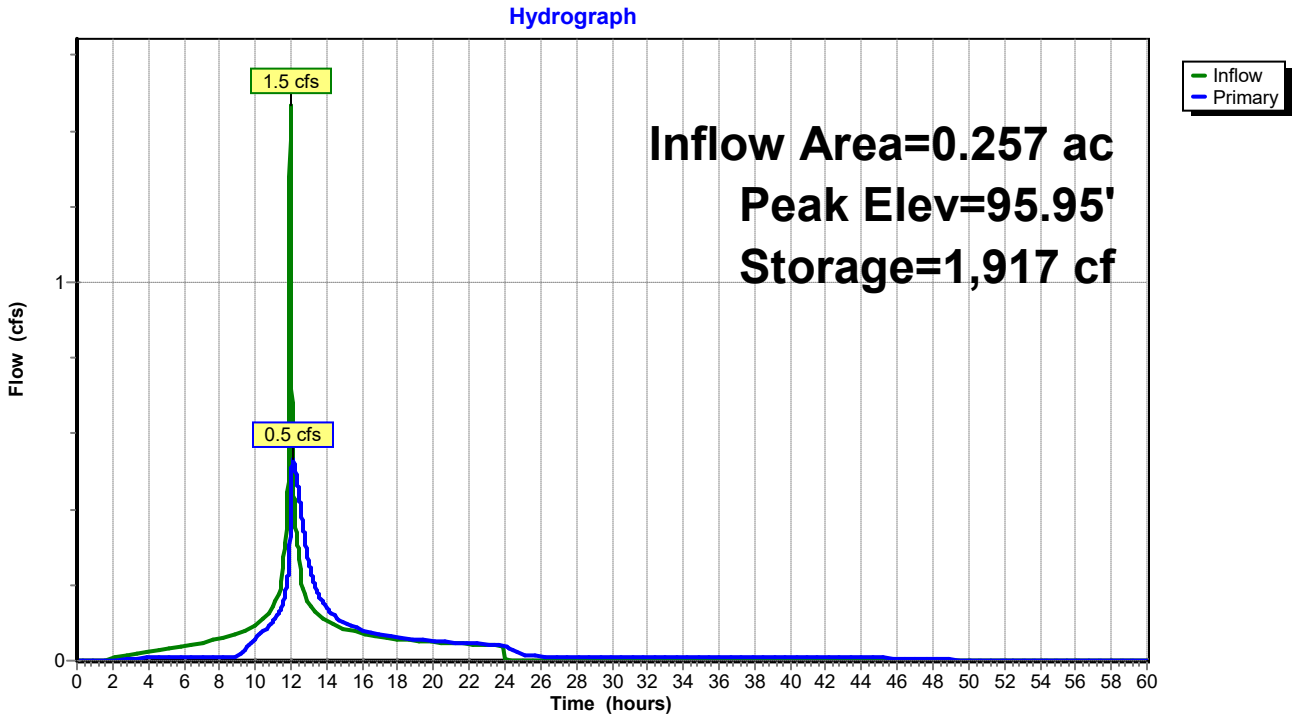
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.5 cfs @ 12.13 hrs HW=95.95' TW=92.92' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.38 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.3 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.78 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio3: Bio 3 w ISR



Stage-Discharge for Pond Bio3: Bio 3 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.60	0.0	94.20	0.0
91.65	0.0	94.25	0.0
91.70	0.0	94.30	0.0
91.75	0.0	94.35	0.0
91.80	0.0	94.40	0.0
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.0
92.60	0.0	95.20	0.0
92.65	0.0	95.25	0.0
92.70	0.0	95.30	0.0
92.75	0.0	95.35	0.1
92.80	0.0	95.40	0.1
92.85	0.0	95.45	0.1
92.90	0.0	95.50	0.1
92.95	0.0	95.55	0.2
93.00	0.0	95.60	0.2
93.05	0.0	95.65	0.3
93.10	0.0	95.70	0.3
93.15	0.0	95.75	0.3
93.20	0.0	95.80	0.4
93.25	0.0	95.85	0.4
93.30	0.0	95.90	0.5
93.35	0.0	95.95	0.5
93.40	0.0	96.00	0.6
93.45	0.0	96.05	1.2
93.50	0.0	96.10	2.3
93.55	0.0	96.15	3.7
93.60	0.0	96.20	5.4
93.65	0.0	96.25	**6.4**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		

Stage-Area-Storage for Pond Bio3: Bio 3 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	280	0
91.65	280	6
91.70	280	11
91.75	280	17
91.80	280	22
91.85	280	28
91.90	280	34
91.95	280	39
92.00	280	45
92.05	280	50
92.10	280	56
92.15	280	62
92.20	280	67
92.25	280	73
92.30	280	78
92.35	280	84
92.40	280	90
92.45	280	95
92.50	280	101
92.55	280	106
92.60	280	112
92.65	280	118
92.70	280	123
92.75	280	129
92.80	280	134
92.85	280	140
92.90	280	144
92.95	280	148
93.00	280	153
93.05	280	157
93.10	280	161
93.15	280	164
93.20	280	167
93.25	280	169
93.30	280	172
93.35	280	175
93.40	280	178
93.45	280	181
93.50	280	183
93.55	280	186
93.60	280	189
93.65	280	192
93.70	280	195
93.75	301	197
93.80	304	201
93.85	307	205
93.90	310	210
93.95	313	214
94.00	317	219
94.05	321	223
94.10	325	228
94.15	329	233
94.20	333	239
94.25	337	244
94.30	342	250
94.35	347	256
94.40	352	262
94.45	357	269
94.50	362	276
94.55	368	283
94.60	374	290
94.65	503	323
94.70	633	356
94.75	764	389
94.80	894	423
94.85	1,025	457
94.90	1,050	512
94.95	1,075	566
95.00	1,101	621
95.05	1,126	676
95.10	1,152	732
95.15	1,178	788
95.20	1,206	847
95.25	1,234	913
95.30	1,262	979
95.35	1,290	1,046
95.40	1,318	1,113
95.45	1,346	1,180
95.50	1,375	1,248
95.55	1,404	1,317
95.60	1,433	1,386
95.65	1,462	1,455
95.70	1,491	1,525
95.75	1,521	1,595
95.80	1,859	1,674
95.85	1,887	1,756
95.90	1,915	1,837
95.95	1,942	1,919
96.00	1,970	2,000
96.05	2,085	2,099
96.10	2,200	2,198
96.15	2,315	2,296
96.20	2,430	2,395
96.25	**2,545**	**2,494**

B – 2

POLLUTANT REMOVAL

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Stormwater Ponds	Wet Pond		B, F	70%	35%	45%
	Wet Extended Detention Pond		A, B	80%	55%	68%
	Micropool Extended Detention Pond	TBA				
	Multiple Pond System	TBA				
	Pocket Pond	TBA				
Stormwater Wetlands	Shallow Wetland		A, B, F, I	80%	55%	45%
	Extended Detention Wetland		A, B, F, I	80%	55%	45%
	Pond/Wetland System	TBA				
	Gravel Wetland		H	95%	85%	64%
Infiltration Practices	Infiltration Trench (≥75 ft from surface water)		B, D, I	90%	55%	60%
	Infiltration Trench (<75 ft from surface water)		B, D, I	90%	10%	60%
	Infiltration Basin (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Infiltration Basin (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Dry Wells			90%	55%	60%
	Drip Edges			90%	55%	60%
Filtering Practices	Aboveground or Underground Sand Filter that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Aboveground or Underground Sand Filter that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Aboveground or Underground Sand Filter with underdrain		A, I, F, G, H	85%	10%	45%
	Tree Box Filter	TBA				
	Bioretention System		I, G, H	90%	65%	65%
	Permeable Pavement that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Permeable Pavement that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Permeable Pavement with underdrain		Use TN and TP values for sand filter w/ underdrain and outlet pipe	90%	10%	45%

B – 3

OUTLET PROTECTION

OUTLET PROTECTION DESIGN CALCS

DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 1

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of outlet pipe (ft)
D= Width of channel (ft)
z= Channel side slope (H:V ft/ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	93
Tailwater elev:	93.26
Tw:	0.26
Q:	1
D_0:	1.00
D:	2
z:	3

Apron Dimensions

w_1=	**8**	(ft)
w_2=	**2**	(ft)
La=	**9**	(ft)

Apron Length:

$Tw > .5D_0$	$Tw < .5D_0$
La: 10.000	La: 8.800

Apron Width:

w_2: 2

w_1: 8

w_1=	8.00
w_2=	2.00
La=	8.8

RipRap Sizing

d_{50}=	0.08	(ft)
d_{50}=	0.92	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.12	TO	0.15	100
0.10	TO	0.14	85
0.08	TO	0.12	50
0.02	TO	0.04	15

Minimum Depth of Rock= 0.23 (ft)

Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 6.67" for 50-yr event
Inflow = 2.6 cfs @ 12.03 hrs, Volume= 0.300 af
Outflow = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af, Atten= 62%, Lag= 10.8 min
Primary = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.95' @ 12.21 hrs Surf.Area= 6,011 sf Storage= 4,792 cf (4,449 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 399.5 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 361.0 min (1,163.0 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.21 hrs HW=95.95' TW=93.26' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.0 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.89 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.0 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

OUTLET PROTECTION DESIGN CALCS

NON DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 2

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of the pipe (ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	92.75
Tailwater elev:	93
Tw:	0.25
Q:	1.6
D_0:	1

Apron Dimensions

w_1=	**3**	(ft)
w_2=	**13**	(ft)
La=	**10**	(ft)

Apron Length:

$Tw > .5D_0$		$Tw < .5D_0$
La: 11.800		La: 9.880

Apron Width:

$Tw > .5D_0$		$Tw < .5D_0$
w_2: 7.72		w_2: 12.88

w_1: 3

w_1=	3.00
w_2=	12.88
La=	9.88

RipRap Sizing

d_{50}=	0.15	(ft)
d_{50}=	1.80	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.22	TO	0.30	100
0.19	TO	0.27	85
0.15	TO	0.22	50
0.04	TO	0.07	15

Minimum Depth of Rock= 0.45 (ft)

Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 6.32" for 50-yr event
Inflow = 5.8 cfs @ 12.15 hrs, Volume= 0.915 af
Outflow = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af, Atten= 73%, Lag= 34.6 min
Primary = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.91' @ 12.72 hrs Surf.Area= 16,279 sf Storage= 14,772 cf (14,202 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 295.4 min calculated for 0.901 af (99% of inflow)
Center-of-Mass det. time= 275.6 min (1,098.1 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.5 cfs @ 12.72 hrs HW=95.91' TW=93.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.21 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.4 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.5 cfs @ 3.58 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

OUTLET PROTECTION DESIGN CALCS

NON DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 3

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of the pipe (ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	92.75
Tailwater elev:	92.92
Tw:	0.17
Q:	0.5
D_0:	1

Apron Dimensions

w_1=	**3**	(ft)
w_2=	**11**	(ft)
La=	**8**	(ft)

Apron Length:

$Tw > .5D_0$		$Tw < .5D_0$
La: 8.500		La: 7.900

Apron Width:

$Tw > .5D_0$		$Tw < .5D_0$
w_2: 6.40		w_2: 10.90

w_1: 3

w_1=	3.00
w_2=	10.9
La=	7.9

RipRap Sizing

d_{50}=	0.05	(ft)
d_{50}=	0.56	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.07	TO	0.09	100
0.06	TO	0.08	85
0.05	TO	0.07	50
0.01	TO	0.02	15

Minimum Depth of Rock= 0.14 (ft)

Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 7.03" for 50-yr event
Inflow = 1.5 cfs @ 12.00 hrs, Volume= 0.151 af
Outflow = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af, Atten= 64%, Lag= 7.7 min
Primary = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.95' @ 12.13 hrs Surf.Area= 1,942 sf Storage= 1,917 cf (1,777 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 266.2 min calculated for 0.147 af (98% of inflow)
Center-of-Mass det. time= 236.9 min (1,021.7 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.5 cfs @ 12.13 hrs HW=95.95' TW=92.92' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.38 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.3 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.78 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

APPENDIX C

INSPECTION AND MAINTENANCE

C – 1

STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

LOT 2 SITE DEVELOPMENT
Map G, Lot 2-1

Crosby Road
Dover, New Hampshire
Strafford County

AUGUST 2024

Owner of Record:

DEL SOL DOVER, LLC
340 Central Avenue
Suite 202
Dover, New Hampshire 03820

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Del Sol Dover, LLC.** The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Chad Kageleiry
Phone: (603) 749 2800
Email: chad@summitlanddev.com

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NHDES in writing.

Management Company:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. Inspections shall include a photograph of each practice that is subject to the I&M requirements each time it is inspected. A copy of the completed Stormwater Management System's Inspection & Maintenance Log, inspection photographs, and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NHDES upon request and to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structures
- Energy Dissipation Structures (Rip Rap)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Grassed Lined Conveyance Swale
- Stone Lined Conveyance Swale
- Pre-Treatment Structures
  - Sediment Forebay
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas, they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

BIORETENTION BASIN W/ ISR:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

GRASS LINED CONVEYANCE SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swale (at least twice annually), maintain a 4" stand of vegetative growth.

STONE LINED CONVEYANCE SWALE

- Inspect once per year.
- Inspect for erosion, sediment accumulation, woody vegetation and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and woody vegetation.
- Reset any dislodged stones.

PRE-TREATMENT STRUCTURES:

SEDIMENT FOREBAY:

- Vegetated areas shall be mowed to maintain a 4" start of vegetative growth.
- Inspect at least once per year.
- Inspect for sediment accumulation.
- Remove all debris immediately.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.

- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for clogging • Check for sediment accumulation	Remove when noticed Clean when necessary
Outlet Structure(s)	Annually	• Inspect once per year. • Inspect for clogging and sediment accumulation. • Remove all debris immediately and sediment accumulations ≥ 2 inches.	≥ 2 in. sediment Remove immediately
Energy Dissipation (ED) Structures (Rip Rap)	Annually	• Check for erosion • Check for displaced stones • Check for woody vegetation • Check for sediment accumulation	≥ 3 in. sediment Remove annually Replace/ reset Dislodged stones immediately
Bioretention Basin w/ ISR • Inlet/Outlet Piping • Pond • Sediment • Drawdown • Trash/Debris • Vegetation (Veg.) • Embankments	Bi-Annually “ “ Annually Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accum. in pond • Check drainage time • Check for and remove trash/debris • Maintain >75% veg. (pond & slopes) Maintain healthy stand of veg.	Repair immediately ≥ 2 in sediment >72 hours Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Grass Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., min 4” • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore vegetation in-kind Mow twice per year Remove/Dispose of accordingly
Stone Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Inspect for woody/ invasive vegetation • Check for dislodged stones	≥ 1 in. sediment Repair immediately Remove/Dispose of accordingly
Pre-Treatment Structures: Sediment Forebay	Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris • Vegetated areas shall be mowed to maintain a 4” start of vegetation growth.	Remove/ Dispose of accordingly Mow twice per year
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x’s Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance_____ Inspector:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

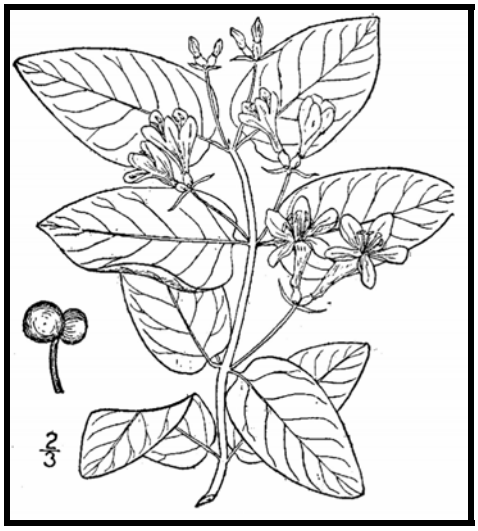
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

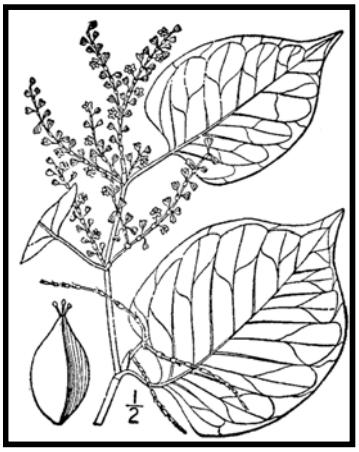
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

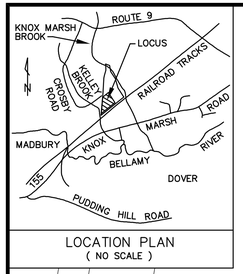
This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have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

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

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran's, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.



LOCATION PLAN
(NO SCALE)

LEGEND:

= SEDIMENT FOREBAY

= ENERGY DISSIPATION STRUCTURES (RIP RAP)

= BIO-RETENTION BASIN W/ ISR

= STONE LINED CONVEYANCE SWALE

= GRASSED LINED CONVEYANCE SWALE

FORMER HANSON ROAD

50' WETLAND BUFFER

WATER - DOVER PARA01-020-WI

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

GAS 4"ø PP

WATER

DOVER PARA01-025-WI

HYDRANT #319

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

EDGE OF PAVEMENT

PROPOSED 9,600 S.F. BUILDING

EDGE OF PAVEMENT

PROPOSED GRAVEL 125'x180' LAYDOWN AREA

EDGE OF GRAVEL

BIORETENTION POND 2 W/ ISR (BIO2 W/ ISR)

BIORETENTION POND 3 W/ ISR (BIO3 W/ ISR)

EXISTING GRASSED LINED CONVEYANCE SWALE

C / 2-1

NEW PARCEL AREA
273,596 S.F.
6.28 Ac.

NH STATE PLANE NAD 83 - GAS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: MJM
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

BMP LOCATION PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

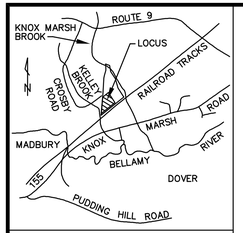
BMP

APPENDIX D

WATERSHED PLANS

D – 1

PRE-DEVELOPMENT CONDITIONS



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

DISCHARGE PT. B

DISCHARGE PT. C

DISCHARGE PT. A

PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
A	8.27	1,314	37.0
B	1.55	268	22.2
C	2.38	402	20.7

FORMER HANSON ROAD

G / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

G / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

CATCH BASIN
#7080 RIM = 96.0'
CATCH BASIN
#7081 RIM = 95.9'

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

G / 1-C2

G / 1-C3
WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

GRAVEL LANDING AREA

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

NHFG WILDIFE RESTRICTED AREA

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

G / 2-1

G / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

G / 5
BOSTON & MAINE RR

NHFG WILDIFE RESTRICTED AREA

A

B

C

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EDGE OF WETLAND
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (A) SUBCATCHMENT DESIGNATION

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-2024
SCALE: 1"=50'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: DRN.DWG

PRE-DEVELOPMENT WATERSHED PLAN

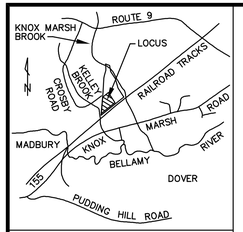
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

WS-1

D – 2

POST-DEVELOPMENT CONDITIONS



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

POST-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
1	0.54	46	5.8
2	1.74	468	14.5
3	6.50	1314	37.0
4	1.06	268	22.2
5	0.26	15	1.9
6	2.09	402	20.7

DISCHARGE PT. B

DISCHARGE PT. C

DISCHARGE PT. A

FORMER HANSON ROAD

G / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

G / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

G / 1-C2

G / 1-C3
WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

BIO-RETENTION BASIN 1 W/ ISR

PROPOSED 80'x120' BUILDING

BIO-RETENTION BASIN 2 W/ ISR

BIO-RETENTION BASIN 3 W/ ISR

NHFG WILDLIFE RESTRICTED AREA

REACH R1

REACH R2

REACH R3 AND LFP 3

REACH R4 AND LFP 3

REACH R5

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

G / 2-1

G / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

G / 5
BOSTON & MAINE RR

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EDGE OF WETLAND
- 154 PROPOSED FINISH GRADE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BUILDING
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- ④ SUBCATCHMENT DESIGNATION

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-2024
SCALE: 1"=50'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: DRN.DWG

POST-DEVELOPMENT WATERSHED PLAN

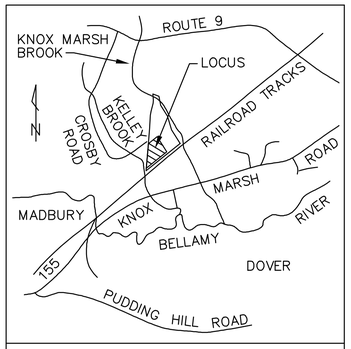
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

WS-2

3 LOT MINOR SUBDIVISION
FOR
DEL SOL DOVER, LLC
"CROSBY ROAD EXTENSION"
TAX MAP G, LOT No. 2-1

CROSBY ROAD
DOVER, NH
AUGUST 2024



LOCATION PLAN
(NO SCALE)

OWNER
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

OWNER SIGNATURE

SITE CIVIL ENGINEER
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LAND SURVEYOR
MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 681
24 CHESTNUT STREET
DOVER, NH 03820
(603) 742-0911

WETLAND/SOIL SCIENTIST
BRUCE A. GILDAY, CWS
BAG LAND CONSULTANTS
43 ROCKINGHAM STREET
CONCORD, NH 03301
(603) 228-5775

PERMIT SUMMARY:

1. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:

   ALTERATION OF TERRAIN: PENDING

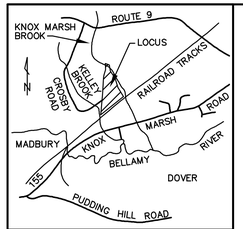
2. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.

   SUBDIVISION: PENDING
   CONDITIONAL USE PERMIT: PENDING

SHEET INDEX	SHEET

COVER SHEET	1
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	2
SUBDIVISION PLAN (BY MCENEANEY SURVEY)	3
TOPOGRAPHIC & SITE SPECIFIC SOILS SUBDIVISION PLAN (BY MCENEANEY SURVEY)	4
NOTE SHEET	5
CROSBY ROAD EXTENSION SITE & UTILITY PLAN	6
CROSBY ROAD EXTENSION PLAN & PROFILE	7
EROSION CONTROL NOTES	8
EROSION CONTROL DETAILS	9-10
DETAILS	11-12

PLANNING FILE NO.: .....



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

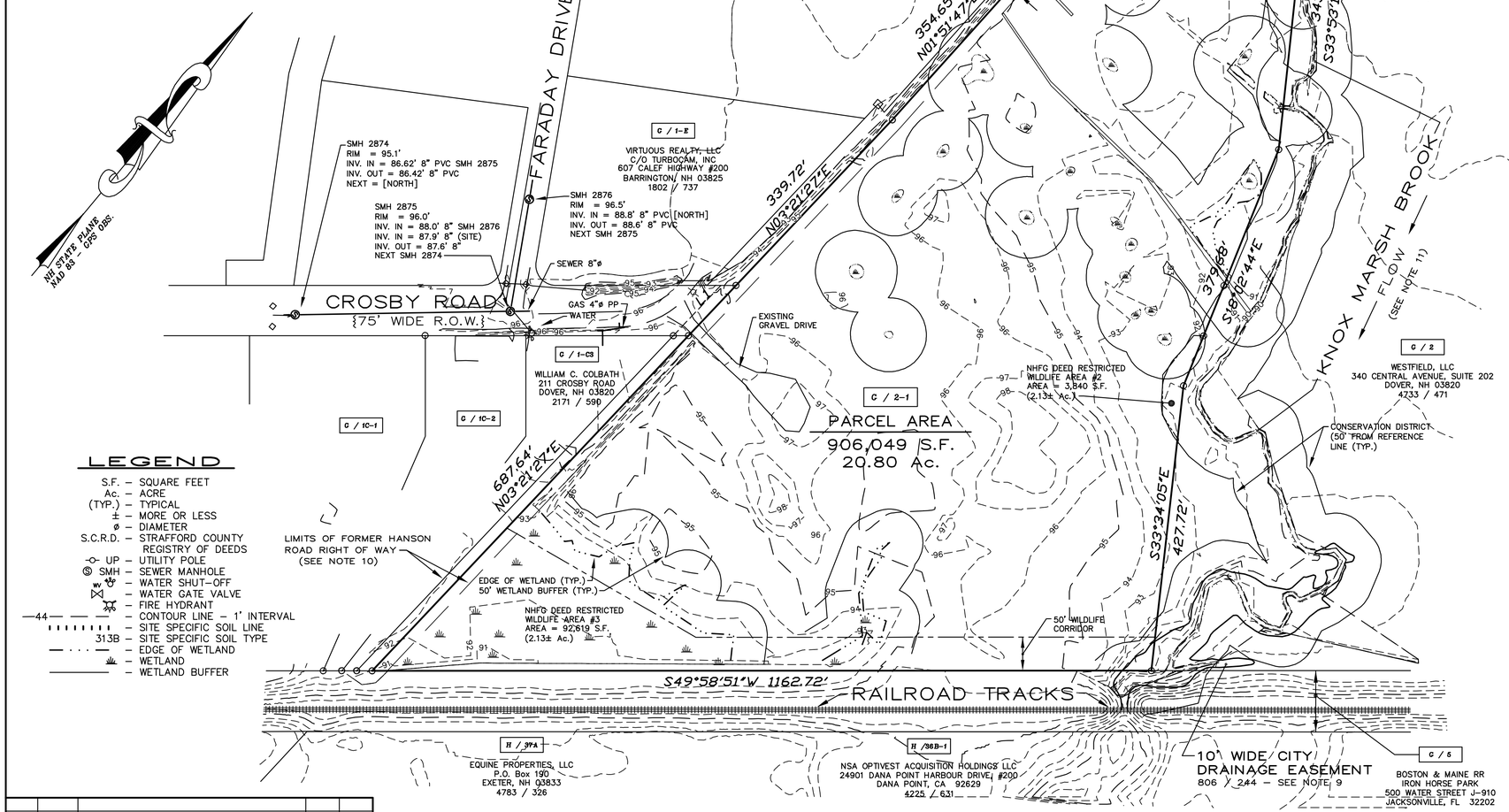
3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.



LEGEND

- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ø – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- SMH – SEWER MANHOLE
- WV – WATER SHUT–OFF
- WATER GATE VALVE
- FIRE HYDRANT
- 44 – CONTOUR LINE – 1' INTERVAL
- SITE SPECIFIC SOIL LINE
- 313B – SITE SPECIFIC SOIL TYPE
- EDGE OF WETLAND
- WETLAND
- WETLAND BUFFER

No.	Bearing	Distance
L1	N03°21'27"E	103.15'
L2	N08°02'33"E	109.95'
L3	N00°50'14"E	84.52'

NOTES:

1.) OWNERS OF RECORD:

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SHOW THE EXISTING SITE CONDITIONS. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL LOT CORNERS AND ANGLE POINTS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

SHEET 2 OF 12

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	EXIST. COND.	
PROJECT NO	TYPE	FIELDBOOK & PAGES

EXISTING CONDITIONS PLAN
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 EC
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

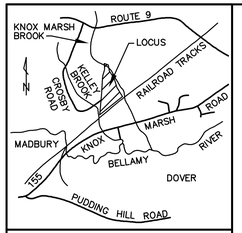
100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE – No. 661 – KEVIN M. McENEANEY – LICENSED LAND SURVEYOR – SIGNATURE

McEneaney Survey Associates
of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:13:09 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 EC 2022-09-19



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

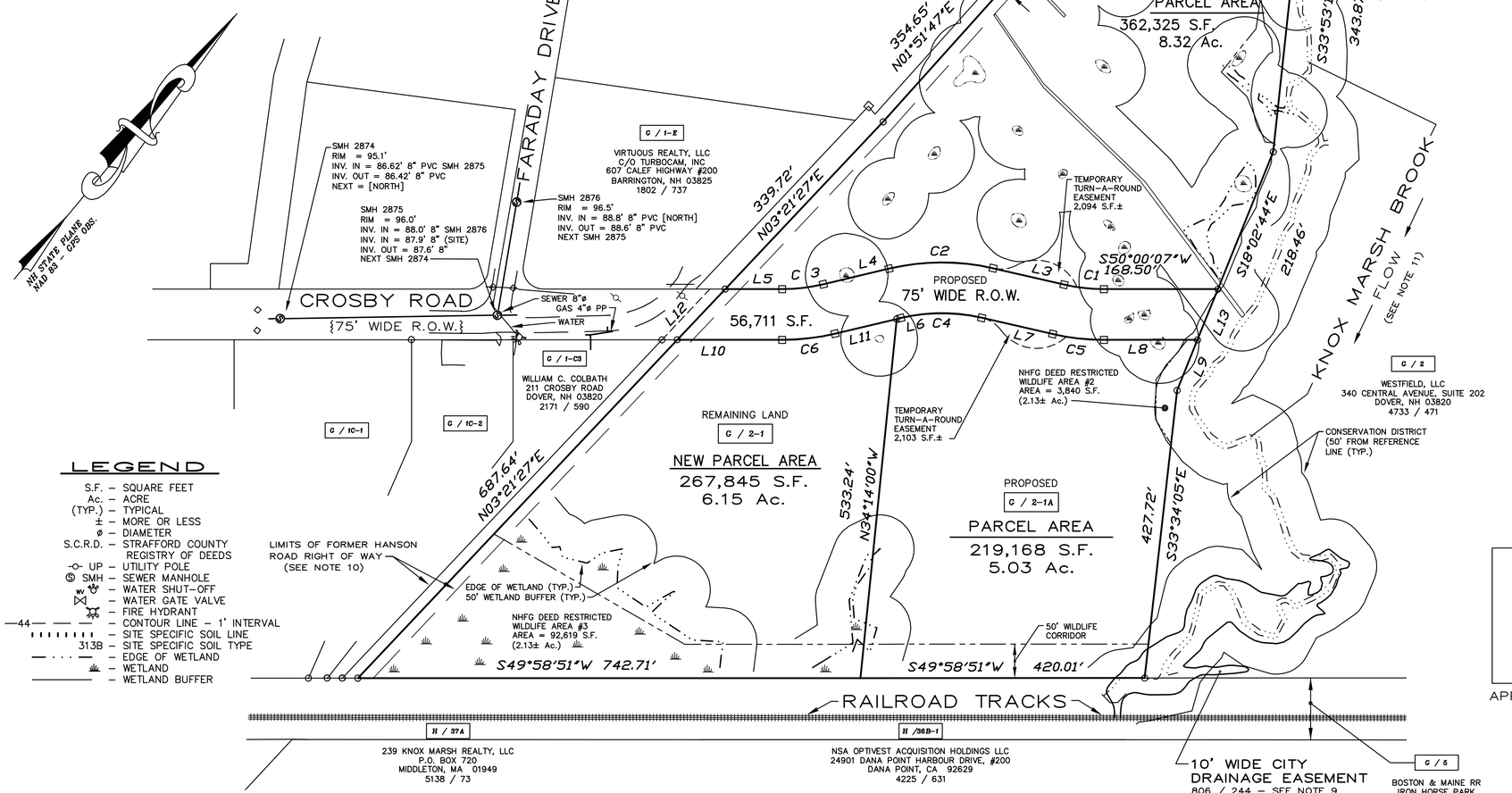
4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.

No.	Bearing	Distance
L1	N08°02'33"E	109.95'
L2	N00°50'14"E	84.52'
L3	S62°57'04"W	107.65'
L4	S36°37'58"W	100.00'
L5	S50°00'07"W	84.10'
L6	N36°37'58"E	6.22'
L7	N62°57'04"E	107.65'
L8	N50°00'07"E	138.27'
L9	S18°02'44"E	80.35'
L10	N50°00'07"E	154.91'
L11	N36°37'58"E	93.78'
L12	N03°21'27"E	103.15'
L13	S18°02'44"E	80.86'



LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
44 – CONTOUR LINE – 1' INTERVAL
– SITE SPECIFIC SOIL LINE
313B – SITE SPECIFIC SOIL TYPE
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	SUNDIV	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	12°56'58"	262.50	59.33	59.20	S56°28'36"W
C2	26°19'07"	337.50	155.03	153.67	S49°47'31"W
C3	13°22'09"	262.50	61.25	61.11	S43°19'02"W
C4	26°19'07"	262.50	120.58	119.52	N49°47'31"E
C5	12°56'58"	337.50	76.28	76.12	N56°28'36"E
C6	13°22'09"	337.50	78.75	78.57	N43°19'02"E

⊙ – IRON ROD WITH IDENTIFICATION CAP TO BET SET AT PROPERTY CORNERS
□ – GRANITE BOUND WITH DRILL HOLE TO BET SET AT RIGHT OF WAY POINTS OF CURVATURE

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NOTES:

1.) OWNERS OF RECORD:

OWNER SIGNATURE

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) TOTAL PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

APPROVAL BLOCK

SHEET 3 OF 12

SUBDIVISION PLAN OF LAND
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. SUBM–2024–00xx

DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 2024S
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

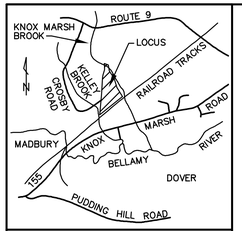
100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 661 KEVIN M. McENEANEY SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:14:25 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 3LOT



LOCATION PLAN
(NO SCALE)

LEGEND

- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ø – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- SMH – SEWER MANHOLE
- WV – WATER SHUT–OFF
- WG – WATER GATE VALVE
- FH – FIRE HYDRANT
- 44 – CONTOUR LINE – 1' INTERVAL
- SITE SPECIFIC SOIL LINE
- 313B – SITE SPECIFIC SOIL TYPE
- EDGE OF WETLAND
- WETLAND
- WETLAND BUFFER

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR WESTFIELD, LLC TAX MAP G, LOT No. 2 LITTLEWORTH ROAD & CROSBY ROAD CITY of DOVER COUNTY of STRAFFORD STATE of NEW HAMPSHIRE. SCALE: 1" = 200' / 400'; DATED: FEBRUARY 9, 2021, REVISED THROUGH 3/24/21; BY THIS OFFICE. DOVER PLANNING FILE 21–07. RECORDED S.C.R.D. PLANS 12388, 12389, 12390.

2.) SUBDIVISION PLAN LOTS 1, 2, 3 AND COMPOSITE PLAN OF CROSBY ROAD INDUSTRIAL PARK, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JUNE 30, 1985, REVISED THROUGH 8/12/85; BY: LECLERC STOWELL ASSOCIATES. RECORDED S.C.R.D. PLAN 27A–2.

3.) LOT LINE ADJUSTMENT PLAN PREPARED FOR BUSINESS PARTNERS, INC. AND CHAUVIN ARNOUX, INC., CROSBY ROAD & FARADAY DRIVE, TAX MAP G, LOTS 1L & 31–1, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: NOVEMBER 5, 1999. BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 57–65.

4.) ALTA –ACSM LAND TITLE SURVEY – COCHECO LAND MANAGEMENT, INC. – FARADAY DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: MARCH 25, 1998; BY: TRITECH ENGINEERING CORPORATION. RECORDED S.C.R.D. PLAN 51–69.

5.) SUBDIVISION OF LAND FOR THE DOVER INDUSTRIAL DEVELOPMENT AUTHORITY IN DOVER, N.H. SCALE: 1" = 50'; DATED: JUNE 21, 1991; BY: BRUCE L. POHOPEK. RECORDED S.C.R.D. PLAN 39–39.

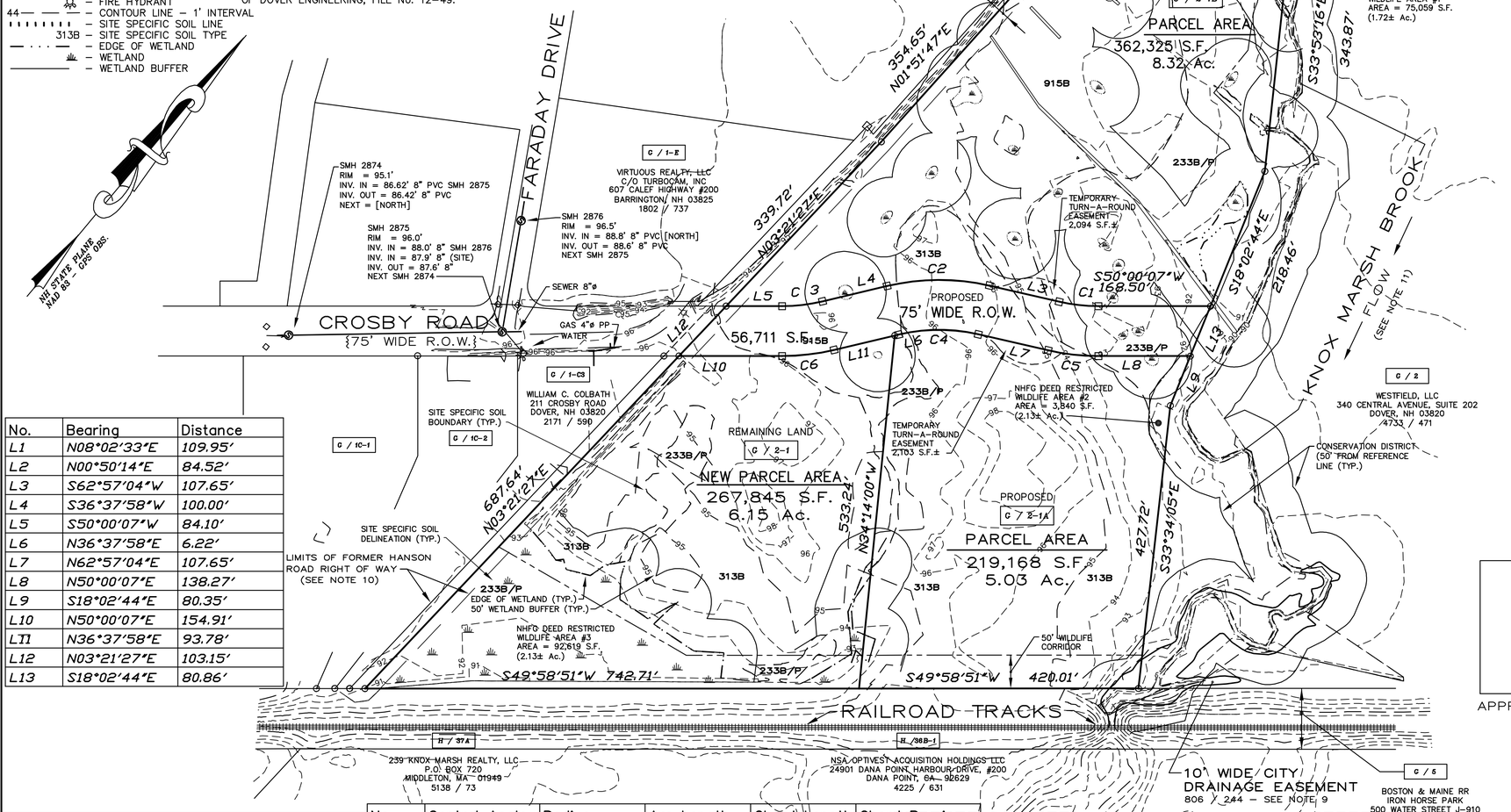
6.) RIGHT–OF–WAY AND TRACK MAP – BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. – STATION 3390+17 TO STATION 3442+97. SCALE: 1" = 100'; DATED: JUNE 30, 1914, REVISED THROUGH MARCH 1982. BY: OFFICE OF VALUATION ENGINEER, BOSTON, MASS. PLAN V2N.H./63.

7.) CITY OF DOVER, PUBLIC WORKS DEPT., PROPOSED DRAINAGE DITCH FROM DOVER INDUSTRIAL PARK THROUGH RILEY LAND TO BROOK. SCALE: 1" = 100'; DATED: MARCH 23, 1965; BY: CITY OF DOVER ENGINEERING, FILE No. 12–49.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	SOIL TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
233B/P	SCANTIC	D	POORLY DRAINED (P)
313B	DEERFIELD	B	MODERATELY–WELL DRAINED
915B	DEERFIELD VARIANT	B	SOMEWHAT POORLY DRAINED

SLOPE	SLOPE DESIGNATION	PERCENT SLOPE
	B	0 TO 8 PERCENT



No.	Bearing	Distance
L1	N08°02'33"E	109.95'
L2	N00°50'14"E	84.52'
L3	S62°57'04"W	107.65'
L4	S36°37'58"W	100.00'
L5	S50°00'07"W	84.10'
L6	N36°37'58"E	6.22'
L7	N62°57'04"E	107.65'
L8	N50°00'07"E	138.27'
L9	S18°02'44"E	80.35'
L10	N50°00'07"E	154.91'
L11	N36°37'58"E	93.78'
L12	N03°21'27"E	103.15'
L13	S18°02'44"E	80.86'

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	12°56'58"	262.50	59.33	59.20	S56°28'36"W
C2	26°19'07"	337.50	155.03	153.67	S49°47'31"W
C3	13°22'09"	262.50	61.25	61.11	S43°19'02"W
C4	26°19'07"	262.50	120.58	119.52	N49°47'31"E
C5	12°56'58"	337.50	76.28	76.12	N56°28'36"E
C6	13°22'09"	337.50	78.75	78.57	N43°19'02"E

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19–2210	SUNDIV	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

⊙ – IRON ROD WITH IDENTIFICATION CAP TO BET SET AT PROPERTY CORNERS
□ – GRANITE BOUND WITH DRILL HOLE TO BET SET AT RIGHT OF WAY POINTS OF CURVATURE

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NOTES:

1.) OWNERS OF RECORD:

OWNER SIGNATURE

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.

4.) TOTAL PARCEL AREA: 906,049 S.F. / 20.80 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) THE PARCEL IS SUBJECT TO A TEN (10) FOOT WIDE DRAINAGE EASEMENT GRANTED TO THE CITY OF DOVER, AS DESCRIBED IN S.C.R.D. VOLUME 806, PAGE 244. (SEE REFERENCE PLAN No. 7).

10.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

11.) THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170–27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.

12.) IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.

13.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

14.) SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024.

SHEET 4 OF 12
TOPOGRAPHIC & SITE SPECIFIC SOILS

APPROVAL BLOCK

SUBDIVISION PLAN OF LAND
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No.	SUBM–2024–00xx
DRAWN BY: RJM	FILE: 2210\DWGS\G–2–1 2024S
SCALE: 1" = 100'	DATE: AUGUST 6, 2024

100 50 0 50 100 200 300 400

STATE OF NEW HAMPSHIRE – LICENSED LAND SURVEYOR – No. 661 – KEVIN M. McENEANEY – SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

8/6/2024 11:15:01 File: M:\2210\Drawings\G-2-1 2024 subdiv.dwg Layout: 2210 G-2-1 SLOT topo

GENERAL NOTES

1. OWNER OF RECORD:
   DEL SOL DOVER, LLC
   340 CENTRAL AVENUE, SUITE 302
   DOVER, NEW HAMPSHIRE 03820
   S.C.R.D. VOLUME 5075, PAGE 142.
2. G / 2-1 – DENOTES TAX MAP AND PARCEL NUMBER.
3. PLAN INTENT: TO SUBDIVIDE THE SUBJECT PARCEL INTO THREE (3) LOTS WITH AN INCLUDED SEVENTY FIVE (75) FOOT WIDE RIGHT OF WAY EXTENDING FROM THE CURRENT TERMINUS OF CROSBY ROAD. PARCEL IS SERVED BY MUNICIPAL SEWER AND WATER SERVICE.
4. TOTAL PARCEL AREA = 906,049 S.F. / 20.80 Ac.
5. ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT
   DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET
REAR SETBACK	= 10 FEET
MAXIMUM BUILDING HEIGHT	= 50 FEET

6. A PORTION OF THE SUBJECT PARCEL IS LOCATED IN THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX F; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015, THAT AREA DIRECTLY ADJACENT TO THE RAILROAD TRACKS AT KNOX MARSH BROOK.
7. BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.
   VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED NOVEMBER 18, 2022.
8. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND IN JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
9. HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R-2008.05.14-80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.
10. THE PARCEL IS SUBJECT TO A DOVER CONSERVATION OVERRIDING DISTRICT, 170-27B.(2), AREAS WITHIN FIFTY (50) FEET OF A FRESHWATER BROOK, KNOX MARSH BROOK.
11. IRON ROD WITH IDENTIFICATION CAP HAVE BEEN SET AT ALL EXISTING LOT CORNERS AND ANGLE POINTS. IRON ROD WITH IDENTIFICATION CAP TO BE SET AT ALL PROPOSED LOT CORNERS.
12. WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS UPDATED IN JULY 2024 BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301.
13. SITE SPECIFIC SOIL MAPPING WAS UPDATED IN JULY 2024 BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED MAY 29, 2024.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT AND POLES.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
9. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
10. EXISTING ("OLD") WATER SERVICES TO THE SUBJECT SITE SHALL BE DISCONNECTED AND SHUT-OFF AT THE WATER MAIN.
11. EXISTING SEWER SERVICES TO BE CUT AND PERMANENTLY CAPPED AT PROPERTY LINE AS APPLICABLE.
12. ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
13. ALL STONEWALLS THAT NEED TO BE REMOVED FOR CONSTRUCTION SHALL BE STOCKPILED AND REUSED ON SITE.

SUBDIVISION NOTES:

1. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A PLAN REFERENCED AND PREPARED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND (SEE EXISTING CONDITIONS PLAN IN THIS PLAN SET).
2. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH A 3 LOT SUBDIVISION, THE CONSTRUCTION OF CROSBY ROAD EXTENSION, PUBLIC WATER AND SEWER, UNDERGROUND UTILITY IMPROVEMENTS, AND GRADING & DRAINAGE IMPROVEMENTS.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
4. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS, AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
5. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
6. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
7. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
8. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
10. BUILDING ADDRESSES TO BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
11. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
12. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBANCE ACTIVITY OCCURS.
13. AS-BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON PAPER AND IN A DIGITAL FORMAT IN PDF AND AUTOCAD DWG, AUTOCAD DXF OR AN ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
14. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY HOURS 7 AM-6 PM, AND NO SUNDAY AND NO FEDERAL HOLIDAY WORK HOURS. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
15. A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
16. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
17. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
18. THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN, THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
19. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
20. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
21. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
22. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
23. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. (HTTPS://WWW.UNH.EDU/UNHSC/PTAPP)
24. NO ROADWAY WITH PRIVATE UTILITY EASEMENTS SHALL BE ACCEPTED AS A PUBLIC ROAD BY THE CITY UNLESS THE EASEMENTS ARE EXPUNGED PRIOR TO THE TRANSFER OF LAND TO THE CITY. LICENSE AGREEMENTS FOR ANY AND ALL PRIVATE UTILITIES WITHIN THE RIGHT OF WAY MAY BE GRANTED BY THE CITY UPON ACCEPTANCE OF THE UNENCUMBERED ROADWAY CONSISTENT WITH APPLICABLE STATE LAW.
25. INDIVIDUAL AND SHARED DRIVEWAYS THAT ARE LONGER THAN 150 LF FROM THE ACCESS ROAD SHALL BE THE STANDARD WIDTH AS SPECIFIED IN NFPA1.
26. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.

GRADING NOTES:

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OF REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
12. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP'S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS. THE DESIGN ENGINEER MUST CERTIFY THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
14. DENSITY REQUIREMENTS:

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

   *ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
9. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
17. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
23. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.

UTILITY CONTACTS

NATURAL GAS: – UNITIL CORPORATION
CONTACT: DAVID MACLEAN
325 WEST ROAD
PORTSMOUTH, NH 03801
TEL: (603)-294-5261
EMAIL: MACLEAND@UNITIL.COM

WATER & SEWER: – CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
PUBLIC WORKS & UTILITIES
CONTACT: KEN MAVROGEORGE, PE
271 MAST ROAD
DOVER, NH 03820
TEL: (603)-516-6450
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV

ELECTRIC: – EVERSOURCE
CONTACT: TREVER EMMONS
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)-332-7515
EMAIL: TREVER.EMMONS@EVERSOURCE.COM

PLANNING FILE NO.: SUBD-2024-

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

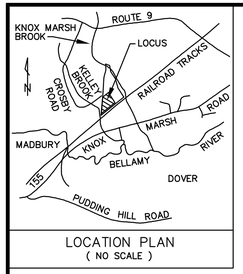
NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

NOTE SHEET

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANIFOLD IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

WATER - DOVER FARAD1-020-MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER MAIN

TIE INTO EXISTING SEWER STUB

SEWER 8"ø

TAPPING SADDLE WITH THRUST BLOCK (SIZE V.I.F).

WATER - DOVER FARAD1-020-MI

HYDRANT #319

GAS 4"ø PP

CROSBY ROAD
{75' WIDE R.O.W.}

C / 1-C1

C / 1-C2

C / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

UTILITY POLE 364A/1Y UGU DROP

EXISTING EDGE OF PAVEMENT

OHU

UTILITY POLE 364A/1 1140-22

MEET/MATCH EXISTING PAVEMENT

PROPOSED OVERHEAD UTILITIES

PSMH1

PROPOSED 8" CL D.I. WATERLINE

2" GAS STUB

6" CL D.I WATERLINE STUB

6" PVC SEWER STUB

PROPOSED UNDERGROUND UTILITES

PROPOSED TRANSFORMER PAD

FORMER HANSON ROAD

50' WETLAND BUFFER

C / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

PSMH3

BEGIN SGC

END SGC

PROPOSED 4" GAS LINE

PAVED SLUICE

C / 2-1
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

75' PUBLIC ROW

6" PVC SEWER STUB

2" GAS STUB

6" CL D.I WATERLINE STUB

C / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

END SGC

PROPOSED GRAVEL (TYP)

PROPOSED HYDRANT

PROPOSED 6" REDUCER WITH GATE VALVE

PROPOSED 20' 8" CL D.I. WATERLINE STUB

PROPOSED GAS LINE STUB

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

LEGEND

Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
– FIRE HYDRANT
– WETLAND
– EDGE OF WETLAND
– WETLAND BUFFER
312'R – PAVEMENT RADUIS
SGC – SLOPED GRANITE CURB
PEOP – PROPOSED EDGE OF PAVEMENT
PW – PROPOSED WATER
PG – PROPOSED GAS
PE – PROPOSED ELECTRIC
PS – PROPOSED SEWER
– PROPOSED GRAVEL

PLANNING FILE NO.: SUBD-2024-

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

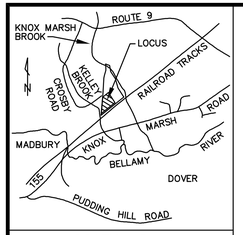
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

CROSBY ROAD EXTENSION SITE & UTILITY PLAN

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

6



LOCATION PLAN
(NO SCALE)

NH STATE PLANE NAD 83 GPS OBS.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

50' WETLAND BUFFER

CATCH BASIN #7080 RIM = 96.0'

CATCH BASIN #7081 RIM = 95.9'

TBM CB7081 RIM=95.9

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

WETLAND BUFFER IMPACT "A"

WETLAND BUFFER IMPACT "B"

WETLAND BUFFER IMPACT "C"

CONSTRUCTION ENTRANCE

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

PROPOSED 8" SILTSOXX (TYP)

WETLAND BUFFER INCLUDED ON "SITE PLAN–LOT 2"

BIORETENTION POND 3 W/ ISR (BIO3 W/ ISR)

WETLAND BUFFER IMPACT:

IMPACT "A"	= 4,437 SF
IMPACT "B"	= 27 SF
IMPACT "C"	= 397 SF
TOTAL	**= 4,861 SF**

CROSBY ROAD EXTENSION
PLAN VIEW
HORIZONTAL SCALE: 1"=40'

HIGH PT. STA.7+50.00
HIGH PT. ELEV.98.89
PVI STA.7+50.00
PVI ELEV.99.02
AD=–1.00
K=100.00
100.00' VC

PVC STA.7+00.00
PVC ELEV.98.77

PVT STA.8+00.00
PVT ELEV.98.77

EOP CROSBY ROAD EXTENSION
STA. 8+55.50

CROSBY ROAD EXTENSION
PROPOSED CUL-DE-SAC EASEMENT

EXISTING SMH 2875
STA. 0+00.32
INV.OUT=87.32

PROPOSED INV.IN=87.9' TIE INTO EXISTING SEWER STUB

EXISTING CROSBY ROAD

EOP CROSBY ROAD EXTENSION (MATCH EXISTING GRADE)

PSMH 1
STA. 3+06.78
RIM=96.9'
INV.IN=89.2'
INV.OUT=89.1'

PSMH2
STA. 3+77.00
RIM=97.2'
INV.IN=89.6'
INV.OUT=89.5'

EXISTING GRADE

PROPOSED GRADE

0.50%

MINIMUM 30'

PSMH3
STA.6+13.43
RIM=98.2'
INV.IN=90.60'
INV.OUT=90.50'

MINIMUM 5'

0.50%

4" GAS MAIN

8" D.I. CL WATERLINE

8" SDR35 L=300' S=.004

8" SDR35 L=66' S=.004

8" SDR35 L=230' S=.004

4" GAS MAIN

8" D.I. CL WATERLINE

DATUM=84

96.2	95.9	95.8	96.0	96.3	96.5	95.8	95.2	95.5	95.4	96.0	95.4	95.3	96.0	96.9	96.0	95.0	93.6	93.3
96.22	96.27	96.32	96.38	96.43	96.52	96.77	97.02	97.27	97.52	97.77	98.02	98.27	98.52	98.77	98.89	98.77	98.52	94.68

0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00 6+50 7+00 7+50 8+00 8+50 8+70.48

CROSBY ROAD EXTENSION
PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

LEGEND
S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
– – – 92 – – – – CONTOUR LINE – 1' INTERVAL
———— – EDGE OF WETLAND
– WETLAND
———— – WETLAND BUFFER
96 – PROPOSED CONTOUR
X 96 – PROPOSED FINISH GRADE
– PROPOSED CONDITIONAL USE IMPACT

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SUBD–2024–

CROSBY ROAD EXTENSION PLAN & PROFILE

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

7

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:JH
PROJECT NO: 18043
FILE: SUB

DESCRIPTION

1. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH A 3 LOT SUBDIVISION, THE CONSTRUCTION OF CROSBY ROAD EXTENSION, PUBLIC WATER AND SEWER, UNDERGROUND UTILITY IMPROVEMENTS, AND GRADING & DRAINAGE IMPROVEMENTS.

PROJECT NAME AND LOCATION

DEL SOL DOVER, LLC
3 LOT SUBDIVISION CROSBY RD EXTENSION — *LATITUDE N43° 10' 49"*
DOVER, NEW HAMPSHIRE 03820 — *LONGITUDE W70° 54' 41"*

DISTURBED AREA

±56,000 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL FOUNDATION FOOTINGS AND WALLS.
10. INSTALL UTILITIES.
11. PLACE GRAVELS AND FINE GRADE.
12. STABILIZE ROADWAYS AND PARKING AREAS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
13. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
14. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
15. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
16. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   e. CURVE THE END OF THE SILT BARRIER UP-GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   c. REMOVE SEDIMENT WHEN IT REACHES ONE-THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
   c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 150-200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   d. EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
      i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
      ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   c. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE @ 138 LBS. PER 1,000 S.F.
      LOW PHOSPHATE (N-P2O5-K2O) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND-DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
b. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
c. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PROPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
   1. THE CONSTRUCTION PROJECT:
      a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
      b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
      d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
      e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
      f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   2. HAZARDOUS PRODUCTS:
      a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
      c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
      d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
   1. PETROLEUM PRODUCTS:
      a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
   2. FERTILIZERS:
      a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
   3. PAINTS:
      a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   4. CONCRETE TRUCKS:
      a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
   IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV-A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST: A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV-A 1002 FUGITIVE DUST: PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV-A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECUATIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   I) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   II) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   III) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT.
2. ALL DITCHES & SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD AND PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3-INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

EROSION CONTROL NOTES

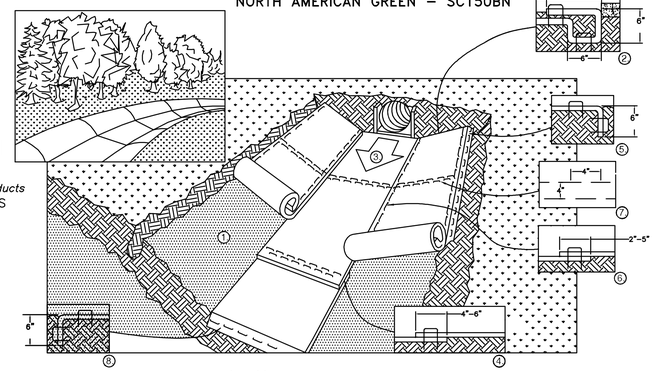
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

8

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



CRITICAL POINTS

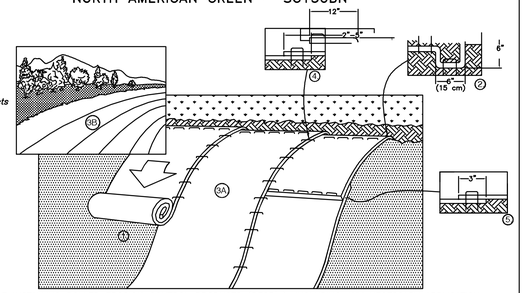
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

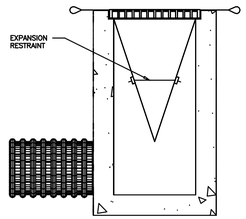
SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM®, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

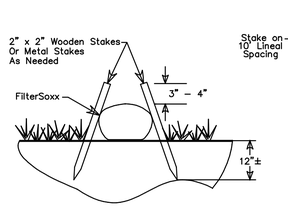
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®

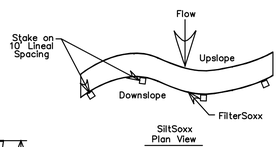
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

DETAIL OF INLET SEDIMENT CONTROL DEVICE



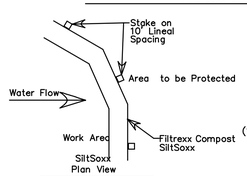
FilterSoxx Section
At Ends of Run
Cross Stakes

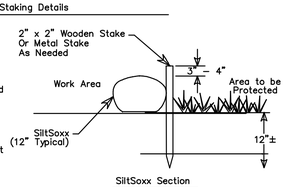


SiltSoxx
Plan View

Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details





SiltSoxx Section

Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SILTSOXX DETAILS
NOT TO SCALE

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:



Blanding's turtle (state endangered)
- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land



Wood turtle (special concern)
- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land



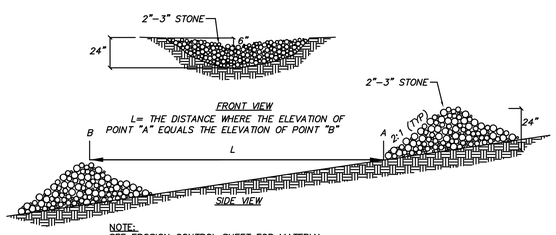
Eastern box turtle (state endangered)
- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base



Spotted turtle (state threatened)
- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 ***Please report promptly, noting specific location and date – Photographs strongly encouraged***

NOTES:
1. ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.
2. THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED
3. ~~THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT~~ SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE
4. IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271–1738 or JOSH MEGYESY AT 271–1125 FOR FURTHER INSTRUCTIONS.



NOTE:
SEE EROSION CONTROL SHEET FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.

STONE CHECK DAM
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	SUB	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

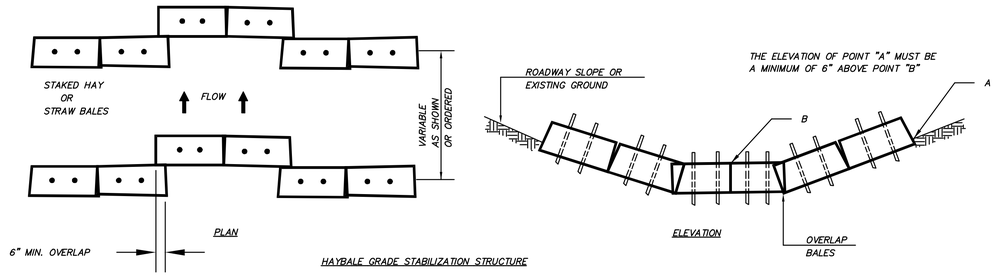
PLANNING FILE NO.: SUBD–2024–

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

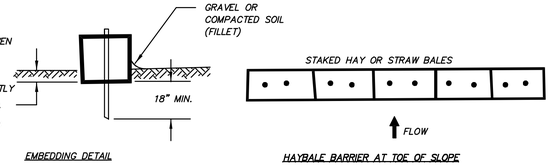
9



HAYBALE GRADE STABILIZATION STRUCTURE

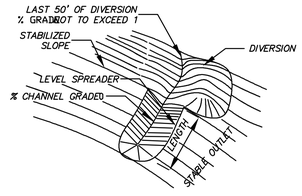
CONSTRUCTION SPECIFICATIONS

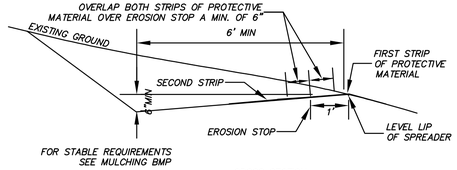
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.



HAYBALE NOTES AND DETAILS

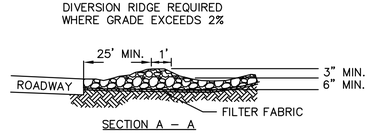
NOT TO SCALE

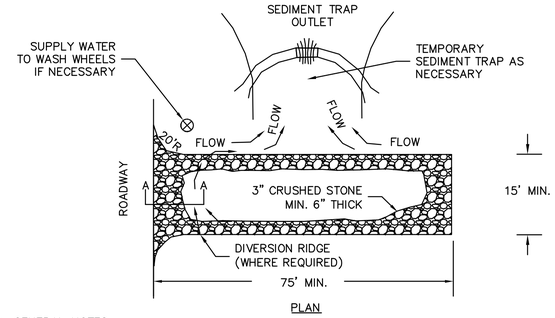




LEVEL SPREADER DETAIL

NOT TO SCALE





A. GENERAL NOTES:

1. A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS
2. ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
3. LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
4. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

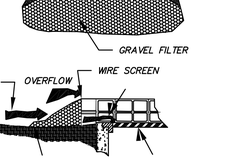
1. STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
3. THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6" THICK.
6. A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF–SITE.
8. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).

1. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT–TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

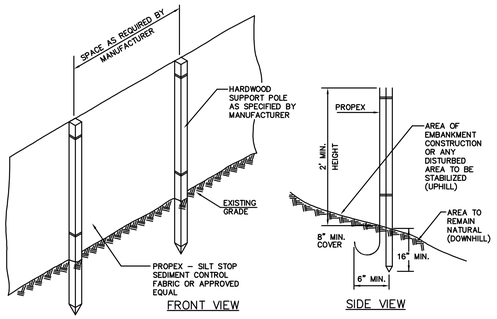
TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE



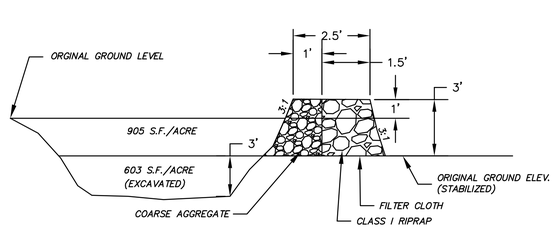
TEMPORARY EROSION CONTROL

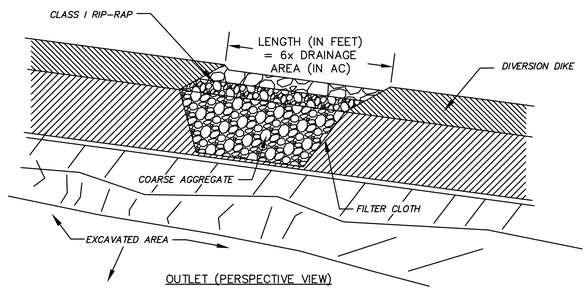
NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE





NOTES:
1. COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
2. FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
3. CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
4. THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
5. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
6. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

TEMPORARY SEDIMENT TRAP

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 18043
FILE: SUB

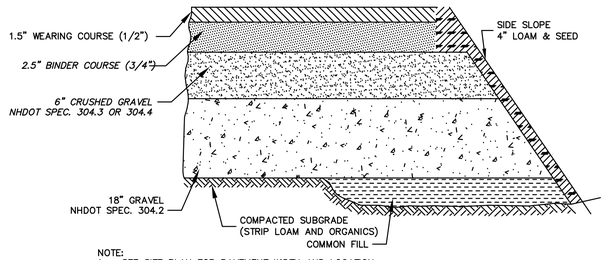
PLANNING FILE NO.: SUBD–2024–

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

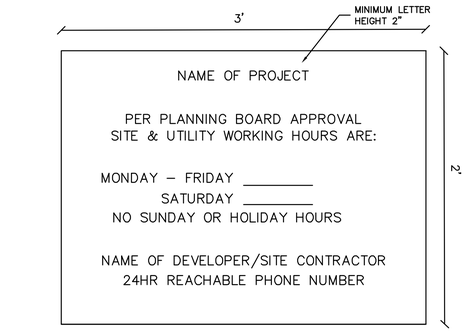
10



NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

HEAVY DUTY TYPICAL PAVEMENT SECTION

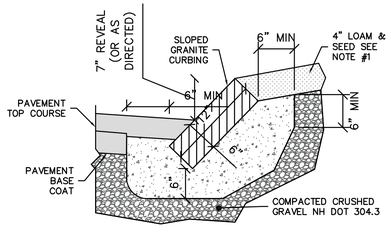
NOT TO SCALE



NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. HOURS ON THE SIGN SHALL COMPLY WITH ALL PLANNING BOARD CONDITIONS OF APPROVAL.

CITY OF DOVER D-2
CONSTRUCTION SIGN

NOT TO SCALE



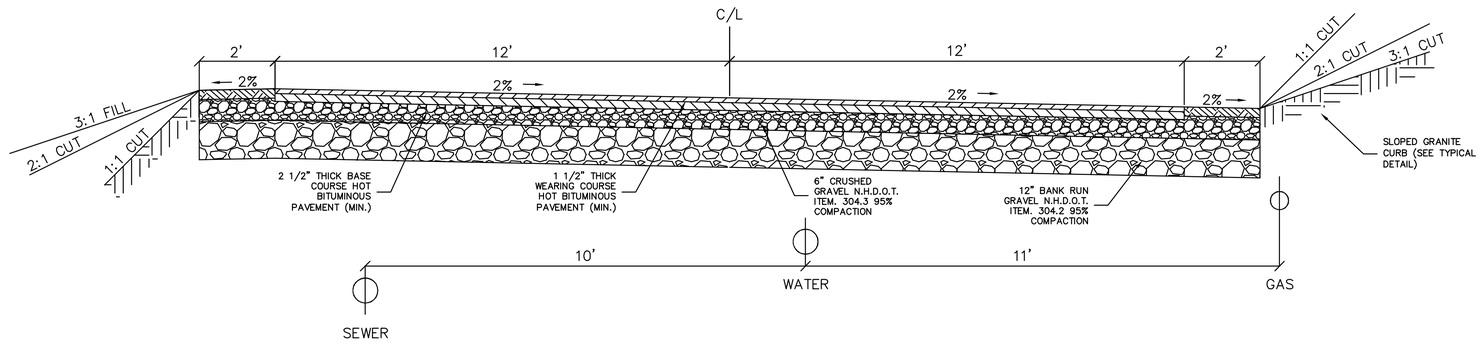
SLOPED GRANITE CURB

RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

NOTES:
1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
2. CONCRETE CURB SUPPORT SHOULD BE SET 1/2" BELOW THE TOP OF THE PAVEMENT BASE COURSE.

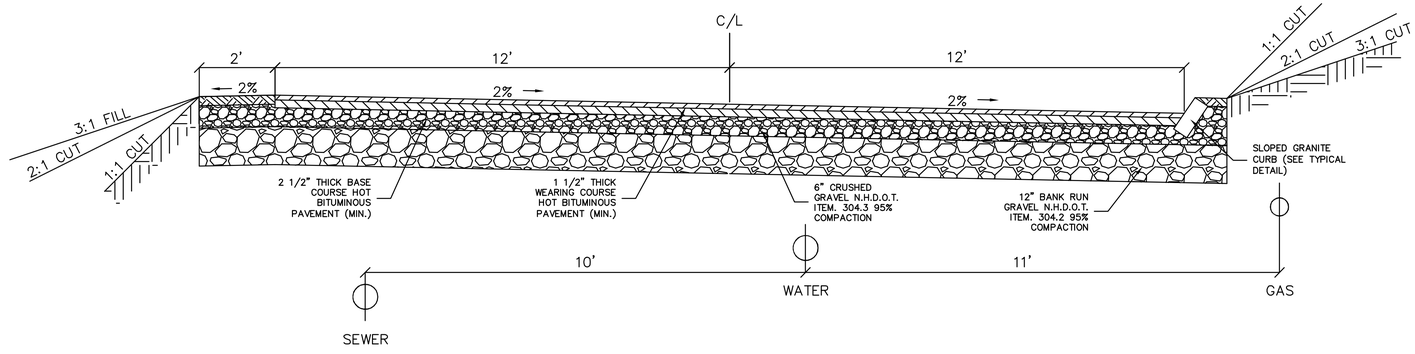
CITY OF DOVER D-8 GRANITE CURB DETAIL

NOT TO SCALE



PROPOSED CROSBY ROAD EXTENTSION
TYPICAL CROSS SECTION
STATION 2+40.29 TO 3+28.00

NOT TO SCALE



PROPOSED CROSBY ROAD EXTENTSION
TYPICAL CROSS SECTION
STATION 3+28.00 TO 8+56.10

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & MUNICIPAL ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

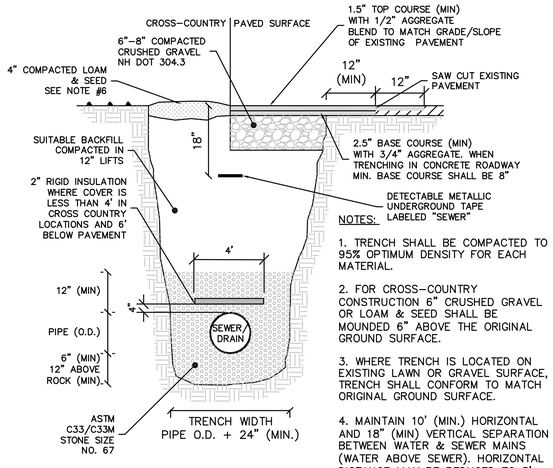
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

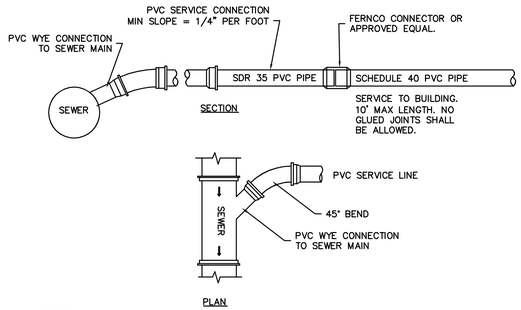


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-3
SEWER TRENCH DETAIL

NOT TO SCALE

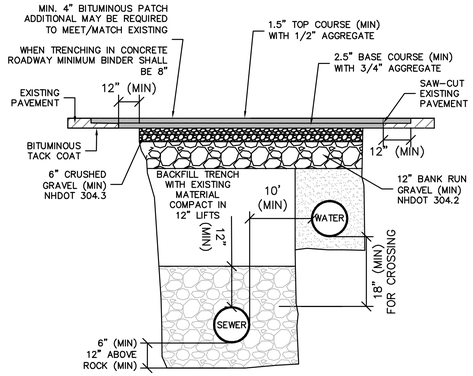


NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

CITY OF DOVER D-17
SEWER SERVICE DETAIL

NOT TO SCALE

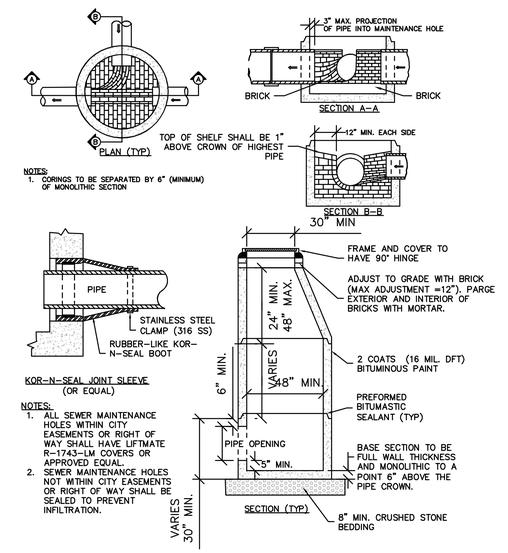


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

CITY OF DOVER
TYPICAL TRENCH DETAIL

NOT TO SCALE

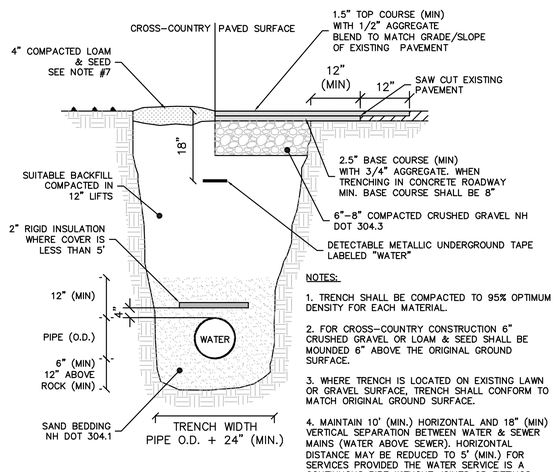


NOTES:

1. ALL SEWER MAINTENANCE HOLES WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL HAVE LIFTMATE R-1743-LM COVERS OR APPROVED EQUAL.
2. SEWER MAINTENANCE HOLES NOT WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL BE SEALED TO PREVENT INFILTRATION.

CITY OF DOVER
TYPICAL SEWER MANHOLE DETAIL

NOT TO SCALE

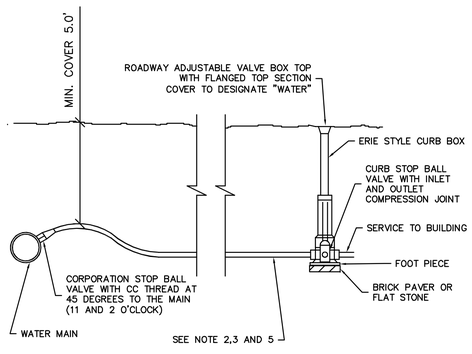


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-4
WATER TRENCH DETAIL

NOT TO SCALE

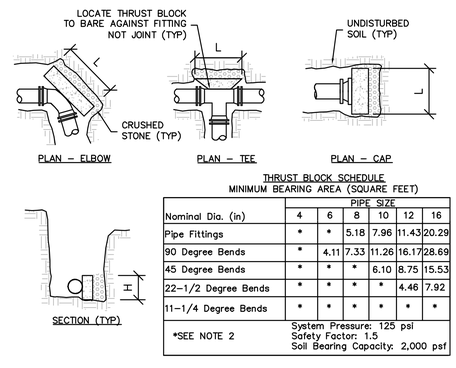


NOTES:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. 3/4"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

CITY OF DOVER D-13
WATER SERVICE CONNECTION DETAIL

NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

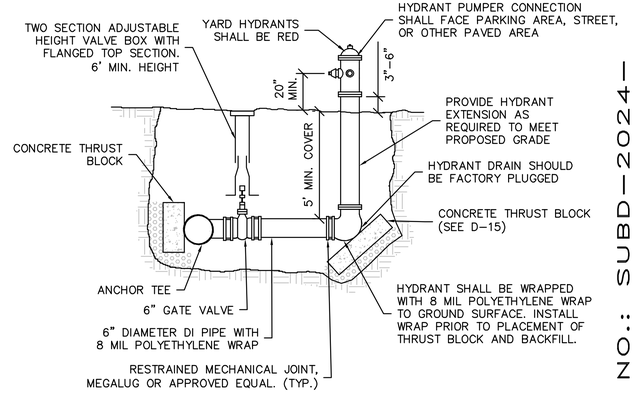
	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*
*SEE NOTE 2	System Pressure: 125 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf					

NOTES:

1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

CITY OF DOVER D-15
THRUST BLOCK DETAIL

NOT TO SCALE



NOTES:

1. FIRE HYDRANTS SHALL BE FACTORY SEALED EDDY STYLE 2641.
2. HYDRANT SHALL BE PAINTED RED WITH EPOXY PAINT AS RECOMMENDED BY THE HYDRANT MANUFACTURER.
3. HYDRANT SHALL OPEN LEFT.

CITY OF DOVER
TYPICAL HYDRANT DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

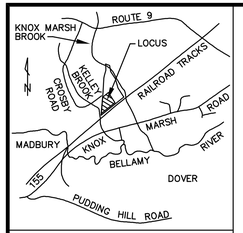
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

PLANNING FILE NO.: SUBD-2024-

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 GPS OBS.

WATER - DOVER FARAD1-020-MI

SEWER MAIN

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANIFOLD IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

C / 1-E

VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

FORMER HANSON ROAD

C / 2-1B

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

50' WETLAND BUFFER

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

SMH 2875
RIM =96.0'
INV. IN=88.0' 8" SMH 2876
INV. IN=87.9' 8" (SITE)
INV.OUT=87.6' 8"
NEXT SMH 2874

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER 8"ø

36" RCP
INV.IN=91.2'

UTILITY POLE
364A/1Y UGU
DROP

EXISTING EDGE OF PAVEMENT

OHU

UTILITY POLE
364A/1
1140-22

CROSBY ROAD
{75' WIDE R.O.W.}

RECONSTRUCT EXISTING SEWER SERVICE TIE INTO NEW SEWER MAIN

RECONSTRUCT SEWER INVERT

SEWER MAIN

TAPPING SADDLE WITH THRUST BLOCK (SIZE V.I.F.)

WATER

DOVER FARAD1-020-MI

GAS 4"ø PP

MEET/MATCH EXISTING PAVEMENT

HYDRANT #319

PROPOSED OVERHEAD UTILITIES

PSMH1

PROPOSED UTILITY POLE

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

PROPOSED 8" CL D.I. WATERLINE

2" GAS STUB

6" CL D.I WATERLINE STUB

6" PVC SEWER STUB

PROPOSED UNDERGROUND UTILITES

PROPOSED TRANSFORMER PAD

BEGIN SGC

END SGC

PAVED SLUICE

PROPOSED 4" GAS LINE

6" PVC SEWER STUB

75' PUBLIC ROW

PSMH3

8"X6" ANCHOR TEE WITH GATE VALVE AND THRUST BLOCK (TYP)

2" GAS STUB

6" CL D.I WATERLINE STUB

C / 2-1A

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

C / 2-1

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

END SGC

PROPOSED GRAVEL (TYP)

PROPOSED HYDRANT

PROPOSED 6" REDUCER WITH GATE VALVE

PROPOSED 20' 8" CL D.I. WATERLINE STUB

PROPOSED GAS LINE STUB

24' (TYP)

C / 1-C1

C / 1-C2

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

LEGEND

Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
– FIRE HYDRANT
– WETLAND
– EDGE OF WETLAND
– WETLAND BUFFER
312'R – PAVEMENT RADUIS
SGC – SLOPED GRANITE CURB
PEOP – PROPOSED EDGE OF PAVEMENT
PW – PROPOSED WATER
PG – PROPOSED GAS
PE – PROPOSED ELECTRIC
PS – PROPOSED SEWER
– PROPOSED GRAVEL

PLANNING FILE NO.: SUBM-2024-0003

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	PER ENGINEERING COMMENT	SJH	9-17-24

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:18043
FILE: SUB

CROSBY ROAD EXTENSION SITE & UTILITY PLAN

3 LOT SUBDIVISION
CROSBY ROAD EXTENSION
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

6

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2024-0010

Application Type:	Site Review
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Meeting Date:	September 24, 2024

INTENT: Proposal is to construct a 9,600 square foot warehouse building with associated parking and infrastructure and an 807' paved extension of Crosby Road.

AGENDA ITEM #: 4-F

FILE: SITE-2024-0010

APPLICANT/OWNER: Del Sol Dover, LLC

LOCATION: Crosby Road (Assessor's Map G, Lot 2-1)

LOTS/UNITS PROPOSED: Two (2) new lots and one (1) existing lot as part of a related minor subdivision.

ACREAGE: 20.80± acres before subdivision, proposed acreage following subdivision:
Assessor's Map G, Lot 2-1B (Lot 1) = 362,325± s.f. (8.32± acres)
Assessor's Map G, Lot 2-1 (Lot 2) = 267,845± s.f. (6.15± acres)
Assessor's Map G, Lot 2-1A (Lot 3) = 219,168± s.f. (5.03± acres)

ZONING DISTRICT: CM

EXISTING USE: Vacant

PROPOSED USE: Commercial, Warehouse

SURROUNDING USE: Commercial, Industrial Park

PERMITS: Two (2) City of Dover CUPs, NHDES Alteration of Terrain

WAIVERS REQUESTED: §153-13A(12), Landscape Plan prepared by LLA
§153-13A(17), Streetscape Renderings
§153-14K(1)(b), Parking Location

ZBA ACTION: None.

CONSERVATION COMMISSION: Reviewed and endorsed on 9/9/24.

TRC: Reviewed on 8/29/24.

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background
The applicant is proposing a three-lot subdivision which will create two new lots and maintain one existing lot and the three lots will be accessed from a 807' paved extension of Crosby Road. The applicant's intent is that, when completed, the proposed extension will be accepted by the City of Dover as a public right-of-way.

As part of the project, the applicant is proposing the development of Lot 2, (Assessor's Map G, Lot 2-1). The proposed development of Lot 2 will involve a 9,600± square foot warehouse building with associated parking and infrastructure. The warehouse will be used primarily for a local lawncare company with remaining space being rented to similar businesses.

The applicant has also applied for two related City of Dover CUPs for wetland buffer impacts and an NHDES Alteration of Terrain permit.

Three (3) waivers are being proposed as part of this project requesting relief from a signed landscape plan, streetscape renderings, and the proposed parking location.

The Technical Review Committee reviewed the project at their August 29, 2024 meeting. *(minutes attached)*

The Conservation Commission reviewed and endorsed the related CUP applications at their September 9, 2024 meeting. *(minutes attached)*

Summary of Waiver Requests:
The applicant is seeking three (3) waivers as part of this proposal. The waivers are from the following:

- §153-13A(12), Landscape Plan prepared by LLA
- §153-13A(17), Streetscape Renderings
- §153-14K(1)(b), Parking Location

Consistency with Land Use Regulations – Site Plan
§153-4 of the Site Review Regulations of the City Code provides for site review by the Planning Board of new construction of various types. This plan is consistent with those regulations.

Consistency with Land Use Regulations –Waivers/Relief
§153-21 of the Site Plan Review Regulations state the "Planning Board may waive specific provisions of these regulations. The Planning Board may only grant a waiver if the Planning Board finds, by majority vote, that:

(1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
(2) Specific circumstances relative to the subdivision, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Planning Staff believes the applicant's rational for the waivers meets criterion (1) and waiving such standards and requirements is not contrary to the spirit or intent of the ordinance.

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2024-0010

Application Type:	Site Review
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Meeting Date:	September 24, 2024

STAFF RECOMMENDATION - Waivers/Relief:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to grant the waiver with the following subsequent condition:

Subsequent Condition to be Met Prior to the Signing of the Plans:
1. Add a note that the Planning Board found the criteria of Chapter 153-21 have been met and the Board approved the following waivers:
   §153-13A(12), Landscape Plan prepared by LLA
   §153-13A(17), Streetscape Renderings
   §153-14K(1)(b), Parking Location

STAFF RECOMMENDATION- Site Plan:
The Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to approve the Site Plan with the following subsequent conditions:

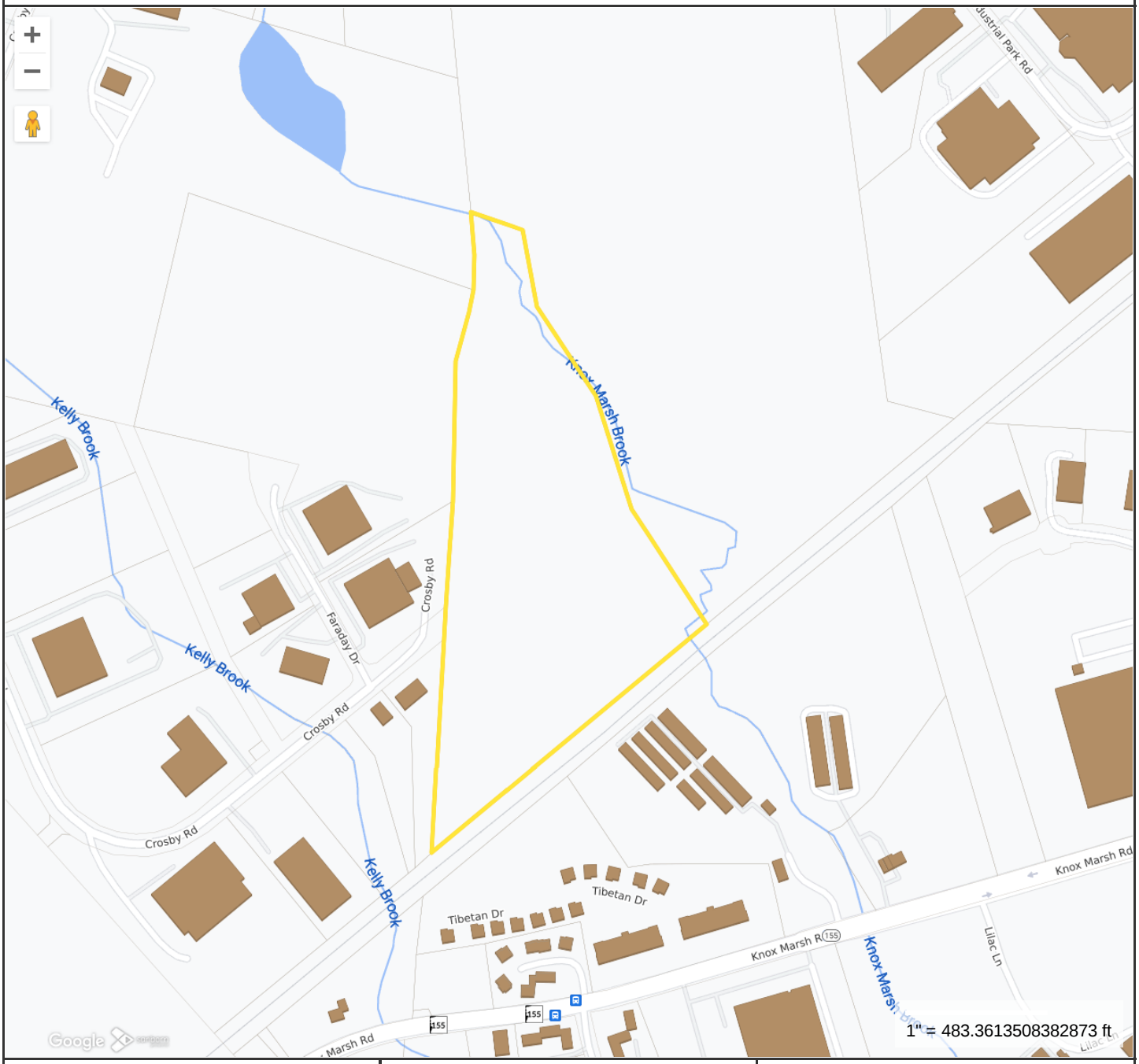
Subsequent Conditions to Be Met Prior to Signing of the Plans:
1. Revise plan and resubmit for final Planning Board signature with the following revisions:
   1.1. Add a note stating the structure will be solar ready.
2. Confirm the sizes and locations of utilities between site plan (SITE-2024-0010) and roadway plan (SUBM-2024-0003);
3. Approval of COND-2024-0025;
4. Approval of COND-2024-0026;
5. Approval of SUBM-2024-0003;

Subsequent Condition to Be Met Prior to Construction:
5. Provide test pit data to City Engineer to determine if a permeability liner is required;
6. A site construction sign with the contact information for the general contractor must be displayed in a location approved by the City Engineer or Planning Director;

Subsequent Conditions to Be Met Prior to Building Permit:
7. Payment of Water and Sewer Investment Fees if applicable at time or request of service;

Subsequent Conditions to Be Met Prior to Occupancy:
8. Issuance of Certificate of Occupancy;
9. Payment of Impact Fees as noted in the invoice attached to the Decision Letter unless a change is made to the impact fee policy; and
10. Surety or other form of security acceptable to the City is provide for any unfinished work;
11. Add a new SMH at the end of the existing stub off of SMH 2875, or alternative connection to the satisfaction of the City Engineer;
12. Design engineer to submit a construction certification letter to the City ensuring construction was completed in accordance with the plans and specifications approved by the City of Dover.

SITE-2024-0010 Crosby Road



Property Information

Location	LITTLEWORTH RD
Owner	DEL SOL DOVER LLC
Land Use	
Zoning Code	CM
Property Id	G0002-001000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PLAN SNAPSHOT REPORT SITE-2024-0010
FOR CITY OF DOVER, N.H.

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	08/06/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	10/10/2024
Status:	Fees Paid	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: "LOT 2", G/2-1 Crosby Road (extension) Site Development

Parcel:	G0002-001000 Main	**Address:**	Littleworth Road Main Dover, NH 03820	**Zone:**	CM(Non-Residential - Commercial Manuf

Surveyor
McEneaney Survey Associates
P.O. Box 1166
DOVER, NH 03821
Business: (603) 742-0911

Applicant
Civilworks New England
Steve Haight
181 Watson Road PO Box 1166
Dover, NH 03820
Business: (603) 749-0443
Mobile: (603) 817-6651

Owner
Summit Land Development
Chad Kageleiry
340 Central Avenue 202
Dover, NH 03820
Business: (603) 749-2800

Wetlands Scientist
Bruce Gilday
Business: (603) 228-5775

Engineer
Stephen Haight
Business: (603) 749-0443

Applicant
Chad Kageleiry
Business: (603) 749-2800

Plan Custom Fields

Total	0	Total2	0	Total3	0
Total4	0	Total5	0	Total6	0
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	23	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	20.8
Deed Book	5075	Total SQFT	906048	Deed Page	142
Deed Date	20221031	Proposed Property Use	Vacant, Industrial Park	Area of Parcel to be Developed (SQFT)	142500
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	23	Number of Employees Total	30
Number of Employees in Max Shift	1	Distance to City Water	300	Distance to City Sewer	300
Type of Building to be Built	Steel Frame w/ Metal Exterior, Warehouse Style	Estimated Construction Value	450000.00	Refuse Removal	Private
Is there an existing Conservation Easement?	No	Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00
TotalImpactFeeTHTOD	0.00	TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00
TotalImpactFeeMHTOD	0.00	TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00
TotalImpactFeeAR55TOD	0.00	TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00
TotalImpactFeeRIRCTOD	0.00	TotalImpactFeeOCSTOD	0.00	TotalImpactFeeITWCTOD	0.00
TotalImpactFeeNHALTOD	0.00	TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOTOD	0.00
Sub Total Non-Residential	0.00	Total of Impact Fees to be Assessed	0.00		

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Steve_Haight_8/6/2024.jpg	08/06/2024 19:11	Haight, Steve		Uploaded via CSS
2024.08.29_PlanningTechnicalReviewCommittee.Agenda.pdf	08/08/2024 15:52	Blonigen, Rachel		TRC Agenda

PLAN SNAPSHOT REPORT (SITE-2024-0010)

2024.09.24_PlanningBoard.Agenda.pdf	09/10/2024 12:53	Blonigen, Rachel	PB Agenda
2024.08.29_PlanningTechnicalReviewCommittee.CrosbyRoad_SITE-2024-0010.pdf	09/10/2024 14:29	Blonigen, Rachel	Final TRC Minutes

Note	Created By	Date and Time Created
1. Per TRC Minutes: Next Steps: Revise plans per comments above, submit for Conservation Commission review, and a second informal TRC.	Rachel Blonigen	09/03/2024 11:39

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00008889	Planning General Application Fee		$200.00	$200.00
		Total for Invoice INV-00008889	$200.00	$200.00
INV-00009238	Planning Public Notice in Newspaper		$120.00	$120.00
		Total for Invoice INV-00009238	$120.00	$120.00
		Grand Total for Plan	$320.00	$320.00

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	08/29/2024	Technical Review Committee Meeting

Comments: Next Steps: Revise plans per comments above, submit for Conservation Commission review, and a second informal TRC.

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	08/19/2024	08/28/2024	09/03/2024	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Approved	08/19/2024	09/16/2024	09/03/2024

Comments: • The traffic memo had a helpful overview of the anticipated use of lot 2 by multiple contractor businesses. Is this still the intent? Adding this description to the overall project memo would help to clarify the intent of development on lot 2.
• Site plan depicts 4 building bays/front walks, while architectural renderings of the front and rear elevations show 3 front entrances and 5 rear man-door/overhead pairs, respectively. Would location and number of entrances change depending on how building is demised? Please clarify or update for consistency.
• Building architecture is very simple, even by industrial standards. Adding design details to entrances along the front elevation could increase overall visual appeal and help visitors (clients, new employees, deliveries, first responders) with wayfinding. Revisions may not be necessary for successful operation by a contractor, but could increase the variety of potential users in the long run.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Approved	08/19/2024	08/28/2024	09/03/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Approved	08/19/2024	09/16/2024	09/03/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	Approved	08/19/2024	08/28/2024	09/03/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Planning / Inspection Services	Maxfield, Jim	Approved	08/19/2024	08/28/2024	09/03/2024

Comments: 1) Is this scheduled to be a multiple occupancy structure?
2) Indicate use(s) of proposed structure
3) Discuss continuation of Crosby Road and proposed building address. Should this application be in the system as Crosby Road.
4) Discuss the ability to maintain accessible route along 5' wide sidewalk along front
5) Sheet 6 & 8 Clarify accessible route from EV charger to front walkway
6)Sheet 8 Ensure adequate separation between utilities. on right side and provide minimum working space as required.
7) Note 22 has M-F working hours, are Saturday/Sunday hours permitted.

PLAN SNAPSHOT REPORT (SITE-2024-0010)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Approved	08/19/2024	08/28/2024	09/03/2024

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/07/2024 10:09	09/03/2024 11:39
Confirm application complete v.1	Generic Action		08/07/2024 10:09
Technical Review Committee Meeting Agenda v.1	Task	08/07/2024 10:09	08/19/2024 13:01
Land Use Plan Technical Review v.1	Receive Submittal	08/19/2024 0:00	09/03/2024 11:39
Technical Review Committee Meeting v.1	Hold Meeting	08/19/2024 13:03	08/19/2024 13:08
Planning Board v.1		09/10/2024 12:49	
Planning Board Agenda v.1	Task	09/10/2024 12:49	09/10/2024 12:50
Invoice for Notices v.1	Task	09/10/2024 12:49	09/10/2024 12:50
Send Notices v.1	Task	09/10/2024 12:49	
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Del Sol Dover, LLC Telephone # 603-749-2800

Address of Applicant: 340 Central Avenue, Suite 202 Dover, NH 03820

E-Mail Address: chad@summitlanddev.com

Name of Property Owner (*if different from applicant*): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: Crosby Road Extension

Assessor's Map # G Lot(s) # 2-1

Zoning District(s) CM Overlay District(s) None

Size of Parcel: 906,049 sq. ft. 20.80 ac. Property Deed: Book 5075 Page: 142

Existing Use of Property: Vacant, Industrial Park

SITE PLAN INFORMATION

Describe Proposed Use: Commercial (Office / Warehouse)

Area of Parcel to be Developed: 142,500± sq. ft.

If Multi-family Residential: Number of Units N/A & Buildings Proposed N/A

If lodging: Number of Units N/A & number of Buildings N/A

Number of Parking Spaces: Existing 0 Proposed 23

Highway Access (check where applicable): X City Street ____ State Highway

Number of Employees Total: 30 In Maximum Shift: 1

Disposition of Parcel:

Building Footprint 9,600 sq. ft.

Total Building Area 9,600 sq. ft.

Paved Area 18,095 sq. ft.

Building Setbacks:

Front Yard 35 ft.

Rear Yard 10 ft.

Side Yard: Right 10 ft. Left 10 ft.

City Water? X Yes ___ No How far is city water from the property? at Crosby Road

City Sewer? X Yes ___ No How far is city sewer from the property? at Crosby Road

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

□ Residential □ Residential (reduced size) □ Industrial | □ Purchase □ Land Preservation

Relief sought (Check All That Apply):

□ Lot Size □ Frontage □ Setback □ 30' Buffer □ Increase by _____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

BUILDING INFORMATION

Type of Building to be Built: Steel Frame with Metal Exterior

Height of Building: 24.8' Finished Floor Elevation: 98.75'

Number of Seats (where applicable) N/A

Estimated value of construction: $450,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: Article IV 153-13 A.12 Licensed Landscape Architect
Article IV 153-13 A.17 Streetscape Renderings
Article IV 153-14 K. (1) (b) Parking Location

Justification for waiver request(s) (*attach additional sheets as needed*):

See attached Waiver Requests

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kevin McEneaney
McEneaney Survey Associates

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-742-0911

Professional License #: NH LLS #661 E-mail address: kevin@surveynh.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Stephen J. Haight, PE
Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH PE #7978 E-mail address: shaight@civilworksne.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) N/A

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) N/A

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) Bruce A. Gilday, CSS, CWS
BAG Land Consultants

Address 43 Rockingham Street Concord, NH 03301 Telephone #: 603-228-5775

Professional License #: NH CSS#012, NH CWS#088 E-mail address: bagilday@comcast.net

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: N/A Telephone #_____

Address Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/5/24

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/5/24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/5/24

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: 8/5/24

Signature of Applicant (*if different from owner*): _____ Date: _____

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
G	2-1	Del Sol Dover, LLC	340 Central Avenue, Suite 202 Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, PE	Civilworks New England	P.O. Box 1166 Dover, NH 03821
Kevin McEneaney	McEneaney Survey Associates	P.O. Box 1166 Dover, NH 03821
Bruce A. Gilday, CSS, CWS	BAG Land Consultants	43 Rockingham Street Concord, NH 03301

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: Del Sol Dover, LLC File Number: _____

PROJECT TITLE: Lot 2 Site Development - Crosby Road Extension

PROPERTY LOCATION: Crosby Road Extension Tax Map: G Lot: 2-1

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the engineered/surveyed plan layout	X	
4. Electronic copy of supplementary materials and application	X	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	X	
6. Waiver requests to the Site Plan Review Regulations, with written justification	X	
7. Conditional Use Permit applications	X	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	Waiver Requested	
9. A colored architectural plan showing all sides of buildings	X	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Proposed Project name and title and Planning File #	X	
Date, north arrow and scale	X	
Names of all abutting property owners	X	
Name and address of owners and/or applicants	X	
Signature & stamp of NH licensed land surveyor and/or engineer	X	
Zoning District boundaries, including any special or overlay districts	X	
Location of Conservation District areas	X	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	X	
Location and widths of existing & proposed easements & right of ways	X	
Location and width of existing and proposed access/egress ways	X	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
Existing and proposed topographic information at two foot intervals	X	
Existing and proposed buildings and structure locations	X	
Minimum building setbacks or build to lines on all lots	X	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	X	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	X	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	X	
Existing and proposed stormwater lines and facilities	X	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	X	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	X	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	X	
Existing natural features and/or significant vegetation on property	X	
Depict existing contours up to 100 ft. beyond project limits	X	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Waiver Requested	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	X	
Location, material and size of existing and proposed pavement area	X	
Location of proposed fire lanes	X	
Specify finished floor elevations of buildings	X	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
Depict all service, storage, loading bays and utility areas	X	
All applicable Dover Common Site Plan notes	X	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	X	
Stormwater Management System Operation and Maintenance Plan	X	
Letter to Serve from Public and Private Utilities	X	
Erosion and Sedimentation Control Plan	X	
Landscape Operation and Maintenance Plan	X	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	X	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	X	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	TBD	

REVIEWED BY: _____ DATE_____ TRC DATE_____

DEL SOL DOVER, LLC
340 Central Avenue, Suite 202
Dover, New Hampshire 03820

August 5, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Re: Crosby Road Extension Site Plan
Tax Map G, Lot 2-1, Crosby Road Extension
Dover, New Hampshire

LETTER OF AUTHORIZATION

As Owner and Applicant for the above referenced project, I hereby authorize Civilworks New England and McEneaney Survey Associates to represent Del Sol Dover, LLC to the State of New Hampshire, the City of Dover Planning Board and any other Dover Boards or Committees relative to the pursuit of permits for the development of the subject parcel.

Respectfully,

Charles P. Kageleiry, Manager
DEL SOL DOVER, LLC

SITE-2024-0010 **LITTLEWORTH ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
G0001-C00001	CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00002	207 CROSBY RD	AI SOLUTIONS INC		1735 FIFTH AVENUE	MCKEESPORT	PA	15132
G0001-C00003	211 CROSBY RD	COLBATH WILLIAM C TRUSTEE	COLBATH FAMILY REVOCABLE TRUST 2010	211 CROSBY RD	DOVER	NH	03820
G0001-E00000	5 FARADAY DR	VIRTUOUS REALTY LLC	C/O TURBOCAM INC	607 CALEF HIGHWAY #200	BARRINGTON	NH	03825-7237
G0001-L00000	15 FARADAY DR	CHAUVIN ARNOUX INC		15 FARADAY DR	DOVER	NH	03820
G0002-000000	LITTLEWORTH RD	WESTFIELD LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
G0005-000000	LITTLEWORTH RD	BOSTON & MAINE RR	IRON HORSE PARK	500 WATER STREET J-910	JACKSONVILLE	FL	32202
G0031-001000	50 52 CROSBY RD	MCGUIRE GROUP LLC		PO BOX 988	DOVER	NH	03821
H0036-B00001	221 KNOX MARSH RD	NSA OPTIVEST ACQUISITION HOLDINGS LLC		24901 DANA PT HARBOR DR #200	DANA POINT	CA	92629
H0037-A00000	239 KNOX MARSH RD	239 KNOX MARSH REALTY LLC		PO BOX 720	MIDDLETON	MA	01949
H0038-000000	289 KNOX MARSH RD	CRAGIN PATRICK J TRUSTEE	CRAGIN PATRICK J LIVING REV TRUST	PO BOX 250	DOVER	NH	03820
G0002-001000	LITTLEWORTH RD	DEL SOL DOVER LLC		340 CENTRAL AVE STE 202	DOVER	NH	03820
		CIVILWORKS NEW ENGLAND	STEVE HAIGHT	P.O. BOX 1166	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES	KEVIN MCENEANEY	P.O. BOX 1166	DOVER	NH	03820

PROJECT NARRATIVE

for

DEL SOL DOVER, LLC

Site Plan Application

Lot 2 Development

Tax Map G, Lot 2-1

PROJECT OVERVIEW & SITE CHARACTERISTICS

The project parcel is shown on Tax Map G, as Lot 2-1, is located within the CM District and consists of 20.80± acres, currently undeveloped. This project proposes a minor (3 lot) subdivision, and the development of Lot 2.

These lots will be accessed from a proposed 75' wide right-of-way being shown as an extension of Crosby Road which is currently 75' wide. The intent is that, when completed, the 75' wide extension will be accepted by the City of Dover as a public right-of-way. The proposed road extension design will include associated drainage improvements and public utilities. The proposed lots, when developed, will be served by proposed utilities extending from the existing Crosby Road ROW, including municipal water and sewer connections, underground electric service, and natural gas service. There will be wetland buffer impacts associated with the ROW extension and development of Lot 2. Please see Conditional Use Permit application and narrative.

The construction of the road and lot 2 will be in conjunction. The construction consists of an 807 foot, 24-foot-wide paved road (Crosby Road extension) and the full build out of one (Tax Map G Lot 2-1, Lot 2) of the three (3) commercial lots. The commercial development consists of the construction of a 9,600-sf building, site access from the newly constructed Crosby Road extension, associated parking, gravel lay down area, underground utilities, and grading and drainage improvements. Total disturbance from the roadway and site development will be 142,500 sf.

WETLAND SETBACK IMPACT TYPE

The project will require a Conditional Use Permit from the City of Dover. Approximately 786.5 s.f. of wetland buffer will be impacted by construction Lot 2 development, and its associated drainage and grading. The project does not impact bogs, marshes, sand dunes, tidal wetlands, cedar swamps, undisturbed tidal buffer zone, or involve any work within 50 feet of a salt marsh. The project is not located within 100 feet of prime wetlands.

DRAINAGE

The parcel is located at the end of Crosby Road within an established industrial park. The proposed subdivision of the 20.80-acre lot abuts other commercial properties to the west, an active railroad track to the south and Knox Marsh Brook to the east. The site is currently undeveloped. The 20.80-acre watershed of the parcel includes the project site as well as a portion of Crosby Road. On site soils are a mix of Scantic, Deerfield, and Deerfield Variant soils. The Scantic series soils are HSG D with Deerfield and Deerfield Variant series soils being classified as HSG B.

To effectively analyze the pre-development subject parcel and proposed roadway, a 12.19 ac area was analyzed. The proposed drainage system incorporates grassed and stone lined swales for stormwater conveyance, sediment forebays for pre-treatment, and three (3) bioretention basins with internal storage reservoirs (ISR's) for stormwater treatment. A large portion of stormwater runoff from the proposed roadway is designed to drain into the stormwater drainage structures located on Lot 2-1 while the last 50+/- ft will be treated within the proposed right-of-way and proposed Lot 2-1A. The proposed stormwater system captures, stores, and treats the stormwater runoff from the site and roadway, then redirects it to the existing discharge points.

The post development watershed is modeled utilizing the same points of analysis as the predevelopment watershed, allowing direct comparison of the peak runoff between the pre- and post- developed conditions (see drainage report). Bioretention Basins with ISR's were utilized for stormwater treatment as the site is located within a "Class A – All Features" watershed as identified on the NHDES OneStop Data Mapper. This analysis indicates that the proposed stormwater measures, and stormwater management plan will treat and mitigate stormwarer runoff in general accordance with ENV-Wq 1500 of the New Hampshire Code of Administrative Rules and the City of Dover's Subdivision and Site Review Regulations.

UTILITIES

The proposed project will connect to City of Dover water and sewer as well as Unitil for natural gas, and Eversource for electricity. Water, sewer, electric lines, and natural gas lines are currently located within Crosby Road. Building connections will be made per the City's Community Services Utility Division and Fire Department requirements and standards.

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2024-0010

Application Type:	Site Plan
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Date:	August 29, 2024

INTENT: Proposal is to construct one (1) 9,600 square foot warehouse building with associated parking and infrastructure and an 807' paved extension of Crosby Road. (This project proposes a related minor (3-lot) subdivision which would appear before the Planning Board).

UNITS/LOTS PROPOSED: Two (2) new lots and one (1) existing lot as part of a related minor subdivision.

AGENDA ITEM #: 1

ACREAGE: 20.80± acres before subdivision, proposed acreage following subdivision:

- Assessor's Map G, Lot 2-1B (Lot 1)= 362,325 s.f. (8.32 acres)
- Assessor's Map G, Lot 2-1 (Lot 2)= 267,845 s.f. (6.15 acres)
- Assessor's Map G, Lot 2-1A (Lot 3)= 219,168 s.f. (5.03 acres)

ZONING DISTRICT: CM

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Commercial, Warehouse

SURROUNDING LAND USE: Commercial, Industrial Park

ZBA ACTION: None.

PERMITS REQUIRED:
City of Dover CUP, NHDES Alteration of Terrain

WAIVERS REQUESTED:
§153-13A(12), Landscape Plan prepared by LLA
§153-13A(17), Streetscape Renderings
§153-14K(1)(b), Parking Location

ATTENDANCE:
Erin Bassegio, Planning
Paul Crouser, Zoning
Jim Maxfield, Inspection Services
Marn Speidel, Police Department
Ken Mavrogeorge, Engineering
Craig Chabot, Fire Department
Reid Bickley, Business Development

Others:
Steve Haight, Civilworks NE
Joe Griffin, Civilworks NE
Chad Kageleiry, Owner/Applicant
Nick Mourgenos, Mourgenous Lawn Care

Approval of minutes from August 8, 2024:
R. Bickley moved to approve the August 8, 2024 minutes. Seconded by K. Mavrogeorge. Vote: U/A.

PLAN REVIEW:
Planning:

- Reminder: Impact fees, Water and sewer investment fees
- Include letters to serve when received.
- Include proposed use of structure in the narrative.
- Parking lot lighting in front is too bright and lighting for rear parking appears to be inadequate.
- Clarify via floorplan industrial/office space to verify parking calc. Also, 9600 / 9800 sf. discrepancy
- Perimeter landscaping is required for rear parking lot
- Revise plans to include:
    - Planning file number: SITE-2024-0010
    - Ensure renderings and plans match accurately
    - Recommend more architectural features to dress up building
    - Add note to plan: "Landscaping bond or other form of security acceptable to the city for a period of 3 years after certificate of occupancy is issued to ensure landscaping is maintained or replaced if needed"
    - Clarify note 22 about Saturdays for construction hours
    - How long will lay down area be used? Any screening or security?
    - Add screening on SE side behind laydown area
    - Add security lighting to 4th wall.
    - Add wetland buffer placards along 50' wetland buffer
    - Solar readiness required

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2024-0010

Application Type:	Site Plan
Applicant(s):	Del Sol Dover, LLC
Owner(s):	Del Sol Dover, LLC
Location:	Crosby Road (Assessor's Map G, Lot 2-1)
Date:	August 29, 2024

Engineering:

General Comment:

- Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf
- Plans for the 807' Crosby Road extension were not provided for review until late Wednesday. Review comments may result in changes to roadway layout. Review comments for roadway will be provided at subsequent TRC.
- Drainage analysis not reviewed in totality due to potential impacts of comments.
- Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.

Sheet 5:

- Demolition plan is inconsistent with existing conditions plan as it shows proposed improvements not yet constructed.

Sheet 6:

- Reconstruct Crosby Road from the intersection with Faraday Drive. Reconfigure private drive to Lot G/1-E to be perpendicular to Crosby Road to define the primary road.
- Show proposed extension of Crosby Road as proposed as part of the site plan set.
- Confirm if the proposed industrial use will need to be coordinated with the City's Industrial Pretreatment Coordinator.
- Comment on the intended use for the proposed gravel laydown area.
-

Sheet 7:

- Regrade Crosby Road from the intersection of Faraday Drive to slope towards Bioretention Pond 1.
- Confirm elevation 93.75' near start of stone lined conveyance swale.
- Design engineer shall certify stormwater management system has been constructed in accordance with the approved plans (Dover Notes #41 on sheet 4); please note that this applies to the grading.
- The City has hired an engineering consultant to evaluate the existing stormwater system within the Crosby Road Industrial Park, including roadside swales and culverts along Crosby Road. Ultimately the design consultant will make recommendations for stormwater improvements. It is imperative that this project not negatively impact the existing stormwater system.

Sheet 8:

- Show proposed water main and sewer main in Crosby Road as proposed linework.
- City is concerned with the size of the proposed water main and sewer main, and requests the developer to provide anticipated future build-out/demand.
- Water and sewer connections not consistent with the will serve request. Note that one meter and bill will be provided per one tap, and one sewer service can be provided per one water service.
- City recommends performing a test pit in Crosby Road at the intersection with Faraday Drive to locate existing water main; water main may be on other side of SMH 2875 as currently shown.
- A stainless-steel tapping sleeve shall be used to connect the proposed watermain in Crosby Road to the existing water main.
- Use a stainless-steel taping saddle and curb stop to connect the 2" service to the water main; a gate is not required.
- Confirm is a fire service is required.
- Add a new SMH at the end of the existing stub off of SMH 2875; an existing property is currently tied into the existing stub.
- Wye the 6" sewer service into the sewer main, and do not connect into PSMH2.

- Recommend providing additional separation from the sewer service to the proposed transformer.
- Provide invert elevations of the sewer service.
- Note material type of utilities.

Sheet 9:

- Provide lighting for the parking area behind the building.

Sheet 17:

- Provide test pit data prior to construction to determine if a permeability liner is required.
- BIO 3 is not shown on the plans.

Sheet 18:

- BIO 3 is not shown on the plans.

Sheet 19:

- Remove details not necessary to construct the project.
- All valves shall open left (counterclockwise)

Police:

- Sheet 9: consider better security lighting for the rear lot and gravel lay down area.
- Sheet 8: minor note, proposed gas stub shows to be coming off the water line.

Inspection Services:

- Is this scheduled to be a multiple occupancy structure?
- Indicate use(s) of proposed structure
- Discuss continuation of Crosby Road and proposed building address. Should this application be in the system as Crosby Road.
- Discuss the ability to maintain accessible route along 5' wide sidewalk along front
- Sheet 6 & 8 Clarify accessible route from EV charger to front walkway
- Sheet 8 Ensure adequate separation between utilities. on right side and provide minimum working space as required.
- Note 22 has M-F working hours, are Saturday/Sunday hours permitted.

Fire Department:

- No comments.

Business Development:

- The traffic memo had a helpful overview of the anticipated use of lot 2 by multiple contractor businesses. Is this still the intent? Adding this description to the overall project memo would help to clarify the intent of development on lot 2.
- Site plan depicts 4 building bays/front walks, while architectural renderings of the front and rear elevations show 3 front entrances and 5 rear man-door/overhead pairs, respectively. Would location and number of entrances change depending on how building is demised? Please clarify or update for consistency.
- Building architecture is very simple, even by industrial standards. Adding design details to entrances along the front elevation could increase overall visual appeal and help visitors (clients, new employees, deliveries, first responders) with wayfinding. Revisions may not be necessary for successful operation by a contractor, but could increase the variety of potential users in the long run.

Planning Board:

- No comments.

Next Steps: Revise plans per comments above, submit for Conservation Commission review, and a second informal TRC.

Pause TRC at: 11:26 a.m.

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

September 15, 2024

Dover Planning Board
288 Central Avenue
Dover, NH 03820

Attn: Technical Review Committee

Re: Del Sol Dover, LLC
Crosby Road -Lot 2 Site Plan
Assessor's Map G Lot 2-1

Technical Review Committee Minutes –
SITE-2024-0010, dated 8,29, 2024

Dear Planning Board:

In response to Technical Review Committee Minutes – SITE-2024-0010, dated August 8, 2024, we submit the following responses in bold beneath the review comments in italic.

Planning:

1. *Reminder: Impact fees, water and sewer investment fees.*
   The client has been made aware of all impact fees and investment fees.
2. *Include letters to serve when received:*
   Acknowledged
3. *Included proposed use in the narrative.*
   As discussed at TRC. The primary use is for Mourgenos Lawn Care. Ther are currently located on Columbus Ave and will be moving their operations to the Crosby Road site. They intend to occupy about ½ of the building and are intending to rent the remaining building area to similar small businesses.
4. *Parking lot lighting in the front is too bright and lighting for the rear parking appears to be inadequate.*
   As discussed at TRC, the building will be located at the end of Crosby Road extension with no abutters and the lighting will provide the additional exposure necessary for safety. The Rear of the building is for storing equipment and land care materials. The owner remarked that this is sufficient for his needs and if he finds that additional lighting is required for his operations, he will provide additional lighting as needed at that time.
5. *Clarify via floorplan industrial/office space to verify parking calc. also 9600/9800 discrepancy.*
   The overall gross floor area of the building is 9,600 sf and the note have been clarified on the site plan and parking calculation. A proposed floor plan has been included in the plan set. There will be 640 sf of office area total and 8,960 sf of industrial floor space. For a total of 15 parking spaced required and provided.
6. *Perimeter landscaping is required for rear parking lot.*
   Additional plantings have been added.
7. *Revise plans to include.*
   a. *Planning File number: SITE-2024-0010.* **The plans have been updated accordingly.**
   b. *Ensure renderings and plans match accurately:* **The plans have been updated**

accordingly.

c. *Recommend more architectural features to dress up building:* **As discussed at TRC, this building as proposed is in keeping with the buildings that currently existing on Crosby Road.**

d. *Add not " Landscape bond or other form of security acceptable to the city for a period of 3 years after certificate of occupancy is issued to ensure landscaping is maintained or replaced if necessary.* **This note has been added to cover sheet**

e. *Clarify note 22 about Saturdays for construction hours.* **The note has been updated to include Saturday and Sunday construction hours from 7 am to 4 pm.**

f. *How long will the lay down area be used? Any screening or security?* **The laydown area is for use by the lawn care business and will include stockpiles of mulch, loam and other materials. These materials will be contained within jersey barriers. As discussed at TRC Security is not necessary.**

g. *Add screening along SE side behind laydown area:* **Additional screening has been added.**

h. *Add security lighting to 4th wall:* ***Additional lighting has been added.***

i. *Add wetland buffer placards along the 50' wetland buffer:* **As discussed at TRC, placards will be placed that the wetland buffer along the proposed areas of disturbance and have been included on the site plan.**

j. *Solar readiness required.* **As discussed at TRC the owner will be providing a solar ready structure.**

Engineering:

1. *General Comment:*
   - **a.** *Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a preconstruction meeting with City Staff.* **Acknowledged.**
   - **b.** *Plans for 807' of Crosby Road were not provided for review until late Wednesday.* **As discussed at TRC the full plan set and application for the Crosby Road extension had been provided to the City at the same time as the site review package for proposed Lot 2. That plan set and supporting documentation shows the work proposed for Crosby Road Extension.**
   - **c.** *Drainage analysis not reviewed in totality due to potential impacts of comments.* **As discussed at TRC the full plan set and application for the Crosby Road extension had been provided to the City at the same time as the site review package for proposed Lot 2. That plan set and supporting documentation shows the work proposed for Crosby Road Extension.**
   - **d.** *Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify that snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.* **Sufficient snow storage meeting the recommendation is provided and the requisite calculation has been provided on the site plan.**
2. *Sheet 5:*
   - **a.** *Demolition plan is inconsistent with existing conditions plan as it shows proposed improvements not yet constructed.* **As discussed at TRC, the offsite improvements (Crosby Road extension) is work that is shown on that plan set. The extension of Crosby Road is the prerequisite work necessary for the creation of lot 2 the subject of this TRC review. The plans are consistent with the extension being constructed prior to lot 2 construction.**
3. *Sheet 6: Reconstruct Crosby Road from the intersection of Faraday Drive.* **This work will be shown on the Crosby Road Extension plan.**

a. *Shown proposed extension of Crosby Road as proposed as part of this plan set.* **This work will be shown on the Crosby Road Extension plan.**
b. *Confirm if the proposed industrial use will need to be coordinated with the City's Industrial Pretreatment Coordinator.* **Acknowledged.**
c. *Comment on the intended use of the gravel laydown area.* **The laydown area is for use by the lawn care business and will include stockpiles of mulch, loam and other materials. These materials will be contained within jersey barriers.**

4. *Sheet 7:*
   a. *Regrade Crosby Road from the intersection of Faraday Drive to slope towards Bio pond 1.* **As reviewed with the City Engineer subsequent to the TRC meeting, the existing grades would not allow grading towards bio pond 1. As discussed the section of Crosby Road to be reconstructed will be regraded to directly that section of the roadway to existing drainage structures in Crosby Road.**
   b. *Confirm elevation 93.75 near start of stone lined conveyance swale.* **The grade shown is actually defining the bottom of Bio pond 1.**
   c. *Design Engineer shall certify stormwater management system has been constructed in accordance with the approved plans (Dover note #41 on sheet 4) please note that this applies to the grading.* **Acknowledged.**
   d. *The City is hiring an engineering consultant to evaluate the existing stormwater system within Crosby Road Industrial Park, including roadside swales and culverts along Crosby Road. Ultimately the design consultant will make recommendations for stormwater improvements. It is imperative that the project not negatively impact the existing stormwater system.* **Acknowledged.**
5. *Sheet 8:*
   a. *Shown proposed watermain and sewer main in Crosby Road as proposed linework.* **This work will be shown on the Crosby Road Extension plan.**
   b. *City is concerned with the size of the proposed water main and sewer main and requests that the developer provide future build-out/demand.* ***As discussed at TRC the applicant will provide a "what if" calculation to validate the 8" sewer and 8" water main extensions. An 8" pvc sewer line at a slope of .004 ft/ft has a capacity of about 150 GPM (flowing ½ full) or about 216,000 gallons per day. Future build out of the remaining 2 lots could accommodate another 60,000 sf of light manufacturing buildings.***
   c. *Water and sewer connection not consistent with the will serve request. Note that one meter and bill will be provided per one water tap.* **Acknowledged.**
   d. *City recommends performing a test pit in Crosby Road at the intersection of Faraday Drive to locate the existing water main. The water main may be on the other side of SMH 2875.* **The applicant will work with the City to determine the exact location of the water main when the work is underway to extend Crosby Road.**
   e. *A stainless steel tapping sleeve shall be used to connect the proposed water main in Crosby Road to the existing water main.* **So noted and will be updated on the Crosby Road extension plan.**
   f. *Add a new SMH at the end of the existing stub off SMH 2875, an existing property is currently tied in the stub.* **So noted and will be updated on the Crosby Road extension plan.**
   g. *Wye the 6" sewer main into the sewer main. Do not connect to PSMH2.* **So noted and has been updated on the utility plan in the Site Plan package.**
   h. *Recommend providing additional separation from the sewer service to the proposed transformer.* **The utility plan has been updated accordingly.**

   i. *Provide invert elevations of the sewer service and note material type.* **The utility plan has been updated accordingly.**

6) Sheet 9
   a. *Provide lighting for the parking area behind the building*. **As discussed at TRC the parking area behind the building is for employee parking during the day and the wall packs on the rear of the building are sufficient.**
7) Sheet 17 *Provide test pit data prior to construction to determine if a permeability liner is required, Bio 3 is not shown on the plans.* **This work is shown on the Crosby Road Extension plan.**
8) Sheet 19 Remove details not necessary to construct the project. **Standard details are provided to address all construction as has been requested by Staff on past projects. This project will also be submitted to AoT which requires all standard details be provided. No plan changes are necessary.**
   a. *All valves shall open left.* **This note has been added to sheet 4 note 30.**

Police:

1. *Consider better security lighting for the rear lot and gravel laydown area.* **See responses above.**
2. *Proposed gas stub shows to be coming off the waterline.* **The utility plan has been updated accordingly.**

Inspection Services:

1. *Is this scheduled to be a multiple occupancy structure?* **As discussed at TRC the structure is intended to be for multiple tenants.**
2. *Indicate use of proposed Structure.* **Primary use will be for Mourgenos Lawn Care with several other similar small businesses.**
3. *Discuss continuation of Crosby Road and the proposed building address.* **As discussed at TRC this building will have a Crosby Road address with multiple street addresses for the multiple tenant spaces.**
4. *Discuss the ability to maintain accessible route along 5' sidewalk along front.* **Accessible route will be maintained to provide access to the accessible space and future EV charger location**
5. *Ensure adequate separation between utilities, on the right side and provide minimum working space is required.* **Acknowledged.**
6. *Note 22 has M-F working hours, are S/S working hours permitted?* **As discussed at TRC, Saturday and Sunday working hours are anticipated and note 22 has been update accordingly.**

Business Development:

1. **As discussed at TRC the structure use with multiple tenants was clarified and an updated floorplan has been included in the revised plan set.**

CIVILWORKS NEW ENGLAND
Sincerely,



Stephen J Haight, PE

CONDITIONAL USE NARRATIVE
§170-27.1
WETLAND PROTECTION DISTRICT
for
DEL SOL DOVER, LLC
Lot 2 Development
Tax Map G, Lot 2-1

F. Conditional use approval.

(1) Conditional use approval may be granted by the PLANNING BOARD (RSA 674:21II) after proper public notice and public hearing, for construction within the Wetland Protection District or buffer. Said construction may include but is not limited to a road or other accessway, utility right-of-way, communication lines, power lines and pipelines, STRUCTUREs, and parking LOTs provided that the proposed construction complies with the following standards:

(a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area. **The proposed driveways, buildings, side slopes, and bio-retention basin location were chosen to avoid wetland impacts and to minimize wetland buffer impacts. The areas of impervious impact to the wetland buffer were minimized by utilizing the site characteristics including existing slope information to minimize additional side slope impacts.**

(b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative. **There are 786.5 sf of wetland buffer impacts associated with the grading and drainage and development of Lot 2 for the project. The design incorporates unique site characteristics including existing slope, and soil type to minimize wetland buffer impacts.**

(c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland, or which has less detrimental impact on a wetland. Design, construction, and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade. **There are 786.5 sf of wetland buffer impacts for the development of Lot 2, with associated grading, drainage, and utilities. All impacts have been minimized to the greatest extent practicable.**

(d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review. **Mitigation is not required.**

(e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below. **A NHDES wetland permit application is not applicable.**

CHRISTOPHER G. PARKER, AICP
Deputy City Manager
c.parker@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6024
Fax: (603) 516-6049
www.dover.nh.gov

City of Dover, New Hampshire

OFFICE OF THE CITY MANAGER

April 4, 2024

Chad Kageleiry
Westfield, LLC
340 Central Ave., # 202
Dover, NH 03820

Re: Transfer of Development Rights

Dear Chad,

This letter is a follow up to our earlier discussion regarding your ongoing development of Tax Assessor's Map G lot 2, located off Littleworth Road, Crosby Road and Industrial Park Road (via an easement).

We discussed that the City Council approved an amendment to the Development Agreement the City and your entities entered into in 2022. This amendment, approved February 14th, allows the City to partner with you in applying relief from the wetlands setbacks on Map G lot 2, and any lots created via subdivision from it (hereafter collectively known as the Westfield Property).

As noted in the Development Agreement amendment, the City will provide either fee simple conveyance or agree to an easement upon Map G lots 32C or 35D. These lots total 55 acres of land in the same watershed as the Westfield Property. The City's intention is to remove the development rights from the parcels so that those rights may be transferred to your Westfield Property. In doing so, the intent is that the local 50 foot wetlands setbacks will be nullified, and you may more intensely develop the upland upon the Westfield Property. At the same time, the City will remove the right to develop its parcels and create permanent protections for the wetlands and uplands present on those parcels.

As you finalize site plans for the commercial/industrial uses upon the Westfield Property, please set up an appointment with myself and Planning staff and we can review the steps for final approval of the relief and document the deed restrictions and relief provided.

If you have any questions, please don't hesitate to contact me with any questions.

Sincerely,

Christopher G. Parker, AICP
Deputy City Manager

EC D.Benton, AICP Director of Planning and Community Development

From: Mark Beaudry
Sent: Tuesday, August 6, 2024 7:07 AM
To: Mavrogeorge, Kenneth <K.Mavrogeorge@dover.nh.gov>
Cc: Steve Haight <shaight@civilworksne.com>; Joseph Griffin <jgriffin@civilworksne.com>
Subject: CNE#24084 - Del Sol Dover, LLC - Crosby Road Extension, Dover, NH

Hello Ken: As required per the City's site review permit process, we are reaching out as part of the process to provide "will serve" letters stating that utilities are available for our proposed project. The project is located at the end of Crosby Road on one of three lots proposed at the extension of the road at Tax Map G,
Lot 2-1.

It is proposed to contain one 9,600 SF building that will house four specialty contractor businesses with 30 employees (estimated total). Attached is a draft utility plan to depict the location, site layout of the building project and anticipated utility services. Each of the four businesses are anticipated to have its own water supply and sewer connection off the single water line and sewer pipe to and from the proposed extensions in the new road.

The project total design flow is estimated to be 530 GPD which is calculated as follows:

- "Unspecified" Office = 4,600 SF x 5 GPD / 100 SF = 230 GPD
- Warehouse = 10 GPD/ Person x 30 Employees = 300 GPD

This design flow rate is based on NHDES Env-Wq 1008.03 Table 1008-1 *Unit Design Flow Figures*.

Please provide us with correspondence that states as required, that the City can provide water and wastewater service to this building.

If you have any questions or require more information, please do not hesitate to get back to us.

Thank you for your assistance on these projects.

Mark

_____

Mark Beaudry, PE
Senior Associate/Sr. Project Manager
Civilworks New England
C: (413) 325-3384
O: (603) 749-0443 x113

From: Mark Beaudry
Sent: Tuesday, August 6, 2024 6:44 AM
To: Emmons, Trevor S <trevor.emmons@eversource.com>
Subject: CNE#24084 - Del Sol Dover, LLC - Crosby Road Extension, Dover, NH

Hello Trevor:

Per the City of Dover, as part of the site review permit process we are required to provide a "will serve" letter stating that electric utilities are available for our proposed project. The project is located at the end of Crosby Road on one of three lots proposed at the extension of the road in Dover at Tax Map G, Lot 2-1.

It is proposed to contain one 9,600 SF building that will house four specialty contractor businesses. Attached is a draft utility plan to depict the location, site layout of the building project and draft utility services. We have estimated the power needed for office and warehouse space to be +/- 400 Amp (total.

The project proponent will be in contact with you at a later date to set up a work order and provide any additional information.

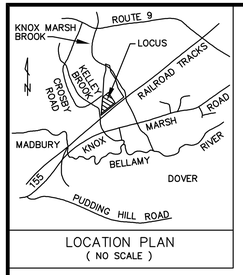
If you have any questions or require more information do not hesitate to get back to me directly.

Thank you again for your assistance on these projects.

Mark Beaudry

_____

Mark Beaudry, PE
Senior Associate/Sr. Project Manager
Civilworks New England
C: (413) 325-3384
O: (603) 749-0443 x113



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

WATER – DOVER FARAD1–020–MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER MAIN

SEWER 8"ø

CROSBY ROAD
{75' WIDE R.O.W.}

UTILITY POLE
364A/1Y UGU
DROP

EXISTING
EDGE OF
PAVEMENT

PROPOSED
OVERHEAD
UTILITIES

UTILITY
POLE
364A/1
1140–22

PSMH —
RIM=
INV.IN=
INV.OUT=1
8" SDR35
L=
S=

PROPOSED
UTILITY
POLE

PSMH 2
RIM= 98.2
INV.IN=90.50
INV.OUT= 90.40
8" SDR35
L=300'
S=.004

50'
WETLAND
BUFFER

WATER LINE
CAP

PROPOSED
GAS LINE
CAP

PROPOSED
UNDERGROUND
UTILITES

PROPOSED TRANSFORMER

PSMH 1
RIM=96.9
INV.IN=89.2
INV.OUT= 89.1
8" SDR35
L=300'
S=.004

PROPOSED
6" WATERLINE

PROPOSED
6" WATERLINE

GAS 4"HPPP

8" WATERLINE

WATER
–
DOVER
FARAD1–020–MI

HYDRANT
#319

LIMITS OF FORMER HANSON
ROAD RIGHT OF WAY

C / 2–1

NEW PARCEL AREA
273,596 S.F.
6.28 Ac.

NH STATE PLANE
NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PROGRESS PRINT
8–5–2024

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & MASTER PLAN ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D

DATE: XXX
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

UTILITY PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

X

From: Mark Beaudry
Sent: Tuesday, August 6, 2024 6:52 AM
To: Dave MacLean <davidemaclean@gmail.com>
Cc: macleand@unitil.com; oliver@unitil.com
Subject: CNE#24084 - Del Sol Dover, LLC - Crosby Road Extension, Dover, NH

Hello David: Per the City of Dover, as part of the site review permit process we are required to provide a "will serve" letter stating that utilities are available for our proposed project. The project is located at the end of Crosby Road on one of three lots proposed at the extension of the road in Dover at Tax Map G, Lot 2-1.

It is proposed to contain one 9,600 SF building that will house four specialty contractor businesses. Attached is a draft utility plan to depict the location, site layout of the building project and anticipated utility services. Each of the four businesses are anticipated to have its own natural gas meter and supply off the single natural gas service line to the building. The natural gas needed for the project should be consistent with typical business uses with an office and warehouse component.

The project proponent will be in contact with you at a later date to set up a work order and provide any additional information.

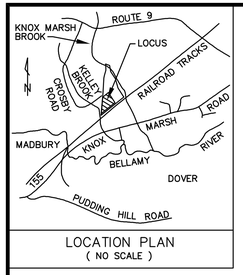
If you have any questions or require more information do not hesitate to get back to us.

Thank you again for your assistance on these projects.

Mark

_____

Mark Beaudry, PE
Senior Associate/Sr. Project Manager
Civilworks New England
C: (413) 325-3384
O: (603) 749-0443 x113



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

WATER – DOVER FARAD1–020–MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER MAIN

SEWER 8"ø

CROSBY ROAD
{75' WIDE R.O.W.}

UTILITY POLE
364A/1Y UGU
DROP

EXISTING
EDGE OF
PAVEMENT

PROPOSED
OVERHEAD
UTILITIES

UTILITY
POLE
364A/1
1140–22

PSMH —
RIM=
INV.IN=
INV.OUT=1
8" SDR35
L=
S=

PROPOSED
UTILITY
POLE

PSMH 2
RIM= 98.2
INV.IN=90.50
INV.OUT= 90.40
8" SDR35
L=300'
S=.004

50'
WETLAND
BUFFER

WATER LINE
CAP

PROPOSED
GAS LINE
CAP

PROPOSED
UNDERGROUND
UTILITES

PROPOSED TRANSFORMER

PSMH 1
RIM=96.9
INV.IN=89.2
INV.OUT= 89.1
8" SDR35
L=300'
S=.004

PROPOSED
6" WATERLINE

PROPOSED
6" WATERLINE

GAS 4"HPPP

8" WATERLINE

WATER
–
DOVER
FARAD1–020–MI

HYDRANT
#319

LIMITS OF FORMER HANSON
ROAD RIGHT OF WAY

C / 2–1

NEW PARCEL AREA
273,596 S.F.
6.28 Ac.

NH STATE PLANE
NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PROGRESS PRINT
8–5–2024

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & MASTER PLAN ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D

DATE: XXX
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

UTILITY PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

X

WAIVER REQUEST

FOR

SITE REVIEW APPLICATION

LOT 2

Tax Map G, Lot 2-1

Crosby Road Extension

ARTICLE IV

Site Design and Development Criteria

§ 153-14. Site development design criteria.

K. Location of parking lots.

(1) Buildings should be sited closer to the street and parking areas should be located on the side or rear of lots to reduce the visual dominance of parking areas, improve pedestrian safety in parking lots, and increase the visibility of businesses to drivers. The following standards are required:

(a) For parcels in the C and CM Districts with frontage and driveway access on an arterial or collector road, a minimum percentage of the parking spaces required by these regulations or of the number of parking spaces proposed (whichever is greater) shall be located to the side or rear of the building (i.e., no closer to the front lot line than the building) according to the following:

Number of Spaces	Percent of Spaces to Side or Rear
25 to 50	50%
51 to 75	60%
More than 75	70%

(b) In recognition of the unique circumstances of some parcels of land, the Planning Board shall be permitted to vary the standards set forth in Subsection K(1)(a) above. The Planning Board may approve projects that do not conform strictly to the parking lot location standards above, provided that a finding is made by the Planning Board that the unique circumstances of the parcel make compliance unreasonable.

We respectfully request relief from the requirement of locating parking areas to the rear or side of the building.

The project site is located on a short cul-de-sac in an existing industrial park. The proposed building and site layout will be consistent with light manufacturing or commercial use. Due to the unique shape of the parcel and the project's proximity to a wetland area at the rear of the site, it would be preferrable to locate the parking areas in front of the building. This would keep the bulk of the impervious areas closer to the road to minimize the distance of stormwater drainage and construction impacts.

WAIVER REQUEST

FOR

SITE REVIEW APPLICATION

LOT 2

Tax Map G, Lot 2-1

Crosby Road Extension

ARTICLE IV

Site Design and Development Criteria

§ 153-13. Site development plan.

A. (17) A colored rendering of the streetscape that will be created along the existing public right-of-way. This sheet shall include a perspective of both sides of any existing roadway, any street or sidewalk improvements, proposed plantings and structures, as prepared by a registered engineer or architect, who shall sign the plan and place his/her seal upon it, as required.

We respectfully request relief from the requirement of providing streetscape plans for this project.

The project site is located on a short cul-de-sac in an industrial park. The proposed building and site layout will be consistent with light manufacturing or commercial use, featuring a typical building design suitable for this use, in conformance with Dover regulations. Being located on a cul-de-sac, there will be very little vehicle or pedestrian traffic to make a streetscape plan beneficial.

Alternatively, a building plan will be provided which will depict the overall exterior appearance of the structure.

WAIVER REQUEST

FOR

SITE REVIEW APPLICATION

LOT 2

Tax Map G, Lot 2-1

Crosby Road Extension/ Lot 2 Development

ARTICLE IV

Site Design and Development Criteria

§ 153-13. Site development plan.

A. (12) A landscape plan that delineates the arrangement, species and dimensions of all existing and proposed landscaping materials. The landscape plan, in sufficient detail to indicate compliance with these regulations, shall be prepared by a professional landscape architect who is licensed by the State of New Hampshire. The licensed landscape architect shall sign the plan. The landscape plan shall be certified by the licensed landscape architect and include his/her State of New Hampshire license number.

We respectfully request relief from the requirement of a landscape plan certified by a New Hampshire Licensed Landscape Architect.

The proposed site design is located on a cul-de-sac in an industrial park that will have very little visibility to the general public. The landscape layout has been designed to the maximum extent for the proposed building and site layout to be consistent with light manufacturing or commercial use in the City of Dover.

Alternatively, the site plan will feature common landscape features suitable for an industrial park setting.

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

TRAFFIC ASSESSMENT MEMORANDUM

August 6, 2024

INTRODUCTION

Civilworks New England has prepared this traffic-assessment memorandum (TAM) in regards to the proposed specialty contractor space development proposed in the City of Dover, NH on proposed Lot 2 of the proposed Crosby Road extension subdivision. Lot 2 is identified as Map G, Lot 2-1 on the subdivision plan.

This TAM includes:

- existing site description
- proposed project description
- road description
- public transit
- sight distances at the proposed driveways
- trip generation
- trip distribution/assignment
- potential traffic impacts

This TAM concludes that:

- relevant sight distances at the Crosby Road /proposed driveway intersection will be adequate
- The proposed project is not anticipated to add significant new traffic to the area

EXISTING SITE DESCRIPTION

The site (Lot 2):

- is located to the southeast of the end of the present Crosby Road
- has an area of about 6.15 acres
- is presently open, vacant land

PROPOSED PROJECT DESCRIPTION

The project will provide:

- one building with a total floor area of about 9,600 square feet (sf) that is anticipated to house multiple contractor businesses primarily involved in providing contract services to meet residential and industrial needs such as plumbing, electrical, heating and cooling, machine and mechanical repair, roofing, industrial supply, locksmith, weed and pest control, cleaning and other similar uses.
- one unsignalized driveway intersecting the south side of the planned extension of Crosby Road that will provide access to the building.

CIVILWORKS NEW ENGLAND
181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

ROAD DESCRIPTION

Crosby Road:

- is under the jurisdiction of the City and the extension is proposed to be as well
- is a dead-end industrial park road
- has a 30 MPH posted speed limit
- is oriented about east-west at the end near the project location
- includes a relatively straight horizontal alignment at the end near the project location
- has minor vertical grades
- has bituminous concrete pavement; which is in overall good condition from Faraday Road west
- has one travel lane per direction, with a pavement width of about 28 ft
- has marked pavement west of Faraday Road
- includes existing utility services

PUBLIC TRANSIT

Collaborative Alliance for Seacoast Transportation (COAST) route 34 services Knox Farm Road (Route 155) to the south of the Crosby Road Industrial Park. There is presently no bus service along Littleworth Road (Route 9) to the industrial park.

SIGHT DISTANCES

Crosby Road currently services traffic from the various businesses existing on Crosby Road and Faraday Drive. The access to the site is approximately 210 feet east from both Faraday Road and the driveway for 211 Crosby Road across from Faraday. The access driveway is approximately 125 feet east of the service entrance to the Turbocam building at 5 Faraday Drive on the opposite side of the road. If the roadside area is kept clear of trees and brush, which is presently the case, sight lines well past Faraday to the west are possible.

The American Association of State Highway and Transportation Officials (AASHTO) has established authoritative policy for appropriate sight distances in terms of stopping sight distance (SSD) for vehicles on the main road reacting to existing traffic, and intersection sight distance (ISD) for left turn movements from a stop. Due to Crosby Road not being a through road, the project location being at the end of Crosby Road, the low traffic volume, and vehicles slowing to access the other businesses before reaching the project driveway, neither SSD or ISD appear to be an issue or even applicable in this case. That said, AASHTO has established the SSD for a 30 mile per hour roadway to be 200 feet.

The 210± foot distance to Faraday Road and the 211 Crosby Road driveway would appear to be suitable for a speed of approximately 31 MPH, which would not be anticipated for a turning vehicle. Service vehicles accessing the 5 Faraday driveway would not be turning east towards the

project site so that sight distance would not appear to be relevant. Therefore, sight distance is adequate, if even applicable in this case.

CALCULATED TRIP GENERATION

The Institute of Transportation Engineers (ITE) compiles and publishes trip-generation information for a variety of land uses in *Trip Generation Manual*.[1] This authoritative guide for calculating site traffic includes vehicle trip information for Specialty Trade Contractors (Land Use Code 180) based on floor area[2]. This Land Use Code also has estimated trips based on the number of employees in these facilities, however the number of employees cannot be identified at this time as the potential contractor businesses that will occupy the building are not yet known. Table 1 shows calculated vehicle trip ends due to the proposed development.

The total vehicle trips generated by the project are:

- Daily (weekday) = 96 total trips (48 into site and 48 out of site)
- AM peak hour (weekday) = 19 total trips (14.6 in and 4.4 out) based on the generator
- PM peak hour (weekday) = 22 total trips (8.4 in and 13.6 out) based on the generator

Table 1: Trip Generation - Specialty Trade Contractor

	Vehicle Trips		
Period / Condition	Total	In	Out
Daily	96	48	48
AM - Peak Hour of Adjacent Street Traffic	17	12.6	4.4
PM - Peak Hour of Adjacent Street Traffic	19	6.1	12.9
AM - Peak Hour of Generator	19	14.6	4.4
PM - Peak Hour of Generator	22	8.4	13.6

* ITE, *Trip Generation Manual,* Specialty Trade Contractor - Land Use Code 180

Building = 9,600 S.F.; Number of Employees Unknown (TBD)
Weekday Trips = No Fitted Curve Equation - Chart => Trip Ends per 1,000 S.F. GFA (50% enter, 50% exit)
AM Trips AST = No Fitted Curve Equation - Chart => Trip Ends per 1,000 S.F. GFA (74% enter, 26% exit)
PM Trips AST = No Fitted Curve Equation - Chart => Trip Ends per 1,000 S.F. GFA (32% enter, 68% exit)
AM Trips Gen. = No Fitted Curve Equation - Chart => Trip Ends per 1,000 S.F. GFA (77% enter, 23% exit)
PM Trips Gen. = No Fitted Curve Equation - Chart => Trip Ends per 1,000 S.F. GFA (38% enter, 62% exit)

[1] ITE, *Trip Generation Manual,* 11th edition (Washington DC, September 2021).

[2] ITE, Trip Generation Manual, Volume 3, General Urban/Suburban and Rural (Land Uses 000-399), pages 204 to 215.

CIVILWORKS NEW ENGLAND
181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

TRIP DISTRIBUTION/ASSIGNMENT

All project-related trips will access the site from Crosby Road which intersects with Route 9 known in this area as Franklin Pierce Highway and Littleworth Road. The calculated vehicle trip generation for the development project is so low that area traffic operations are not sensitive to trip distribution/assignment of project vehicle trips. Vehicle trips to and from the east may predominate largely due to roadway connections to Knox Marsh Road and exit 8 of the Spaulding Turnpike.

POTENTIAL TRAFFIC IMPACTS

The calculations show less than 50 peak-hour primary vehicle trips, due to the proposed project. More specifically, tabulated *peak-hour* trip generation is:

- 17 to 22 vehicle-trips
- These totals are split between vehicles entering and vehicles exiting the site

Therefore, the proposed project is not anticipated to add significant new traffic to Crosby Road or Route 9.

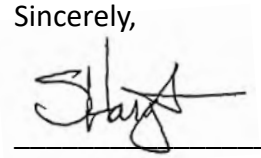
CONCLUSION

In conclusion:

- Sight distances at the Crosby Road/proposed driveway intersection will be adequate
- The proposed project is not anticipated to add significant new traffic to the area

CIVILWORKS NEW ENGLAND

Sincerely,



Stephen J. Haight, PE

Cc: Del Sol Dover, LLC

SITE DEVELOPMENT DESIGN CRITERIA NARRATIVE
§153-14
STORMWATER MANAGEMENT
for
DEL SOL DOVER, LLC
Crosby Road Extension/ Lot 2 Development
Tax Map G, Lot 2-1

A. Stormwater management, erosion control and flood hazards.

(1) Purpose and objective. These regulations establish standards to manage the discharge of runoff to the City of Dover's municipal storm sewer system and water bodies, in a manner compliant with the requirements of state and federal law, including provisions of the federal stormwater management legislation for municipal separate storm sewer systems (MS4), as amended. These provisions and standards are implemented for the purpose of:

(a) Managing stormwater runoff to protect water quality and quantity. **The proposed roadway and commercial development have been designed in accordance with NH DES AoT permitting requirements to include the treatment and mitigation of stormwater runoff from the roadway and site. This is being managed by three (3) Bioretention basins with ISR, and swales and overland flow for conveyance.**

(b) Minimizing the contribution of a pollutant for which a water body is impaired to the maximum extent practicable (MEP). **The proposed development has been designed in accordance with NH DES AoT permitting requirements to include the treatment of stormwater runoff from all impervious areas of the roadway and site to minimize pollutant runoff.**

(c) Causing no discharge of runoff to an adjacent property in excess of runoff discharge in the existing developed or undeveloped condition. **The proposed development does not propose an increase in the peak rate of runoff from the project site.**

(d) Encouraging the use of low-impact development (LID) strategies. **The project proposes the use of bioretention basins with internal storage reservoirs for stormwater treatment.**

(2) Applicability of the stormwater standards.

(a) All projects requiring site plan or major subdivision approval shall be subject to the following set of stormwater standards according to the amount and type of disturbance. Applicability is as follows: **The project does not qualify for the redevelopment standards, as such, the stormwater standards apply.**

[1] The minimum protections and management standards shall apply to all projects. **The design incorporates these standards.**

[2] The stormwater management for new development standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area. **The design incorporates these standards.**

[3] The stormwater management for redevelopment standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area where the existing land use has

been previously developed as commercial, industrial, institutional, governmental, recreational, or multifamily. **The redevelopment standards are not applicable to this project.**

(b) All projects of such magnitude as to require a permit from the National Pollutant Discharge Elimination System (NPDES) Program or the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Program shall also comply with the standards of the Environmental Protection Agency (EPA) and/or NHDES permits and this section, whereas the stricter standards shall apply. **The project will require NH DES AoT permitting, and a NPDES CGP through the EPA. The design of the project has incorporated the associated standards of these agencies.**

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended. **The project complies with the City's design and stormwater requirements.**

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter 170, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. **The proposed project will result in wetland buffer impacts as part of the construction. A Conditional Use Permit application has been submitted as part of the application process.**

[3] Low-impact development (LID) site planning and design strategies shall be used to the MEP in order to reduce the generation of the stormwater runoff Volume for both new and redevelopment projects. An owner/applicant must document why LID strategies are not appropriate if not used to manage stormwater. **LID strategies were implemented to the maximum extent practicable. The site was evaluated for infiltration practices but the site characteristics, including soil types, topography, depth to the SHWT and depth to ledge prevent the use of infiltration practices.**

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on The NHDES website. **The project incorporates stormwater BMP designed in accordance with NH DES AoT permitting requirements. Details provided for construction are aligned with the NH Stormwater Manual and the engineer of design will be required to review material submittals and witness the installation of the practices. NH DES AoT will require a letter from the design engineer indicating the site stormwater BMPs were installed as designed and permitted. A Stormwater Inspection and Maintenance Manual will be provided for the site that will outline BMP maintenance; the owner will be responsible for this in perpetuity.**

[5] All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the regulations of the NHDES, including but not limited to those involving underground storage tanks, aboveground storage tanks,

hazardous waste, and best management practices for groundwater protection (Part Env Wq 401). **The project does not propose the storage of the referenced materials onsite.**

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal. **The project does not propose the storage of deicing materials onsite.**

[7] The use of sodium-chloride-based materials for winter maintenance shall be the minimum necessary for safety. The use of sodium-chloride-based materials is discouraged within the groundwater protection districts. **The roadway is an extension of the existing Crosby Road and is being proposed as a city road. The city currently practices salt minimization plan as part of their winter maintenance practices. This same practice will be utilized on site.**

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible. **The project design incorporated the minimization of impervious areas to the maximum extent possible. All aspects of the design including road width, and turning areas were evaluated.**

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration. **The proposed design includes the treatment of stormwater runoff from all impervious areas of the proposed roadway and site.**

(b) Stormwater management for new development.

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website. **The project utilizes bioretention basins with ISR for treatment of all impervious areas. This system provides 90% removal of TSS and 65% removal of both total nitrogen and phosphorous per the NH Stormwater Manual.**

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center. **The design incorporates NRCC precipitation amounts and the associated storm distribution data. As the project will require a NH DES AoT permit, the precipitation amounts have been increased by 15% accordingly.**

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. **The proposed design mitigates post-development peak rate runoff to the pre-developed conditions.**

[4] Measures shall be taken to control the post-development surface water runoff volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. For sites where infiltration/recharge is limited or not practicable, the owner/applicant must demonstrate that the project will not cause or

contribute to flooding or functional impairments to streets, adjacent properties, and downstream properties. **The site was evaluated for the inclusion of infiltration practices but the site characteristics, including soil types, topography, depth to the SHWT prevent the use of infiltration practices. The project proposes a slight increase in the volume of runoff from the site. The increased volume of runoff will be discharged directly to large wetland complexes associated with Knox Marsh Brook and Kelly Brook. The increase in volume will not cause flooding to adjacent or downstream properties.**

[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14. **The site was not feasible for infiltration practices and as such infiltration rates were not calculated.**

[6] Stormwater conveyance practices shall be sized appropriately to convey the ten-year, twenty-four-hour storm event without overtopping or causing flooding on the property. **Stormwater conveyance practices are designed to ensure they pass the 50-yr, 24-hour storm events without overtopping.**

[7] For large projects adding greater than or equal to 10 acres of impervious cover, or projects located in known areas of flooding concern, or specifically within areas with a 1% chance of being inundated by water in any given year, the owner/applicant shall submit a supplementary report that describes how the project will not increase the future flooding potential and complies with the AoT requirements pertaining to floodplain impacts as described in Section Env-Wq 1503.09, regardless of whether an AoT permit is required. **The project is located outside of the 0.2 percent annual chance floodplain. The project does not propose permanent or temporary disturbance or alteration of terrain within the flood plain.**

[8] The design of the stormwater management systems shall consider upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff. **The project has been designed to accommodate on-site and off-site drainage.**

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria. **Test pit information was utilized in determining the SHWT associated with the bioretention basin design.**

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required. **Stormwater facilities are included with the roadway and will be incorporated into each of the sites as they get developed. Stormwater access easements may be required for this project.**

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment. **N/A**

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces. **The project does not meet redevelopment requirements and this section is Not Applicable (N/A).**

[1] For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as new development projects, with the important distinction that the applicant can meet those requirements either on site or at an approved off-site location (i.e., off-site mitigation). The applicant must satisfactorily demonstrate that impervious area reduction, LID strategies and BMPs have been implemented on site to the MEP. **N/A**

[2] For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, stormwater shall be managed in accordance with one or more of the following techniques, listed in order of preference: **N/A**

[a] Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or

[b] Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area.

[3] The owner/applicant may utilize off-site mitigation to meet the redevelopment requirements when the following standards have been met. **N/A**

[a] The owner/applicant shall demonstrate, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the MEP.

[b] The owner/applicant shall find an approved, off-site location within the same watershed as the project site or within the drainage area of the same receiving water body.

[c] Off-site mitigation shall be equivalent to no less than the total area of pervious cover not treated on site.

[d] The owner/applicant shall submit a full design of the proposed off-site measures for review and approval.

[e] The owner/applicant must also demonstrate that there is no downstream drainage or flooding impact as a result of not providing on-site management.

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity: **The plan set includes temporary and permanent sediment and erosion control practice notes and details in support of meeting the erosion control standards.**

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website. **The sediment and erosion control details provided in the plan set are all designed in accordance with the NH Stormwater Manual.**

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department. **If required, a SWPPP will be provided prior to construction.**

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**

[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction and that in no case shall greater than 5 acres be disturbed at any time.**

[5] Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or measures to convey stormwater through the project area without causing erosion of sediment must be included. The integrity of downstream drainage systems shall be maintained. **Direction to ensure that stormwater conveyance practices shall be stabilized prior to receiving stormwater runoff is included on the Erosion Control Notes sheet provided as part of this submittal.**

[6] Appropriate erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the Community Services Department. **Construction scheduling and inspections will be discussed with Community Services at the required pre-construction meeting.**

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers. **This project will require a City of Dover Conditional Use Permit for work within wetland buffers. Sediment and erosion control will be limited within the wetland buffer as identified and approved through these permits.**

[8] Disturbed soil areas shall be either temporarily or permanently stabilized. In areas where final grading has not occurred, temporary stabilization measures should be in place within seven calendar days for exposed soil areas that are within 100 feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas. **The definitions of, and direction for, stabilization of the site is provided on the Erosion Control Notes sheet provided as part of this submittal.**

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal. **The erosion control inspection scheduling requirements are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department. **The NH DES AoT winter construction notes are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1. **Slopes greater than 3:1 require erosion control matting and a detail is provided in the plan set.**

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise. **Temporary practice details identify the need to remove sediment and/or stabilize the area once the practices have been removed.**

[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where attainable, until final stabilization of the site. Alternatively, the sediment of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations. **The project does not propose the disturbance of greater than 10 acres of area.**

[14] Use of temporary sediment basins should avoid any additional vegetation clearing or site land disturbance not otherwise needed for post-construction. Sediment basin locations must be reviewed by the Community Services Department prior to construction and must consider the potential for off-site impacts, including public safety, especially as it relates to sediment movement and/or sediment basin failure, and alternative sediment controls must be used where site limitations preclude a safe design. **Temporary sediment basin locations, if constructed, will be discussed with Community Services prior to the construction of the practices. These discussions will occur upon submission/review of the SWPPP, if required.**

(e) Installation and construction inspections. The owner/applicant shall be responsible for inspection requirements as follow:

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections. **Community Services access and inspection requirements will be discussed at the pre-construction meeting.**

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours. **The project notes provide direction for the contractor to notify the design engineer and the Community Services Department as required.**

[3] The Planning Board or Community Services Department may require the design engineer and/or an independent third party to provide inspection and oversight of the construction of the stormwater management facilities and erosion and sediment control measures at its discretion. Such oversight may be especially important for implementing techniques such as porous pavement or subsurface stormwater infiltration systems. The owner/applicant shall be responsible for all fees associated with third-party inspections. **NH DES AoT permitting requires the design engineer to provide a letter at the completion of work that indicates the stormwater practices were installed as designed.**

[4] All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be

submitted to the Community Services Department. **The project notes provide direction for the inspector to be qualified and for all reports to be submitted to the Community Services Department.**

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. **The project notes identify the owner as having the responsibility for ensuring the stormwater management and erosion control measures are installed as approved.**

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant. **The SWMP is a comprehensive set of documents that include, at a minimum, a drainage report, plan set, and Stormwater I&M Manual. These documents each serve a role in presenting the necessary information to the appropriate audience. The information required in this section is provided within the SWMP documents.**

[1] For projects requiring minimum protection standards, a plan including the following information shall be submitted:

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site. **This information is provided within the Erosion Control Notes within the plan set.**

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided within the drainage report and the Pre/Post Development Watershed Plans.**

[c] Description of LID proposed measures. **This information is provided in the drainage report and throughout the plan set and details.**

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted: **The SWMP documents include the proposed information when applicable.**

[a] Description of construction period and earth movement schedule, including anticipated project start and completion dates, sequence and duration of grading and construction activities, sequence, and timing of installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site. **The SWMP documents include the proposed information when applicable, more specifically in the erosion control note sheet.**

[b] Description of the on-site and adjacent wetlands, streams and other water resources, including methods used to identify these resources, and a description of any buffer setbacks that may apply, steep slopes, critical habitat, existing vegetation, areas with a 1% chance of being inundated by water in any given year, and whether any downstream water bodies are listed as impaired according to NHDES's most recent 303(d) list. **The SWMP documents include the proposed information when applicable, more specifically in the existing conditions plan.**

[c] Soils information for proposed disturbed areas shall be delineated by a certified soil scientist. For all other areas that contribute runoff to the project site, soil types may be identified in accordance with Natural Resources Conservation Service (NRCS) countywide soil survey. **The SWMP documents include the proposed information when applicable. BAG Land Consultants, Bruce Gilday NH Soil Scientist #12 delineated the soils.**

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[h] Methods and assumptions used to calculate the pollutant load removal. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible. **The SWMP documents include the proposed information when applicable.**

[j] If not used, provide rationale why LID measures are not practical for the site. **The SWMP documents include the proposed information when applicable.**

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[l] Provide calculations for the infiltration or exfiltration system. **The SWMP documents include the proposed information when applicable.**

[m] If an increase in post-development runoff volume is anticipated due to limited applicability for LID measures and site constraints, provide an assessment and supporting calculations to demonstrate no adverse impacts to downstream infrastructure, adjacent properties, or aquatic habitat. **The SWMP documents include the proposed information when applicable, more specifically in the drainage report.**

[n] Descriptions, details, and design criteria and calculations for all structural, nonstructural, permanent, and temporary erosion and sedimentation control measures and BMPs. This information should include seeding mixtures and rates, types of sod, methods of seedbed preparation, expected seeding dates (or limitations on seeding time frames), type and rate of lime and fertilizer application, and type and quantity of mulching for temporary and permanent control facilities. **The SWMP documents include the proposed information when applicable, more specifically in the erosion control note sheet.**

[o] Where proposed changes are anticipated within mapped limits of the areas with a 1% chance of being inundated by water in any given year, provide hydrologic and hydraulic analysis to show no net increase in flood elevations. **The SWMP documents include the proposed information when applicable.**

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization. **The SWMP documents include the proposed information when applicable, more specifically in the erosion control note sheet.**

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures. **The SWMP documents include the proposed information when applicable, more specifically in the erosion control note sheet.**

[r] Any other specific study, calculation, or investigation as requested by the City. **Additional information is provided as requested and may include traffic studies, structural designs, septic/sewer designs, geotechnical reports, etc. These documents are provided on a case-by-case basis and as requested by the City.**

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater. **The Stormwater I&M Manual includes the implementation of a salt minimization plan.**

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required. **A Stormwater I&M Manual is provided as part of the submission.**

[u] Provide copies of pertinent state and federal permits. **Copies of permits will be provided to the City.**

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements. **An I&M Manual that identifies the owner's responsibilities has been provided as a part of the submission.**

[1] An operation and maintenance manual shall be created with the following information:

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities. **The Owner, Responsible Party, and the Management Company are identified in the I&M Manual.**

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance. **Inspection requirements and maintenance thresholds are identified in the I&M Manual.**

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials. **The I&M Manual requires the use of a Green SnowPro contractor.**

[d] Deicing log to track amount and type of deicing material applied. **The I&M Manual requires the implementation of a salt minimization plan that also requires the owner or operator to track salt usage onsite through a quantity usage log.**

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained. **The approved Grading and Drainage Plan, where BMPs are highlighted in a BMP Location Plan, accompanies the I&M Manual.**

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year. **The I&M Manual identifies this requirement.**

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved stormwater management plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance and reporting. **Not Applicable.**

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

LOT 2 SITE DEVELOPMENT
Map G, Lot 2-1

Crosby Road
Dover, New Hampshire
Strafford County

AUGUST 2024

Owner of Record:

DEL SOL DOVER, LLC
340 Central Avenue
Suite 202
Dover, New Hampshire 03820

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Del Sol Dover, LLC.** The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Chad Kageleiry
Phone: (603) 749 2800
Email: chad@summitlanddev.com

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NHDES in writing.

Management Company:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. Inspections shall include a photograph of each practice that is subject to the I&M requirements each time it is inspected. A copy of the completed Stormwater Management System's Inspection & Maintenance Log, inspection photographs, and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NHDES upon request and to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structures
- Energy Dissipation Structures (Rip Rap)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Grassed Lined Conveyance Swale
- Stone Lined Conveyance Swale
- Pre-Treatment Structures
  - Sediment Forebay
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas, they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

BIORETENTION BASIN W/ ISR:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

GRASS LINED CONVEYANCE SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swale (at least twice annually), maintain a 4" stand of vegetative growth.

STONE LINED CONVEYANCE SWALE

- Inspect once per year.
- Inspect for erosion, sediment accumulation, woody vegetation and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and woody vegetation.
- Reset any dislodged stones.

PRE-TREATMENT STRUCTURES:

SEDIMENT FOREBAY:

- Vegetated areas shall be mowed to maintain a 4" start of vegetative growth.
- Inspect at least once per year.
- Inspect for sediment accumulation.
- Remove all debris immediately.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.

- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for clogging • Check for sediment accumulation	Remove when noticed Clean when necessary
Outlet Structure(s)	Annually	• Inspect once per year. • Inspect for clogging and sediment accumulation. • Remove all debris immediately and sediment accumulations ≥ 2 inches.	≥ 2 in. sediment Remove immediately
Energy Dissipation (ED) Structures (Rip Rap)	Annually	• Check for erosion • Check for displaced stones • Check for woody vegetation • Check for sediment accumulation	≥ 3 in. sediment Remove annually Replace/ reset Dislodged stones immediately
Bioretention Basin w/ ISR • Inlet/Outlet Piping • Pond • Sediment • Drawdown • Trash/Debris • Vegetation (Veg.) • Embankments	Bi-Annually “ “ Annually Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accum. in pond • Check drainage time • Check for and remove trash/debris • Maintain >75% veg. (pond & slopes) Maintain healthy stand of veg.	Repair immediately ≥ 2 in sediment >72 hours Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Grass Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., min 4” • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore vegetation in-kind Mow twice per year Remove/Dispose of accordingly
Stone Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Inspect for woody/ invasive vegetation • Check for dislodged stones	≥ 1 in. sediment Repair immediately Remove/Dispose of accordingly
Pre-Treatment Structures: Sediment Forebay	Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris • Vegetated areas shall be mowed to maintain a 4” start of vegetation growth.	Remove/ Dispose of accordingly Mow twice per year
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x’s Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance_____ Inspector:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

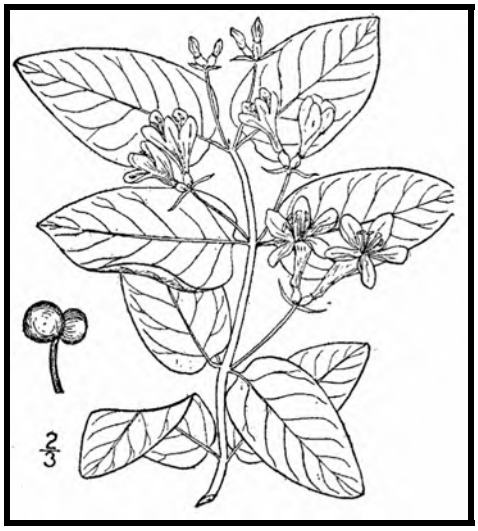
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

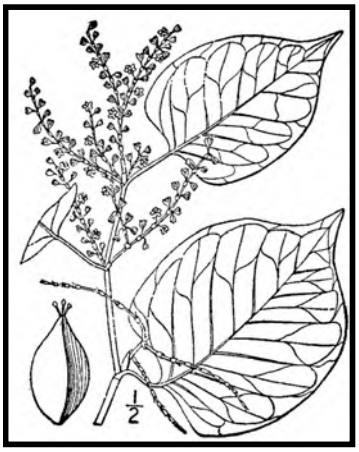
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

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

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

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

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

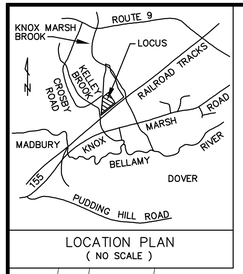
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

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

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

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran’s, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.



LOCATION PLAN
(NO SCALE)

LEGEND:

= SEDIMENT FOREBAY

= ENERGY DISSIPATION STRUCTURES (RIP RAP)

= BIO-RETENTION BASIN W/ ISR

= STONE LINED CONVEYANCE SWALE

= GRASSED LINED CONVEYANCE SWALE

FORMER HANSON ROAD

50' WETLAND BUFFER

WATER - DOVER PARA01-020-WI

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

GAS 4"ø PP

WATER

DOVER PARA01-025-WI

HYDRANT #319

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

EDGE OF PAVEMENT

PROPOSED 9,600 S.F. BUILDING

EDGE OF PAVEMENT

PROPOSED GRAVEL 125'x180' LAYDOWN AREA

EDGE OF GRAVEL

BIORETENTION POND 2 W/ ISR (BIO2 W/ ISR)

BIORETENTION POND 3 W/ ISR (BIO3 W/ ISR)

EXISTING GRASSED LINED CONVEYANCE SWALE

C / 2-1

NEW PARCEL AREA
273,596 S.F.
6.28 Ac.

NH STATE PLANE NAD 83 - GAS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: MJM
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

BMP LOCATION PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

BMP

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

JOB 24085 ~ DEL SOL DOVER, LLC
SHEET NO. 1 OF 1
CALCULATED BY M. BEAUDRY DATE 8/5/24
CHECKED BY (NH PE #7101 DATE
SCALE

SEWER LOADING CALCULATIONS

9,600 SF SPECIALTY TRADE CONTRACTOR BUILDING

4,600 SF OFFICE

5,000 SF WAREHOUSE

ESTIMATED # EMPLOYEES = 30

PER NHDES ENV-WQ1008.03 TABLE 1008-1:

UNSPECIFIED OFFICE SPACE = 5 GPD/100 SF

WAREHOUSE = 10 GPD/PERSON

DESIGN FLOW

OFFICE = 4,600 SF x 5 GPD/100 SF = 230 GPD

W. HOUSE = 30 EMP'S x 10 GPD/EMPL. = 300 GPD

TOTAL = 530 GPD

DRAINAGE ANALYSIS

Del Sol Dover, LLC
CROSBY ROAD EXTENSION &
LOT 2 DEVELOPMENT
TAX MAP G, LOT 2-1
DOVER, NH

August 2024

Prepared For:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Prepared By:

Civilworks NE
PO Box 1166
181 Watson Road
Dover, NH 03820

CONTENTS

1.0 INTRODUCTION

2.0 DRAINAGE ANALYSIS

2.1 DRAINAGE DESIGN PARAMETERS
- 2.1.1 Watersheds
- 2.1.2 Soils
- 2.1.3 Rainfall Data
- 2.1.4 Runoff Curve Numbers

2.2 EXISTING CONDITIONS
- 2.2.1 Table A – Existing Conditions Hydrology

2.3 DEVELOPED CONDITIONS
- 2.3.1 Table B – Developed Conditions Hydrology

2.4 HYDROLOGIC COMPARISON
- 2.4.1 Table C – Existing vs. Developed Conditions Hydrology

2.5 STORMWATER DESIGN
- 2.5.1 Stormwater Best Management Practices
- 2.5.2 Pollutant Removal
- 2.5.3 Groundwater Recharge
- 2.5.4 Outlet Protection

3.0 APPENDIX A – HYDROLOGIC CALCULATIONS
- A Extreme Precipitation Table
- A-1 Existing Watersheds
  - Drainage Diagram, Area, and Soil Listings
  - Node Listing – 2-yr
  - Node Listing – 10-yr
  - 10-yr Storm Summary Hydrographs
  - Node Listing – 25-yr
  - Node Listing – 50-yr
- A-2 Developed Watersheds
  - Drainage Diagram, Area, and Soil Listings
  - Node Listing – 2-yr
  - Node Listing – 10-yr
  - 10-yr Storm Summary Hydrographs
  - Node Listing – 25-yr
  - Node Listing – 50-yr

4.0 APPENDIX B – DESIGN
- B-1 Stormwater Best Management Practices
- B-2 Pollutant Removal
- B-3 Outlet Protection

5.0 APPENDIX C – INSPECTION AND MAINTENANCE
- C-1 Stormwater Management System Inspection & Maintenance Plan

6.0 APPENDIX D – WATERSHED PLANS
- D-1 Pre-Development Conditions
- D-2 Post-Development Conditions

1.0 INTRODUCTION

This is a hydrologic analysis of a portion of the subject parcel located on Crosby Road in Dover, NH. The 20.80± acre lot is identified as Tax Map G, Lot 2-1. The parcel is being subdivided into three (3) lots (Lot 2-1, 2-1A, & 2-1B) ranging in size from approximately 5.0 to 8.3 acres. This hydrologic analysis analyzes the land development associated with construction of the proposed road and the development of the newly formed (6.15+/- acre) Lot 2-1. The area of analysis is currently undeveloped and primarily consists of mowed fields with a small, graveled area for site access. The project parcel, Lot 2-1, is relatively flat and slopes to the railroad tracks located along the south easterly property line. The parcel is bound by commercial lots to the North, East, and West, and the railroad tracks to the South and Southeast.

This analysis includes the construction of an 807 foot, 24-foot-wide paved road (Crosby Road extension) and the full build out of one (Tax Map G Lot 2-1) of the three (3) commercial lots. The commercial development consists of the construction of a 9,600-sf building, site access from the newly constructed Crosby Road extension, associated parking, gravel lay down area, underground utilities, and grading and drainage improvements. The proposed drainage system incorporates grassed and stone lined swales for stormwater conveyance, sediment forebays for pre-treatment, and three (3) bioretention basins with internal storage reservoirs (ISR's) for stormwater treatment. A large portion of stormwater runoff from the proposed roadway is designed to drain into the stormwater drainage structures located on Lot 2-1 while the last 50+/- ft will be treated be treated within the proposed right-of-way and proposed Lot 2-1A. The proposed stormwater system captures, stores, and treats the stormwater runoff from the site and roadway, then redirects it to the existing discharge points. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management System Inspection & Maintenance Manual (Stormwater I&M Manual) in Appendix C.

To effectively analyze the pre-development subject parcel and proposed roadway, a 12.19 ac area was analyzed and divided into three (3) watersheds, A, B, & C. The remaining 8.61 acres of the original larger lot is not being developed as part of this project. Watershed A drains to the south to an existing drainage ditch along the railroad tracks; Watershed B drains to the country drainage associated with the former Hanson Road, prior to discharge from a cross culvert under the driveway of an abutting lot; and Watershed C drains to Knox Marsh Brook. The site is located within a Great Bay Community; therefore, this analysis includes a 15% increase to the extreme precipitation data obtained from the Northeast Regional Climate Center.

The post development condition maintains the same three (3) watersheds as the pre-development condition. Watersheds A & B are further divided into subcatchments, three (3) and two (2) respectively, to account for the proposed stormwater management system. The post-development watersheds utilize the same points of discharge as the existing conditions, and they provide a direct comparison to the pre-development model. Bioretention Basins with ISR's were utilized for stormwater treatment as the site is located

within a “Class A – All Features” watershed as identified on the NHDES OneStop Data Mapper. This analysis indicates that the proposed stormwater measures, and stormwater management plan will treat and mitigate stormwarer runoff in general accordance with ENV-Wq 1500 of the New Hampshire Code of Administrative Rules and the City of Dover’s Subdivision and Site Review Regulations. The proposed development of the site, in conjunction with the implementation of the Stormwater I&M Manual, will have minimal impact on the watersheds.

2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

“Stormwater Management and Erosion Sediment Control Handbook for Urban and Developing Areas in New Hampshire”

“New Hampshire Stormwater Manual Volume 2 - Post-Construction Best Management Practices Selection & Design”

“Civil Engineering Reference Manual, Fifth Edition”

“Open-Channel Hydraulics” Chow.

“Stormwater Modeling System” HydroCAD Ver. 10.10

2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

2.1.1 Watersheds

The watershed was delineated using on site topographic and as built survey data field located by McEneaney Survey Associates of New England.

2.1.2 Soils

Soil types were determined utilizing a site specific soils map prepared by BAG Land Consultants, Bruce A. Gilday, CSS#012. The hydrologic soil drainage classifications used for this analysis are Class B and D.

Hydrologic Drainage Class B:

Map Unit Symbol	Soil Taxonomic Name	Drainage Class
313B	Deerfield	Moderately-Well Drained
915B	Deerfield Variant	Somewhat Poorly Drained

Hydrologic Drainage Class D:

Map Unit Symbol	Soil Taxonomic Name	Drainage Class
233B/P	Scantic	Poorly Drained (P)

2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center were utilized in this analysis. The analysis has been performed for the 2-year, 10-year, 25-year, and 50-year storm events with 3.60", 5.44", 6.88", and 8.23" rainfall depths respectively. The rainfall data has been peaked by 15% in accordance with NHDES Alteration of Terrain requirements as the site is located within the Coastal Region.

2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used and are summarized within each sub-catchment drainage summary in Appendix A.

2.2 EXISTING CONDITIONS

For the purposes of this analysis, the subject parcel was analyzed as three (3) watersheds.

2.2.1 Table A – Existing Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Pre-Development Volume (af)**	**Pre Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.625	2.8	6.6	9.8	12.7
B	0.080	0.4	1.2	1.8	2.5
C	0.223	1.4	3.0	4.2	5.3

2.3 DEVELOPED CONDITIONS

The post development model was analyzed utilizing the same summing points as the pre-development analysis.

2.3.1 Table B – Developed Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Post-Development Volume (af)**	**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.915	2.5	6.3	9.7	12.7
B	0.055	0.3	0.8	1.3	1.7
C	0.261	1.4	3.0	4.2	5.3

2.4 HYDROLOGIC COMPARISON

The analysis indicates that the proposed project will have negligible impact on the developed watersheds.

2.4.1 Table C – Pre/Post Development Comparison (2, 10, 25, and 50-year storm events)

Watershed	Pre/**Post-Development Volume (af)**	Pre/**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.625/**0.915**	2.8/**2.5**	6.6/**6.3**	9.8/**9.7**	12.7/**12.7**
B	0.080/**0.055**	0.4/**0.3**	1.2/**0.8**	1.8/**1.3**	2.5/**1.7**
C	0.223/**0.261**	1.4/**1.4**	3.0/**3.0**	4.2/**4.2**	5.3/**5.3**

2.5 STORMWATER DESIGN

The project incorporates best management practices to mitigate runoff as well as treat and convey stormwater.

2.5.1 Stormwater Best Management Practices (BMP's)

This project incorporates three (3) bioretention basins with ISR's to mitigate flow and water quality from the proposed development. Pre-treatment for the proposed

stormwater BMP's will utilize sediment forebays. See Appendix B-1 for the BMP design calculations and supporting documentation.

2.5.2 Pollutant Removal

This project treats 1.65+/- acres of proposed impervious area. The project incorporates the following practice and associated pollutant removal efficacy as identified in the New Hampshire Stormwater Management Manual Volume 2, Appendix B:

	TSS	TN	TP
Bioretention Basin with ISR:	90%	65%	65%

The pollutant removal meets or exceeds The City of Dover's Site Review Regulations. See Appendix B-2 for the removal efficiency data as provided in Volume 1.

2.5.3 Groundwater Recharge

The site was evaluated for infiltration practices in support of groundwater recharge. The site's characteristics were not conducive for infiltration. The site limitations prevent infiltration and therefore will influence the project's ability to meet City and State requirements to attenuate volume and meet channel protection requirements respectively.

Site characteristics including soil type, topography, and depth to SHWT prevent the infiltration of stormwater. However, the project's stormwater infrastructure is designed to attenuate flow from the development of the parcel in support of meeting the spirit of the channel protection criteria to the greatest extent practicable. The discharge from the site is directed to large wetland complexes associated with Kelley and Knox Marsh Brooks and the proposed project will not contribute to flooding or functional impairments to streets, adjacent properties, or downstream properties.

2.5.4 Outlet Protection

BMP's, conveyance structures, and outlet protection have been sized to convey the 50-year, 24 hour storm event. All proposed rip-rap applications shall consist of min. d50 = 6" stone with a stone layer thickness of 12" (min) on a filter fabric layer over a 6" thick (min) gravel base. See Appendix B-3 for design calculations and supporting data, the plan set for rip-rap locations and the drainage details for additional information.

APPENDIX A

HYDROLOGIC CALCULATIONS

Extreme Precipitation in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project | Data & Products | Daily Monitoring | Documentation

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address → | Locate by Lat/Lon 43.17° N -70.91° W → | Locate by State/County



Select Options

Smoothing	Delivery
Yes	Popup

Submit

Version 2.0 Copyright 2010-2022

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)

Cornell University

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.180 degrees North
Longitude	70.911 degrees West
Elevation	20 feet
Date/Time	Mon Jun 24 2024 14:58:45 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day		+15%
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	1.99	~~2.60~~	2.85	**1yr**	2.30	2.74	3.14	3.87	4.44	**1yr**	2.99
2yr	0.32	0.49	0.61	0.81	1.01	1.28	**2yr**	0.87	1.17	1.50	1.91	2.44	~~3.13~~	3.48	**2yr**	2.77	3.35	3.84	4.57	5.21	**2yr**	3.60
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.06	3.96	4.46	**5yr**	3.50	4.29	4.90	5.78	6.54	**5yr**	
10yr	0.40	0.63	0.80	1.09	1.41	1.84	**10yr**	1.22	1.69	2.17	2.82	3.65	~~4.73~~	5.38	**10yr**	4.19	5.17	5.90	6.90	7.77	**10yr**	5.44
25yr	0.46	0.74	0.94	1.29	1.72	2.26	**25yr**	1.48	2.09	2.69	3.51	4.59	~~5.98~~	6.90	**25yr**	5.30	6.64	7.54	8.73	9.76	**25yr**	6.88
50yr	0.51	0.82	1.06	1.48	1.99	2.66	**50yr**	1.72	2.45	3.17	4.17	5.47	~~7.16~~	8.33	**50yr**	6.33	8.01	9.08	10.43	11.61	**50yr**	8.23
100yr	0.58	0.93	1.20	1.70	2.31	3.11	**100yr**	1.99	2.88	3.73	4.94	6.51	~~8.56~~	10.07	**100yr**	7.57	9.68	10.94	12.47	13.81	**100yr**	9.84
200yr	0.64	1.04	1.35	1.94	2.69	3.65	**200yr**	2.32	3.39	4.41	5.87	7.77	10.24	12.17	**200yr**	9.06	11.70	13.18	14.91	16.44	**200yr**	
500yr	0.75	1.24	1.61	2.34	3.28	4.51	**500yr**	2.83	4.20	5.47	7.34	9.79	12.98	15.64	**500yr**	11.49	15.04	16.87	18.91	20.72	**500yr**	

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.25	1.55	2.04	2.48	**1yr**	1.81	2.38	2.92	3.35	4.05	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.38	**2yr**	2.69	3.25	3.73	4.45	5.06	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.70	4.11	**5yr**	3.27	3.96	4.58	5.40	6.10	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.57	1.82	2.45	3.14	4.26	4.78	**10yr**	3.77	4.59	5.31	6.24	7.01	**10yr**
25yr	0.44	0.67	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.85	3.67	5.04	5.79	**25yr**	4.46	5.57	6.48	7.56	8.43	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.19	**50yr**	1.53	2.14	2.36	3.21	4.12	5.78	6.69	**50yr**	5.11	6.44	7.53	8.74	9.68	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.51	**100yr**	1.74	2.46	2.64	3.59	4.61	6.61	7.73	**100yr**	5.85	7.43	8.76	10.09	11.08	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.88	**200yr**	1.99	2.81	2.93	4.02	5.16	7.57	8.93	**200yr**	6.70	8.58	10.19	11.67	12.72	**200yr**
500yr	0.70	1.04	1.34	1.94	2.77	3.47	**500yr**	2.39	3.39	3.40	4.67	6.01	9.01	10.78	**500yr**	7.97	10.37	12.44	14.15	15.20	**500yr**

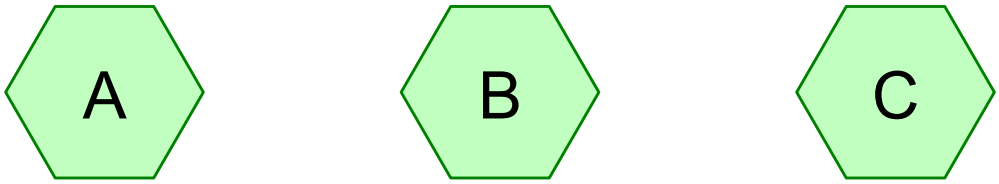
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.23	1.74	2.21	2.83	3.05	**1yr**	2.50	2.93	3.37	4.17	4.76	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.24	**2yr**	0.90	1.22	1.48	1.95	2.50	3.25	3.59	**2yr**	2.87	3.45	3.96	4.72	5.39	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.54	1.85	2.49	3.19	4.22	4.80	**5yr**	3.73	4.61	5.23	6.17	6.94	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.87	2.23	3.04	3.84	5.19	5.98	**10yr**	4.59	5.75	6.55	7.58	8.46	**10yr**
25yr	0.55	0.84	1.05	1.49	1.96	2.47	**25yr**	1.69	2.41	2.87	3.95	4.92	6.93	8.02	**25yr**	6.13	7.71	8.73	9.96	11.02	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.98	**50yr**	2.02	2.91	3.48	4.80	5.97	8.55	10.03	**50yr**	7.57	9.64	10.87	12.25	13.47	**50yr**
100yr	0.74	1.12	1.40	2.03	2.78	3.59	**100yr**	2.40	3.51	4.21	5.87	7.24	10.55	12.55	**100yr**	9.34	12.07	13.52	15.08	16.47	**100yr**
200yr	0.86	1.29	1.63	2.37	3.30	4.35	**200yr**	2.85	4.26	5.12	7.18	8.78	13.06	15.72	**200yr**	11.56	15.11	16.83	18.54	20.18	**200yr**
500yr	1.05	1.56	2.00	2.91	4.13	5.59	**500yr**	3.57	5.46	6.61	9.39	11.34	17.35	21.17	**500yr**	15.36	20.36	22.49	24.42	26.41	**500yr**

Powered by ACIS Northeast Regional Climate Center

A – 1

EXISTING WATERSHEDS



Subcat Reach Pond Link

Routing Diagram for 24085 - Pre
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.549	61	>75% Grass cover, Good, HSG B (A, B, C)
3.457	80	>75% Grass cover, Good, HSG D (A, C)
0.186	96	Gravel surface, HSG B (A)
12.192	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.735	HSG B	A, B, C
0.000	HSG C	
3.457	HSG D	A, C
0.000	Other	
12.192		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	8.549	0.000	3.457	0.000	12.005	>75% Grass cover, Good	A, B, C
0.000	0.186	0.000	0.000	0.000	0.186	Gravel surface	A
0.000	**8.735**	**0.000**	**3.457**	**0.000**	**12.192**	**TOTAL AREA**	

A – 1

NODE LISTING – 2-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=0.91"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=2.8 cfs 0.625 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=0.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.4 cfs 0.080 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=1.13"
Flow Length=402' Tc=20.7 min CN=71 Runoff=1.4 cfs 0.223 af

Total Runoff Area = 12.192 ac Runoff Volume = 0.928 af Average Runoff Depth = 0.91"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

NODE LISTING – 10-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=2.12"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=6.6 cfs 1.458 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.2 cfs 0.211 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=2.45"
Flow Length=402' Tc=20.7 min CN=71 Runoff=3.0 cfs 0.486 af

Total Runoff Area = 12.192 ac Runoff Volume = 2.155 af Average Runoff Depth = 2.12"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

10-YR STORM SUMMARY

Summary for Subcatchment A: A

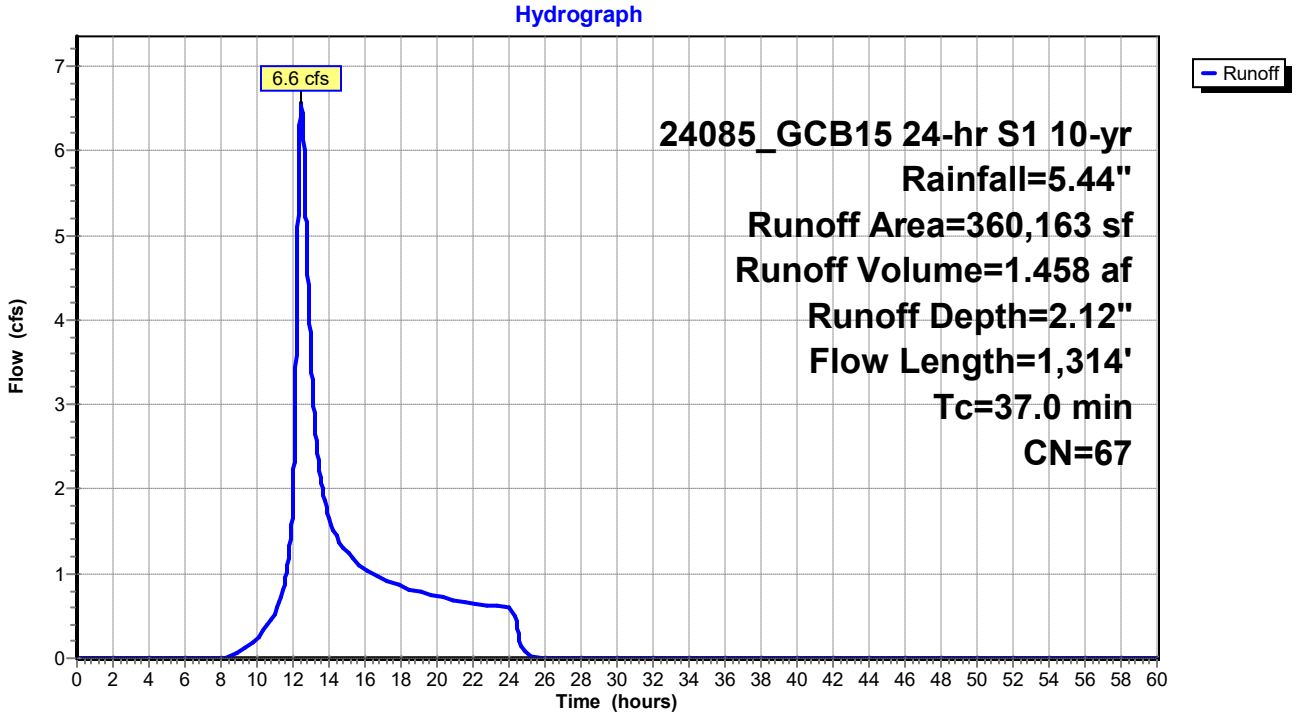
Runoff = 6.6 cfs @ 12.46 hrs, Volume= 1.458 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
253,585	61	>75% Grass cover, Good, HSG B
8,114	96	Gravel surface, HSG B
98,464	80	>75% Grass cover, Good, HSG D
360,163	67	Weighted Average
360,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
16.1	479	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	735	0.0050	4.00	35.96	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 2.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
37.0	1,314	Total			

Subcatchment A: A



Summary for Subcatchment B: B

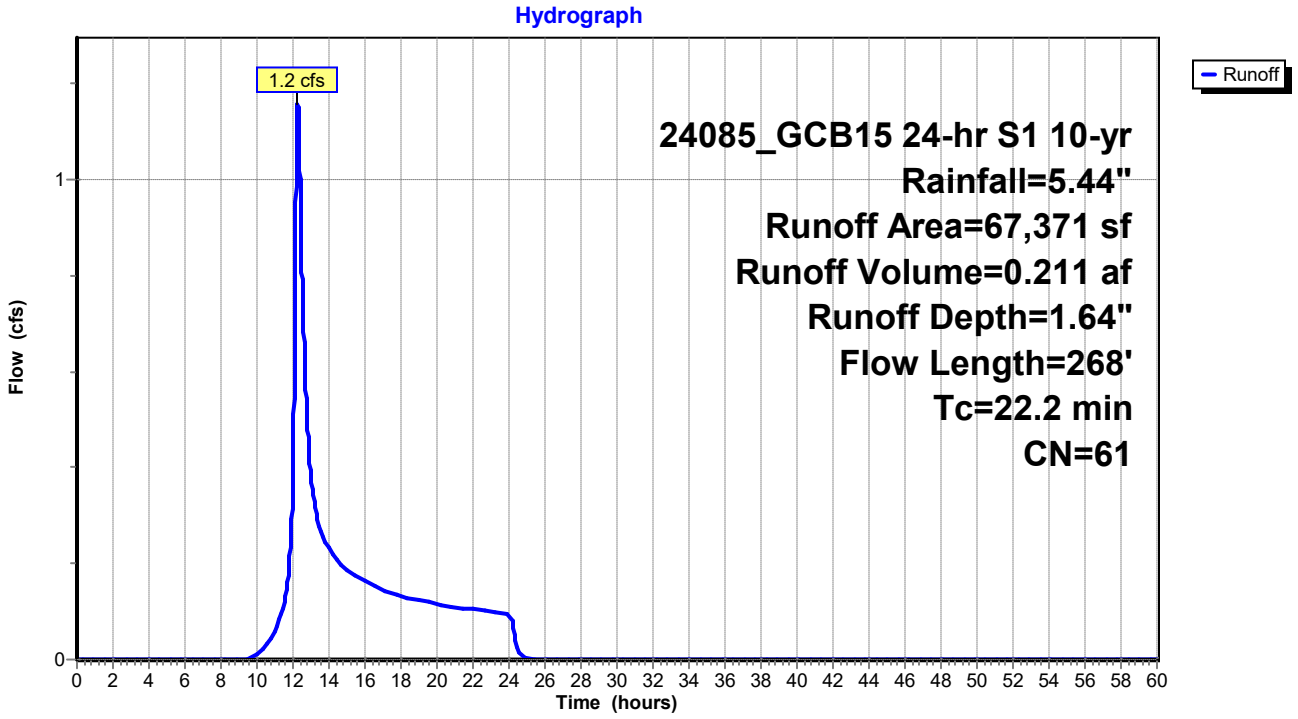
Runoff = 1.2 cfs @ 12.26 hrs, Volume= 0.211 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
67,371	61	>75% Grass cover, Good, HSG B
67,371		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
5.7	168	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	268	Total			

Subcatchment B: B



Summary for Subcatchment C: C

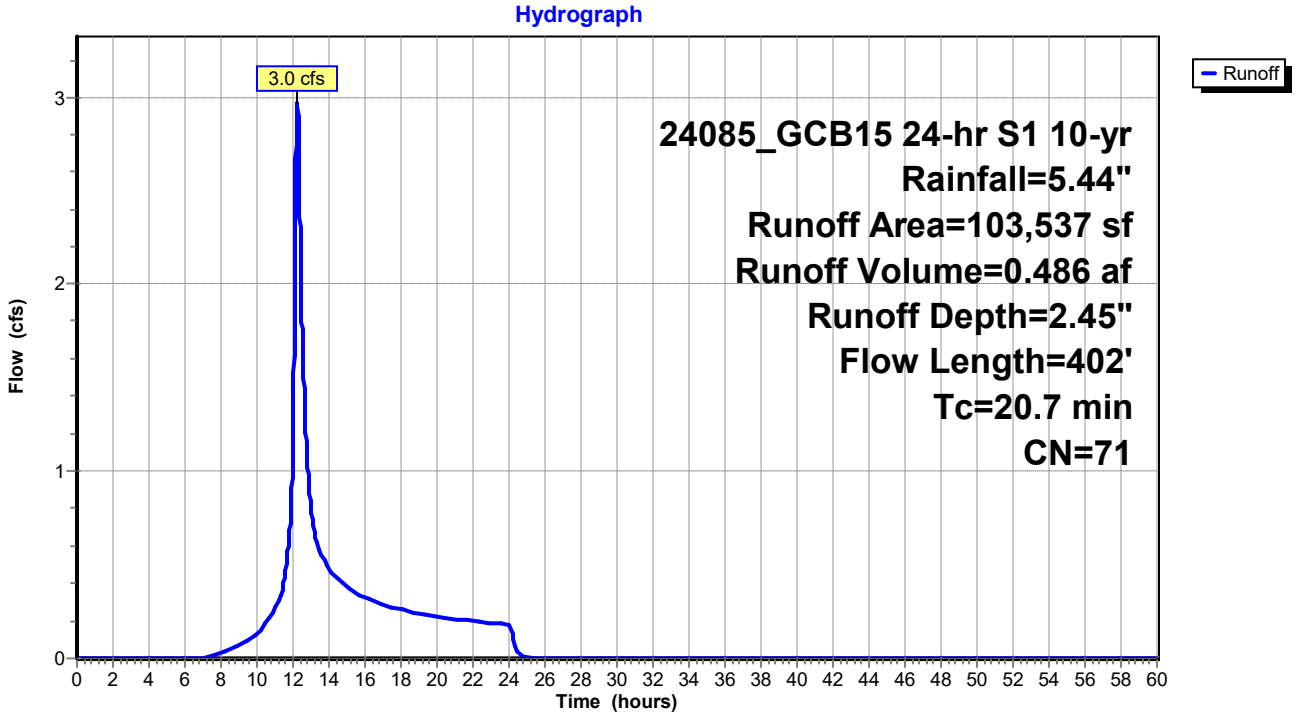
Runoff = 3.0 cfs @ 12.24 hrs, Volume= 0.486 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
51,429	61	>75% Grass cover, Good, HSG B
52,108	80	>75% Grass cover, Good, HSG D
103,537	71	Weighted Average
103,537		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
7.2	302	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.7	402	Total			

Subcatchment C: C



A – 1

NODE LISTING – 25-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=9.8 cfs 2.213 af

Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=2.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.8 cfs 0.337 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=402' Tc=20.7 min CN=71 Runoff=4.2 cfs 0.718 af

Total Runoff Area = 12.192 ac Runoff Volume = 3.268 af Average Runoff Depth = 3.22"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 1

NODE LISTING – 50-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=360,163 sf 0.00% Impervious Runoff Depth=4.31"
Flow Length=1,314' Tc=37.0 min CN=67 Runoff=12.7 cfs 2.972 af

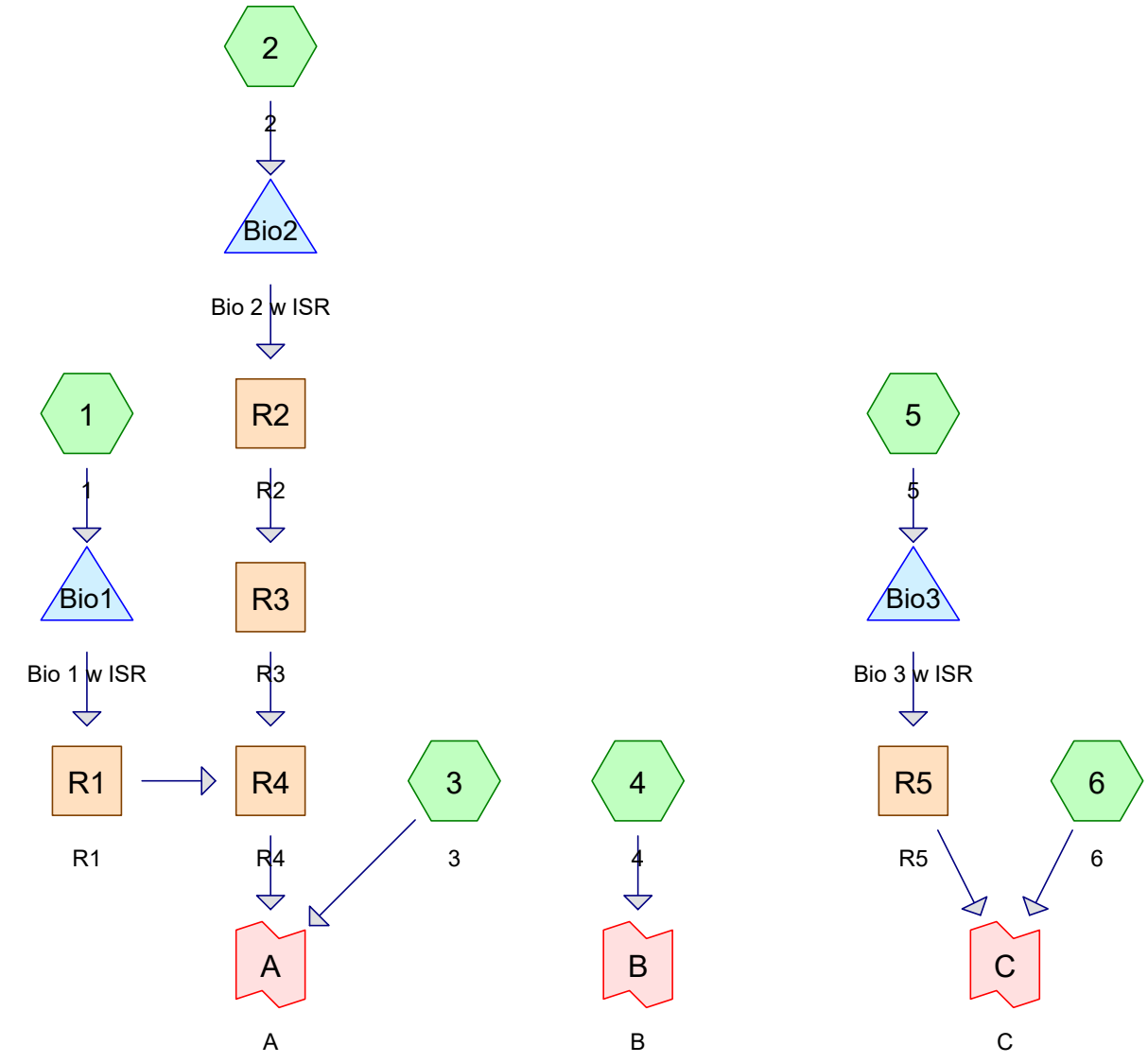
Subcatchment B: B Runoff Area=67,371 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=2.5 cfs 0.467 af

Subcatchment C: C Runoff Area=103,537 sf 0.00% Impervious Runoff Depth=4.78"
Flow Length=402' Tc=20.7 min CN=71 Runoff=5.3 cfs 0.947 af

Total Runoff Area = 12.192 ac Runoff Volume = 4.385 af Average Runoff Depth = 4.32"
100.00% Pervious = 12.192 ac 0.00% Impervious = 0.000 ac

A – 2

DEVELOPED WATERSHEDS



Subcat Reach Pond Link

Routing Diagram for 24085 - Post
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.025	61	>75% Grass cover, Good, HSG B (1, 2, 3, 4, 5, 6)
3.517	80	>75% Grass cover, Good, HSG D (1, 2, 3, 5, 6)
0.576	96	Gravel surface, HSG B (2, 5)
0.017	96	Gravel surface, HSG D (5)
0.524	98	Paved parking, HSG B (2, 5)
0.008	98	Paved parking, HSG D (5)
0.305	98	Paved roads w/curbs & sewers, HSG B (1)
0.220	98	Roofs, HSG B (1, 2)
12.192	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.650	HSG B	1, 2, 3, 4, 5, 6
0.000	HSG C	
3.541	HSG D	1, 2, 3, 5, 6
0.000	Other	
12.192		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	7.025	0.000	3.517	0.000	10.542	>75% Grass cover, Good	1, 2, 3, 4, 5, 6
0.000	0.576	0.000	0.017	0.000	0.593	Gravel surface	2, 5
0.000	0.524	0.000	0.008	0.000	0.531	Paved parking	2, 5
0.000	0.305	0.000	0.000	0.000	0.305	Paved roads w/curbs & sewers	1
0.000	0.220	0.000	0.000	0.000	0.220	Roofs	1, 2
0.000	**8.650**	**0.000**	**3.541**	**0.000**	**12.192**	**TOTAL AREA**	

A – 2

NODE LISTING – 2-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=2.27"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=1.2 cfs 0.102 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=2.02"
Flow Length=468' Tc=14.5 min CN=84 Runoff=2.4 cfs 0.293 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=0.96"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=2.3 cfs 0.520 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=0.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.3 cfs 0.055 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=2.54"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=0.8 cfs 0.054 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=402' Tc=20.7 min CN=72 Runoff=1.3 cfs 0.207 af

Reach R1: R1 Avg. Flow Depth=0.04' Max Vel=0.44 fps Inflow=0.0 cfs 0.102 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.0 cfs 0.102 af

Reach R2: R2 Avg. Flow Depth=0.10' Max Vel=1.28 fps Inflow=0.3 cfs 0.293 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=0.3 cfs 0.293 af

Reach R3: R3 Avg. Flow Depth=0.12' Max Vel=0.72 fps Inflow=0.3 cfs 0.293 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=0.3 cfs 0.293 af

Reach R4: R4 Avg. Flow Depth=0.16' Max Vel=0.61 fps Inflow=0.3 cfs 0.395 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=0.3 cfs 0.395 af

Reach R5: R5 Avg. Flow Depth=0.08' Max Vel=0.44 fps Inflow=0.1 cfs 0.054 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.1 cfs 0.054 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.52' Storage=2,961 cf Inflow=1.2 cfs 0.102 af
Outflow=0.0 cfs 0.102 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.30' Storage=6,200 cf Inflow=2.4 cfs 0.293 af
Outflow=0.3 cfs 0.293 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.41' Storage=1,126 cf Inflow=0.8 cfs 0.054 af
Outflow=0.1 cfs 0.054 af

Link A: A Inflow=2.5 cfs 0.915 af
Primary=2.5 cfs 0.915 af

Link B: B Inflow=0.3 cfs 0.055 af
Primary=0.3 cfs 0.055 af

Link C: C

Inflow=1.4 cfs 0.261 af
Primary=1.4 cfs 0.261 af

Total Runoff Area = 12.192 ac Runoff Volume = 1.231 af Average Runoff Depth = 1.21"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

NODE LISTING – 10-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=3.98"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=1.8 cfs 0.179 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=3.68"
Flow Length=468' Tc=14.5 min CN=84 Runoff=3.8 cfs 0.532 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=2.20"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=5.4 cfs 1.192 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=268' Tc=22.2 min CN=61 Runoff=0.8 cfs 0.145 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=4.30"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.1 cfs 0.092 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=2.54"
Flow Length=402' Tc=20.7 min CN=72 Runoff=2.7 cfs 0.443 af

Reach R1: R1 Avg. Flow Depth=0.13' Max Vel=0.85 fps Inflow=0.3 cfs 0.179 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.3 cfs 0.179 af

Reach R2: R2 Avg. Flow Depth=0.18' Max Vel=1.85 fps Inflow=0.9 cfs 0.532 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=0.9 cfs 0.532 af

Reach R3: R3 Avg. Flow Depth=0.23' Max Vel=1.07 fps Inflow=0.9 cfs 0.532 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=0.9 cfs 0.532 af

Reach R4: R4 Avg. Flow Depth=0.33' Max Vel=0.94 fps Inflow=1.1 cfs 0.711 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=1.1 cfs 0.711 af

Reach R5: R5 Avg. Flow Depth=0.14' Max Vel=0.64 fps Inflow=0.3 cfs 0.092 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.3 cfs 0.092 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.68' Storage=3,572 cf Inflow=1.8 cfs 0.179 af
Outflow=0.3 cfs 0.179 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.55' Storage=9,733 cf Inflow=3.8 cfs 0.532 af
Outflow=0.9 cfs 0.532 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.72' Storage=1,548 cf Inflow=1.1 cfs 0.092 af
Outflow=0.3 cfs 0.092 af

Link A: A Inflow=6.3 cfs 1.903 af
Primary=6.3 cfs 1.903 af

Link B: B Inflow=0.8 cfs 0.145 af
Primary=0.8 cfs 0.145 af

Link C: C

Inflow=3.0 cfs 0.535 af
Primary=3.0 cfs 0.535 af

Total Runoff Area = 12.192 ac Runoff Volume = 2.583 af Average Runoff Depth = 2.54"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

10-YR STORM SUMMARY

Summary for Subcatchment 1: 1

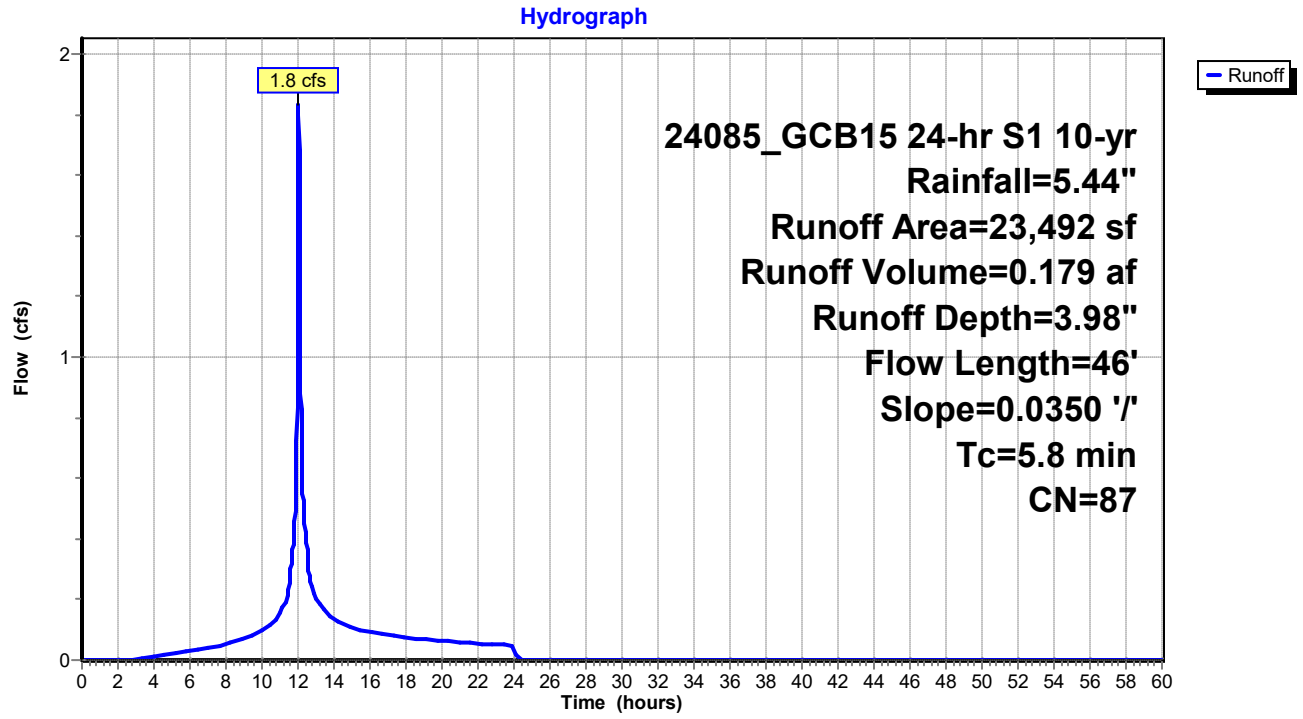
Runoff = 1.8 cfs @ 12.03 hrs, Volume= 0.179 af, Depth= 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
6,277	61	>75% Grass cover, Good, HSG B
13,295	98	Paved roads w/curbs & sewers, HSG B
2,400	98	Roofs, HSG B
1,520	80	>75% Grass cover, Good, HSG D
23,492	87	Weighted Average
7,797		33.19% Pervious Area
15,695		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	46	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"

Subcatchment 1: 1



Summary for Subcatchment 2: 2

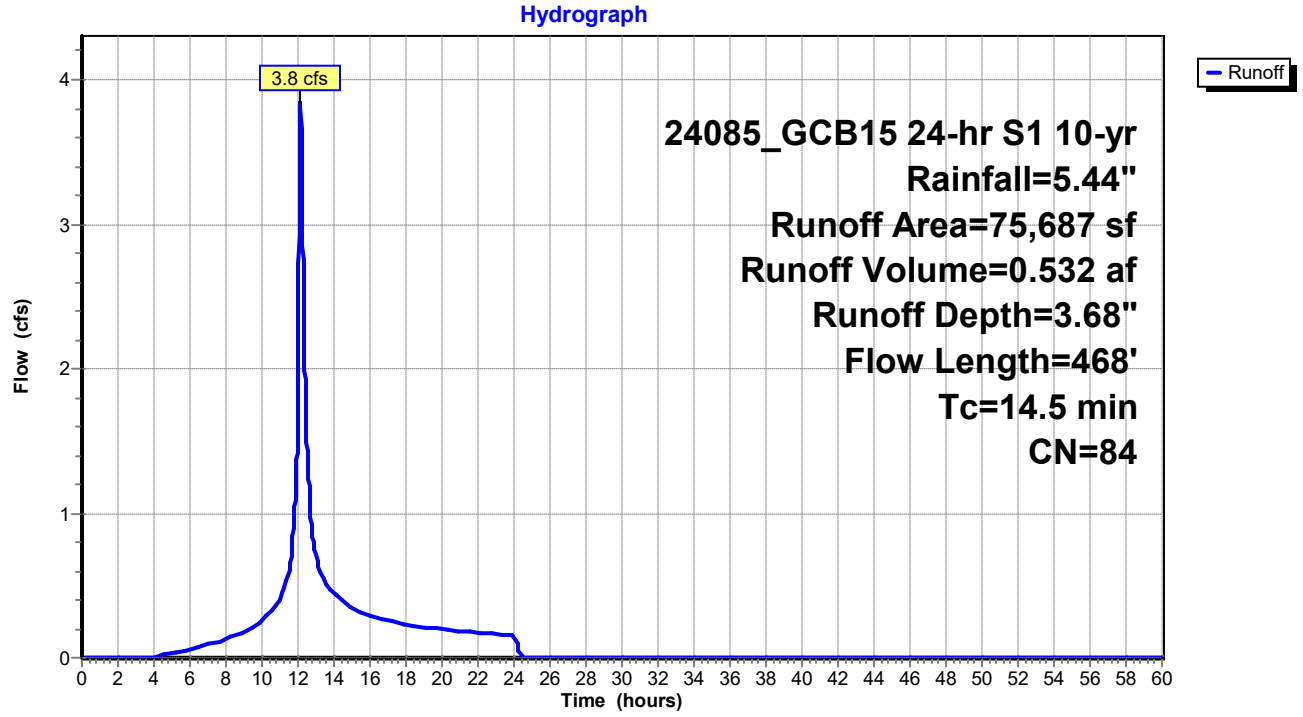
Runoff = 3.8 cfs @ 12.15 hrs, Volume= 0.532 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
26,404	61	>75% Grass cover, Good, HSG B
22,500	96	Gravel surface, HSG B
17,963	98	Paved parking, HSG B
7,200	98	Roofs, HSG B
1,620	80	>75% Grass cover, Good, HSG D
75,687	84	Weighted Average
50,524		66.75% Pervious Area
25,163		33.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	65	0.0110	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
2.4	403	0.0040	2.80	16.81	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
14.5	468	Total			

Subcatchment 2: 2



Summary for Subcatchment 3: 3

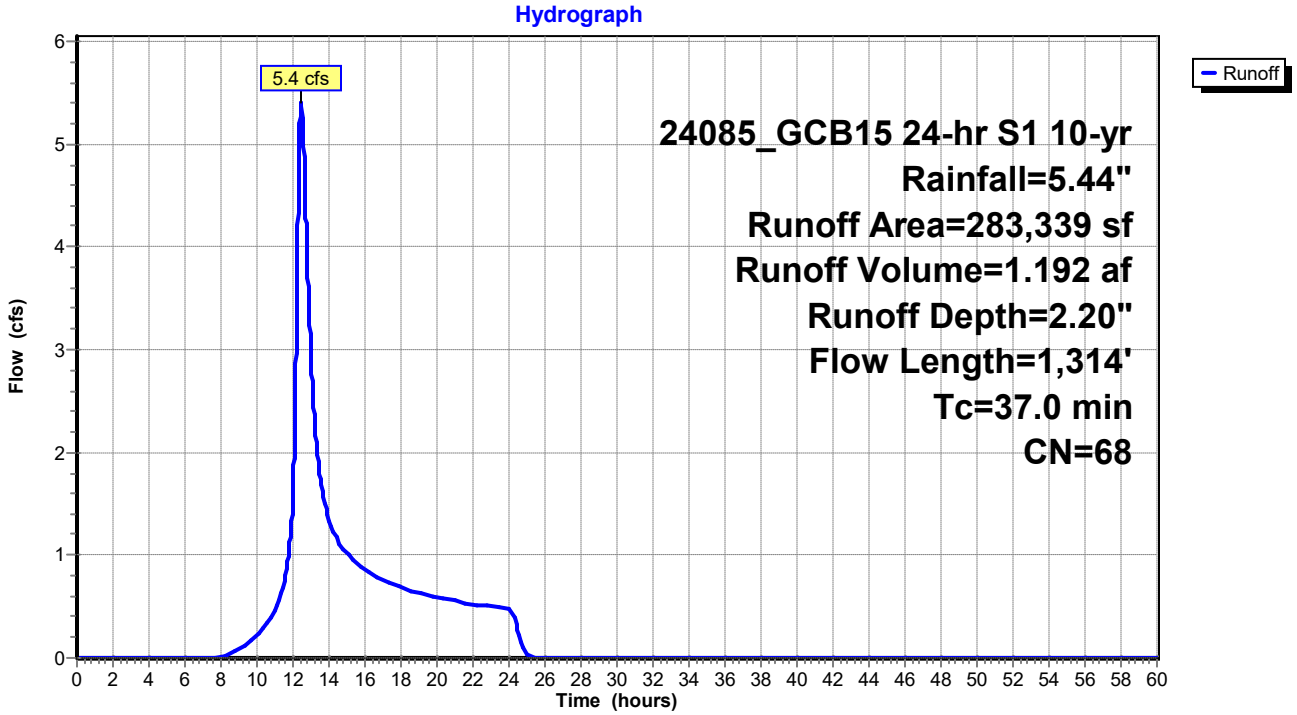
Runoff = 5.4 cfs @ 12.46 hrs, Volume= 1.192 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
184,875	61	>75% Grass cover, Good, HSG B
98,464	80	>75% Grass cover, Good, HSG D
283,339	68	Weighted Average
283,339		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
16.1	479	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	735	0.0050	4.00	35.96	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 2.0 '/' Top.W=9.00' n= 0.025 Earth, clean & straight
37.0	1,314	Total			

Subcatchment 3: 3



Summary for Subcatchment 4: 4

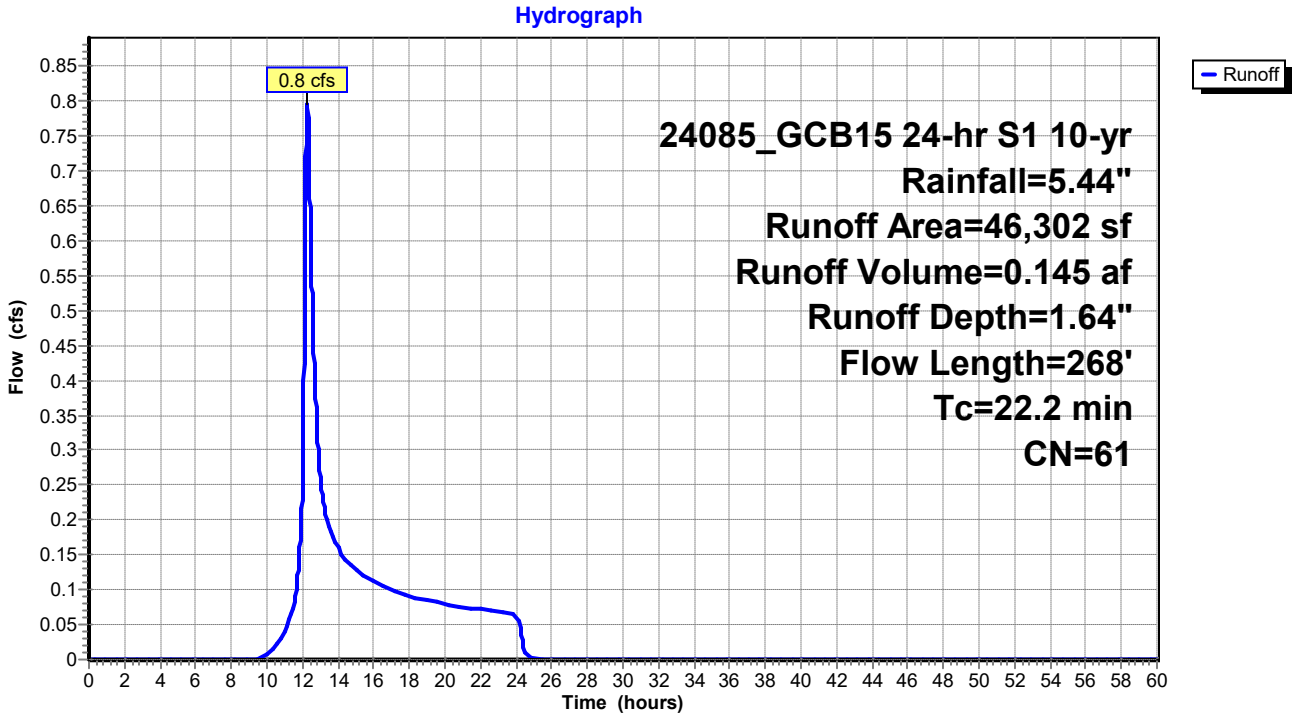
Runoff = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
46,302	61	>75% Grass cover, Good, HSG B
46,302		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0120	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
5.7	168	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	268	Total			

Subcatchment 4: 4



Summary for Subcatchment 5: 5

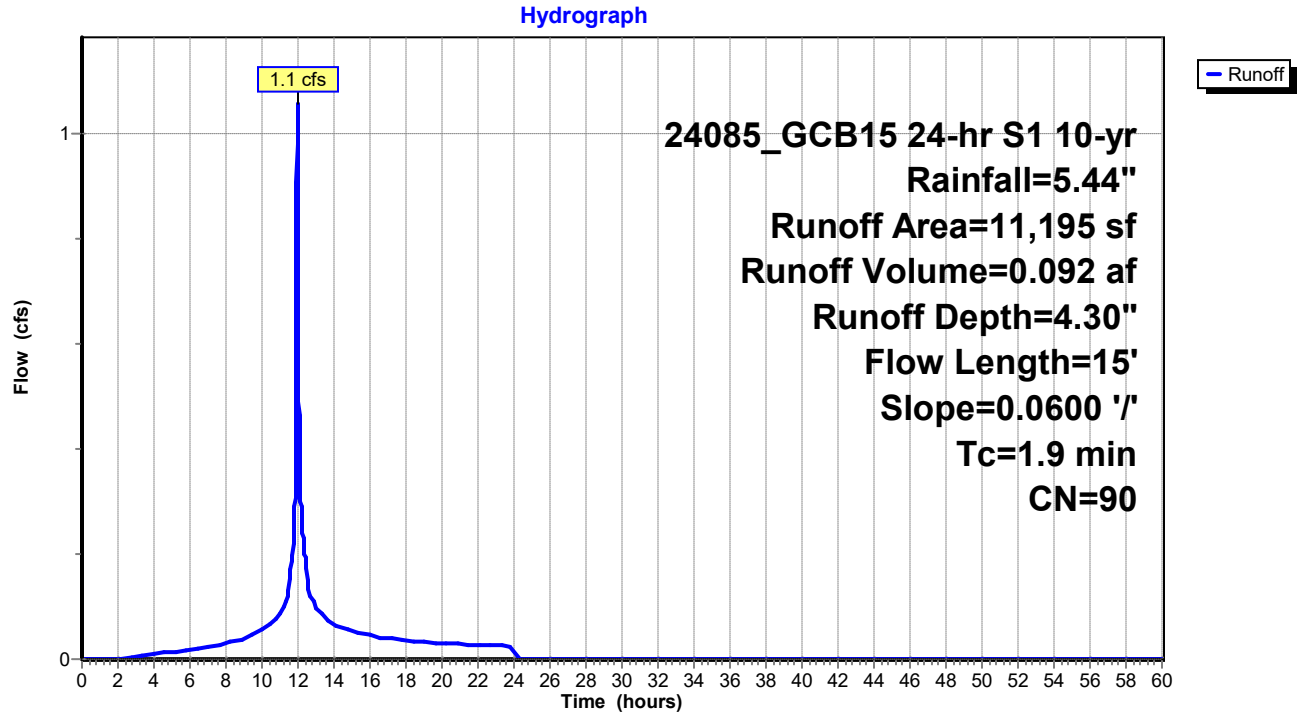
Runoff = 1.1 cfs @ 12.00 hrs, Volume= 0.092 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
1,995	61	>75% Grass cover, Good, HSG B
2,606	96	Gravel surface, HSG B
4,843	98	Paved parking, HSG B
678	80	>75% Grass cover, Good, HSG D
743	96	Gravel surface, HSG D
330	98	Paved parking, HSG D
11,195	90	Weighted Average
6,022		53.79% Pervious Area
5,173		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	15	0.0600	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"

Subcatchment 5: 5



Summary for Subcatchment 6: 6

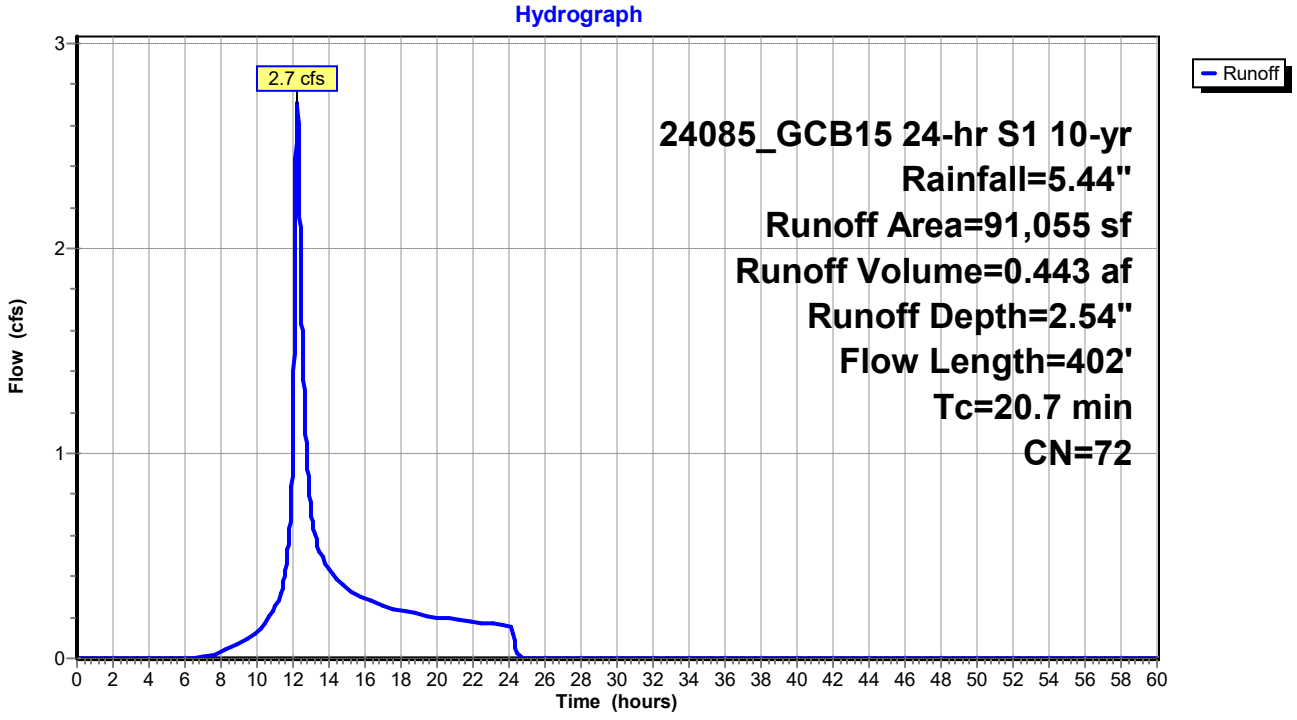
Runoff = 2.7 cfs @ 12.24 hrs, Volume= 0.443 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
24085_GCB15 24-hr S1 10-yr Rainfall=5.44"

Area (sf)	CN	Description
40,145	61	>75% Grass cover, Good, HSG B
50,910	80	>75% Grass cover, Good, HSG D
91,055	72	Weighted Average
91,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
7.2	302	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.7	402	Total			

Subcatchment 6: 6



Summary for Reach R1: R1

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth > 3.98" for 10-yr event
Inflow = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af
Outflow = 0.3 cfs @ 12.84 hrs, Volume= 0.179 af, Atten= 3%, Lag= 11.2 min

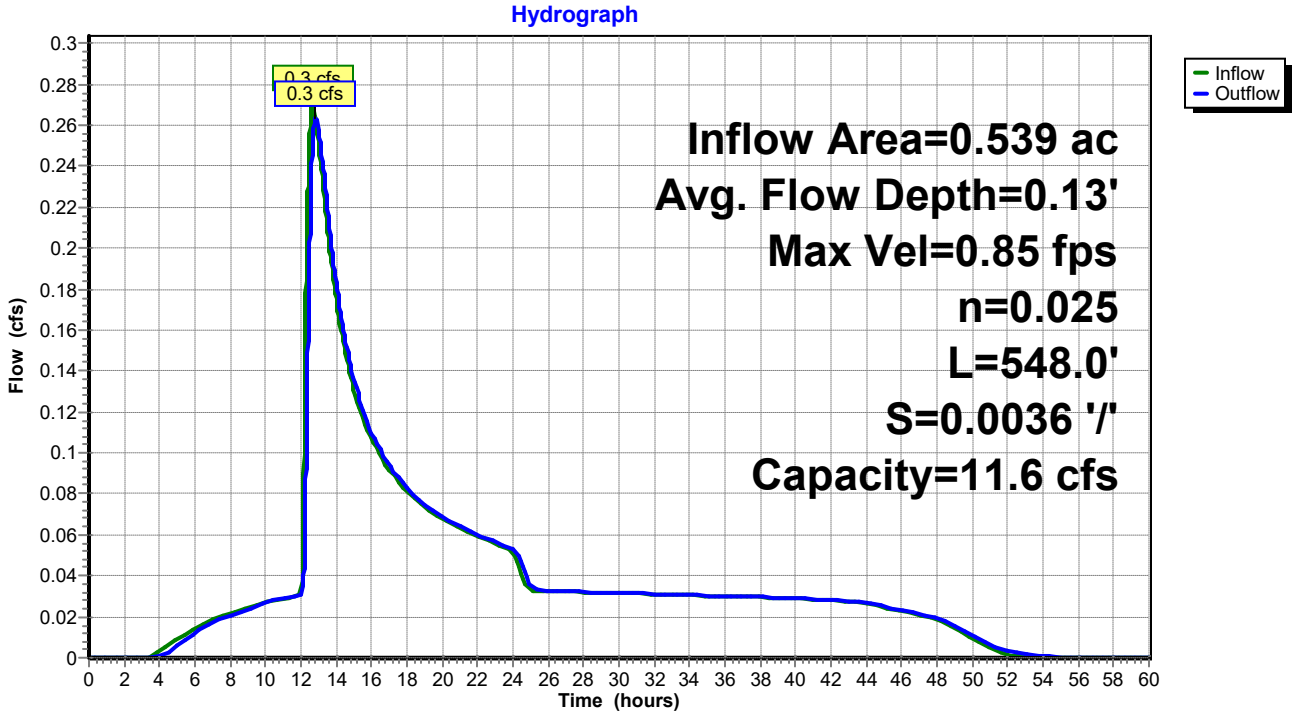
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 10.8 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 24.2 min

Peak Storage= 171 cf @ 12.84 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 2.67'
Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 11.6 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'
Length= 548.0' Slope= 0.0036 '/'
Inlet Invert= 93.00', Outlet Invert= 91.00'



Reach R1: R1



Summary for Reach R2: R2

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth > 3.67" for 10-yr event
Inflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.85 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 1.5 min

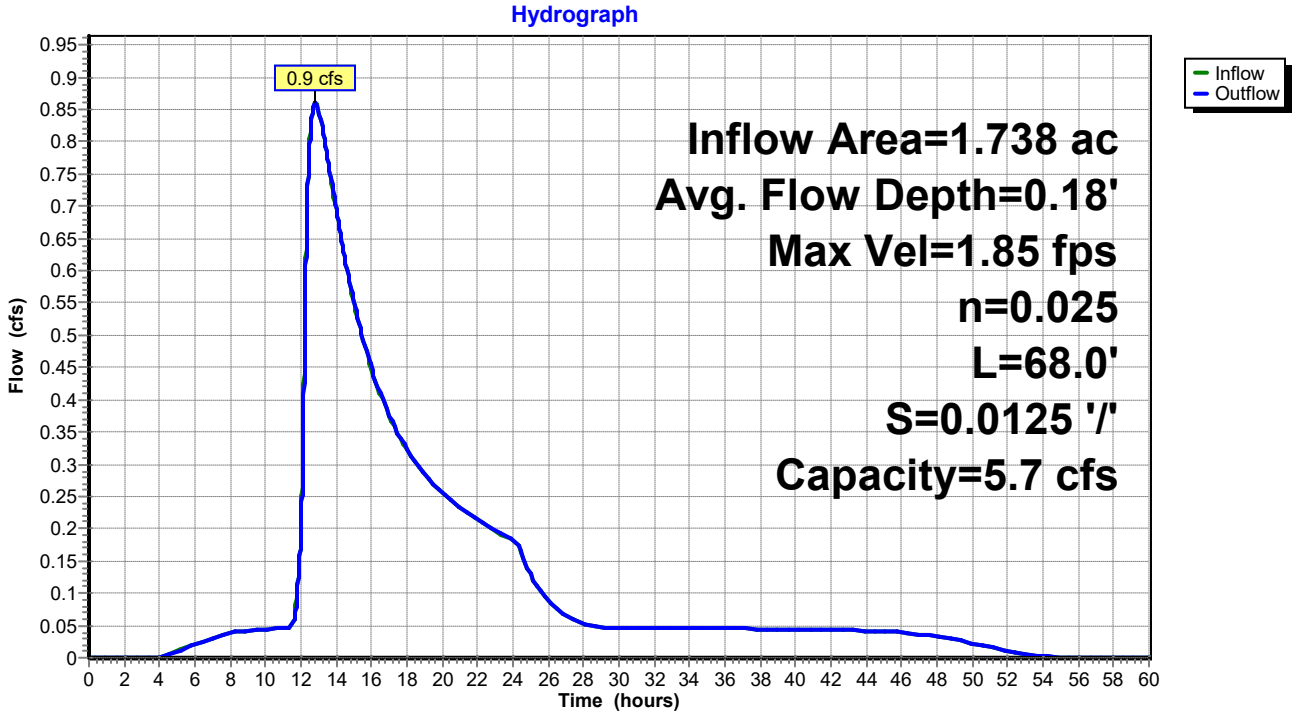
Peak Storage= 32 cf @ 12.80 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 3.09'
Bank-Full Depth= 0.50' Flow Area= 1.8 sf, Capacity= 5.7 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 5.00'
Length= 68.0' Slope= 0.0125 '/'
Inlet Invert= 92.75', Outlet Invert= 91.90'



‡

Reach R2: R2



Summary for Reach R3: R3

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth > 3.67" for 10-yr event
Inflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.87 hrs, Volume= 0.532 af, Atten= 0%, Lag= 4.0 min

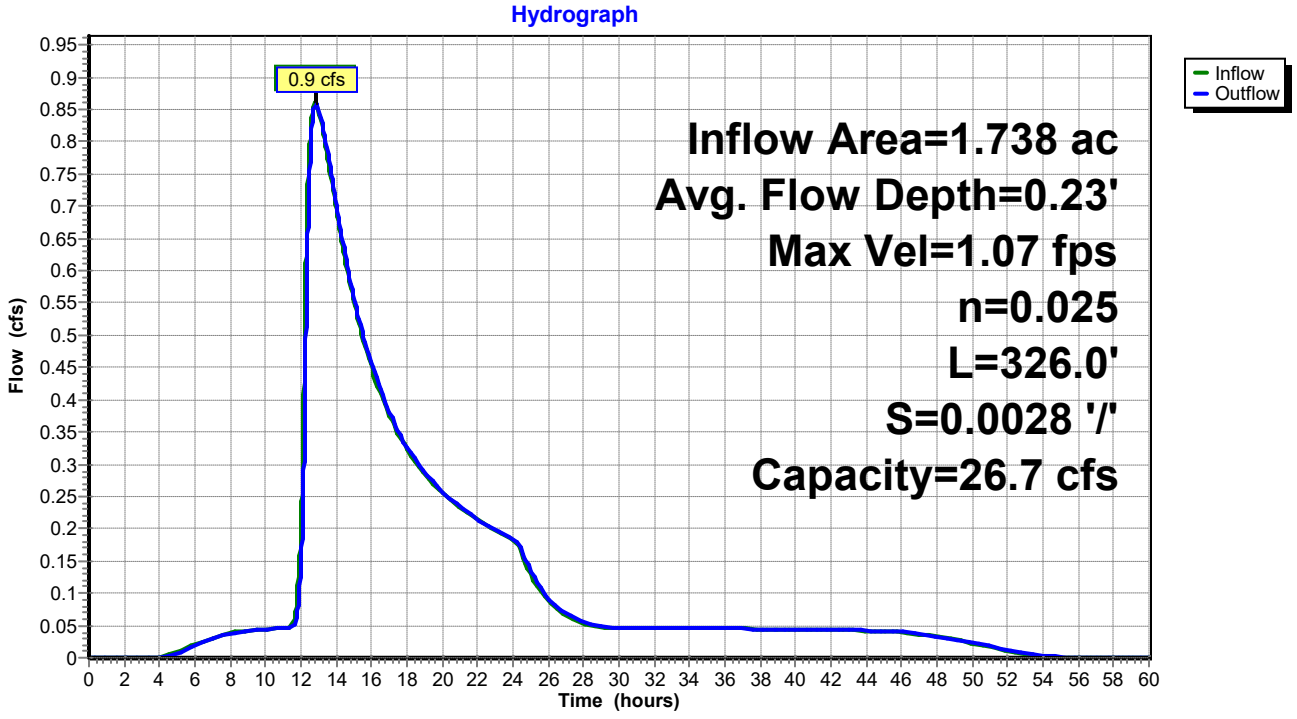
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.07 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 12.8 min

Peak Storage= 263 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 3.93'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 26.7 cfs

3.00' x 1.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 326.0' Slope= 0.0028 '/'
Inlet Invert= 91.90', Outlet Invert= 91.00'



Reach R3: R3



Summary for Reach R4: R4

Inflow Area = 2.277 ac, 41.20% Impervious, Inflow Depth > 3.75" for 10-yr event
Inflow = 1.1 cfs @ 12.86 hrs, Volume= 0.711 af
Outflow = 1.1 cfs @ 12.90 hrs, Volume= 0.711 af, Atten= 0%, Lag= 2.2 min

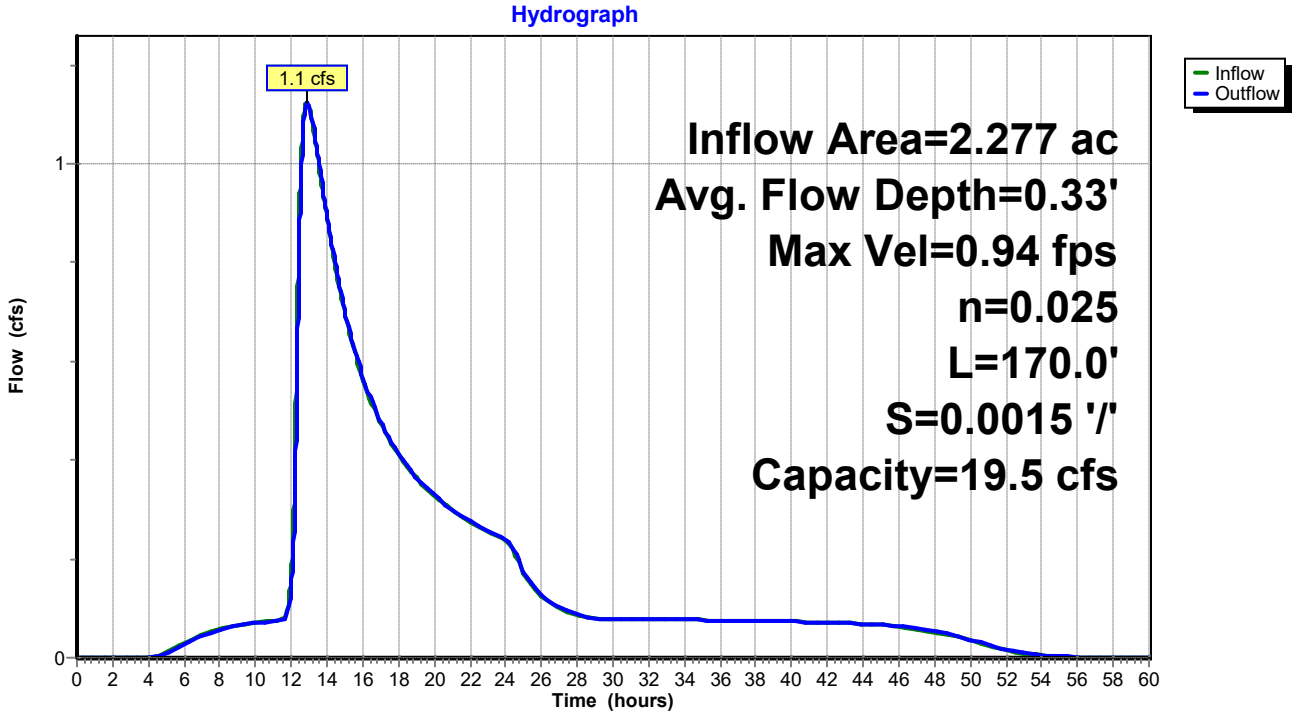
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.94 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 7.3 min

Peak Storage= 202 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 4.30'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 19.5 cfs

3.00' x 1.50' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 170.0' Slope= 0.0015 '/'
Inlet Invert= 91.00', Outlet Invert= 90.75'



Reach R4: R4



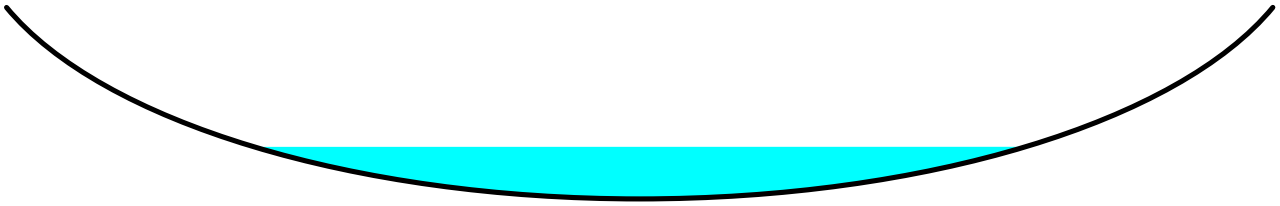
Summary for Reach R5: R5

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 4.30" for 10-yr event
Inflow = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af
Outflow = 0.3 cfs @ 12.23 hrs, Volume= 0.092 af, Atten= 1%, Lag= 5.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.64 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 11.3 min

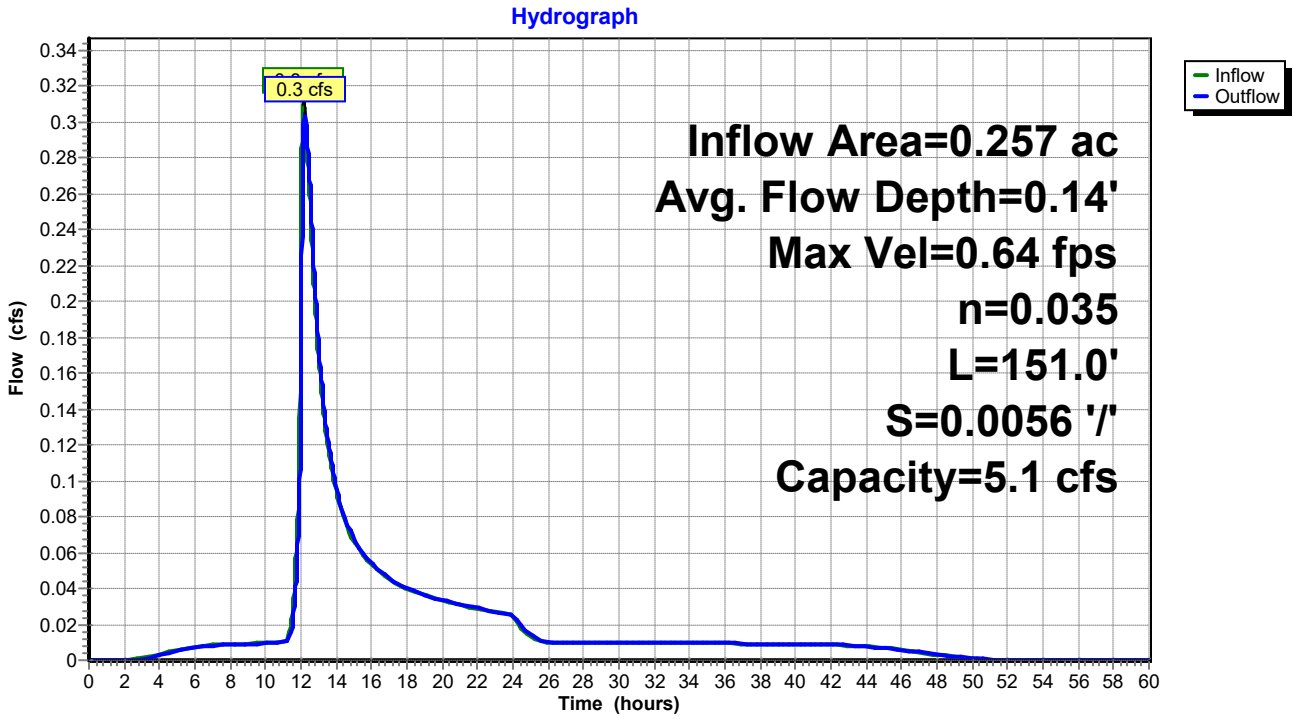
Peak Storage= 72 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 5.22'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 5.1 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 151.0' Slope= 0.0056 '/'
Inlet Invert= 92.75', Outlet Invert= 91.90'



‡

Reach R5: R5



Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 3.98" for 10-yr event
Inflow = 1.8 cfs @ 12.03 hrs, Volume= 0.179 af
Outflow = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af, Atten= 85%, Lag= 37.3 min
Primary = 0.3 cfs @ 12.66 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.68' @ 12.66 hrs Surf.Area= 3,982 sf Storage= 3,572 cf (3,229 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 601.0 min calculated for 0.171 af (96% of inflow)
Center-of-Mass det. time= 533.0 min (1,354.8 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

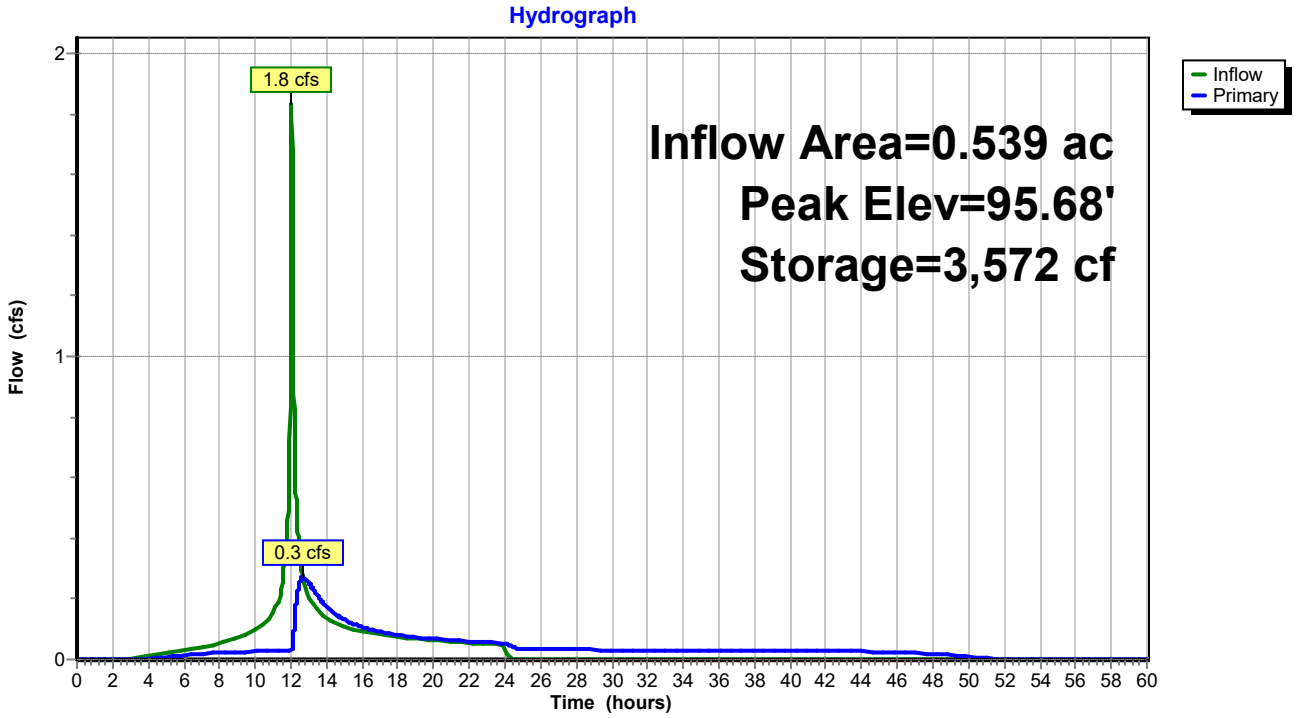
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.3 cfs @ 12.66 hrs HW=95.68' TW=93.13' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.3 cfs of 5.4 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.67 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 0.8 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.2 cfs @ 1.35 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio1: Bio 1 w ISR



Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 3.68" for 10-yr event
Inflow = 3.8 cfs @ 12.15 hrs, Volume= 0.532 af
Outflow = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af, Atten= 78%, Lag= 38.8 min
Primary = 0.9 cfs @ 12.80 hrs, Volume= 0.532 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.55' @ 12.80 hrs Surf.Area= 14,356 sf Storage= 9,733 cf (9,163 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 394.3 min calculated for 0.519 af (98% of inflow)
Center-of-Mass det. time= 361.2 min (1,205.2 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

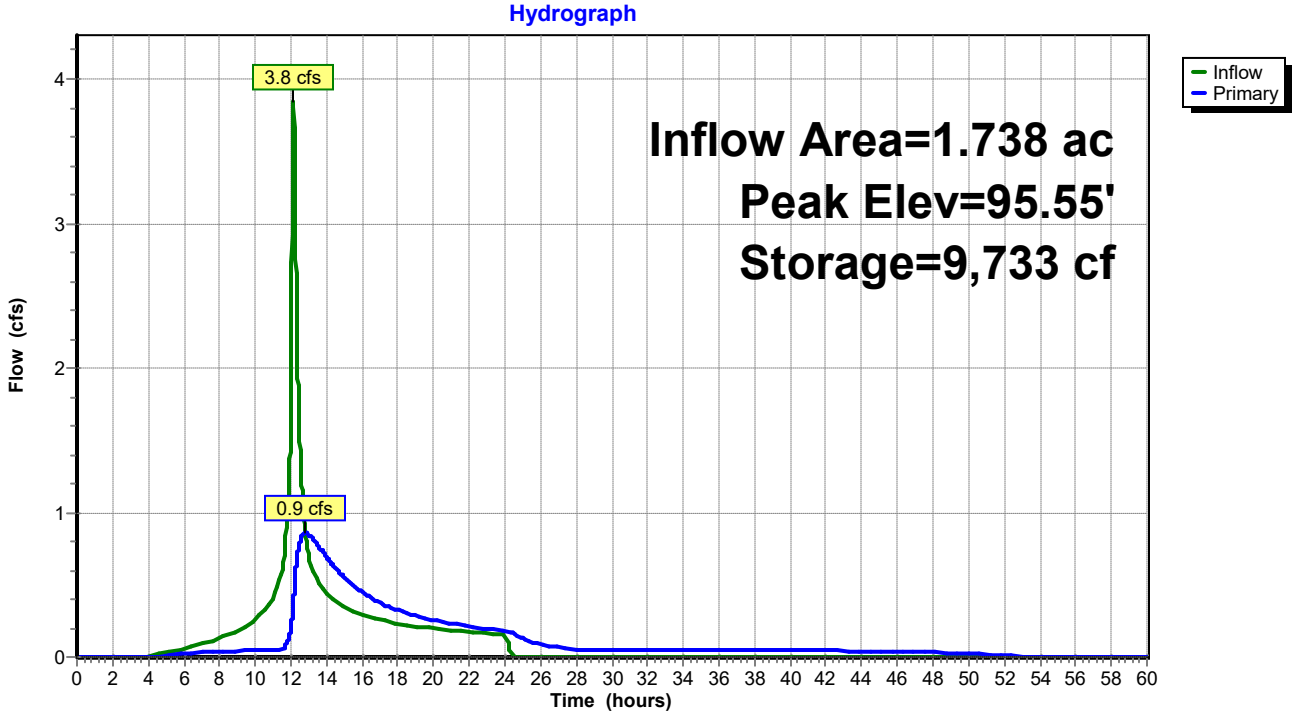
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.9 cfs @ 12.80 hrs HW=95.55' TW=92.93' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.9 cfs of 5.6 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 7.79 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio2: Bio 2 w ISR



Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 4.30" for 10-yr event
Inflow = 1.1 cfs @ 12.00 hrs, Volume= 0.092 af
Outflow = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af, Atten= 71%, Lag= 8.8 min
Primary = 0.3 cfs @ 12.14 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.72' @ 12.14 hrs Surf.Area= 1,501 sf Storage= 1,548 cf (1,408 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 376.5 min calculated for 0.089 af (97% of inflow)
Center-of-Mass det. time= 328.6 min (1,131.2 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

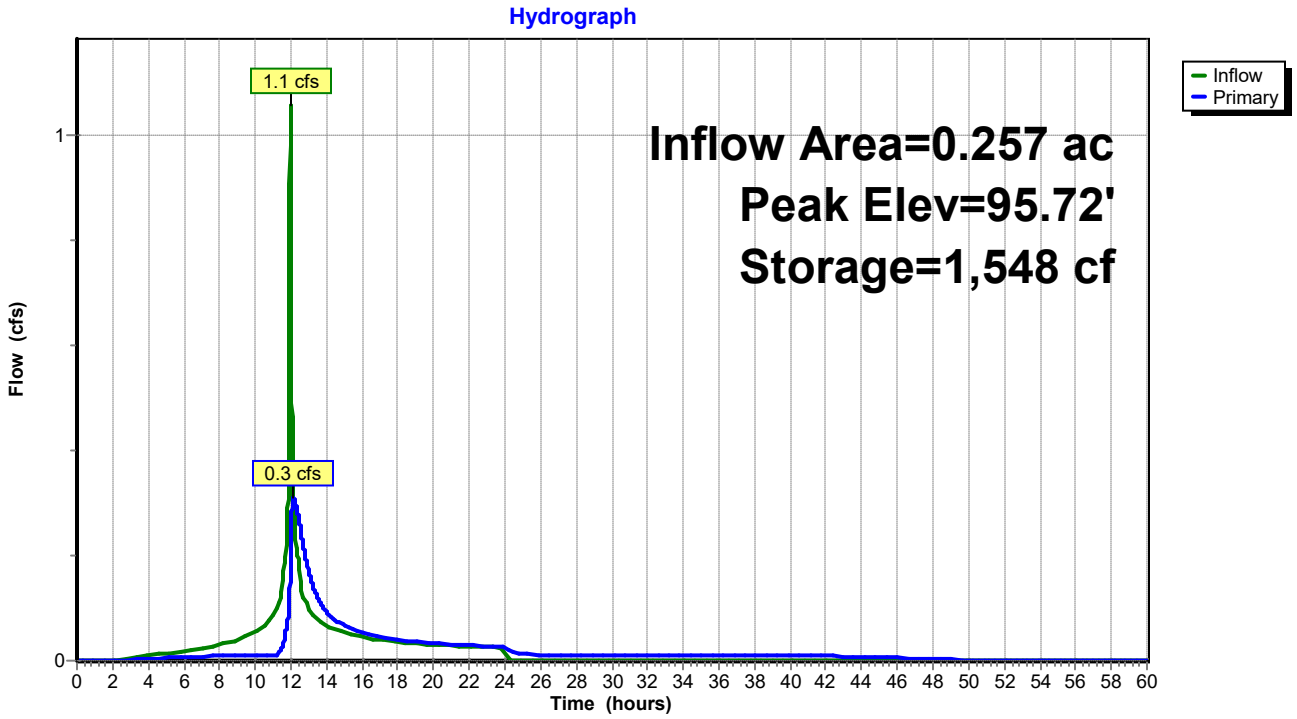
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.3 cfs @ 12.14 hrs HW=95.72' TW=92.88' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.3 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.10 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.7 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.3 cfs @ 2.31 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio3: Bio 3 w ISR

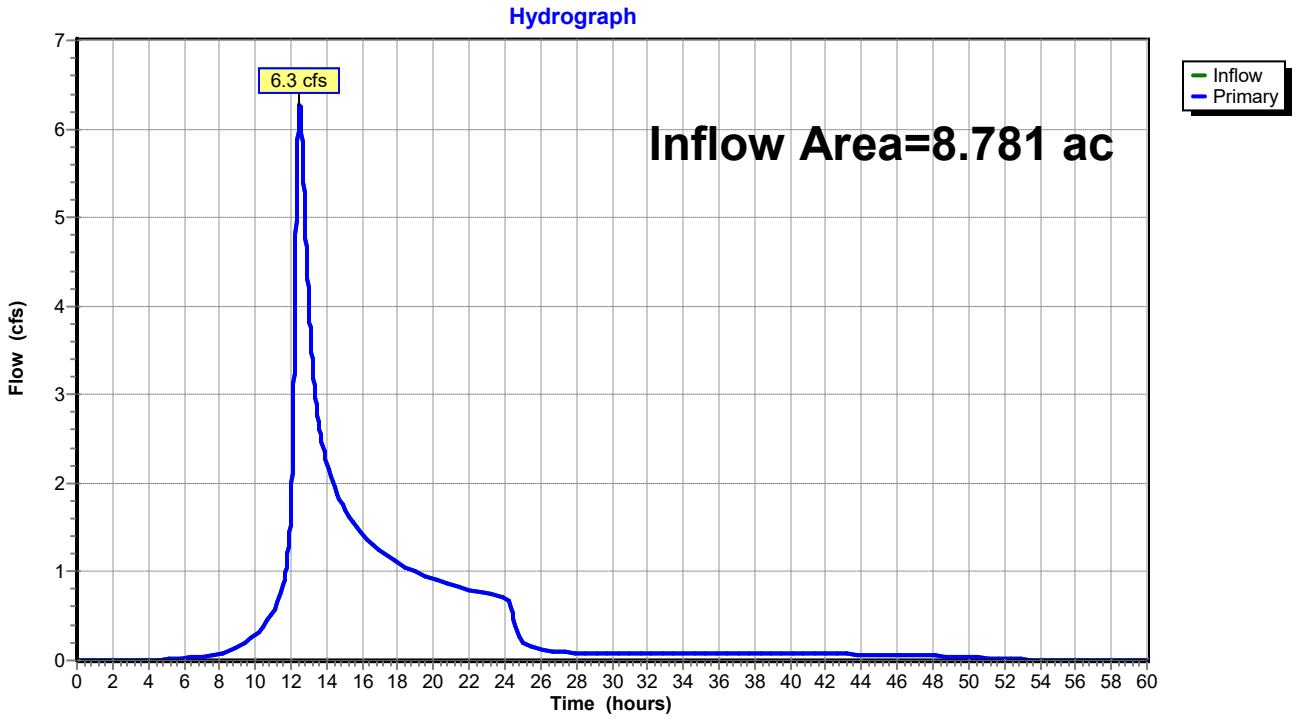


Summary for Link A: A

Inflow Area = 8.781 ac, 10.68% Impervious, Inflow Depth = 2.60" for 10-yr event
Inflow = 6.3 cfs @ 12.50 hrs, Volume= 1.903 af
Primary = 6.3 cfs @ 12.50 hrs, Volume= 1.903 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link A: A

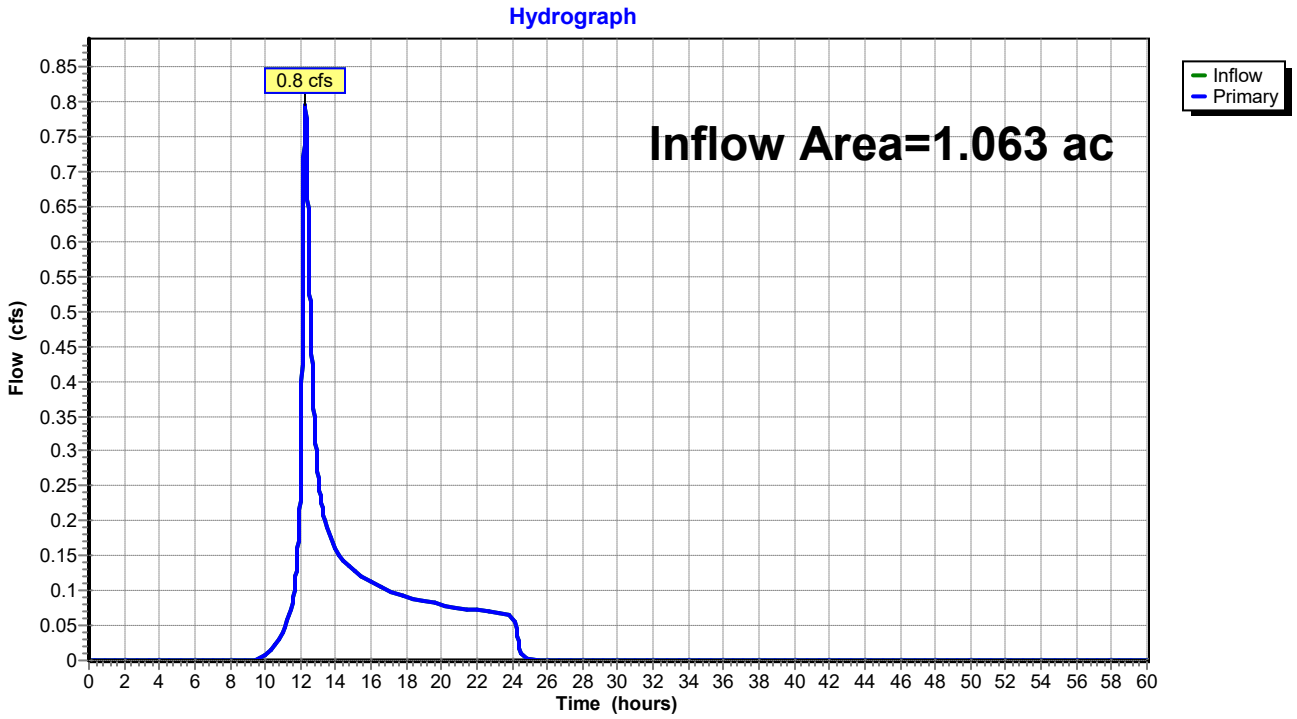


Summary for Link B: B

Inflow Area = 1.063 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-yr event
Inflow = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af
Primary = 0.8 cfs @ 12.26 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link B: B

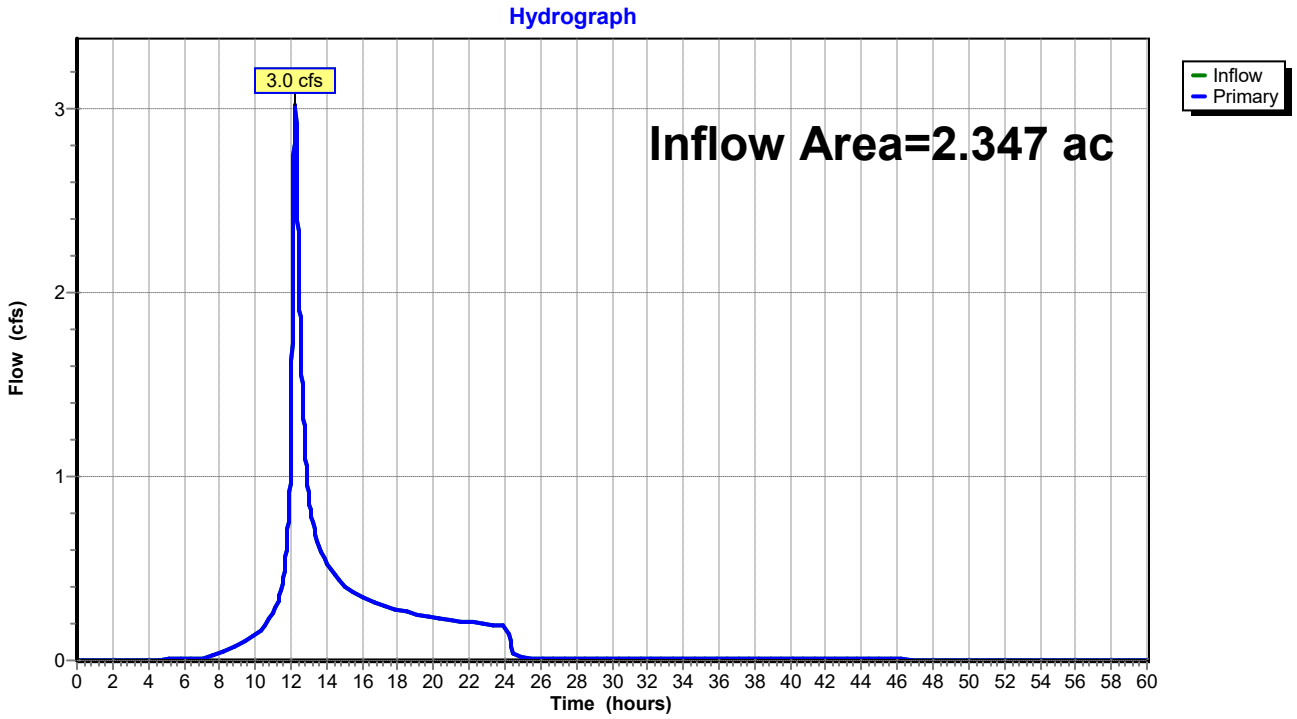


Summary for Link C: C

Inflow Area = 2.347 ac, 5.06% Impervious, Inflow Depth = 2.73" for 10-yr event
Inflow = 3.0 cfs @ 12.24 hrs, Volume= 0.535 af
Primary = 3.0 cfs @ 12.24 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link C: C



A – 2

NODE LISTING – 25-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=5.36"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=2.3 cfs 0.241 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=5.03"
Flow Length=468' Tc=14.5 min CN=84 Runoff=4.9 cfs 0.728 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=7.9 cfs 1.796 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=2.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.3 cfs 0.232 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=5.71"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.3 cfs 0.122 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=3.73"
Flow Length=402' Tc=20.7 min CN=72 Runoff=3.8 cfs 0.649 af

Reach R1: R1 Avg. Flow Depth=0.22' Max Vel=1.12 fps Inflow=0.6 cfs 0.241 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=0.6 cfs 0.241 af

Reach R2: R2 Avg. Flow Depth=0.23' Max Vel=2.10 fps Inflow=1.3 cfs 0.728 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=1.3 cfs 0.728 af

Reach R3: R3 Avg. Flow Depth=0.29' Max Vel=1.22 fps Inflow=1.3 cfs 0.728 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=1.3 cfs 0.728 af

Reach R4: R4 Avg. Flow Depth=0.43' Max Vel=1.11 fps Inflow=1.9 cfs 0.969 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=1.9 cfs 0.969 af

Reach R5: R5 Avg. Flow Depth=0.16' Max Vel=0.72 fps Inflow=0.4 cfs 0.122 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.4 cfs 0.122 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.83' Storage=4,231 cf Inflow=2.3 cfs 0.241 af
Outflow=0.6 cfs 0.241 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.74' Storage=12,418 cf Inflow=4.9 cfs 0.728 af
Outflow=1.3 cfs 0.728 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.86' Storage=1,770 cf Inflow=1.3 cfs 0.122 af
Outflow=0.4 cfs 0.122 af

Link A: A Inflow=9.7 cfs 2.765 af
Primary=9.7 cfs 2.765 af

Link B: B Inflow=1.3 cfs 0.232 af
Primary=1.3 cfs 0.232 af

Link C: C

Inflow=4.2 cfs 0.771 af
Primary=4.2 cfs 0.771 af

Total Runoff Area = 12.192 ac Runoff Volume = 3.768 af Average Runoff Depth = 3.71"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

A – 2

NODE LISTING – 50-YR

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=23,492 sf 66.81% Impervious Runoff Depth=6.67"
Flow Length=46' Slope=0.0350 '/' Tc=5.8 min CN=87 Runoff=2.6 cfs 0.300 af

Subcatchment 2: 2 Runoff Area=75,687 sf 33.25% Impervious Runoff Depth=6.32"
Flow Length=468' Tc=14.5 min CN=84 Runoff=5.8 cfs 0.915 af

Subcatchment 3: 3 Runoff Area=283,339 sf 0.00% Impervious Runoff Depth=4.43"
Flow Length=1,314' Tc=37.0 min CN=68 Runoff=10.3 cfs 2.401 af

Subcatchment 4: 4 Runoff Area=46,302 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=268' Tc=22.2 min CN=61 Runoff=1.7 cfs 0.321 af

Subcatchment 5: 5 Runoff Area=11,195 sf 46.21% Impervious Runoff Depth=7.03"
Flow Length=15' Slope=0.0600 '/' Tc=1.9 min CN=90 Runoff=1.5 cfs 0.151 af

Subcatchment 6: 6 Runoff Area=91,055 sf 0.00% Impervious Runoff Depth=4.90"
Flow Length=402' Tc=20.7 min CN=72 Runoff=4.8 cfs 0.853 af

Reach R1: R1 Avg. Flow Depth=0.28' Max Vel=1.28 fps Inflow=1.0 cfs 0.300 af
n=0.025 L=548.0' S=0.0036 '/' Capacity=11.6 cfs Outflow=1.0 cfs 0.300 af

Reach R2: R2 Avg. Flow Depth=0.25' Max Vel=2.22 fps Inflow=1.5 cfs 0.914 af
n=0.025 L=68.0' S=0.0125 '/' Capacity=5.7 cfs Outflow=1.5 cfs 0.914 af

Reach R3: R3 Avg. Flow Depth=0.33' Max Vel=1.30 fps Inflow=1.5 cfs 0.914 af
n=0.025 L=326.0' S=0.0028 '/' Capacity=26.7 cfs Outflow=1.5 cfs 0.914 af

Reach R4: R4 Avg. Flow Depth=0.50' Max Vel=1.20 fps Inflow=2.4 cfs 1.214 af
n=0.025 L=170.0' S=0.0015 '/' Capacity=19.5 cfs Outflow=2.4 cfs 1.214 af

Reach R5: R5 Avg. Flow Depth=0.18' Max Vel=0.76 fps Inflow=0.5 cfs 0.151 af
n=0.035 L=151.0' S=0.0056 '/' Capacity=5.1 cfs Outflow=0.5 cfs 0.151 af

Pond Bio1: Bio 1 w ISR Peak Elev=95.95' Storage=4,792 cf Inflow=2.6 cfs 0.300 af
Outflow=1.0 cfs 0.300 af

Pond Bio2: Bio 2 w ISR Peak Elev=95.91' Storage=14,772 cf Inflow=5.8 cfs 0.915 af
Outflow=1.5 cfs 0.914 af

Pond Bio3: Bio 3 w ISR Peak Elev=95.95' Storage=1,917 cf Inflow=1.5 cfs 0.151 af
Outflow=0.5 cfs 0.151 af

Link A: A Inflow=12.7 cfs 3.615 af
Primary=12.7 cfs 3.615 af

Link B: B Inflow=1.7 cfs 0.321 af
Primary=1.7 cfs 0.321 af

Link C: C

Inflow=5.3 cfs 1.004 af
Primary=5.3 cfs 1.004 af

Total Runoff Area = 12.192 ac Runoff Volume = 4.940 af Average Runoff Depth = 4.86"
91.33% Pervious = 11.135 ac 8.67% Impervious = 1.057 ac

APPENDIX B

DESIGN

B – 1

STORMWATER BEST MANAGEMENT PRACTICES

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

Type/Node Name: **Bioretention Pond 1 w/ ISR (Bio 1 w ISR)**

Enter the node name in the drainage analysis if applicable.

0.54 ac	A = Area draining to the practice	
0.36 ac	A_I = Impervious area draining to the practice	
0.67 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.65 unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.35 ac-in	WQV= 1" x Rv x A	
1,274 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
127 cf	10% x WQV (check calc for sediment forebay)	
319 cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay	Method of Pretreatment	
1,065 cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
1,498 cf	Volume below lowest orifice[1]	**≥ 100%WQV**
343 cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.03 cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.42 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.03 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
24.41 hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00 in	Depth of Filter Media	**≥ 18"**
3.00 :1	Pond side slopes	**≥ 3:1**
Top Grate	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.95 ft	Peak elevation of the 50-year storm event (E_{50})	
96.25 ft	Berm elevation of the pond	
YES	E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 6.67" for 50-yr event
Inflow = 2.6 cfs @ 12.03 hrs, Volume= 0.300 af
Outflow = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af, Atten= 62%, Lag= 10.8 min
Primary = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.95' @ 12.21 hrs Surf.Area= 6,011 sf Storage= 4,792 cf (4,449 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 399.5 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 361.0 min (1,163.0 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

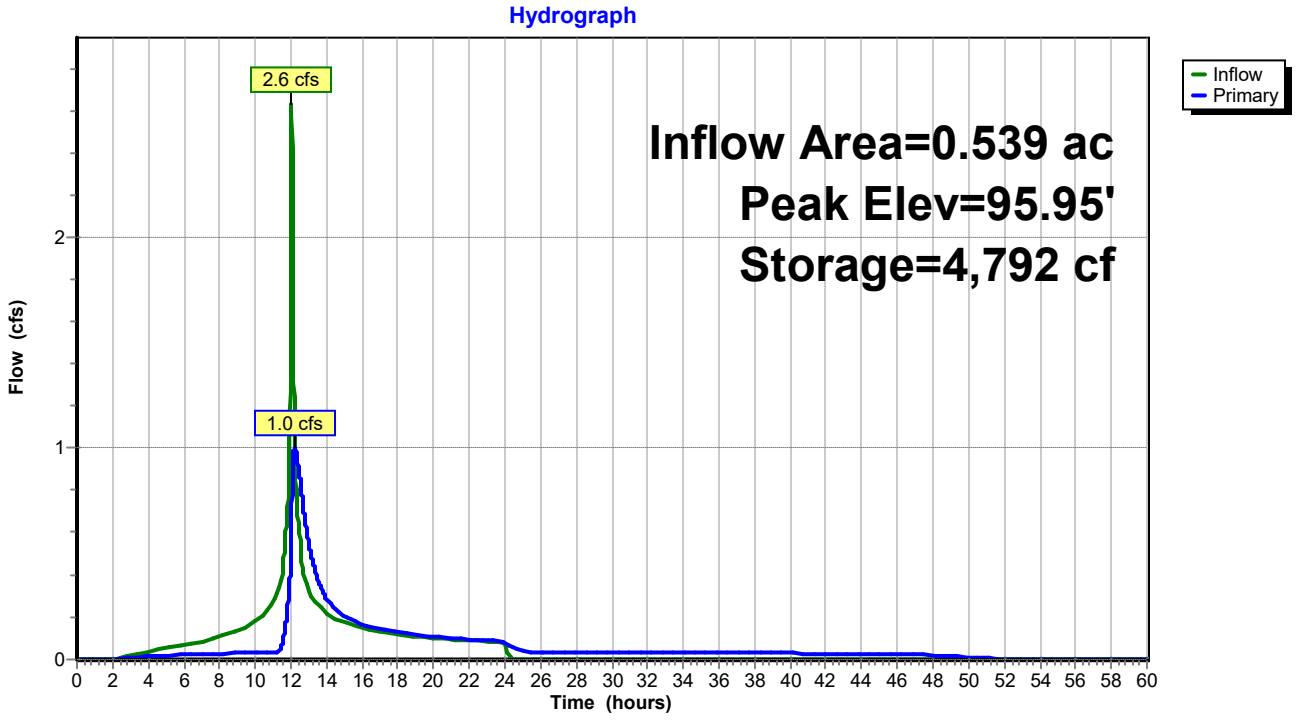
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.21 hrs HW=95.95' TW=93.26' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.0 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.89 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.0 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio1: Bio 1 w ISR



Stage-Discharge for Pond Bio1: Bio 1 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.0
92.60	0.0	95.20	0.0
92.65	0.0	95.25	0.0
92.70	0.0	95.30	0.0
92.75	0.0	95.35	0.0
92.80	0.0	95.40	0.0
92.85	0.0	95.45	0.0
92.90	0.0	95.50	0.0
92.95	0.0	95.55	0.1
93.00	0.0	95.60	0.1
93.05	0.0	95.65	0.2
93.10	0.0	95.70	0.3
93.15	0.0	95.75	0.4
93.20	0.0	95.80	0.6
93.25	0.0	95.85	0.7
93.30	0.0	95.90	0.8
93.35	0.0	95.95	1.0
93.40	0.0	96.00	1.2
93.45	0.0	96.05	1.9
93.50	0.0	96.10	3.1
93.55	0.0	96.15	4.6
93.60	0.0	96.20	6.1
93.65	0.0	96.25	**6.2**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		
94.20	0.0		
94.25	0.0		
94.30	0.0		
94.35	0.0		
94.40	0.0		

Stage-Area-Storage for Pond Bio1: Bio 1 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.85	686	0
91.90	686	14
91.95	686	27
92.00	686	41
92.05	686	55
92.10	686	69
92.15	686	82
92.20	686	96
92.25	686	110
92.30	686	123
92.35	686	137
92.40	686	151
92.45	686	165
92.50	686	178
92.55	686	192
92.60	686	206
92.65	686	220
92.70	686	233
92.75	686	247
92.80	686	261
92.85	686	274
92.90	686	288
92.95	686	302
93.00	686	316
93.05	686	329
93.10	686	343
93.15	686	353
93.20	686	364
93.25	686	374
93.30	686	384
93.35	686	394
93.40	686	401
93.45	686	408
93.50	686	415
93.55	686	422
93.60	686	429
93.65	686	436
93.70	686	442
93.75	824	449
93.80	838	463
93.85	852	478
93.90	867	494
93.95	883	510
94.00	899	527
94.05	912	545
94.10	926	564
94.15	940	583
94.20	955	603
94.25	970	623
94.30	985	645
94.35	1,001	667
94.40	1,017	690
94.45	1,034	714
94.50	1,051	739
94.55	1,069	764
94.60	1,086	791
94.65	1,105	818
94.70	1,123	846
94.75	1,142	875
94.80	1,162	906
94.85	1,182	937
94.90	1,786	1,036
94.95	2,391	1,136
95.00	2,996	1,237
95.05	3,054	1,392
95.10	3,114	1,549
95.15	3,174	1,708
95.20	3,236	1,869
95.25	3,299	2,032
95.30	3,363	2,197
95.35	3,428	2,364
95.40	3,494	2,534
95.45	3,589	2,710
95.50	3,703	2,891
95.55	3,780	3,081
95.60	3,859	3,274
95.65	3,939	3,469
95.70	4,021	3,666
95.75	4,103	3,866
95.80	5,798	4,091
95.85	5,869	4,325
95.90	5,940	4,560
95.95	6,012	4,795
96.00	6,083	5,030
96.05	6,226	5,291
96.10	6,369	5,552
96.15	6,513	5,813
96.20	6,656	6,074
96.25	**6,799**	**6,335**

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

Type/Node Name: **Bioretention Pond 2 w/ ISR (Bio 2 w ISR)**

Enter the node name in the drainage analysis if applicable.

1.74	ac	A = Area draining to the practice	
0.58	ac	A_I = Impervious area draining to the practice	
0.33	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.35	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.61	ac-in	WQV= 1" x Rv x A	
2,203	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
220	cf	10% x WQV (check calc for sediment forebay)	
551	cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay		Method of Pretreatment	
724	cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
2,334	cf	Volume below lowest orifice[1]	**≥ 100%WQV**
570	cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.05	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.09	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.05	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
26.04	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00	in	Depth of Filter Media	**≥ 18"**
3.00	:1	Pond side slopes	**≥ 3:1**
Grates		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.91	ft	Peak elevation of the 50-year storm event (E_{50})	
96.25	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 6.32" for 50-yr event
Inflow = 5.8 cfs @ 12.15 hrs, Volume= 0.915 af
Outflow = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af, Atten= 73%, Lag= 34.6 min
Primary = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.91' @ 12.72 hrs Surf.Area= 16,279 sf Storage= 14,772 cf (14,202 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 295.4 min calculated for 0.901 af (99% of inflow)
Center-of-Mass det. time= 275.6 min (1,098.1 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

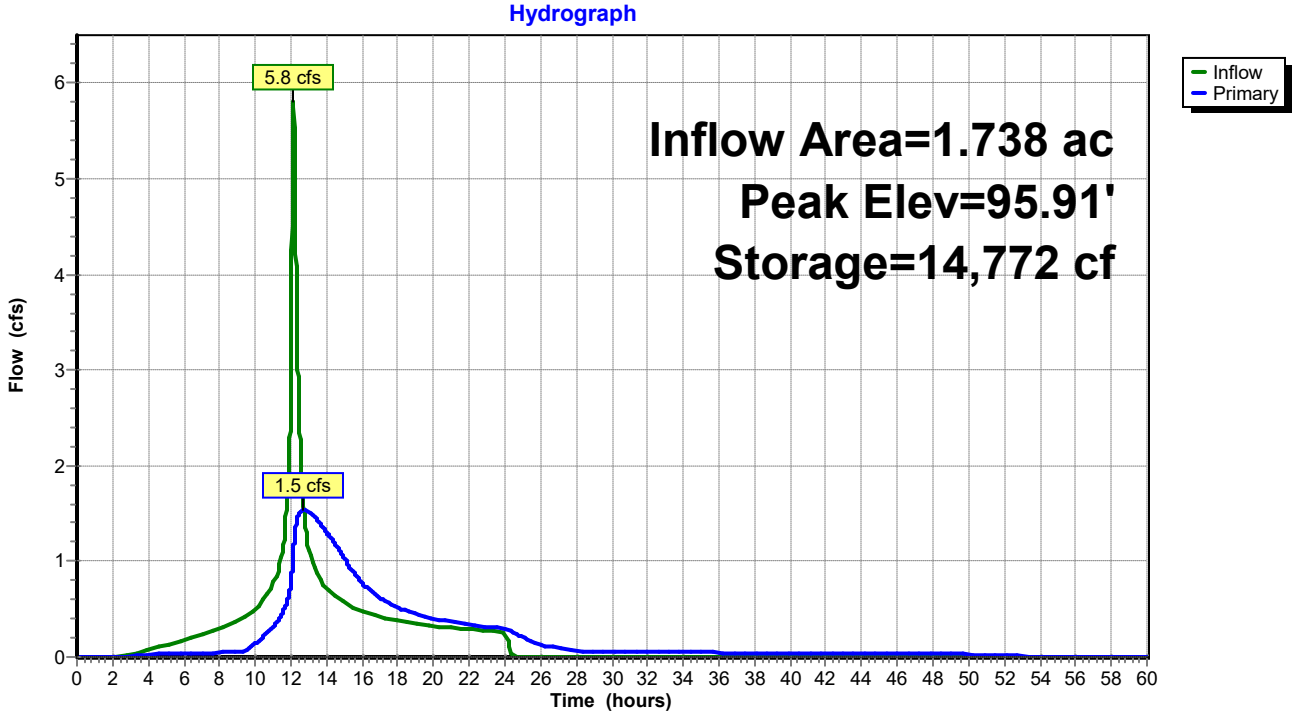
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.5 cfs @ 12.72 hrs HW=95.91' TW=93.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.21 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.4 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.5 cfs @ 3.58 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio2: Bio 2 w ISR



Stage-Discharge for Pond Bio2: Bio 2 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.60	0.0	94.20	0.0
91.65	0.0	94.25	0.0
91.70	0.0	94.30	0.0
91.75	0.0	94.35	0.0
91.80	0.0	94.40	0.0
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.1
92.60	0.0	95.20	0.1
92.65	0.0	95.25	0.2
92.70	0.0	95.30	0.3
92.75	0.0	95.35	0.4
92.80	0.0	95.40	0.5
92.85	0.0	95.45	0.6
92.90	0.0	95.50	0.7
92.95	0.0	95.55	0.9
93.00	0.0	95.60	1.0
93.05	0.0	95.65	1.1
93.10	0.0	95.70	1.2
93.15	0.0	95.75	1.3
93.20	0.0	95.80	1.4
93.25	0.0	95.85	1.5
93.30	0.0	95.90	1.5
93.35	0.0	95.95	1.6
93.40	0.0	96.00	1.7
93.45	0.0	96.05	2.3
93.50	0.0	96.10	3.4
93.55	0.0	96.15	4.9
93.60	0.0	96.20	6.4
93.65	0.0	96.25	**6.4**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		

Stage-Area-Storage for Pond Bio2: Bio 2 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	1,140	0
91.65	1,140	23
91.70	1,140	46
91.75	1,140	68
91.80	1,140	91
91.85	1,140	114
91.90	1,140	137
91.95	1,140	160
92.00	1,140	182
92.05	1,140	205
92.10	1,140	228
92.15	1,140	251
92.20	1,140	274
92.25	1,140	296
92.30	1,140	319
92.35	1,140	342
92.40	1,140	365
92.45	1,140	388
92.50	1,140	410
92.55	1,140	433
92.60	1,140	456
92.65	1,140	479
92.70	1,140	502
92.75	1,140	524
92.80	1,140	547
92.85	1,140	570
92.90	1,140	587
92.95	1,140	604
93.00	1,140	621
93.05	1,140	638
93.10	1,140	656
93.15	1,140	667
93.20	1,140	678
93.25	1,228	690
93.30	1,235	706
93.35	1,242	722
93.40	1,250	739
93.45	1,258	756
93.50	1,266	773
93.55	1,274	791
93.60	1,283	809
93.65	1,291	828
93.70	1,301	847
93.75	1,310	867
93.80	1,320	887
93.85	1,330	908
93.90	1,340	929
93.95	1,350	951
94.00	1,361	973
94.05	1,378	996
94.10	1,395	1,019
94.15	1,413	1,044
94.20	1,432	1,070
94.25	1,451	1,096
94.30	1,471	1,123
94.35	1,491	1,152
94.40	1,512	1,181
94.45	1,534	1,212
94.50	1,556	1,244
94.55	1,579	1,276
94.60	1,602	1,310
94.65	2,402	1,524
94.70	3,203	1,738
94.75	4,005	1,954
94.80	4,807	2,171
94.85	5,609	2,390
94.90	6,413	2,610
94.95	7,217	2,831
95.00	8,021	3,054
95.05	8,876	3,492
95.10	9,734	3,940
95.15	10,605	4,469
95.20	11,476	4,999
95.25	11,576	5,576
95.30	13,025	6,246
95.35	13,291	6,942
95.40	13,556	7,637
95.45	13,822	8,333
95.50	14,087	9,028
95.55	14,353	9,724
95.60	14,618	10,420
95.65	14,884	11,115
95.70	15,149	11,811
95.75	15,415	12,506
95.80	15,680	13,202
95.85	15,946	13,898
95.90	16,211	14,593
95.95	16,477	15,289
96.00	16,742	15,984
96.05	16,983	16,811
96.10	17,223	17,637
96.15	17,464	18,463
96.20	17,704	19,289
96.25	**17,945**	**20,115**

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

Type/Node Name: **Bioretention Pond 3 w/ ISR (Bio 3 w ISR)**

Enter the node name in the drainage analysis if applicable.

0.26	ac	A = Area draining to the practice	
0.12	ac	A_I = Impervious area draining to the practice	
0.46	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.47	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
435	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
43	cf	10% x WQV (check calc for sediment forebay)	
109	cf	25% x WQV (check calc for water stored in saturated zone)	
Forebay		Method of Pretreatment	
247	cf	If pretrt is sed forebay: V_{SED} (sediment forebay volume)	**≥ 10%WQV**
477	cf	Volume below lowest orifice[1]	**≥ 100%WQV**
140	cf	Water stored in voids of saturated zone	**≥ 26%WQV**
0.01	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2]	
95.16	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.01	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{WQV}$**
24.15	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
18.00	in	Depth of Filter Media	**≥ 18"**
3.00	:1	Pond side slopes	**≥ 3:1**
Grate		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
95.95	ft	Peak elevation of the 50-year storm event (E_{50})	
96.25	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

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

Designer's Notes: HSG "D" soils utilized in areas of lined ISR and forebay.

Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 7.03" for 50-yr event
Inflow = 1.5 cfs @ 12.00 hrs, Volume= 0.151 af
Outflow = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af, Atten= 64%, Lag= 7.7 min
Primary = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.95' @ 12.13 hrs Surf.Area= 1,942 sf Storage= 1,917 cf (1,777 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 266.2 min calculated for 0.147 af (98% of inflow)
Center-of-Mass det. time= 236.9 min (1,021.7 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

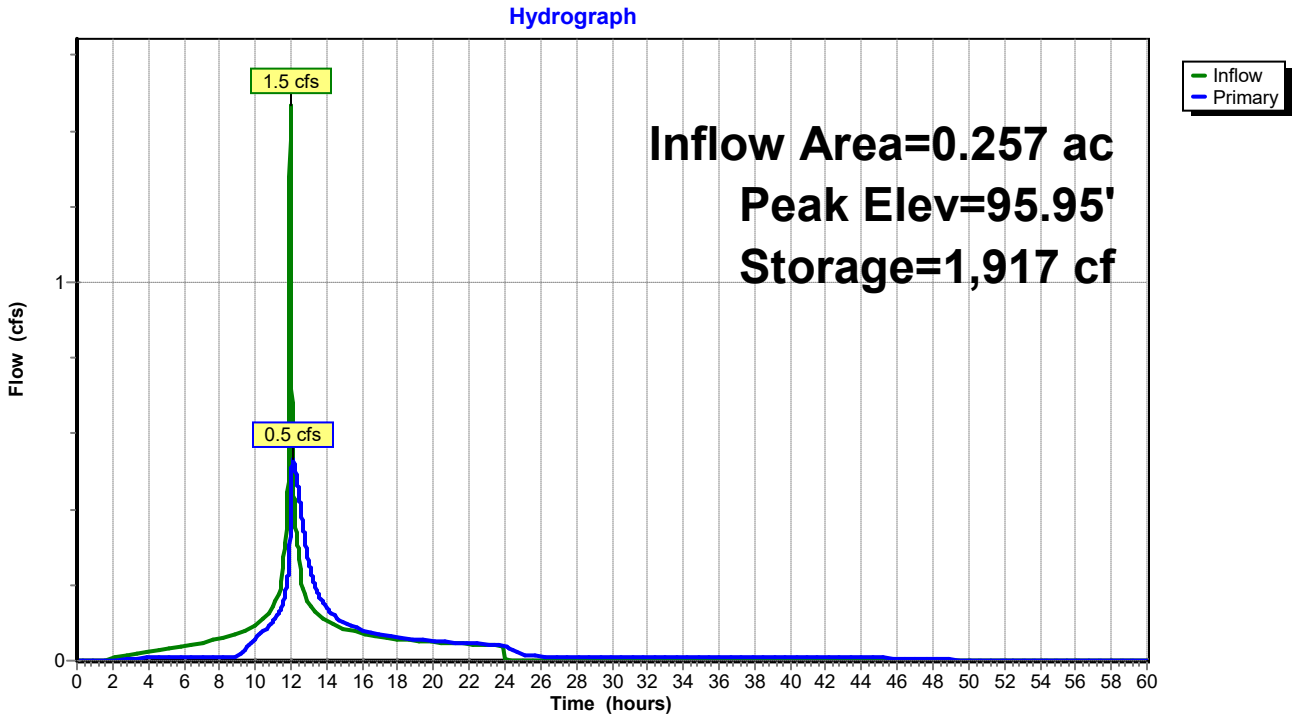
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.5 cfs @ 12.13 hrs HW=95.95' TW=92.92' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.38 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.3 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.78 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

Pond Bio3: Bio 3 w ISR



Stage-Discharge for Pond Bio3: Bio 3 w ISR

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
91.60	0.0	94.20	0.0
91.65	0.0	94.25	0.0
91.70	0.0	94.30	0.0
91.75	0.0	94.35	0.0
91.80	0.0	94.40	0.0
91.85	0.0	94.45	0.0
91.90	0.0	94.50	0.0
91.95	0.0	94.55	0.0
92.00	0.0	94.60	0.0
92.05	0.0	94.65	0.0
92.10	0.0	94.70	0.0
92.15	0.0	94.75	0.0
92.20	0.0	94.80	0.0
92.25	0.0	94.85	0.0
92.30	0.0	94.90	0.0
92.35	0.0	94.95	0.0
92.40	0.0	95.00	0.0
92.45	0.0	95.05	0.0
92.50	0.0	95.10	0.0
92.55	0.0	95.15	0.0
92.60	0.0	95.20	0.0
92.65	0.0	95.25	0.0
92.70	0.0	95.30	0.0
92.75	0.0	95.35	0.1
92.80	0.0	95.40	0.1
92.85	0.0	95.45	0.1
92.90	0.0	95.50	0.1
92.95	0.0	95.55	0.2
93.00	0.0	95.60	0.2
93.05	0.0	95.65	0.3
93.10	0.0	95.70	0.3
93.15	0.0	95.75	0.3
93.20	0.0	95.80	0.4
93.25	0.0	95.85	0.4
93.30	0.0	95.90	0.5
93.35	0.0	95.95	0.5
93.40	0.0	96.00	0.6
93.45	0.0	96.05	1.2
93.50	0.0	96.10	2.3
93.55	0.0	96.15	3.7
93.60	0.0	96.20	5.4
93.65	0.0	96.25	**6.4**
93.70	0.0		
93.75	0.0		
93.80	0.0		
93.85	0.0		
93.90	0.0		
93.95	0.0		
94.00	0.0		
94.05	0.0		
94.10	0.0		
94.15	0.0		

Stage-Area-Storage for Pond Bio3: Bio 3 w ISR

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	280	0
91.65	280	6
91.70	280	11
91.75	280	17
91.80	280	22
91.85	280	28
91.90	280	34
91.95	280	39
92.00	280	45
92.05	280	50
92.10	280	56
92.15	280	62
92.20	280	67
92.25	280	73
92.30	280	78
92.35	280	84
92.40	280	90
92.45	280	95
92.50	280	101
92.55	280	106
92.60	280	112
92.65	280	118
92.70	280	123
92.75	280	129
92.80	280	134
92.85	280	140
92.90	280	144
92.95	280	148
93.00	280	153
93.05	280	157
93.10	280	161
93.15	280	164
93.20	280	167
93.25	280	169
93.30	280	172
93.35	280	175
93.40	280	178
93.45	280	181
93.50	280	183
93.55	280	186
93.60	280	189
93.65	280	192
93.70	280	195
93.75	301	197
93.80	304	201
93.85	307	205
93.90	310	210
93.95	313	214
94.00	317	219
94.05	321	223
94.10	325	228
94.15	329	233
94.20	333	239
94.25	337	244
94.30	342	250
94.35	347	256
94.40	352	262
94.45	357	269
94.50	362	276
94.55	368	283
94.60	374	290
94.65	503	323
94.70	633	356
94.75	764	389
94.80	894	423
94.85	1,025	457
94.90	1,050	512
94.95	1,075	566
95.00	1,101	621
95.05	1,126	676
95.10	1,152	732
95.15	1,178	788
95.20	1,206	847
95.25	1,234	913
95.30	1,262	979
95.35	1,290	1,046
95.40	1,318	1,113
95.45	1,346	1,180
95.50	1,375	1,248
95.55	1,404	1,317
95.60	1,433	1,386
95.65	1,462	1,455
95.70	1,491	1,525
95.75	1,521	1,595
95.80	1,859	1,674
95.85	1,887	1,756
95.90	1,915	1,837
95.95	1,942	1,919
96.00	1,970	2,000
96.05	2,085	2,099
96.10	2,200	2,198
96.15	2,315	2,296
96.20	2,430	2,395
96.25	**2,545**	**2,494**

B – 2

POLLUTANT REMOVAL

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Stormwater Ponds	Wet Pond		B, F	70%	35%	45%
	Wet Extended Detention Pond		A, B	80%	55%	68%
	Micropool Extended Detention Pond	TBA				
	Multiple Pond System	TBA				
	Pocket Pond	TBA				
Stormwater Wetlands	Shallow Wetland		A, B, F, I	80%	55%	45%
	Extended Detention Wetland		A, B, F, I	80%	55%	45%
	Pond/Wetland System	TBA				
	Gravel Wetland		H	95%	85%	64%
Infiltration Practices	Infiltration Trench (≥75 ft from surface water)		B, D, I	90%	55%	60%
	Infiltration Trench (<75 ft from surface water)		B, D, I	90%	10%	60%
	Infiltration Basin (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Infiltration Basin (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Dry Wells			90%	55%	60%
	Drip Edges			90%	55%	60%
Filtering Practices	Aboveground or Underground Sand Filter that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Aboveground or Underground Sand Filter that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Aboveground or Underground Sand Filter with underdrain		A, I, F, G, H	85%	10%	45%
	Tree Box Filter	TBA				
	Bioretention System		I, G, H	90%	65%	65%
	Permeable Pavement that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Permeable Pavement that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Permeable Pavement with underdrain		Use TN and TP values for sand filter w/ underdrain and outlet pipe	90%	10%	45%

B – 3

OUTLET PROTECTION

OUTLET PROTECTION DESIGN CALCS

DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 1

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of outlet pipe (ft)
D= Width of channel (ft)
z= Channel side slope (H:V ft/ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	93
Tailwater elev:	93.26
Tw:	0.26
Q:	1
D_0:	1.00
D:	2
z:	3

Apron Dimensions

w_1=	**8**	(ft)
w_2=	**2**	(ft)
La=	**9**	(ft)

Apron Length:

$Tw > .5D_0$	$Tw < .5D_0$
La: 10.000	La: 8.800

Apron Width:

w_2: 2

w_1: 8

w_1=	8.00
w_2=	2.00
La=	8.8

RipRap Sizing

d_{50}=	0.08	(ft)
d_{50}=	0.92	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.12	TO	0.15	100
0.10	TO	0.14	85
0.08	TO	0.12	50
0.02	TO	0.04	15

Minimum Depth of Rock= 0.23 (ft)

Summary for Pond Bio1: Bio 1 w ISR

Inflow Area = 0.539 ac, 66.81% Impervious, Inflow Depth = 6.67" for 50-yr event
Inflow = 2.6 cfs @ 12.03 hrs, Volume= 0.300 af
Outflow = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af, Atten= 62%, Lag= 10.8 min
Primary = 1.0 cfs @ 12.21 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 93.10' Surf.Area= 686 sf Storage= 343 cf
Peak Elev= 95.95' @ 12.21 hrs Surf.Area= 6,011 sf Storage= 4,792 cf (4,449 cf above start)
Flood Elev= 96.25' Surf.Area= 6,799 sf Storage= 6,335 cf (5,992 cf above start)

Plug-Flow detention time= 399.5 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 361.0 min (1,163.0 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	1,065 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.85'	5,270 cf	**Bioretention Area 1 w/ ISR (Irregular)** Listed below
		6,335 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	138	98.0	0	0	138
94.00	213	102.7	44	44	217
95.00	558	145.0	372	415	1,060
95.75	1,216	368.9	649	1,065	10,218

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.85	686	126.0	0.0	0	0	686
93.10	686	126.0	40.0	343	343	844
93.35	686	126.0	30.0	51	394	875
94.85	686	126.0	20.0	206	600	1,064
95.00	2,438	192.7	100.0	221	821	2,756
95.42	2,626	198.7	100.0	1,063	1,884	2,960
95.50	2,734	202.1	100.0	214	2,099	3,070
95.75	2,887	206.8	100.0	703	2,801	3,231
95.76	4,525	471.9	100.0	37	2,838	17,549
96.00	4,867	476.4	100.0	1,127	3,965	17,907
96.25	5,583	456.2	100.0	1,305	5,270	19,410

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 93.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	93.10'	**0.9" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	92.18'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.18' / 92.18' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

#4	Device 3	91.85'	**10.000 in/hr Exfiltration over Surface area below 94.90'** Phase-In= 0.01'
#5	Device 3	95.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.50'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.21 hrs HW=95.95' TW=93.26' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.0 cfs of 5.8 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.89 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.4 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 2.5 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.0 cfs @ 2.15 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

OUTLET PROTECTION DESIGN CALCS

NON DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 2

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of the pipe (ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	92.75
Tailwater elev:	93
Tw:	0.25
Q:	1.6
D_0:	1

Apron Dimensions

w_1=	**3**	(ft)
w_2=	**13**	(ft)
La=	**10**	(ft)

Apron Length:

$Tw > .5D_0$		$Tw < .5D_0$
La: 11.800		La: 9.880

Apron Width:

$Tw > .5D_0$		$Tw < .5D_0$
w_2: 7.72		w_2: 12.88

w_1: 3

w_1=	3.00
w_2=	12.88
La=	9.88

RipRap Sizing

d_{50}=	0.15	(ft)
d_{50}=	1.80	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.22	TO	0.30	100
0.19	TO	0.27	85
0.15	TO	0.22	50
0.04	TO	0.07	15

Minimum Depth of Rock= 0.45 (ft)

Summary for Pond Bio2: Bio 2 w ISR

Inflow Area = 1.738 ac, 33.25% Impervious, Inflow Depth = 6.32" for 50-yr event
Inflow = 5.8 cfs @ 12.15 hrs, Volume= 0.915 af
Outflow = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af, Atten= 73%, Lag= 34.6 min
Primary = 1.5 cfs @ 12.72 hrs, Volume= 0.914 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 1,140 sf Storage= 570 cf
Peak Elev= 95.91' @ 12.72 hrs Surf.Area= 16,279 sf Storage= 14,772 cf (14,202 cf above start)
Flood Elev= 96.25' Surf.Area= 17,945 sf Storage= 20,115 cf (19,545 cf above start)

Plug-Flow detention time= 295.4 min calculated for 0.901 af (99% of inflow)
Center-of-Mass det. time= 275.6 min (1,098.1 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	724 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	19,390 cf	**Bioretention Area 2 w/ ISR (Irregular)** Listed below
		20,115 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	88	52.0	0	0	88
94.00	221	66.1	112	112	228
95.00	672	193.2	426	538	2,854
95.25	819	197.9	186	724	3,008

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	1,140	158.0	0.0	0	0	1,140
92.85	1,140	158.0	40.0	570	570	1,338
93.10	1,140	158.0	30.0	86	656	1,377
94.60	1,140	158.0	20.0	342	998	1,614
95.00	7,349	356.1	100.0	1,518	2,515	9,719
95.09	8,838	402.3	100.0	727	3,243	12,508
95.10	9,005	407.4	100.0	89	3,332	12,836
95.20	10,688	457.3	100.0	983	4,315	16,270
95.25	10,757	458.3	100.0	536	4,851	16,346
95.26	11,994	798.0	100.0	114	4,965	50,307
96.00	15,923	1,473.3	100.0	10,295	15,260	172,367
96.25	17,126	1,550.7	100.0	4,130	19,390	190,996

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900

			n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'
#5	Device 3	95.10'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.10'	**10.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.5 cfs @ 12.72 hrs HW=95.91' TW=93.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.21 fps)
    - **3=Culvert** (Passes 0.1 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.7 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.4 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 1.5 cfs @ 3.58 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

OUTLET PROTECTION DESIGN CALCS

NON DEFINED CHANNEL

Job #: 24085
Date: 8/6/2024
Structure: Outlet from BioPond 3

Variables:

Q= Discharge from the pipe (cfs)
$D_{0=}$ Diameter of the pipe (ft)
Tw= Tailwater depth above the invert of the pipe (ft)
La= Apron length
w_1= Apron width at pipe outlet
w_2= Apron width at downstream end of apron

Input:

Outlet elev:	92.75
Tailwater elev:	92.92
Tw:	0.17
Q:	0.5
D_0:	1

Apron Dimensions

w_1=	**3**	(ft)
w_2=	**11**	(ft)
La=	**8**	(ft)

Apron Length:

$Tw > .5D_0$		$Tw < .5D_0$	
La:	8.500	La:	7.900

Apron Width:

$Tw > .5D_0$		$Tw < .5D_0$	
w_2:	6.40	w_2:	10.90

w_1: 3

w_1=	3.00
w_2=	10.9
La=	7.9

RipRap Sizing

d_{50}=	0.05	(ft)
d_{50}=	0.56	(in)

RipRap Gradation

Stone Size			% of Weight Smaller Then the Given Size
0.07	TO	0.09	100
0.06	TO	0.08	85
0.05	TO	0.07	50
0.01	TO	0.02	15

Minimum Depth of Rock= 0.14 (ft)

Summary for Pond Bio3: Bio 3 w ISR

Inflow Area = 0.257 ac, 46.21% Impervious, Inflow Depth = 7.03" for 50-yr event
Inflow = 1.5 cfs @ 12.00 hrs, Volume= 0.151 af
Outflow = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af, Atten= 64%, Lag= 7.7 min
Primary = 0.5 cfs @ 12.13 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Starting Elev= 92.85' Surf.Area= 280 sf Storage= 140 cf
Peak Elev= 95.95' @ 12.13 hrs Surf.Area= 1,942 sf Storage= 1,917 cf (1,777 cf above start)
Flood Elev= 96.25' Surf.Area= 2,545 sf Storage= 2,494 cf (2,354 cf above start)

Plug-Flow detention time= 266.2 min calculated for 0.147 af (98% of inflow)
Center-of-Mass det. time= 236.9 min (1,021.7 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	247 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#2	91.60'	2,247 cf	**Bioretention Area 3 w/ ISR (Irregular)** Listed below
		2,494 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	21	22.0	0	0	21
95.75	274	61.0	247	247	292

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.60	280	76.0	0.0	0	0	280
92.85	280	76.0	40.0	140	140	375
93.10	280	76.0	30.0	21	161	394
94.60	280	76.0	20.0	84	245	508
94.85	900	120.0	100.0	140	385	1,195
95.16	1,014	125.8	100.0	296	682	1,314
95.20	1,030	126.6	100.0	41	723	1,331
95.75	1,247	137.0	100.0	625	1,348	1,561
95.76	1,563	182.5	100.0	14	1,362	2,718
96.00	1,696	187.1	100.0	391	1,753	2,860
96.25	2,271	194.9	100.0	494	2,247	3,102

Device	Routing	Invert	Outlet Devices
#1	Primary	92.85'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.85' / 92.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	92.85'	**0.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	91.93'	**6.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.93' / 91.93' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	91.60'	**10.000 in/hr Exfiltration over Surface area below 94.70'** Phase-In= 0.01'

#5	Device 3	95.20'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	95.20'	**3.0" W x 9.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 1	96.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.5 cfs @ 12.13 hrs HW=95.95' TW=92.92' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.5 cfs of 6.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.38 fps)
    - **3=Culvert** (Passes 0.0 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes < 0.1 cfs potential flow)
      - **5=Orifice/Grate** (Passes < 3.3 cfs potential flow)
  - **6=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.78 fps)
  - **7=Orifice/Grate** (Controls 0.0 cfs)

APPENDIX C

INSPECTION AND MAINTENANCE

C – 1

STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

LOT 2 SITE DEVELOPMENT
Map G, Lot 2-1

Crosby Road
Dover, New Hampshire
Strafford County

AUGUST 2024

Owner of Record:

DEL SOL DOVER, LLC
340 Central Avenue
Suite 202
Dover, New Hampshire 03820

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Del Sol Dover, LLC.** The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Chad Kageleiry
Phone: (603) 749 2800
Email: chad@summitlanddev.com

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NHDES in writing.

Management Company:

Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. Inspections shall include a photograph of each practice that is subject to the I&M requirements each time it is inspected. A copy of the completed Stormwater Management System's Inspection & Maintenance Log, inspection photographs, and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NHDES upon request and to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structures
- Energy Dissipation Structures (Rip Rap)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Grassed Lined Conveyance Swale
- Stone Lined Conveyance Swale
- Pre-Treatment Structures
  - Sediment Forebay
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas, they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

BIORETENTION BASIN W/ ISR:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

GRASS LINED CONVEYANCE SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swale (at least twice annually), maintain a 4" stand of vegetative growth.

STONE LINED CONVEYANCE SWALE

- Inspect once per year.
- Inspect for erosion, sediment accumulation, woody vegetation and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and woody vegetation.
- Reset any dislodged stones.

PRE-TREATMENT STRUCTURES:

SEDIMENT FOREBAY:

- Vegetated areas shall be mowed to maintain a 4" start of vegetative growth.
- Inspect at least once per year.
- Inspect for sediment accumulation.
- Remove all debris immediately.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.

- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for clogging • Check for sediment accumulation	Remove when noticed Clean when necessary
Outlet Structure(s)	Annually	• Inspect once per year. • Inspect for clogging and sediment accumulation. • Remove all debris immediately and sediment accumulations ≥ 2 inches.	≥ 2 in. sediment Remove immediately
Energy Dissipation (ED) Structures (Rip Rap)	Annually	• Check for erosion • Check for displaced stones • Check for woody vegetation • Check for sediment accumulation	≥ 3 in. sediment Remove annually Replace/ reset Dislodged stones immediately
Bioretention Basin w/ ISR • Inlet/Outlet Piping • Pond • Sediment • Drawdown • Trash/Debris • Vegetation (Veg.) • Embankments	Bi-Annually “ “ Annually Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accum. in pond • Check drainage time • Check for and remove trash/debris • Maintain >75% veg. (pond & slopes) Maintain healthy stand of veg.	Repair immediately ≥ 2 in sediment >72 hours Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Grass Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., min 4” • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore vegetation in-kind Mow twice per year Remove/Dispose of accordingly
Stone Lined Conveyance Swale	Annually	• Check for sediment accumulation • Check for erosion • Inspect for woody/ invasive vegetation • Check for dislodged stones	≥ 1 in. sediment Repair immediately Remove/Dispose of accordingly
Pre-Treatment Structures: Sediment Forebay	Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris • Vegetated areas shall be mowed to maintain a 4” start of vegetation growth.	Remove/ Dispose of accordingly Mow twice per year
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x’s Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance_____ Inspector:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

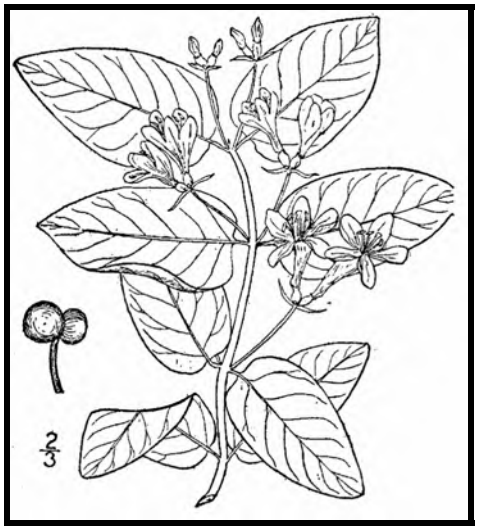
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

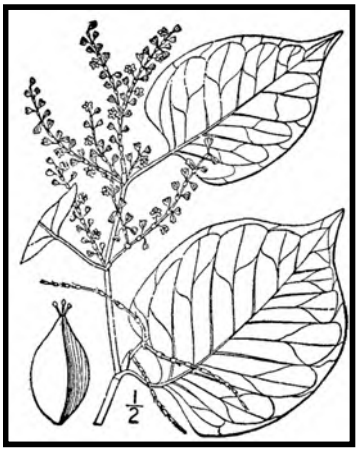
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

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

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

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

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

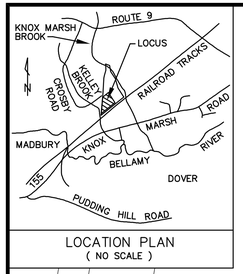
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

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

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

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran’s, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.



LOCATION PLAN
(NO SCALE)

LEGEND:

= SEDIMENT FOREBAY

= ENERGY DISSIPATION STRUCTURES (RIP RAP)

= BIO-RETENTION BASIN W/ ISR

= STONE LINED CONVEYANCE SWALE

= GRASSED LINED CONVEYANCE SWALE

FORMER HANSON ROAD

50' WETLAND BUFFER

WATER - DOVER PARA01-020-WI

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

GAS 4"ø PP

WATER

DOVER PARA01-025-WI

HYDRANT #319

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

EDGE OF PAVEMENT

PROPOSED 9,600 S.F. BUILDING

EDGE OF PAVEMENT

PROPOSED GRAVEL 125'x180' LAYDOWN AREA

EDGE OF GRAVEL

BIORETENTION POND 2 W/ ISR (BIO2 W/ ISR)

BIORETENTION POND 3 W/ ISR (BIO3 W/ ISR)

EXISTING GRASSED LINED CONVEYANCE SWALE

C / 2-1

NEW PARCEL AREA
273,596 S.F.
6.28 Ac.

NH STATE PLANE NAD 83 - GAS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: MJM
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

BMP LOCATION PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

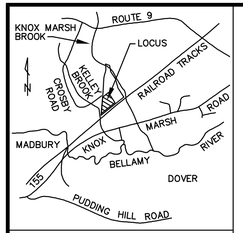
BMP

APPENDIX D

WATERSHED PLANS

D – 1

PRE-DEVELOPMENT CONDITIONS



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

DISCHARGE PT. B

DISCHARGE PT. C

DISCHARGE PT. A

PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
A	8.27	1,314	37.0
B	1.55	268	22.2
C	2.38	402	20.7

FORMER HANSON ROAD

G / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

G / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

CATCH BASIN
#7080 RIM = 96.0'
CATCH BASIN
#7081 RIM = 95.9'

EXISTING
EDGE OF
PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

G / 1-C2

G / 1-C3
WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

GRAVEL
LANDING
AREA

LIMITS OF FORMER HANSON
ROAD RIGHT OF WAY

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

G / 2-1

NHFG WILDIFE
RESTRICTED AREA

G / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

G / 5
BOSTON & MAINE RR

A
B
C

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EDGE OF WETLAND
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (A) SUBCATCHMENT DESIGNATION

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-2024
SCALE: 1"=50'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: DRN.DWG

PRE-DEVELOPMENT WATERSHED PLAN

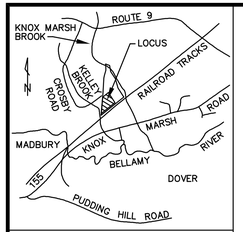
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

WS-1

D – 2

POST-DEVELOPMENT CONDITIONS



LOCATION PLAN
(NO SCALE)

NH STATE PLANE
NAD 83 - GPS OBS.

POST-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
1	0.54	46	5.8
2	1.74	468	14.5
3	6.50	1314	37.0
4	1.06	268	22.2
5	0.26	15	1.9
6	2.09	402	20.7

DISCHARGE PT. B

DISCHARGE PT. C

DISCHARGE PT. A

FORMER HANSON ROAD

G / 1-E
VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

G / 2-1B
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

G / 1-C2

G / 1-C3
WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

BIO-RETENTION BASIN 1 W/ ISR

PROPOSED 80'x120' BUILDING

BIO-RETENTION BASIN 2 W/ ISR

BIO-RETENTION BASIN 3 W/ ISR

NHFG WILDLIFE RESTRICTED AREA

REACH R1

REACH R2

REACH R3 AND LFP 3

REACH R4 AND LFP 3

REACH R5

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

G / 2-1
NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

G / 2-1A
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

G / 5
BOSTON & MAINE RR

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EDGE OF WETLAND
- 154 PROPOSED FINISH GRADE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BUILDING
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- ④ SUBCATCHMENT DESIGNATION

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-6-2024
SCALE: 1"=50'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: DRN.DWG

POST-DEVELOPMENT WATERSHED PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

WS-2

Landscape Best Management Practices
Operations and Maintenance Plan

Commercial Site
Tax Map G, Lot 2-2
Crosby Road
Dover, New Hampshire 03820

Prepared for:
Del Sol Dover, LLC
340 Central Avenue
Suite 202
Dover, NH 03820

Prepared by:
Civilworks New England
181 Watson Road
P.O. Box 1166
Dover, NH 03820

CIVILWORKS NEW ENGLAND
181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

Landscape Maintenance

Introduction:
The landscape enhancements proposed for the proposed commercial development will require modest maintenance at various times throughout the year. For the site plantings, maintenance is most important during the first 1-2 years following installation when plants are becoming established. Anyone involved in the upkeep of the facility should become familiar with the landscape and its features. Identified below are basic, at minimum, maintenance tasks:

Weekly Tasks:

1. Prune back any shrubs overhanging curbs or sidewalks.
2. Remove litter from plants bed.
3. Remove broken or fallen branches from trees.
4. Prune sucker growth from tree trunks.
5. Remove weeds larger than 2 inches high or wide from plant beds. Weeds 2 inches and larger must be removed, not just killed. **The application of herbicides such as Roundup is discouraged.**
6. Any invasive species seedlings observed should be removed and disposed of properly.
7. Replace bark mulch that may have been washed out of planting beds. Smooth mulch layer if it has been disturbed.
8. Check plants for signs of stress, pests, or disease and notify Owner for authorization to replace.
9. If a significant decline in plant health is attributed to an insect pest, **apply an organic product and/or process** to control the pest.
10. Water plants that are dry and stressed.
11. Notify Owner for authorization to replace dead plants at the appropriate time (see annual tasks, September).
12. Identify other tasks listed on the Annual and Monthly checklist of tasks.

Annual Tasks

Early Spring:

1. Prune winter damage such as broken tree branches that interfere with public safety.
2. Trim dead perennial foliage left in the fall for winter interest to within six inches of the ground.
3. Add new mulch to plant beds where the mulch depth has been reduced to less than 2 inches. Mulch depth shall not exceed two inches (top dressed). Mulch is not required where shrubs or groundcover completely hide the soil surface from view.
4. Gently prune shrubs at appropriate time of year based on species, shape and form. **Do not shear.**
5. Energize the irrigation system, repair damaged components, test the system, adjust heads, and update programing.
6. Conduct a soil test to measure at a minimum, pH, phosphorus, potassium, calcium, and magnesium. Follow the recommendations provided with the soil test results.
7. Apply fertilizer only when required. A single application of fertilizer per year before Memorial Day is encouraged.

Monthly Tasks

June:
No additional items

July:
No additional items

August:
No additional items

September:
1. Inventory all plant materials, including an exact count of all shrubs and trees.
2. Replace any dead or missing plants.
3. Aerate lawn areas.
4. Apply pelletized lime at a rate of 80 lbs/1,000 square feet or as soil test dictates.

October:
1. Winterize irrigation system.

November:
1. Remove leaves from lawn areas and planting beds.
2. Remove perennial vegetation that has died back for the season.
3. Apply "WILT-PRUF" to broadleaf evergreens, according to label instructions, to protect shrubs from winter die back.

December:
1. Prune any tree branches that interfere with public safety.
2. Prune street and parking lot trees yearly to encourage strong growth the following growing season.Trees adjacent to pedestrian sidewalks shall have branches pruned to 6-foot height.

	Time of Frequency						
Management Task or Activity	Weekly	Monthly	Spring	Summer	Fall	Winter	After Major Rain Events
Replace Dead or Dying Plants			X				
Remove Weeds	X		X	X	X		
Cut Down Grasses			X				
Remove Accumulated Leaves, Litter, and Plant Debris		X					X

CIVILWORKS NEW ENGLAND
181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

Stormwater Detention Facilities

Introduction:
The stormwater facilities are used to attenuate flow and treat stormwater. The stormwater treatment areas consist of large bioretention ponds and linear swales seeded with a variety of native, adaptable, and rugged perennial grasses, and sometimes additional flowering plants. There are maintenance tasks associated with stormwater facilities.

Erosion:
The soil in the facility and in areas draining to the facility shall be inspected for erosion. Eroded areas shall be filled with soil or mulch and seeded with the approved seed mix for the location.

Sediment Accumulation & Clogging:
The accumulation of sediment within the facility may reduce its infiltration capacity and impair performance. The facility shall be inspected for accumulation of sediment and excessive sediment shall be removed with the area re-mulched and replanted as appropriate and necessary.

Outlet Structure Maintenance:
The facility outlet structure requires monitoring. Periodically, the orifice on the outlet pipe may clog with debris. Any found debris should be removed and appropriately disposed of off-site.

Debris & Litter:
Debris and litter should be removed monthly to maintain aesthetic appearance and public acceptance.

Plant Maintenance:
Healthy vegetation contributes to the optimal operation of the stormwater facility. Planting area maintenance tasks include the removal of accumulated leaves, litter, and plant debris as needed. During the first 1-2 years after planting, the facility should be monitored for invasive species and weeded as needed and appropriate. Well-established facility vegetation should be mowed annually in the fall.

Snow Storage:
Snow shall not be dumped directly onto the facility.

Chlorides:
The stormwater facility is not suitable for treating chlorides. Chloride use on source surface areas tributary to the facility should be avoided if possible. In these locations, it would be prudent to eliminate or reduce application of chloride-containing deicing compounds, use alternative deicers, or apply clean sand as needed. Aggressive sweeping in these areas, along with pretreatment sumps and filter strips, will minimize the negative impact of the sand on the facility.

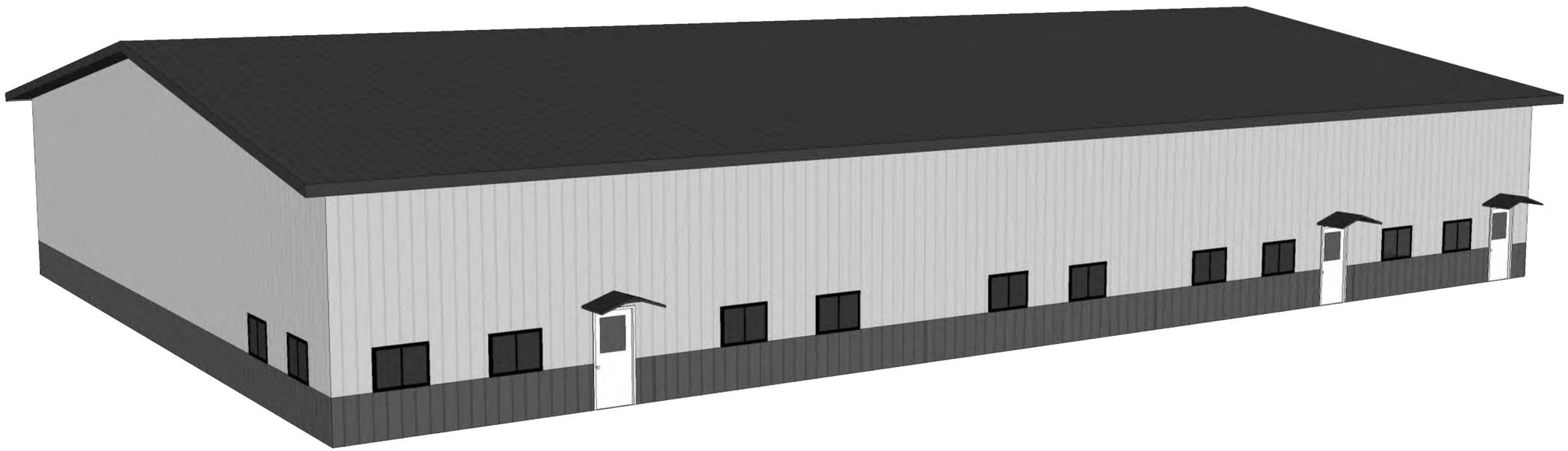
CIVILWORKS NEW ENGLAND
181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

Management Task or Activity	Time of Frequency						
	Weekly	Monthly	Spring	Summer	Fall	Winter	After Major Rain Events
Inspect for erosion. Rake and redistribute/ replenish any soil, rap, or mulch that has eroded		X					X
Inspect for standing water							X
Remove Accumulated Leaves, Litter, and Plant Debris		X					X
Weed plant material		X					
Mow plant material					X		

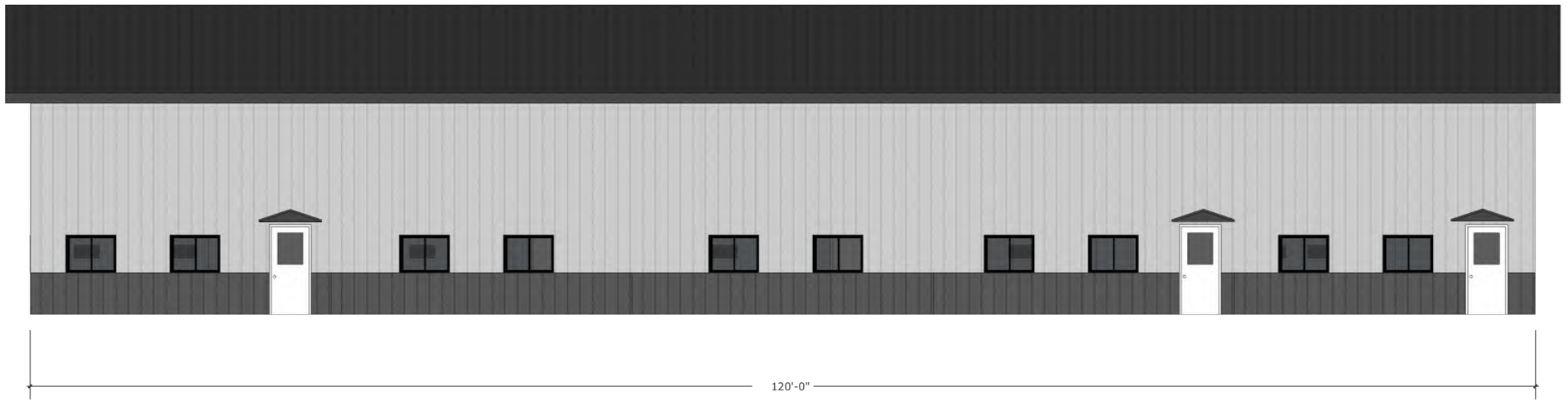
CIVILWORKS NEW ENGLAND



Stephen J. Haight, PE
President



Seacoast Crane & Building Co., Inc.



Front Side Wall Elevation

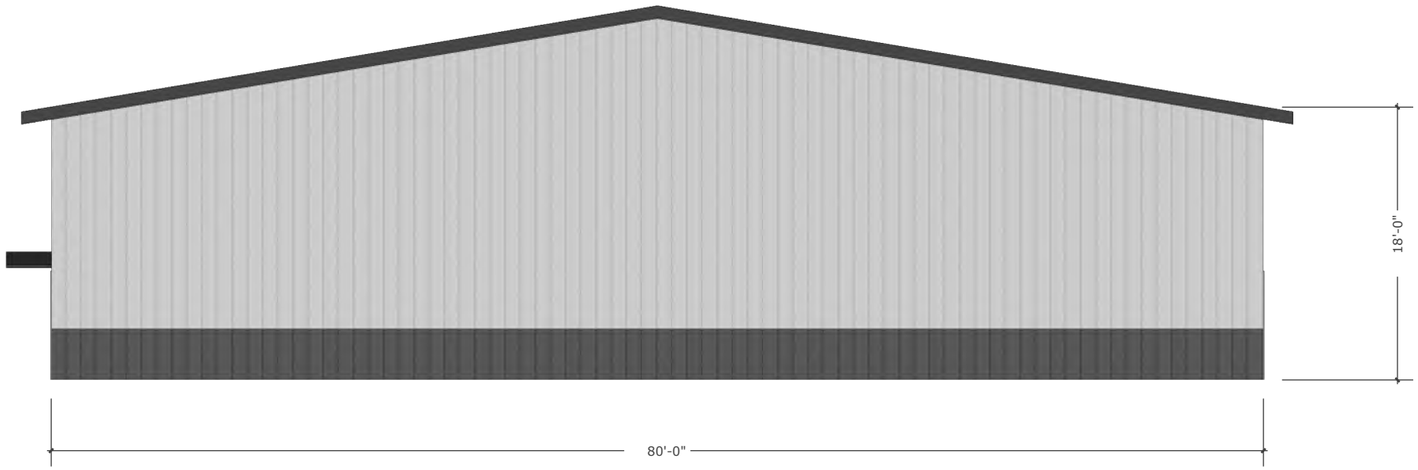
A
01



Back Sidewall Elevations

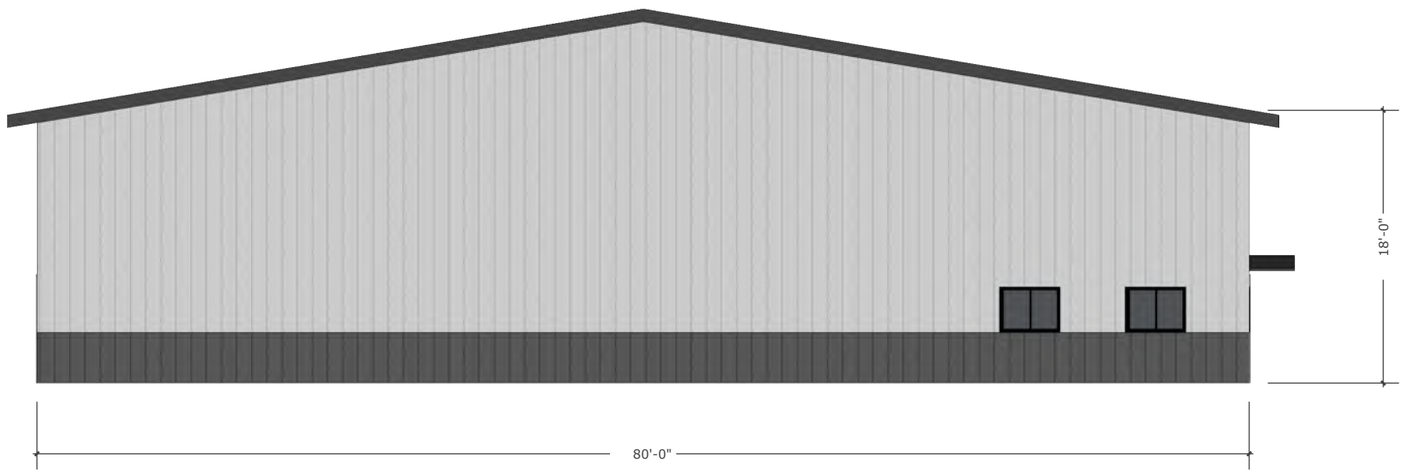
A
02

Seacoast Crane & Building Co., Inc.



Left Endwall Elevation

A
01



Right Endwall Elevation

A
02

SITE PLAN - LOT 2
FOR
DEL SOL DOVER, LLC

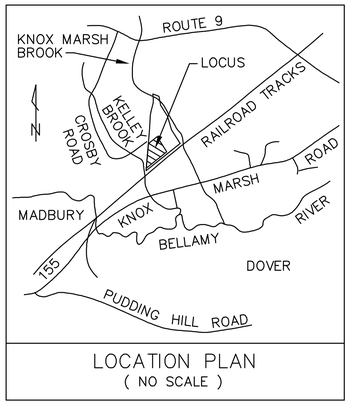
TAX MAP G, LOT No. 2-1

CROSBY ROAD

DOVER, NH

AUGUST 2024

SEPTEMBER 2024



LOCATION PLAN
(NO SCALE)

OWNER

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

OWNER SIGNATURE

SITE CIVIL ENGINEER

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LAND SURVEYOR

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 1166
181 WATSON ROAD
DOVER, NH 03821
(603) 742-0911

WETLAND/SOIL SCIENTIST

BRUCE A. GILDAY, CWS
BAG LAND CONSULTANTS
43 ROCKINGHAM STREET
CONCORD, NH 03301
(603) 228-5775

PERMIT SUMMARY/ WAIVER SUMMARY:

1. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:

   NHDES ALTERATION OF TERRAIN: PENDING

2. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.

   SITE PLAN: PENDING

   CONDITIONAL USE PERMIT: PENDING

2. WAIVERS REQUESTED: THE PLANNING BOARD HAS FOUND THE CRITERIA OF CHAPTER 153-21 HAVE BEEN MET AND HAVE BEEN APPROVED THE FOLLOWING WAIVERS:

   * A WAIVER REQUEST FROM 153-13A (12) TO ALLOW A LANDSCAPE PLAN NOT SIGNED BY A NH LANDSCAPE ARCHITECT.

   * A WAIVER REQUEST FROM 153-13K (1)(b) TO ALLOW PARKING IN FRONT OF BUILDING.

   * A WAIVER REQUEST FROM 153--13A (17) TO ALLOW RELIEF FROM PROVIDING STREETSCAPE PLANS.

WILDLIFE PROTECTION NOTES:

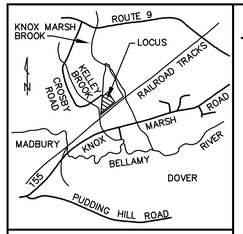
- ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, EMAIL SUBJECT LINE: NHB24-2663, DEL SOL DOVER LLC, WILDLIFE SPECIES OBSERVATION.
- PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
- IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04.
- THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

NOTE:

LANDSCAPING BOND OR OTHER FORM OF SECURITY ACCEPTABLE TO THE CITY FOR A PERIOD OF 3 YEARS AFTER CERTIFICATION OF OCCUPANCY IS ISSUED TO ENSURE LANDSCAPING IS MAINTAINED OR REPLACED IF NEEDED.

SHEET IND	SHEET
COVER SHEET	1
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	2
NEIGHBORHOOD PLAN	3
NOTE SHEET	4
DEMOLITION PLAN	5
SITE PLAN	6
GRADING, DRAINAGE & EROSION CONTROL PLAN	7
UTILITY PLAN	8
LIGHTING PLAN	9
LIGHTING DETAILS	10
LANDSCAPING PLAN	11
EROSION CONTROL NOTES	12
EROSION CONTROL DETAILS	13 - 14
DETAILS	15 - 19
TRUCK MOVEMENT PLAN	20

PLANNING FILE NO.: SITE-2024-0010



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) SUBDIVISION PLAN OF LAND PREPARED FOR DEL SOL DOVER, LLC TAX MAP G, LOT No. 2–1, CROSBY ROAD, CITY of DOVER, COUNTY of STRAFFORD, STATE of NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: AUGUST 5, 2024; BY THIS OFFICE.

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7081 RIM = 95.9'
#7080 RIM = 96.0'

SMH 2874
RIM = 95.1'
INV. IN = 86.62' 8" PVC SMH 2875
INV. OUT = 86.42' 8" PVC
NEXT = [NORTH]

SEWER MAIN 321' SMH TO SMH

WATER – DOVER FARAD1–020–MI

SEWER MAIN 169' SMH TO SMH

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

DMH RIM = 95.7'

36" RCP
INV. IN = 91.2'

C / 1–E

VIRTUOUS REALTY, LLC
C/O TURBOCAM, INC
607 CALEF HIGHWAY #200
BARRINGTON, NH 03825
1802 / 737

EXISTING EDGE OF PAVEMENT

UTILITY POLE
364A/1Y UGU DROP

UTILITY POLE

SEWER 8"ø

CROSBY ROAD
{75' WIDE R.O.W.}

GAS 4"ø PP

WATER – DOVER FARAD1–020–MI

HYDRANT #319

FORMER HANSON ROAD

18" RCP CULVERT
INV. IN = 92.7'
INV. OUT = 92.6'

UTILITY POLE
364A/1 1140–22

C / 2–1B

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820
5075 / 142

50' WETLAND BUFFER

PROPOSED
75' WIDE R.O.W.

915B

N36°37'58"E
93.78'

N50°00'07"E
154.91'

C1

313B

233B/P

C / 1–C1

C / 1–C2

C / 1–C3

SEE NOTE 13 (TYP.)

SEE NOTE 12 (TYP.)

TP 1
EL. 95.1'

GRAVEL LANDING AREA

WILLIAM C. COLBATH
211 CROSBY ROAD
DOVER, NH 03820
2171 / 590

MON WELL 1

MON WELL 2

MON WELL 3

NW STATE PLANE NAD 83 / GPS OBS.

SITE SPECIFIC SOIL DELINEATION (TYP.)

687.64'

N03°21'27"E

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

TP 2A
EL. 92.5'

TP 2
EL. 92.7'

TP 3
EL. 94.7'

TP 5
EL. 94.1'

WETLAND BAG 2024

TP 4
EL. 93.0'

50' WETLAND BUFFER

SITE SPECIFIC SOIL DESIGNATION (TYP.)

NHFG DEED RESTRICTED WILDLIFE AREA #3
AREA = 92,619 S.F.
(2.13± Ac.)

PARCEL AREA
267,845 S.F.
6.15 Ac.

C / 2–1

C / 2–1A

DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NH 03820
5075 / 142

50' WILDLIFE CORRIDOR

533.24'
S34°14'00"E

C / 5
S49°58'51"W 742.71'

BOSTON & MAINE RR
IRON HORSE PARK
500 WATER STREET J–910
JACKSONVILLE, FL 32202

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	SOIL TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
233B/P	SCANTIC	D	POORLY DRAINED (P)
313B	DEERFIELD	B	MODERATELY–WELL DRAINED
915B	DEERFIELD VARIANT	B	SOMEWHAT POORLY DRAINED

SLOPE

SLOPE DESIGNATION	PERCENT SLOPE
B	0 TO 8 PERCENT

LEGEND

- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- ø – DIAMETER
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- UP – UTILITY POLE
- SMH – SEWER MANHOLE
- WV – WATER SHUT–OFF
- WG – WATER GATE VALVE
- FH – FIRE HYDRANT
- 92 – CONTOUR LINE – 1' INTERVAL
- – – – SITE SPECIFIC SOIL LINE
- 313B – SITE SPECIFIC SOIL TYPE
- – · · – EDGE OF WETLAND
- WETLAND
- WETLAND BUFFER

NOTES:

1.) OWNERS OF RECORD:
DEL SOL DOVER, LLC
340 CENTRAL AVENUE, SUITE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 5075, PAGE 142

2.) C / 2–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PLAN INTENT: TO DEPICT THE PARCEL EXISTING CONDITIONS.

4.) PARCEL AREA = 267,845 S.F. / 6.15 Ac.

5.) ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

MINIMUM LOT SIZE	= 20,000 S.F.
LOT COVERAGE	= 50 PERCENT
MINIMUM FRONTAGE	= 100 FEET
FRONT SETBACK	= 35 FEET
SIDE SETBACK	= 10 FEET MIN.
REAR SETBACK	= 10 FEET MIN.
BUILDING HEIGHT	= 50 FEET MAX.

6.) THE SUBJECT PARCEL IS LOCATED OUTSIDE OF THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000

9.) HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33' WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R–2008.05.14–80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.

10.) WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 088); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

11.) SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED AUGUST 28, 2024.

12.) MONITOR WELLS 1, 2 & 3 MAINTAINED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012, CWS 088); 43 ROCKINGHAM STREET, CONCORD, NH 03301.

13.) SOIL TEST PITS 1 THROUGH 5 OBSERVED AUGUST 5, 2024 BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012, CWS 088); 43 ROCKINGHAM STREET, CONCORD, NH 03301.
ESTIMATED SEASONAL HIGH WATER TABLE (ESHWT) DEPTHS:
TPIT 1 = 22 INCHES, TPIT 2 = 13 INCHES, TPIT 2A = 24 INCHES
TPIT 3 = 21 INCHES, TPIT 4 = 12 INCHES, TPIT 5 = 19 INCHES.

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	13°22'09"	337.50	78.75	78.57	N43°19'02"E

NO.	DATE	DESCRIPTION	BY	CHK

CNE 18043	REVISIONS		
24–2210	EXIST. COND.	–	–
PROJECT NO	TYPE	FIELDBOOK & PAGES	

EXISTING CONDITIONS PLAN
PREPARED FOR
DEL SOL DOVER, LLC
TAX MAP G, LOT No. 2–1
CROSBY ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. SITE 2024

DRAWN BY: RJM	FILE: 2210\D\G–2–13LOTROAD40sc
SCALE: 1" = 40'	DATE: AUGUST 5, 2024

40 20 0 20 40 80 120 160

STATE OF NEW HAMPSHIRE No. 661 KEVIN M. McENEANEY LICENSED LAND SURVEYOR SIGNATURE

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911
SURVEYING – PLANNING – CONSULTING



ABUTTERS LIST
(WITHIN 200 FT)

TAX MAP	LOT NO.	NAME & ADDRESS
G	2-1-0	DEL SOL DOVER, LLC 340 CENTRAL AVENUE SUITE 202 DOVER, NH 03820
G	2-0-0	WESTFIELD, LLC 340 CENTRAL AVENUE SUITE 202 DOVER, NH 03820
G	1-L-0	CHAUVIN ARNOUX, INC. 15 FARADAY DRIVE DOVER, NH 03820
G	1-E-0	VIRTUOUS REALITY, LLC C/O TURBOCAM, INC. 607 CALEF HIGHWAY #200 BARRINGTON, NH 03825
G	1-D-0	DEREK S. BETTS-LEVINE, TRUSTEE R AND R REAL ESTATE TRUST 6 FARADAY DRIVE DOVER, NH 03820
G	1-B-0	MCQUADE REALTY, INC. P.O. BOX 1409 DOVER, NH 03820
G	1-C-1	AI SOLUTIONS, INC. 1735 FIFTH AVENUE MCKEESPORT, PA 15132
G	1-C-2	AI SOLUTIONS, INC. 1735 FIFTH AVENUE MCKEESPORT, PA 15132
G	1-C-3	COLBATH FAMILY REVOCABLE TRUST WILLIAM C. COLBATH, TRUSTEE 211 CROSBY ROAD DOVER, NH 03820
G	5-0-0	BOSTON & MAINE RR IRON HORSE PARK 500 WATER STREET J-910 JACKSON, FL 32202
H	38-0-0	PATRICK J. CRAGIN LIVING REVOCABLE TRUST PATRICK J. CRAGIN, TRUSTEE P.O. BOX 250 DOVER, NH 03820
H	37-A-0	239 KNOX MARSH REALTY, LLC P.O. BOX 720 MIDDLETON, MA 01949
H	36-B-1	NSA OPTIVEST ACQUISITION HOLDINGS, LLC 24901 DANA PT HARBOR DRIVE #200 DANA POINT, CA 92629

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

PLANNING FILE NO.: SITE-2024-0010

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

DATE: 8-6-24
SCALE: 1"=80'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

NEIGHBORHOOD PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

3

DOVER NOTES:

1. THE OWNERS OF RECORD:
   DEL SOL DOVER, LLC
   340 CENTRAL AVENUE, SUITE 202
   DOVER, NEW HAMPSHIRE 03820
   S.C.R.D. VOL. 5075, PAGE 142
2. G/2-1 – DENOTES TAX MAP AND PARCEL NUMBER.
3. PLAN INTENT: IS TO SHOW SITE IMPROVEMENTS FOR A 9,600 S.F. COMMERICAL BUILDING WITH THE ASSOCIATED WATER, SEWAGE, AND ELECTRIC UTILITY IMPROVEMENTS.
4. PARCEL AREA = 267,845 S.F. / 6.15 Ac.
5. ZONING DISTRICT: COMMERCIAL MANUFACTURING (CM) DISTRICT:

	REQUIRED	PROPOSED
MINIMUM LOT SIZE	= 20,000 S.F.	267,845
LOT COVERAGE	= 50 PERCENT	±19%
MINIMUM FRONTAGE	= 100 FEET	327 FEET
FRONT SETBACK	= 35 FEET	67 FEET
SIDE SETBACK	= 10 FEET MIN.	77 FEET
REAR SETBACK	= 10 FEET MIN.	353 FEET
BUILDING HEIGHT	= 50 FEET MAX.	24'8"

6. THE SUBJECT PARCEL IS LOCATED OUTSIDE OF THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANELS 0310 & 0320; SUFFIX E; MAP NUMBERS 33017C0310E & 33017C0320E; EFFECTIVE DATE SEPTEMBER 30, 2015,
7. BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED JANUARY 22, 2021.
8. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND DURING JANUARY 2021 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
9. HANSON ROAD (A/K/A HANSON WAY) IS AN UNIMPROVED 33'WIDE ROAD. THE CITY OF DOVER DISCONTINUED HANSON ROAD AS A PUBLIC WAY WITH THE 2008 RESOLUTION, R-2008.05.14-80. PER ACCEPTED PRACTICE, TITLE TO THE UNDERLYING LAND OF THE ROAD EXTENDS TO THE CENTERLINE FOR ABUTTING PARCELS. THE USE RIGHTS OF THE ENTIRE WIDTH OF HANSON ROAD MAY EXIST FOR ABUTTING OWNERS.
10. WETLANDS ONSITE WERE IDENTIFIED UTILIZING THE 1987 FEDERAL TECHNICAL REPORT. THE DELINEATION WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CWS 018); 43 ROCKINGHAM STREET, CONCORD, NH 03301. JULY 2024.
11. SITE SPECIFIC SOIL MAPPING WAS PERFORMED BY BAG LAND CONSULTANTS (BRUCE A. GILDAY, CSS 012); 43 ROCKINGHAM STREET, CONCORD, NH 03301. SEE REPORT DATED AUGUST 28, 2024.
12. LIST ANY VARIANCE OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS. (SEE PERMIT SUMMARY/WAIVER SUMMARY)
13. AS-BUILT PLANS OF THE SUBDIVISION SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT IF A STREET IS PROPOSED FOR CITY ACCEPTANCE. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
14. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
15. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
16. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
17. EROSION CONTROL NOTES INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
18. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
19. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
20. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
21. A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
22. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM AND SATURDAYS AND SUNDAYS 7AM-4PM. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR PLANNING DIRECTOR. WORK PRECLUDED ON SUNDAYS AND FEDERAL HOLIDAYS.
23. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS, IF APPLICABLE) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
24. THE FOLLOWING FEDERAL AND STATE PERMINTS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY: (SEE PERMIT SUMMARY/WAIVER SUMMARY)

DOVER NOTES CONTINUED:

25. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
26. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
27. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
28. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
    HTTPS://PTAPP.UNH.EDU/
29. IF APPLICABLE, THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
30. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
31. THE MAXIMUM PARKING SPACE CALCULATION IS 15, INCLUDING 1 ACCESSIBLE SPACES, WHILE 15, INCLUDING 1 ACCESSIBLE SPACES, ARE PROVIDED.
32. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
33. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATE, JANUARY 2021.
34. VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED NOVEMBER 18, 2022.
35. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER. (AS APPLICABLE)
36. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
37. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81- 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.
38. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.
39. FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
40. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A: 5.
41. DESIGN ENGINEER SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
42. ALL MANHOLE COVERS SHALL BE LIFTMATE R-1743-LM OR APPROVED EQUAL WITH 90 DEGREE HINGE.
43. REQUIRED BLASTING AND EXCAVATION – DOVER FIRE DEPARTMENT SHALL BE NOTIFIED PRIOR TO ANY BLASTING ACTIVITIES AND A BLASTING PERMIT FROM THE DOVER FIRE DEPARTMENT MUST BE OBTAINED.
44. THE WATER MAIN SHALL BE POLY WRAPPED IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS.
45. ALL SEWER MAINS AND MANHOLES SHALL BE TESTED IN ACCORDANCE WITH NHDES ENV-WQ 700 REQUIREMENTS. COPIES OF TEST RESULTS SHALL BE PROVIDED TO THECITY OF DOVER ENGINEERING DEPARTMENT.
46. WETLAND PLACARDS SHOULD IDENTIFY THE NO CUT WETLAND BUFFER AND SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION AND AFTER.
47. ALL FITTINGS MUST BE CLASS 140 WATER FITTINGS.
48. ALL GATE VALVES MUST BE MANUFACTURED BY MUELLER OR CLOW.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. STONES FROM REMOVED STONEWALLS SHALL REMAIN ON-SITE. STONES SHALL BE REPURPOSED ON-SITE AND SHALL NOT BE USED AS FILL.
9. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
10. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.

SITE NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
3. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
4. SEE DETAILS FOR SIGN LEGENDS.
5. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
7. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
9. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
10. REFUSE PICKUP WILL BE BY PRIVATE CONTRACTOR AND WILL BE VIA DUMPSTER ON-SITE.
11. SNOW STORAGE WILL BE ACCORDING TO THE OPERATION AND MAINTENANCE PLAN AND WITHIN AREAS AS INDICATED. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
12. ALL EXTERIOR DOORS ARE MANUAL AND OPENED FROM THE INTERIOR BY PANIC HARDWARE. ALL EXTERIOR DOORS SHALL COMPLY WITH ADA AND ALL LOCAL BUILDING CODE REQUIREMENTS.

GRADING NOTES:

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OF REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
12. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP'S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS. THE DESIGN ENGINEER MUST CERTIFY THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
14. DENSITY REQUIREMENTS:

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

*ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
9. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
17. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
23. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
24. THE PROPOSED STRUCTURE SHALL COMPLY WITH CHAPTER 81, ARTICLE IV, SECTION 81-27 AND THE STATE BUILDING CODES OF THE CODE OF THE CITY OF DOVER.
25. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION AS APPROPRIATE.
26. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
27. SEWAGE LOADING
    9,600 S.F. SPECIALTY TRADE CONTRACTOR BUILDING
    640 S.F. OFFICE
    8,960 S.F. WAREHOUSE
    ESTIMATED # EMPLOYEES = 30
    PER NHDES ENV-WQ1008.03 TABLE 1008-1:
    UNSPECIFIED OFFICE SPACE = 5 GPD/100 S.F.
    WAREHOUSE = 10 GPD/ PERSON
    DESIGN FLOW
    OFFICE = 640 S.F. x 5 GPD/100 S.F. = 32 GPD
    WAREHOUSE = 30 EMP'S x 10 GPD/EMPL. = 300 GPD
    TOTAL = 332 GPD
28. AN EASEMENT WILL BE GRANTED TO THE CITY ALONG THE WATER LINES TO ALLOW ACCESS FOR OPERATION OF THE WATER INFRASTRUCTURE TO MAINTAIN WATER QUALITY.
29. ALL VALVES SHALL OPEN COUNTER CLOCKWISE.

UTILITY CONTACTS

NATURAL GAS: –
CONTACT: UNITIL CORPORATION
DAVID MACLEAN
325 WEST ROAD
PORTSMOUTH, NH 03801
TEL: (603)-294-5261
EMAIL: MACLEAND@UNITIL.COM

WATER & SEWER: –
CONTACT: CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
PUBLIC WORKS & UTILITIES
KEN MAVROGEORGE, PE
271 MAST ROAD
DOVER, NH 03820
TEL: (603)-516-6450
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV

ELECTRIC: –
CONTACT: EVERSOURCE
TREVOR EMMONS
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)-332-7515
EMAIL: TREVER.EMMONS@EVERSOURCE.COM

PLANNING FILE NO.: SITE-2024-0010

NOTE SHEET

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

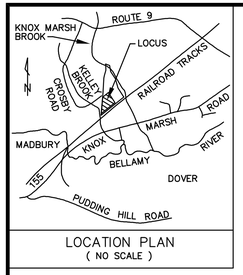
4

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

DATE: 8-6-24
SCALE: N.T.S
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

50' WETLAND BUFFER

WATER – DOVER FARAD1–020–MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

UTILITY POLE 364A/1Y UGU DROP

INV.OUT=91.5

EXISTING EDGE OF PAVEMENT

UTILITY POLE 364A/1 1140–22

CROSBY ROAD
{75' WIDE R.O.W.}

PUBLIC R.O.W. 75'

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER 8"ø

SEWER MAIN

GAS 4"

PW

PG

WATER – DOVER FARAD1–020–MI

8" WATERLINE

GAS LINE STUB

WATER LINE STUB

HYDRANT #319

15" PROPOSED ADS N–12
L=55'
S=0.005

PCB1
RIM=94.8
INV.OUT=91.8

35' SETBACK

GRAVEL AREA WILL BE REMOVED DURING SITE GRADING DEVELOPMENT

GRAVEL LANDING AREA

10' SETBACK

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

10' SETBACK

WETLANDS DELINEATED BY BAG LAND CONSULTANTS

50' BUFFER

50' BUFFER

G / 2–1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
TBR – TO BE REMOVED
S SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
FH – FIRE HYDRANT
92 – CONTOUR LINE – 2' INTERVAL
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER

NH STATE PLANE NAD 83_ GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SITE–2024–0010

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9–19–24

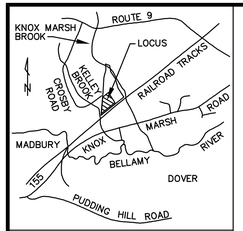
DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

DEMOLITION PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

5



LOCATION PLAN
(NO SCALE)

FORMER HANSON ROAD

50' WETLAND BUFFER

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

PUBLIC R.O.W. 75'

312'R

288'R

PEOP

SGC

CROSBY ROAD RECONSTRUCTION

PROPOSED STOP BAR & LEGNED END SGC

BEGIN SGC

END BCC BEGIN SGC

END SGC BEGIN BCC

PROPOSED CONCRETE TRANSFORMER PAD

CURB BREAK

BEGIN BCC

SNOW STORAGE (TYP.)

PROPOSED PAINTED ACCESSIBLE PARKING SYMBOL

PROPOSED CURB BREAK

PROPOSED PAINTED ISLAND

PROPOSED LIGHT POLE BASE (TYP)

PROPOSED MANDOOR (TYP)

PROPOSED BIKE RACK

PROPOSED 5' WIDE CONCRETE SIDEWALK

10' SETBACK

EV READY

PROPOSED RAMP WITH TIP-DOWN CURB

PROPOSED R7-8 & R7-8A SIGN

PROPOSED 9,600 S.F. BUILDING

PROPOSED OVERHEAD DOOR (TYP)

PROPOSED BOLLARD (TYP)

PROPOSED 6'x6' CONCRETE DUMPSTER PAD FOR 6 YD DUMPSTER (TYP OF 3)

PROPOSED GRAVEL 125'x180' LAYDOWN AREA

PROPOSED EDGE OF GRAVEL

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

WETLANDS DELINEATED BY BAG LAND CONSULTANTS

50' BUFFER

G / 2-1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
⌀ – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
– FIRE HYDRANT
– WETLAND
– EDGE OF WETLAND
– WETLAND BUFFER
312'R – PAVEMENT RADUIS
SGC – SLOPED GRANITE CURB
ICC – INTERGRATED CONCRETE CURB
BCC – BITUMINOUS CONRETE CURB
– ACCESIBLE PARKING SYMBOL
– PROPOSED SIDEWALK
– PROPOSED GRAVEL

PARKING CALCULATIONS
OFFICE 1 SPACE/300 S.F.
INDUSTRIAL 1 SPACE/800 S.F.
OFFICE: 640 S.F./300 = 3
INDUSTRIAL: 8,960 S.F./800 = 12
ALLOWED = 15
PROVIDED = 15

SNOW STORAGE CALCULATIONS
1 SF OF SNOW STORAGE PER 10 SF OF PAVEMENT TO BE CLEARED.
REQUIRED: 1810 SF OF PAVEMENT/ 10 SF = 181 SF
PROVIDED: 1870 SF

NOTES:
1. THE 3 LOT SUBDIVISION OFFSITE IMPROVEMENTS ARE SHOWN HEREON AS EXISTING CONDITIONS.
2. THE OFFSITE IMPROVEMENTS ARE SHOWN ON THE 3 LOT SUBDIVISION PLAN AND ARE EXPECTED TO BE COMPLETED PRIOR TO THE WORK BEGINNING ON THIS SITE DEVELOPMENT.

NH STATE PLANE NAD 83 - GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SITE-2024-0010

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9-19-24	SJH

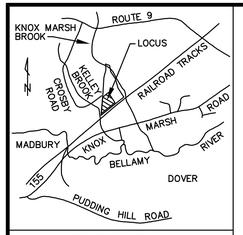
DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

SITE PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

6



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANHOLE IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

WATER – DOVER PARADI–020–WI

CATCH BASIN #7080 RIM = 96.0'

CATCH BASIN #7081 RIM = 95.9'

TBM RIM =96.0

INV.OUT=91.5 EXISTING EDGE OF PAVEMENT

CROSBY ROAD
175' WIDE R.O.W.

H.P. 96.98

GAS 4"ø P

WATER

DOVER PARADI–028

HYDRANT #319

15" PROPOSED ADS N–12 L=55' S=0.005

PCB1 RIM=94.8 INV.OUT=91.8

CROSBY ROAD RECONSTRUCTION

PROPOSED CONSTRUCTION ENTRANCE

PEOP

H.P. 96.43

BIORETENTION POND 1 W/ ISR (BIO1 W/ ISR)

PROPOSED RIP–RAP 1
PROPOSED SILTSOXX

PROPOSED SILTSOXX

INV. 93.0

TC=98.65
BC=98.15

PROPOSED 9,600 S.F. BUILDING
F.F.=98.75

H.P. 97.58

50' WETLAND BUFFER

75' PUBLIC ROW

35' SETBACK

10' SETBACK

BUFFER IMPACT "A"

MON WELL 2

MON WELL 3

PROPOSED SILTSOXX

PROPOSED SILTSOXX

PROPOSED SILTSOXX

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

10' SETBACK

TP 2A
TP2

WETLANDS DELINEATED BY BAG–LAND CONSULTANTS

50' BUFFER

TP3

BIORETENTION POND 2 W/ ISR (BIO2 W/ ISR)

TP5

BUFFER IMPACT "C"

BUFFER IMPACT "B"

INV. 92.75

PROPOSED RIP–RAP 2

C / 2–1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
ø – DIAMETER
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
UP – UTILITY POLE
SMH – SEWER MANHOLE
WV – WATER SHUT–OFF
– WATER GATE VALVE
– FIRE HYDRANT
92 – CONTOUR LINE – 1' INTERVAL
– EDGE OF WETLAND
– WETLAND
– WETLAND BUFFER
92.0 – PROPOSED FINISH GRADE
x 92.0 – PROPOSED SPOT ELEVATIONS
PD – PROPOSED DRAIN LINE

CONDITIONAL USE PERMIT
WETLAND BUFFER IMPACTS

IMPACT	AREA
A	104.3 S.F.
B	354.7 S.F.
C	327.5 S.F.
TOTAL	786.5 S.F.

NH STATE PLANE NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SITE–2024–0010

GRADING, DRAINAGE & EROSION CONTROL PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

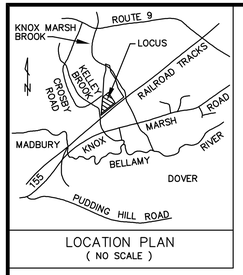
7

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9–19–24

DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG



LOCATION PLAN
(NO SCALE)

INFORMATION FROM CITY OF DOVER G.I.S.
– WATER MAIN LOCATION AND IDENTIFICATIONS
– CATCH BASIN AND SEWER MANIFOLD IDENTIFICATIONS

GAS LOCATION FROM SURFACE PAINT MARKINGS

FORMER HANSON ROAD

WATER – DOVER FARAD1–020–MI

SEWER MAIN

SMH 2876
RIM = 96.5'
INV. IN = 88.8' 8" PVC [NORTH]
INV. OUT = 88.6' 8" PVC
NEXT SMH 2875

SMH 2875
RIM = 96.0'
INV. IN = 88.0' 8" SMH 2876
INV. IN = 87.9' 8" (SITE)
INV. OUT = 87.6' 8"
NEXT SMH 2874

CATCH BASIN
#7080 RIM = 96.0'

CATCH BASIN
#7081 RIM = 95.9'

UTILITY POLE
364A/1Y UGU
DROP

INV.OUT=91.5

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
[75' WIDE R.O.W.]

74
95.1'
= 86.62' 8" PVC SMH 2875
T = 86.42' 8" PVC
[NORTH]

SEWER 8"ø

SEWER MAIN

GAS 4"HPPP

WATER

DOVER FARAD1–020–MI

8" WATERLINE

HYDRANT
#319

15"
PROPOSED ADS N–12
L=55'
S=0.005

PCB1
RIM=94.8
INV.OUT=91.8

CROSBY ROAD RECONSTRUCTION

PROPOSED 2" STAINLESS STEEL TAPPING SLEEVE

PROPOSED OVERHEAD UTILITIES

UTILITY POLE
364A/1
1140–22

PE

PROPOSED UTILITY POLE

SEWER WYE
INV=95.75

PSMH2
RIM97.2
INV.IN=89.6
INV.OUT=89.5
8" SDR35
L=2.30'
S=.004

PSMH 3
RIM=98.2
INV.IN=90.60
INV.OUT= 90.50

50' WETLAND BUFFER

8" PVC

8" D.I.

PEOP

PUBLIC R.O.W. 75'

PS

PW

PG

PROPOSED UNDERGROUND UTILITES

PROPOSED TRANSFORMER

2" WATER SHUTOFF

PSMH 1
RIM=96.9
INV.IN=89.2
INV.OUT=89.1
8" SDR35
L=66
S=.004

PROPOSED 93 LF
6" PVC
S=6.8%

PROPOSED 2" POLY DOMESTIC WATER SERVICE

PROPOSED 2" GAS SERVICE

INV=95.75

PROPOSED 9,600 S.F. BUILDING

F.F.=98.75

35' SETBACK

10' SETBACK

PROPOSED FUTURE EV CHARGING STATION ELECTRICAL LINE

GAS LINE STUB

WATER LINE STUB

SEWER LINE STUB

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

10'SETBACK

WETLANDS DELINEATED BY BAG LAND CONSULTANTS

50' BUFFER

G / 2–1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA

LEGEND

S.F.	– SQUARE FEET
Ac.	– ACRE
(TYP.)	– TYPICAL
±	– MORE OR LESS
ø	– DIAMETER
S.C.R.D.	– STRAFFORD COUNTY REGISTRY OF DEEDS
UP	– UTILITY POLE
SMH	– SEWER MANHOLE
WV	– WATER SHUT–OFF
	– WATER GATE VALVE
	– FIRE HYDRANT
	– EDGE OF WETLAND
	– WETLAND
	– WETLAND BUFFER
PD	– PROPOSED DRAIN LINE
PW	– PROPOSED WATER
PE	– PROPOSED UTILITY LINES
PS	– PROPOSED SEWER LINE
PG	– PROPOSED GAS LINE

NH STATE PLANE
NAD 83 – GPS OBS.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SITE–2024–0010

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9–19–24	SJH

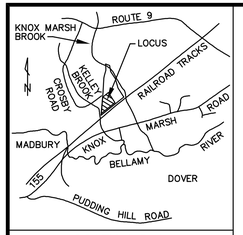
DATE: 8–6–24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

UTILITY PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

8



LOCATION PLAN
(NO SCALE)

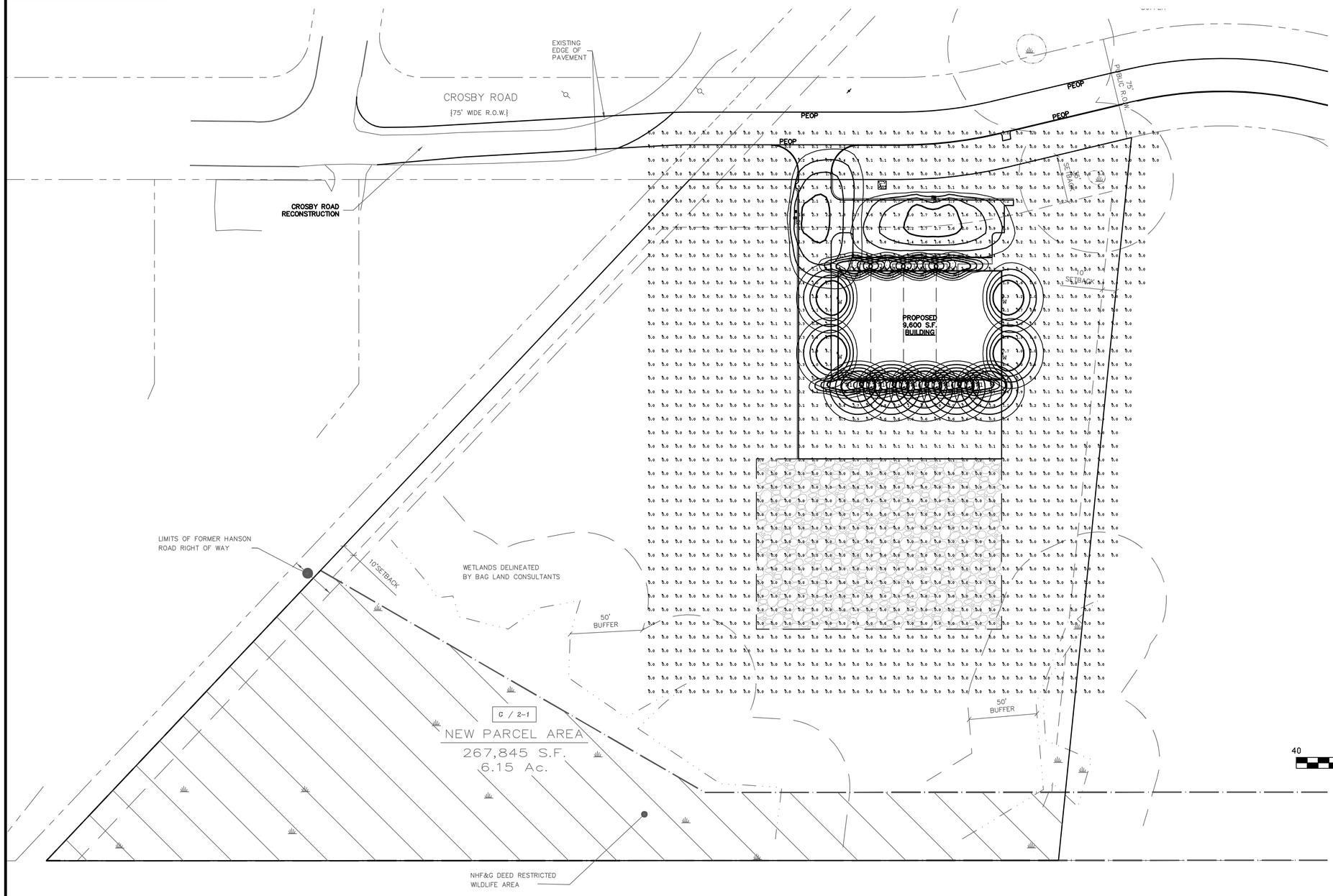
Luminaire Schedule					
Symbol	Qty	Label	Arrangement	Description	[MANUFAC]
	1	S2	Single	MRM-LED-09L-SIL-FT-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G20 S AB 4BC	LSI INDUSTRIES, INC.
	1	S3	Single	MRM-LED-09L-SIL-3-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G20 S AB 4BC	LSI INDUSTRIES, INC.
	9	W	Single	XWS-LED-03L-MTD-UNV-DIM-30-80CRI-CXX	LSI INDUSTRIES, INC.
	9	W1	Single	EOF1MV3KCXXPSC	NICOR, Inc.

FRONT PARKING LOT AREA

Illuminance (Fc)
Average = 1.22
Maximum = 2.7
Minimum = 0.4
Avg/Min Ratio = 3.05
Max/Min Ratio = 6.75

REAR PARKING LOT AREA

Illuminance (Fc)
Average = 1.45
Maximum = 9.1
Minimum = 0.0
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-0010

LIGHTING PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

9

EOF

LED Emergency Outdoor Full Cutoff

Project

Catalog

Type

Date

Product Description

The LED Emergency Outdoor Full Cutoff combines 90-minute emergency lighting with a low-profile, architectural design. The EOF is designed for outdoor use, with an optional cold-weather kit for added reliability in northern climates. The EOF comes standard with a photocell, with an optional motion sensor adding even more energy efficiency. An internal selector switch allows bypassing the photocell to control the unit from a wall switch. A non-emergency unit is available for locations not requiring battery-backup, providing a uniform look for all fixtures.

Construction
- IP65 Rated enclosure
- Durable die-cast Aluminum body
- Separable backplate for easy installation and maintenance

Optical System
- Polycarbonate lens
- Utilizes advanced LED technology with CCT of 3000K and 5000K
- CRI 70+

Electrical
- Input voltage of 120/277VAC
- Maintenance-free NiCad battery provides 90-minute emergency operation
- LED indicator light & test button with self-testing, self-diagnostic option
- Photocell standard with wall switch control
- Motion sensor option for additional energy saving
- Operating Temperature:
  - EM: 32°F to 122°F (0°C to +50°C)
  - Non-EM and EM Cold Weather: -13°F to +122°F (-25°C to +50°C)

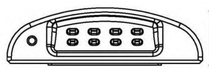
Mounting and Installation
- Fixture mounts directly to J Boxes and walls with screws
- Wiring possible through backplate or 1/2" conduit knockout
- For installations where power surge may be possible, NICOR recommends installing additional surge protection at the electrical distribution panel

Finish
- Fine-textured, UV-stabilized powder coat bronze finish

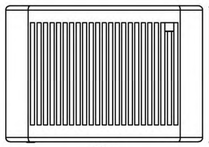
Listings
- LM-79, LM-80 testing performed in accordance with IESNA standards.
- UL & cUL 924 Listed
- Meets or exceeds requirements of NFPA 70 & NFPA 101
- Meets FCC Part 15, Subpart B, Class B standards for conducted and radiated emissions
- TM-21 Projected L70(9k) life >72,000 hours

Warranty
- 1-year limited system warranty standard
- Warranty does not cover product failure due to an overvoltage event (power surge.)





2.6 in (66.0 mm)



6.25 in (158.8 mm)

9.0 in (228.6 mm)

NICOR, Inc. 2200 Midtown Place NE, Albuquerque, NM 87107 P: 800.821.6283 F: 800.892.8393
www.nicorlighting.com April 2, 2021 9:17 AM

Catalog # : Project : Type :

Prepared By: Date :

Mirada Medium (MRM)

Outdoor LED Area Light

IP66 IK08



OVERVIEW	
Lumen Package	9,000 - 55,000
Wattage Range	62 - 438
Efficacy Range (LPW)	115 - 162
Weight lbs(kg)	30 (13.6)
Control Options	IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System
- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated sealed optical chamber in 1 component.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in IES Types 2, 3, 4, 5W, FT, FTA, AM, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377. Also Available in Phosphor Converted Amber with Peak intensity at 610nm.
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz or optional High Voltage (347-480 Vac).
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L and 48L lumen packages rated to +40°C. 55L lumen package rate to +35°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls
- Optional integral passive infrared Bluetooth™ motion. Fixtures operate independently and can be commissioned via iOS or Android configuration app
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7. (see controls section for more details).

Installation
- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional 3" drill pattern B3 for easy fastening of LSI products.

Warranty
- LSI LED Fixtures carry a 5-year warranty.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet Locations.
- IP66 rated Luminaire per IEC 60598.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2)
- IK08 rated luminiare per IEC 66262 mechanical impact code

Catalog #: Project:

Prepared By: Date: Type:

Mirada Small Wall Sconce (XWS)

Outdoor LED Wall Light

IP65 IK10



OVERVIEW	
Lumen Output Range	2,000 - 6,000
Wattage Range	15 - 52
Efficacy Range (LPW)	119 - 151
Luminaire Weight lbs (kg)	8 (3.6)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: 10 lbs in carton.
- Max luminaire shipping weight (with back housing): 20 lbs in carton.

Optical System
- Choice of acrylic lens or high impact resistant polycarbonate lens
- The lens is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP65 rating for the luminaire
- Reflector system with recessed light engine reduces glare and brightness.
- Forward Throw Wide and Medium distributions available.
- Optional diffused lens for reduced LED pixilation over the lens and maximum visual comfort.
- Zero uplight.
- Available in 5000K, 4000K, 3500K, 3000K and 2700K color temperatures per ANSI C78.377.
- Minimum CRI of 80

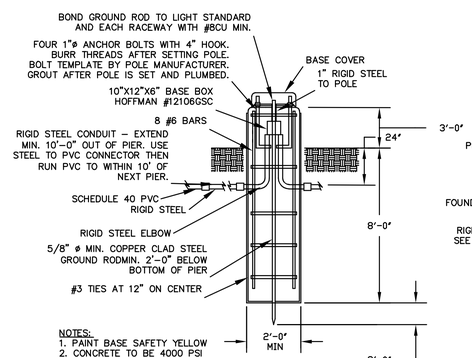
Electrical
- High-performance driver features over-voltage under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F).
- Power factor: >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance. Driver complies with FCC standards. Accessible driver and electrical components.
- Optional Dual Drivers/Circuit/Power Feeds.
- Optional battery backup provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. Standard battery rated for 0° to 50° with cold weather battery rated for -20°C to 50°. 120-277V Only.

Controls
- Optional integral passive infrared Bluetooth™ motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7.

Installation
- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 2700K or 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- IK10 rated luminaire per IEC 66262 mechanical impact code with clear polycarbonate lens (MTP).
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product are DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9–19–24

DATE: 8–6–24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

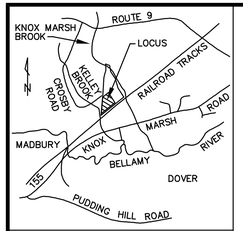
PLANNING FILE NO.: SITE–2024–0010

LIGHTING DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

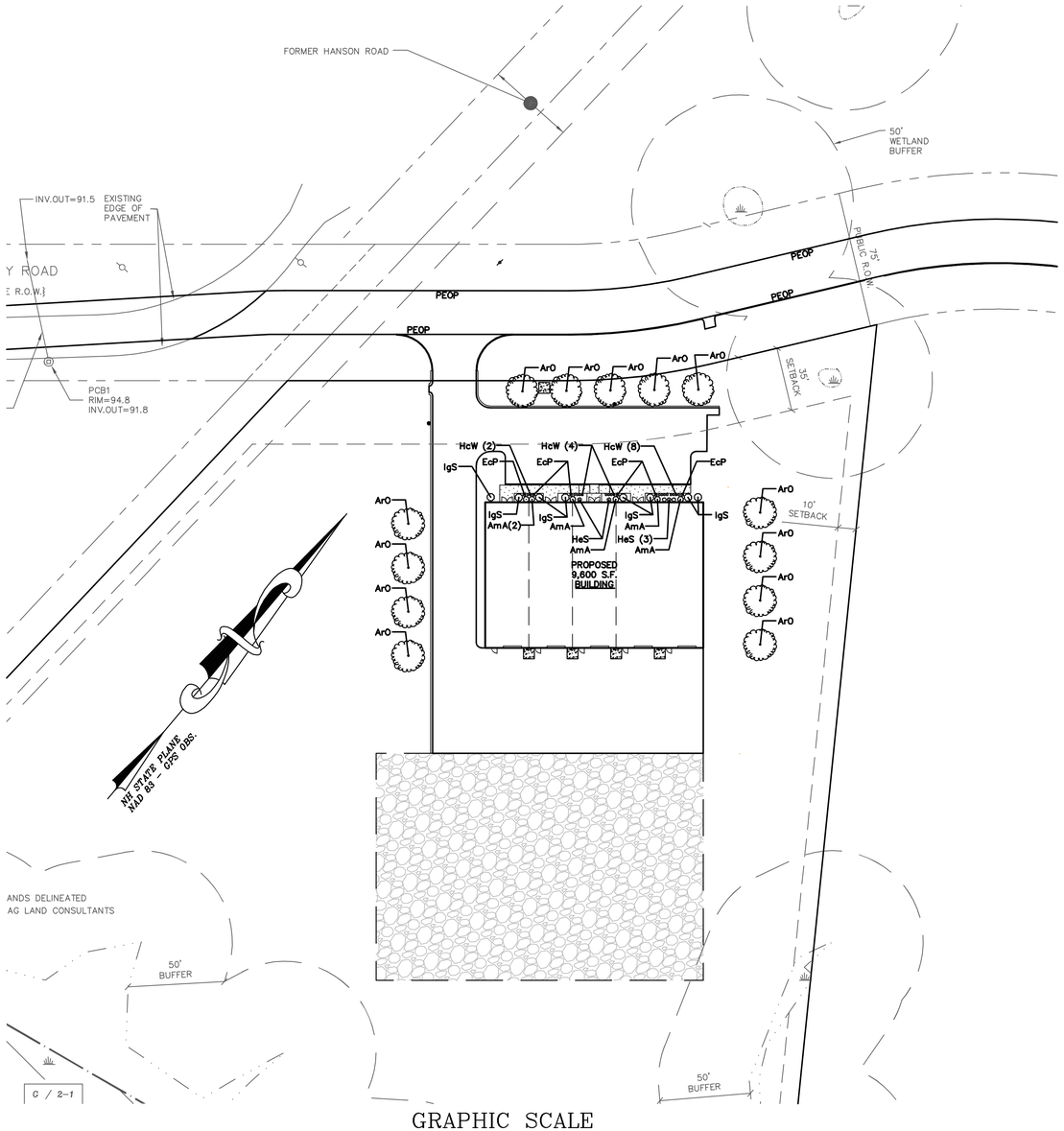
10



LOCATION PLAN
(NO SCALE)

PLANT SCHEDULE

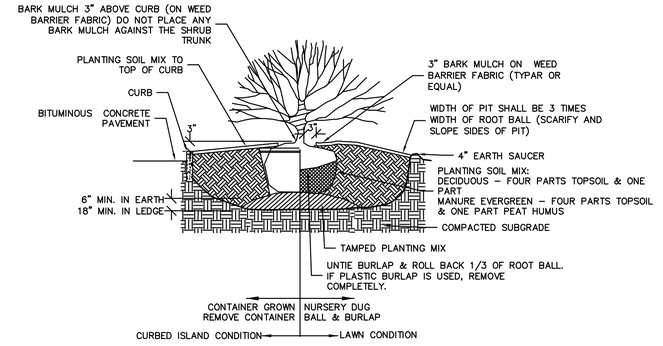
QTY	SYMBOL	BITINICAL NAME	COMMON NAME	SIZE
13	ARO	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3 -3.5"C
8	IGS	ILEX GLABRA 'SHAMROCK'	SHAMROCK HOLLY	#5
6	AMA	ARONIA MELANOCARPA 'AUTUMN MAGIC'	AUTUMN MAGIC CHOKEBERRY	#5
5	HES	HYDRANGEA 'ENDLESS SUMMER'	ENDLESS SUMMER HYDRANGEA	#3
6	ECP	ECHINACEA PURPUREZ	CONEFLOWER	#1
18	HCW	HEMEROCALLIS 'CATHERINE WOODBURY'	CAHTERINE WOODBURY DAYLILY	#1



GRAPHIC SCALE

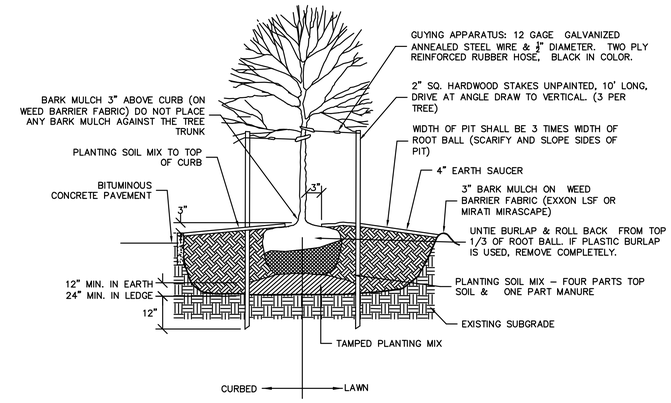
40 0 20 40 80 160

(IN FEET)



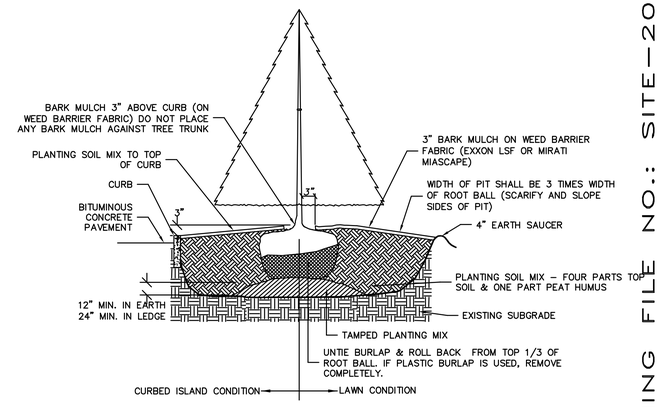
NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING
NOT TO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

DECIDUOUS PLANTING
NOT TO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

EVERGREEN TREE PLANTING
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9-19-24	SJH

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-0010

LANDSCAPING PLAN

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

11

DESCRIPTION

1. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS FOR A 9,600 S.F. COMMERICAL BUILDING WITH THE ASSOCIATED WATER, SEWAGE, AND ELECTRIC UTILITY IMPROVEMENTS.

PROJECT NAME AND LOCATION

DEL SOL DOVER, LLC
CROSBY RD – LOT 2 DEVELOPMENT — *LATITUDE N43° 10' 49"*
DOVER, NEW HAMPSHIRE 03820 — *LONGITUDE W70° 54' 41"*

DISTURBED AREA

±151,500 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL FOUNDATION FOOTINGS AND WALLS.
10. INSTALL UTILITIES.
11. PLACE GRAVELS AND FINE GRADE.
12. STABILIZE ROADWAYS AND PARKING AREAS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
13. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
14. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
15. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
16. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP–RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   e. CURVE THE END OF THE SILT BARRIER UP–GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   c. REMOVE SEDIMENT WHEN IT REACHES ONE–THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
   c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 150–200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   d. EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
      i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
      ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   c. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE @ 138 LBS. PER 1,000 S.F.
      LOW PHOSPHATE (N–P2O5–K20) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND–DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
b. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
c. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PROPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
   1. THE CONSTRUCTION PROJECT:
      a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
      b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
      d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
      e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
      f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   2. HAZARDOUS PRODUCTS:
      a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
      c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
      d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
   1. PETROLEUM PRODUCTS:
      a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
   2. FERTILIZERS:
      a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
   3. PAINTS:
      a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   4. CONCRETE TRUCKS:
      a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
   IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY–TO–DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV–A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST: A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV–A 1002 FUGITIVE DUST: PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV–A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECUATIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   I) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   II) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   III) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST–DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT.
2. ALL DITCHES & SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD AND PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3–INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9–19–24

DATE: 8–6–24
SCALE: AS SHOWN
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SIT–DWG

PLANNING FILE NO.: SITE–2024–0010

EROSION CONTROL NOTES

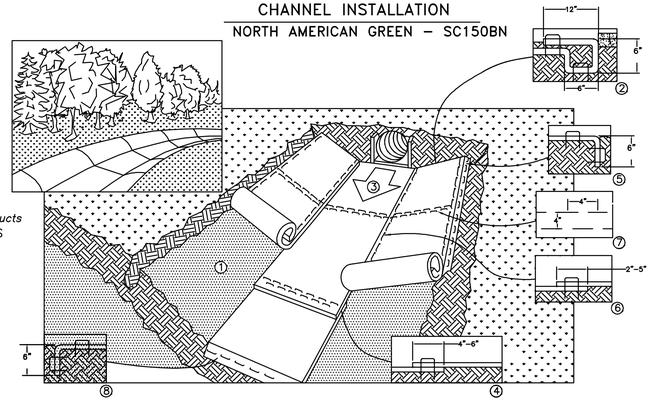
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

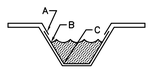
12

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



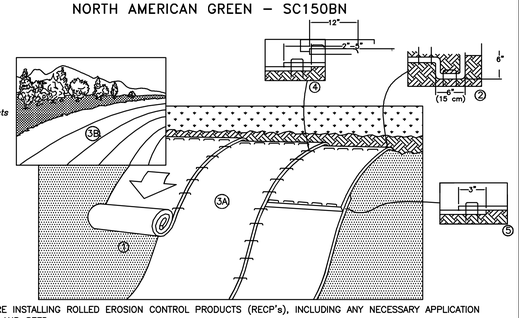
CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

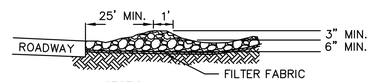
NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



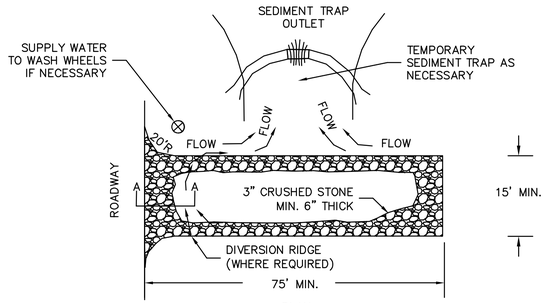
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™ STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.

DIVERSION RIDGE REQUIRED
WHERE GRADE EXCEEDS 2%



SECTION A – A



PLAN

A. GENERAL NOTES:

1. A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS
2. ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
3. LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
4. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

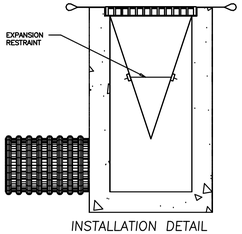
1. STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
3. THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6" THICK.
6. A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF–SITE.
8. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).

1. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT–TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®

(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)
DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

DETAIL OF INLET SEDIMENT CONTROL DEVICE

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:



Blanding's turtle (state endangered)
- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land



Wood turtle (special concern)
- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land



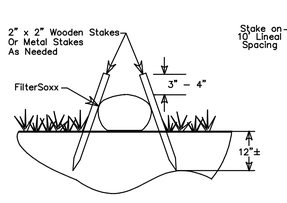
Eastern box turtle (state endangered)
- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base



Spotted turtle (state threatened)
- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 ***Please report promptly, noting specific location and date – Photographs strongly encouraged***

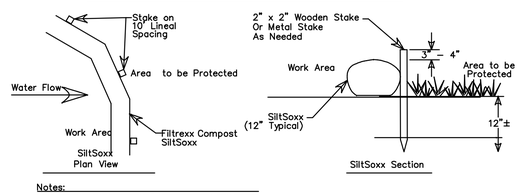
NOTES:
1. ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.
2. THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED
3. THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE
4. IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271–1738 or JOSH MEGYESY AT 271–1125 FOR FURTHER INSTRUCTIONS.



FilterSoxx Section
At Ends of Run Cross Stakes

Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details



Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SILTSOXX DETAILS

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9–19–24

DATE: 8–6–24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO:24085
FILE: SITE.DWG

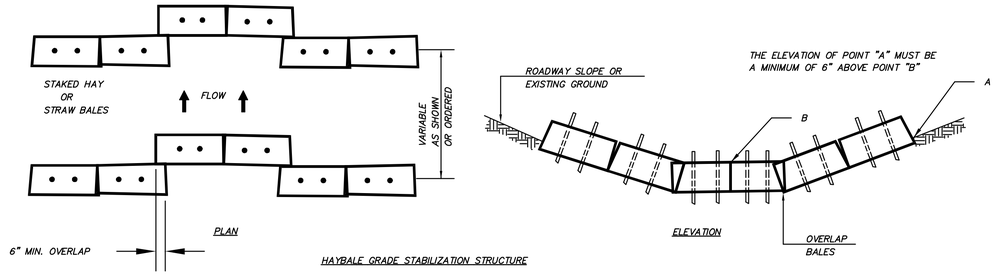
PLANNING FILE NO.: SITE–2024–0010

EROSION CONTROL DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

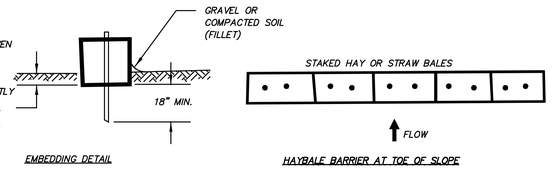
13



HAYBALE GRADE STABILIZATION STRUCTURE

CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.

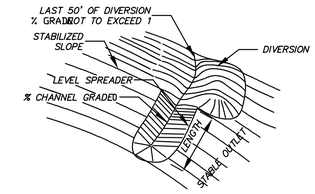


EMBEDDING DETAIL

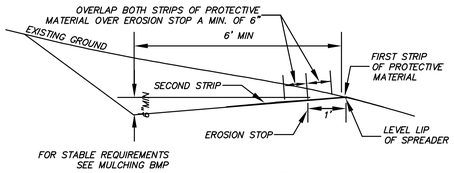
HAYBALE BARRIER AT TOE OF SLOPE

HAYBALE NOTES AND DETAILS

NOT TO SCALE



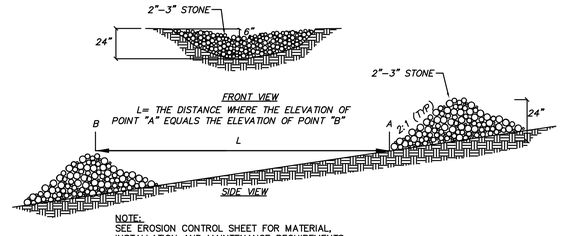
ISOMETRIC VIEW



CROSS SECTION

LEVEL SPREADER DETAIL

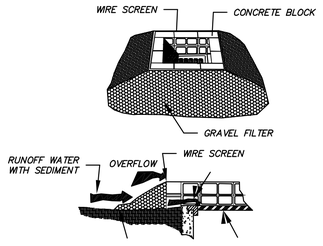
NOT TO SCALE



NOTE:
SEE EROSION CONTROL SHEET FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.

STONE CHECK DAM

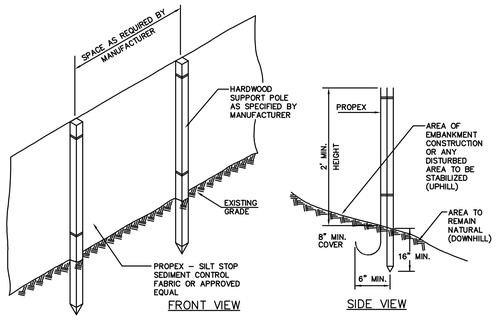
NOT TO SCALE



NORMAL USE AROUND CATCH BASINS

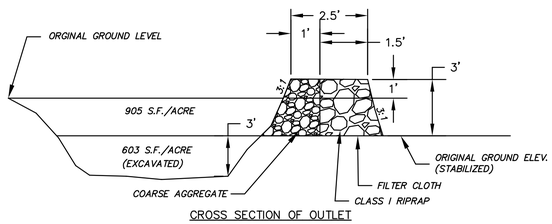
TEMPORARY EROSION CONTROL

NOT TO SCALE

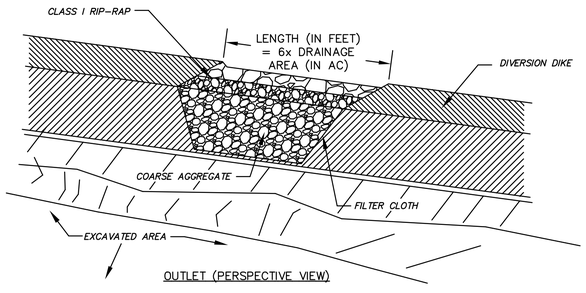


SILT FENCE DETAIL

NOT TO SCALE



CROSS SECTION OF OUTLET



OUTLET (PERSPECTIVE VIEW)

NOTES:
1. COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
2. FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
3. CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
4. THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
5. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
6. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

TEMPORARY SEDIMENT TRAP

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9-19-24	SJH

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JPG
APPROVED BY:SJH
PROJECT NO:24085
FILE: SITE.DWG

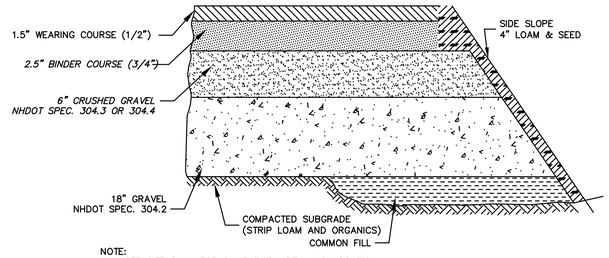
PLANNING FILE NO.: SITE-2024-0010

EROSION CONTROL DETAILS

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

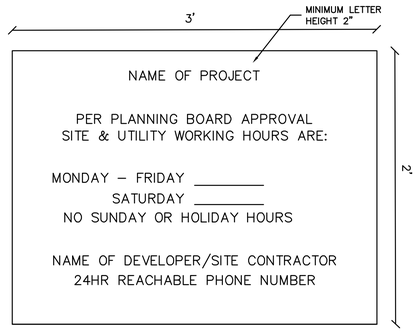
14



NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

HEAVY DUTY TYPICAL PAVEMENT SECTION

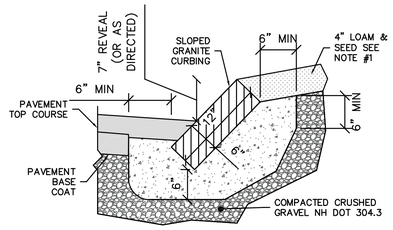
NOT TO SCALE



NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. HOURS ON THE SIGN SHALL COMPLY WITH ALL PLANNING BOARD CONDITIONS OF APPROVAL.

CITY OF DOVER D-2 CONSTRUCTION SIGN

NOT TO SCALE



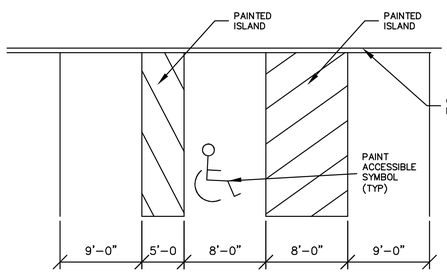
SLOPED GRANITE CURB

RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

NOTES:
1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
2. CONCRETE CURB SUPPORT SHOULD BE SET 1/2" BELOW THE TOP OF THE PAVEMENT BASE COURSE.

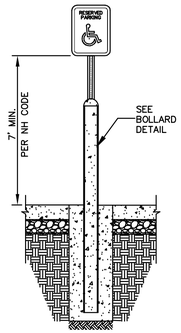
CITY OF DOVER D-8 GRANITE CURB DETAIL

NOT TO SCALE



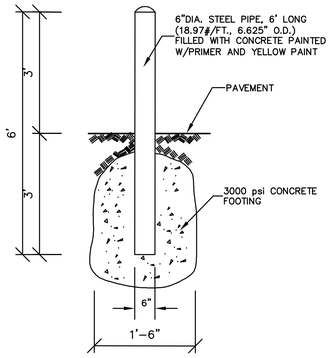
ACCESSIBLE PARKING LAYOUT

NOT TO SCALE



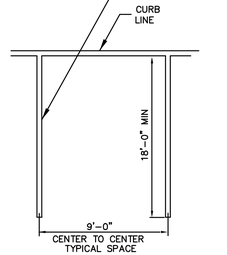
SIGN IN BOLLARD

NOT TO SCALE



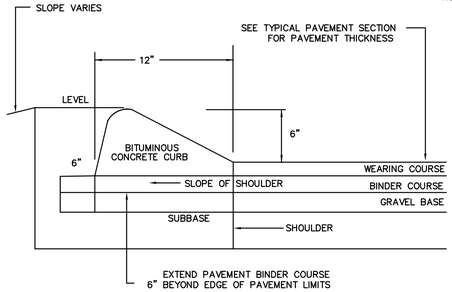
BOLLARD DETAIL

NOT TO SCALE



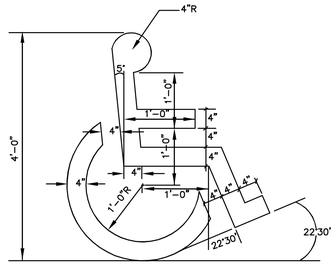
STANDARD PARKING STALL

NOT TO SCALE



BITUMINOUS CONCRETE CURB

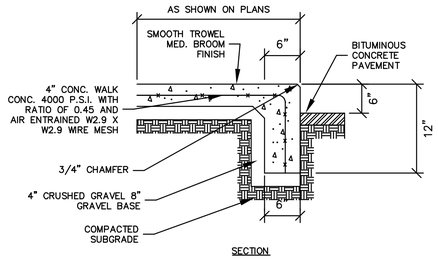
NOT TO SCALE



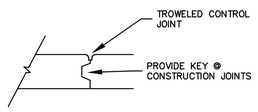
PAINTED

ACCESSIBLE PARKING SYMBOL

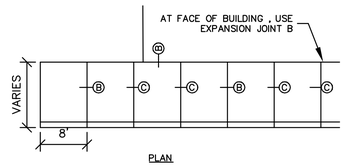
NOT TO SCALE



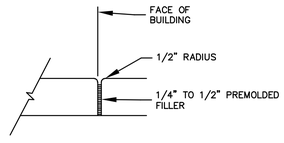
SECTION



CONSTRUCTION CONTROL JOINT C



PLAN



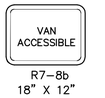
EXPANSION JOINT B

CONCRETE WALKWAY WITH MONOLITHIC CONCRETE CURB

NOT TO SCALE

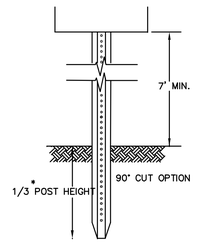


R7-8a
12" x 18"

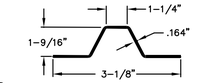


R7-8b
18" X 12"

NOTE:
1. ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

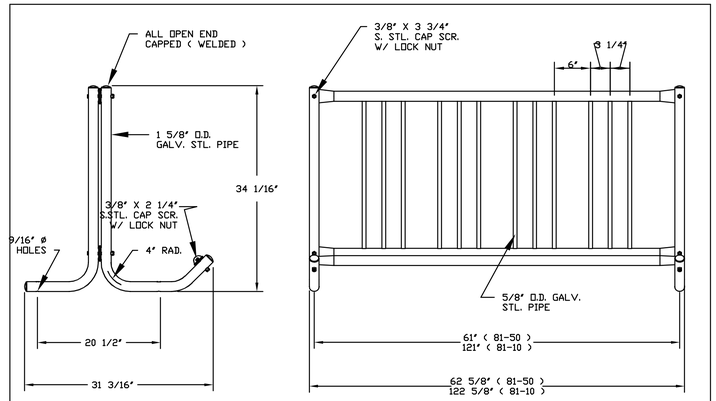


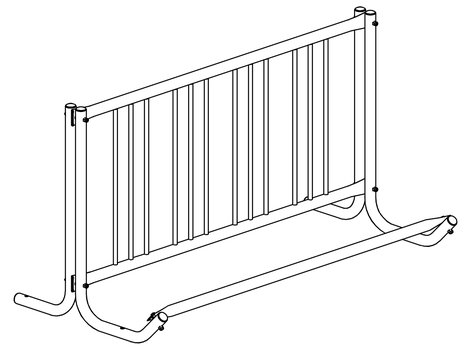
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 – 1080)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN
BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY.
ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.



SIGN LEGEND & SIGN POST

NOT TO SCALE





NOTES:
1.) ALL STL. MEMBERS GALVANIZED. WELDS COATED WITH ZINC-RICH FINISH.
2.) 1/2" X 5 1/2" EXPANSION ANCHOR BOLTS PROVIDED.

LENGTH OPTIONS
☐ 5' RACK
☐ 10' RACK

DuMor, inc.
P.O. Box 142 Mifflintown, PA 17059-0142

SCALE :	NONE
DATE DRAWN :	3/22/94
DRAWN BY :	CDC
DATE REV. :	7/9/02
REV. BY :	CDC
TITLE :	SINGLE-SIDE ENTRY BIKE RACK
REV.	C
DRAWING NUMBER	81 SERIES
SHEET	1 OF 2

BIKE RACK DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9-19-24	SJH

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

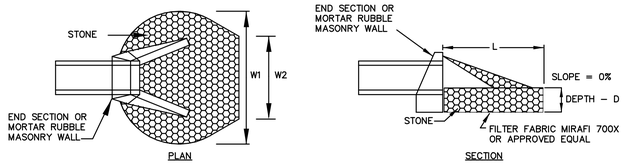
PLANNING FILE NO.: SITE-2024-0010

DETAILS

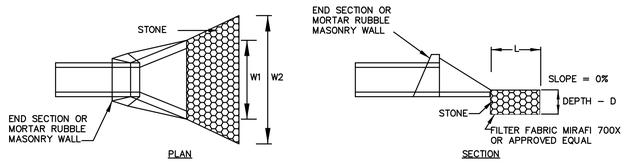
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

15



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO DEFINED CHANNEL



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO FLAT AREA, NON DEFINED CHANNEL

MAINTENANCE

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

STONE GRADATION

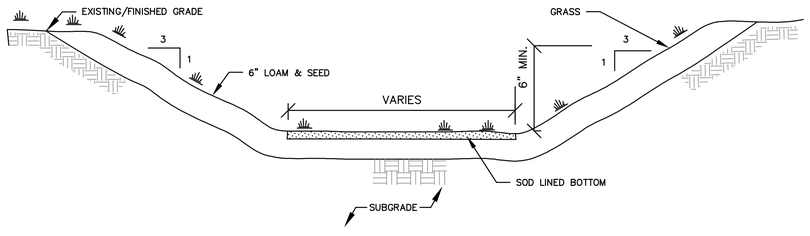
% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100	1.5 TO 2.0 D50
85	1.3 TO 1.8 D50
50	1.0 TO 1.5 D50
15	0.3 TO 0.5 D50

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

OUTLET FROM	W1(ft)	W2(ft)	L(ft)	D (ft)	D50(IN)	CHANNEL TYPE
BIO-1	8	2	9	1	6	DEFINED
BIO-2	3	13	10	1	6	UNDEFINED
BIO-3	3	11	8	1	6	UNDEFINED

RIP RAP OUTLET PROTECTION
NOT TO SCALE



MAINTENANCE
TIMELY MAINTENANCE IS IMPORTANT TO KEEP THE VEGETATION IN THE SWALE IN GOOD CONDITION. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO KEEP THE VEGETATION IN VIGOROUS CONDITION AND TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION, HOWEVER IT SHOULD NOT BE MOWED TOO CLOSELY, MAINTAIN A MINIMUM 4" STAND OF VEGETATION. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.

THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE SWALE. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

GRASS LINED CONVEYANCE SWALE DETAIL
NOT TO SCALE

B A G
LAND CONSULTANTS

September 9, 2024

Chad Kageleiry
Westfield, LLC
340 Central Avenue
Dover, NH 03820

RE: Del Sol Subdivision Project (20.5 Ac. +/-)
Crosby Road, Dover, NH [Map G; Lot 2-1]

Dear Chad:

ONSITE SOIL TEST PIT DOCUMENTATION for STORMWATER DESIGN

In late July 2024, we visited the above-referenced property for the purpose of documenting soil characteristics to support any stormwater design decisions. A backhoe (with operator) opened up six (6) test pits at strategically surveyed locations on the property. All test pits were dug to a depths greater than five (5') feet. There was no ledge refusal in any of the test pits. There was no observed water table in any of the test pits. Below our soil field findings:

TP #	Redox Observed	Matrix Color	Texture	Structure / Consistence
1	7.5 YR 5/8 @ 22" (prominent-common)	10YR 5/4	Loamy Sand	Weak Fine Granular/V. Friable
2	10YR 5/3 @ 13" (distinct-common)	2.5Y 5/3	Silt Loam	Subangular Blocky/Friable
3	10YR 5/6 @ 21" (distinct-common)	2.5Y 5/4	Sand	Single Grain/Loose
4	7.5YR 6/8 @ 12" (prominent-many)	2.5Y 5/2	Silt Clay Loam	Blocky/Firm
5	7.5YR 5/8 @ 19" (prominent-many)	10YR 5/4	Loamy Sand	Single Grain/Loose
6	10YR 5/6 @ 12" (distinct-common)	2.5Y 5/2	Silt Clay Loam	Blocky/Firm

The estimated seasonal high water table (e.s.h.w.t.) in each test pit is at the same depth of of recorded redoximorphic feature.

Sincerely,

Bruce Gilday
Certified Soil Scientist

STATE OF NEW HAMPSHIRE
BRUCE A. GILDAY
No. 012
CERTIFIED SOIL SCIENTIST

43 Rockingham Street • Concord, New Hampshire 03301 • 603/228-5775

TEST PIT LOGS
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REV PER TRC COMMENTS	9-19-24	SJH

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

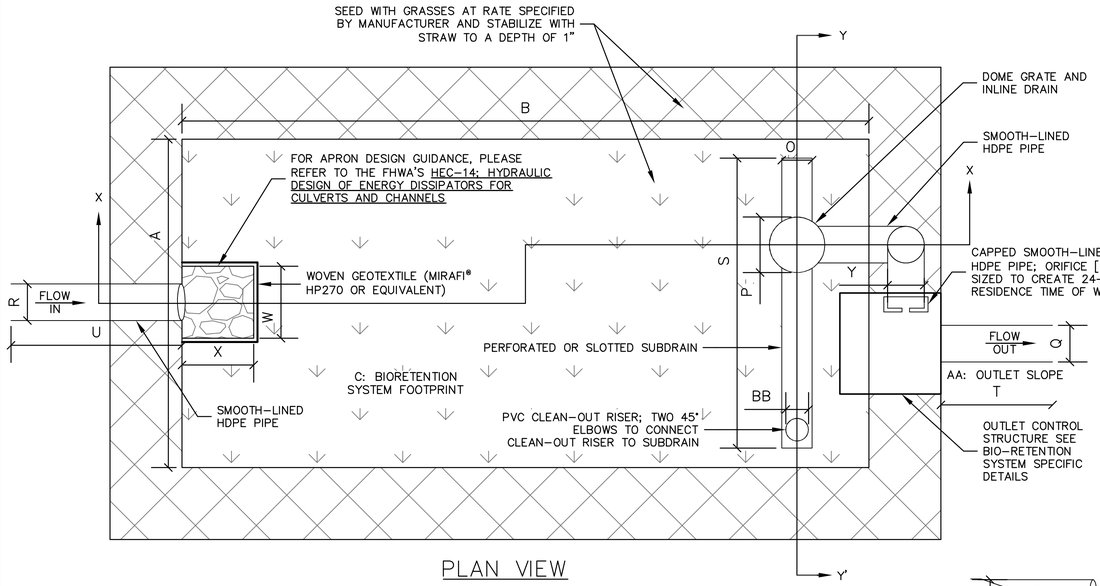
PLANNING FILE NO.: SITE-2024-0010

DETAILS

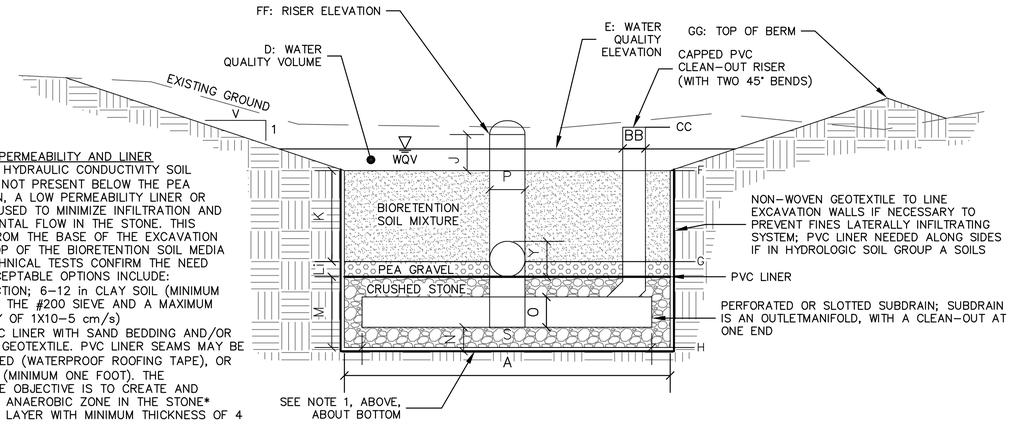
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

16



PLAN VIEW



SECTION Y-Y'

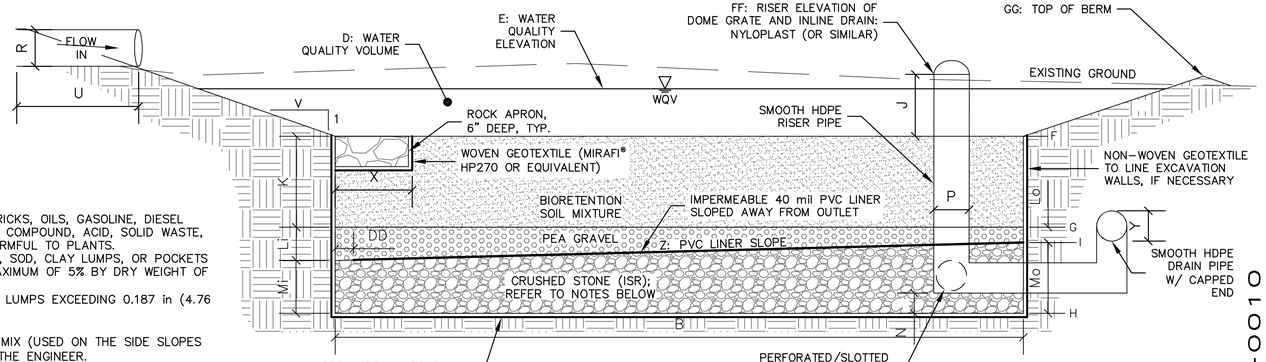
NOTE 1: BOTTOM PERMEABILITY AND LINER

IF A NATIVE, LOW HYDRAULIC CONDUCTIVITY SOIL (k≤0.03ft/day) IS NOT PRESENT BELOW THE PEA GRAVEL ELEVATION, A LOW PERMEABILITY LINER OR SOIL SHOULD BE USED TO MINIMIZE INFILTRATION AND PRESERVE HORIZONTAL FLOW IN THE STONE. THIS LINER EXTENDS FROM THE BASE OF THE EXCAVATION TO ABOVE THE TOP OF THE BIORETENTION SOIL MEDIA LAYER. IF GEOTECHNICAL TESTS CONFIRM THE NEED FOR A LINER, ACCEPTABLE OPTIONS INCLUDE:

a. SOIL COMPACTION; 6-12 in CLAY SOIL (MINIMUM 15% PASSING THE #200 SIEVE AND A MAXIMUM PERMEABILITY OF 1X10-5 cm/s)
b. A 40 mil PVC LINER WITH SAND BEDDING AND/OR NON-WOVEN GEOTEXTILE. PVC LINER SEAMS MAY BE WELDED, TAPED (WATERPROOF ROOFING TAPE), OR OVERLAPPED (MINIMUM ONE FOOT). THE PERFORMANCE OBJECTIVE IS TO CREATE AND MAINTAIN AN ANAEROBIC ZONE IN THE STONE*
c. A BENTONITE LAYER WITH MINIMUM THICKNESS OF 4 in
d. USE OF CHEMICAL ADDITIVES (SEE NRCS AGRICULTURAL HANDBOOK #386, DATED 1961)
e. OR AN OTHERWISE PREPARED DESIGN BY A PROFESSIONAL ENGINEER

*IF ENGINEER BELIEVES THE PVC LINER IS AT RISK OF PUNCTURE, THE LINER MAY BE SANDWICHED BETWEEN NON-WOVEN GEOTEXTILE OR SAND (3 in THICKNESS)

NOTE: ADDITIONAL OUTLET STRUCTURES ABOVE THE ELEVATION OF THE WQV OR DESIGN VOLUME MAY BE NECESSARY TO CONVEY LARGE FLOWS.



SECTION X-X'

NOTES:

1. FOR FULL BIORETENTION STORMWATER SYSTEM SPECIFICATIONS, PLEASE REFER TO THE UNH STORMWATER CENTER'S BIORETENTION SPECIFICATIONS PUBLICATION, DATED FEBRUARY 2017, FOUND AT: https://www.unh.edu/unhsc/sites/default/files/media/unhsc_bsm_spec_2-28-17_0.pdf
2. SYSTEM FOOTPRINT NEED NOT BE RECTANGULAR, ANY SHAPE IS POSSIBLE. THESE DETAILS USE THE RECTANGULAR SHAPE AS AN EXAMPLE.
3. THESE DETAILS ARE NOT TO SCALE; FOR DIMENSIONS AND SPECIFICATIONS, REFERENCE EACH LETTER TO THE TABLE OF METRICS.
4. BIORETENTION SOIL MIX SHALL NOT BE PLACED UNTIL AFTER ENGINEERING APPROVAL AND INSPECTION OF SUBGRADE.
5. BIORETENTION SYSTEM IS RECOMMENDED TO HAVE PRETREATMENT (FOREBAY, SWALE, OR OTHER APPROVED STRUCTURE). PRETREATMENT IS REQUIRED FOR PROJECTS REQUIRING ALTERATION OF TERRAIN (AOT) PERMITTING.
6. PLANT THE SYSTEM AS SPECIFIED; AT A MINIMUM, SEED THE SYSTEM FLOOR AND SIDE SLOPES WITH RYE GRASS MIXTURE CONTAINING PERENNIAL AND WINTER RYES, AT A RATE SPECIFIED BY THE MANUFACTURER. STABILIZE THE SLOPES WITH STRAW TO A DEPTH OF 1".
7. GENERAL CONSTRUCTION GUIDELINES:
   - 7.1. VERIFY THAT NO FOREIGN OR DELETERIOUS MATERIAL OR LIQUID SUCH AS PAINT, PAINT WASHOUT, CONCRETE SLURRY, ASPHALT/CONCRETE LAYERS OR CHUNKS. CEMENT, PLASTER, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, SOLID WASTE, OR ACID HAS BEEN DEPOSITED IN PLANTING SOIL (BIORETENTION MEDIA OR LOAM ON SIDE SLOPES).
   - 7.2. PROCEED WITH PLACEMENT OF ANY SUBSURFACE MATERIALS ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
   - 7.3. COMPACT EACH BLENDED LIFT OF BIORETENTION SOIL MEDIA TO 75% OF MAXIMUM STANDARD PROCTOR DENSITY ACCORDING TO ASTM D698.
   - 7.4. GRADE SOIL MEDIA TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
   - 7.5. LIGHTLY COMPACT FINISHED FLOOR ELEVATION AND FINISHED SLOPES USING THE BUCKET OF AN EXCAVATOR, NON-MOTORIZED ROLLER, HAND TAMP, OR OTHER MEANS, THEN ROUGHEN SURFACE WITH A RAKE TO LOOSEN SOILS BEFORE SEEDING.
   - 7.6. DO NOT COMPACT THE SUBGRADE AT THE BOTTOM OF EXCAVATION UNLESS PERMEABILITY EXCEEDS $1x10^{-5}$ cm/s
8. BIORETENTION SOIL MEDIA (BSM) MIXTURE SPECIFICATIONS:
   - 8.1. STICKS AND ROOTS SHOULD BE MINIMIZED IN THE BSM MIXTURE, AND PREFERABLY LIMITED TO NOTHING LARGER THAN 4.76 mm (0.187 in).
   - 8.2. DEBRIS AND OTHER FOREIGN MATERIALS SHOULD BE MINIMIZED.
   - 8.3. ORGANIC MATTER SHOULD MAKE UP A MINIMUM OF 3% BY VOLUME AND A MAXIMUM 8% BY VOLUME OF THE BSM.
   - 8.4. BSM MIXTURE SHOULD HAVE A SOIL REACTION pH OF 6 TO 7.
   - 8.5. CATION EXCHANGE CAPACITY (CEC) OF BSM SHOULD BE A MINIMUM OF 10 meq PFR 100 ml AT A pH OF 7.0.
9. IF BSM IS PURCHASED FROM A MANUFACTURER, BSM MIXTURE SHALL NOT CONTAIN THE FOLLOWING:
   - 9.1. UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, OR OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANTS.
   - 9.2. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, OR POCKETS OF COARSE SAND THAT EXCEEDS A COMBINED MAXIMUM OF 5% BY DRY WEIGHT OF THE MANUFACTURED SOIL.
   - 9.3. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS EXCEEDING 0.187 in (4.76 mm) IN ANY DIMENSION.
10. ORGANIC SOIL AMENDMENTS:
    - 10.1. NO COMPOST SHOULD BE USED IN THE PLANTING MIX (USED ON THE SIDE SLOPES AND SURROUNDING AREA) UNLESS SPECIFIED BY THE ENGINEER.
    - 10.1. SPHAGNUM PEAT: PARTIALLY DECOMPOSED SPHAGNUM PEAT MOSS, FINELY DIVIDED OR OF GRANULAR TEXTURE WITH 100% PASSING THROUGH A 1/2-in (13 mm) SIEVE, WITH A pH OF 3.4 TO 4.8.
    - 10.2. WOOD DERIVATIVES: SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIAL.
11. THE CRUSHED STONE LAYER SHOULD CONSIST OF AASHTO #5 STONE (3/4-in).
12. THE VOLUME OF WATER CONTAINED ABOVE THE BSM ELEVATION AND BELOW THE HIGH FLOW SPILLWAY IS STATISTICALLY DESIGNED TO HOLD A SPECIFIC RUNOFF VOLUME.

BIORETENTION SYSTEM DESIGN METRICS

ID	DESIGN PARAMETER	MIN	BIO 1	BIO 2	BIO 3	UNITS
A	SYSTEM FLOOR WIDTH		14	19	10	FT
B	SYSTEM FLOOR LENGTH		49	60	28	FT
C	BIORETENTION FOOTPRINT AREA		686	1,140	280	SF
D	WATER QUALITY VOLUME		1,274	2,203	435	CF
E	WQV ELEVATION		95.42	95.09	95.16	FT
F	SYSTEM FLOOR ELEVATION		94.85	94.60	94.60	FT
G	BOTTOM BSM ELEVATION		93.35	93.10	93.10	FT
H	BOTTOM STONE ELEVATION		91.85	91.60	91.60	FT
I	TOP STONE/OUTLET INVERT ELEVATION		93.10	92.85	92.85	FT
J	PONDING DEPTH BELOW LOWEST INV.		0.65	0.50	0.60	FT
K	BSM MEDIA DEPTH	18	18	18	18	IN
Li	INLET END PEA GRAVEL DEPTH		6	7	5	IN
Lo	OUTLET END PEA GRAVEL DEPTH	3	3	3	3	IN
Mi	INLET END CRUSHED STONE DEPTH		12	11	13	IN
Mo	OUTLET END CRUSHED STONE DEPTH	14	15	15	15	IN
N	SUBDRAIN DEPTH ABOVE BOTTOM	4	4	4	4	IN
O	PERFORATED SUBDRAIN DIAMETER	6	6	6	6	IN

NOTES:

1. BIO POND 3 NOT IN CONTRACT

BIORETENTION SYSTEM DESIGN METRICS

ID	DESIGN PARAMETER	MIN	BIO 1	BIO 2	BIO 3	UNITS
P	RISER PIPE DIAMETER	6	12	12	12	IN
Q	OUTLET PIPE DIAMETER	6	12	12	12	IN
R	INFLOW PIPE DIAMETER		N/A	N/A	N/A	IN
S	PERFORATED SUBDRAIN LENGTH		12	16	7	FT
T	OUTLET PIPE LENGTH		10	10	10	FT
U	INFLOW PIPE LENGTH		N/A	N/A	N/A	FT
V	SLOPE GRADE (RUN PER 1ft RISE)		3	3	3	FT
W	ROCK APRON WIDTH		N/A	N/A	N/A	FT
X	ROCK APRON LENGTH		N/A	N/A	N/A	FT
Y	SMOOTH LINED HDPE PIPE DIAMETER		6	6	6	IN
Z	PVC LINER SLOPE		0.51	0.56	0.60	%
AA	OUTLET PIPE SLOPE		1.0	1.0	1.0	%
BB	CLEAN-OUT RISER DIAMETER		6	6	6	IN
CC	CLEAN-OUT RISER ELEVATION		95.75	95.75	95.75	FT
DD	PVC LINER GAP	0.1*B	5	6	3	FT
EE	OUTLET PIPE ORIFICE DIAMETER		7/8	1-1/8	1/2	IN
FF	RISER ELEVATION		95.50	95.10	95.20	FT
GG	TOP OF BERM		96.25	96.25	96.25	FT

ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX

MEDIA TYPE	SIEVE #	SIZE (in)	SIZE (mm)	% PASSING
COARSE SAND	4	0.187	4.76	100
MEDIUM SAND	10	0.079	2.00	95
FINE SAND	40	0.017	0.42	40-15
SILTS	200	0.003	0.075	10-20
CLAYS	<200	PAN	PAN	0-5

BIORETENTION SOIL MEDIA COMPONENTS: *

- AMOUNTS MIXED BY TOTAL VOLUME
- 60-85% - SAND (0.5 TO 2.0 mm) (SEE SPECS ABOVE)
- 15-25% - LOAM OR TOPSOIL
- 3-8% - ORGANIC MATTER
- 0-5% - WATER TREATMENT RESIDUALS OR IRON FILINGS**

*ALTERNATELY, USE MEDIA SPECIFIED IN THE ALTERATION OF TERRAIN RULES, Env-Wq 1508.07(k)
**THIS IS AN AMENDMENT USED FOR ENHANCED PHOSPHORUS ADSORPTION

INTERNAL STORAGE RESERVOIR (ISR) NOTES:

- THE HYBRID BIORETENTION SYSTEM HARBORS AN ANAEROBIC INTERNAL STORAGE RESERVOIR FOR NITROGEN REMOVAL.
- THE ISR IS SEPARATED BY AN IMPERMEABLE PVC LINER BETWEEN THE PEA GRAVEL AND CRUSHED STONE LAYERS.
- THE PVC LINER SLOPES FROM THE OUTLET TOWARDS THE INLET TO MAXIMIZE STORAGE RETENTION AND PROVIDE EXTRA TREATMENT/FILTER TIME VIA PLUG FLOW THROUGH CRUSHED STONE.
- DESIGN GUIDELINES FOR THE SUBSURFACE GRAVEL WETLAND SPECIFICATIONS (UNHSC, 2016) IDENTIFIED THAT THE WATER VOLUME IN THE ISR BE AT LEAST 0.26*WQV [WATER QUALITY VOLUME], OR 26% OF THE WQV.
- PVC LINER THICKNESS OF 40 TO 60 MIL, PREFERABLY SEAMLESS. IF SEAMS ARE UNAVOIDABLE, THE SEAMS SHOULD BE SEALED.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

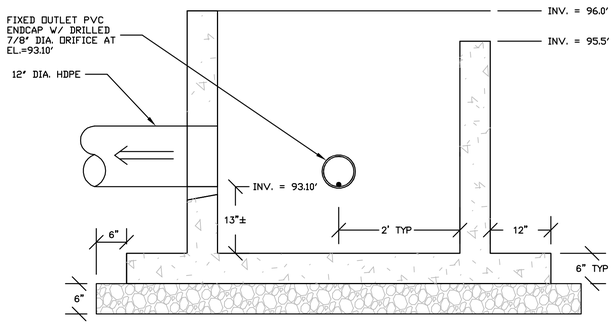
PLANNING FILE NO.: SITE-2024-0010

DETAILS

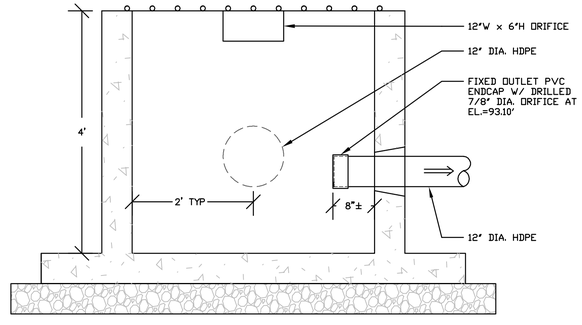
DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

17



SIDE VIEW

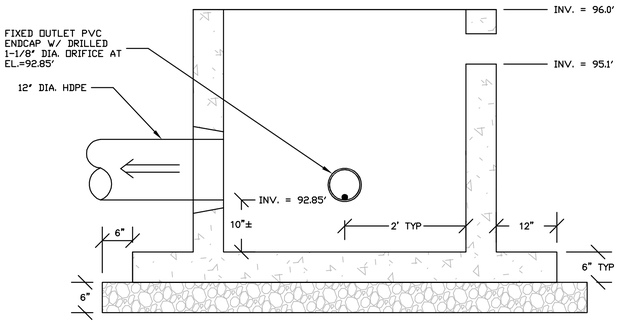


FRONT VIEW

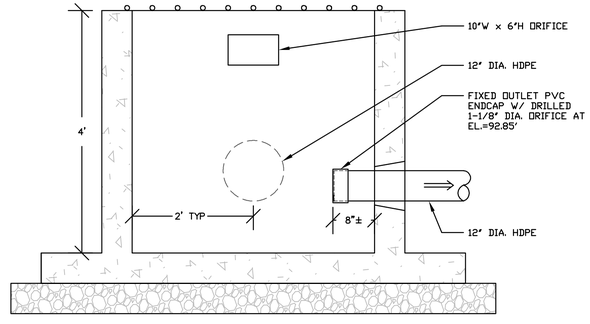
NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.

BIORETENTION POND 1 (BIO1) OUTLET STRUCTURE DETAIL

NOT TO SCALE



SIDE VIEW

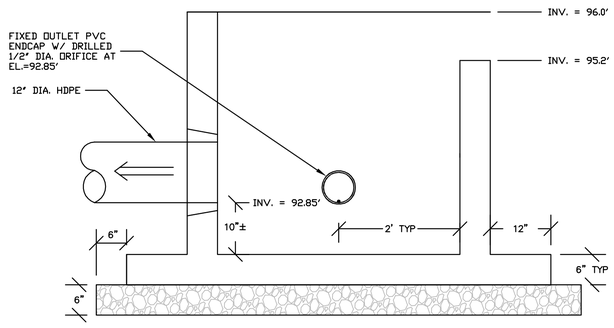


FRONT VIEW

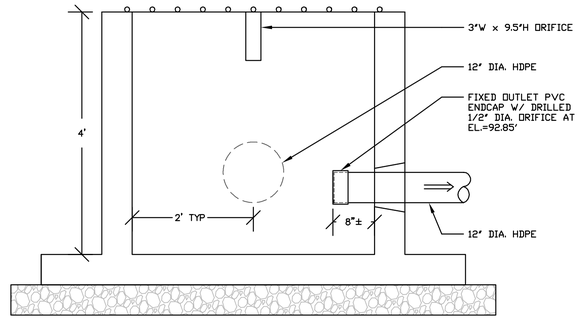
NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.

BIORETENTION POND 2 (BIO2) OUTLET STRUCTURE DETAIL

NOT TO SCALE



SIDE VIEW

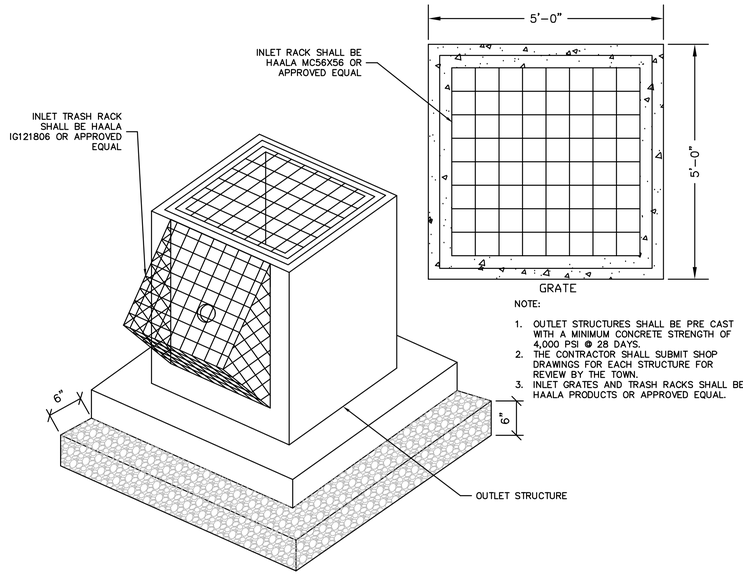


FRONT VIEW

NOTE:
1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 8 INCHES.
4) SEE OFFSITE IMPROVEMENTS PLAN FOR CROSBY ROAD EXTENSION. NOT IN CONTRACT.

BIORETENTION POND 3 (BIO3) OUTLET STRUCTURE DETAIL

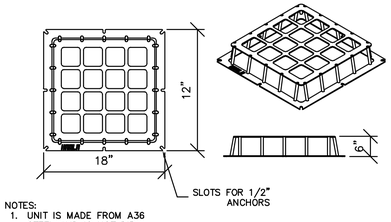
NOT TO SCALE



NOTE:
1. OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3. INLET GRATES AND TRASH RACKS SHALL BE HAALA PRODUCTS OR APPROVED EQUAL.

TYPICAL INLET TRASH RACKS

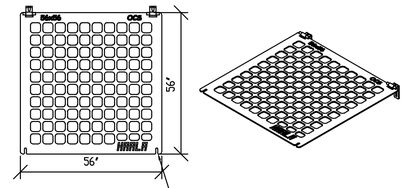
NOT TO SCALE



NOTES:
1. UNIT IS MADE FROM A36 STEEL AND IS HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

HAALA IG121806

NOT TO SCALE



NOTES:
1. UNIT IS MADE FROM A36 STEEL AND IS HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

HAALA MC56X56

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

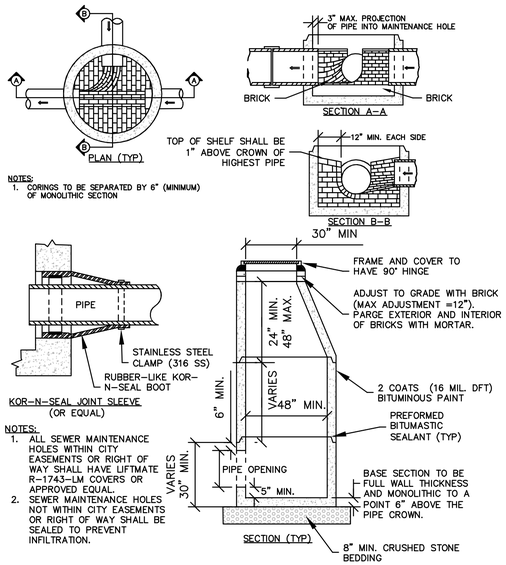
DATE: 8-6-24
SCALE: N.T.S
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-0010

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

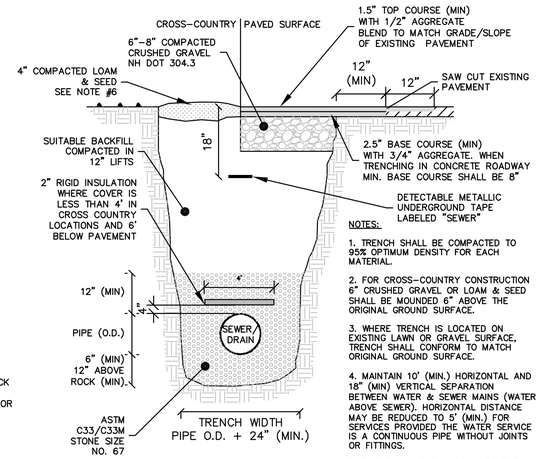


NOTES:
1. CORINGS TO BE SEPARATED BY 6" (MINIMUM) OF MONOLITHIC SECTION

NOTES:
1. ALL SEWER MAINTENANCE HOLES WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL HAVE LIFTMATE R-1743-LM COVERS OR APPROVED EQUAL.
2. SEWER MAINTENANCE HOLES NOT WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL BE SEALED TO PREVENT INFILTRATION.

CITY OF DOVER D-16
SEWER MANHOLE DETAIL

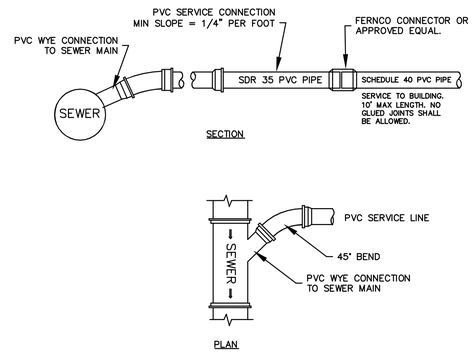
NOT TO SCALE



NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-3
SEWER TRENCH DETAIL

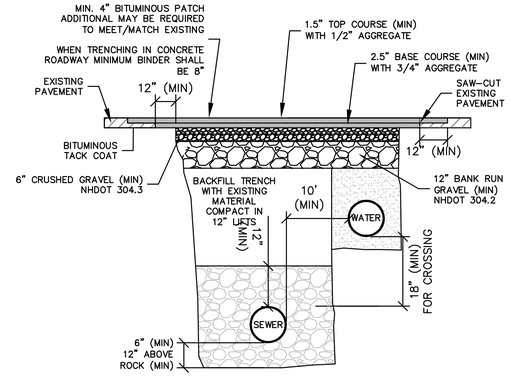
NOT TO SCALE



NOTES:
1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

CITY OF DOVER D-17
SEWER SERVICE DETAIL

NOT TO SCALE



NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

CITY OF DOVER
TYPICAL TRENCH DETAIL

NOT TO SCALE

TRELLEBORG PIPE SEALS

TRELLEBORG

Kor-N-Seal® I
Stainless Steel Wedge Connector (WS Series)

Installation Instructions

CONNECTOR INSTALLATION

1. Check to be sure the Stainless Steel Waveband® is properly located in Connector groove.
2. Inspect the inside surface of the cored/formed hole. If there is porosity or wire-to-concrete separation, use patching or hydraulic cement to smooth the surface.
3. Insert Connector Assembly into hole with Wedge Expander at top of hole.
4. Position Connector so it is square to manhole both vertically and horizontally.
5. Tighten Wedge Expander using 1/2" socket wrench to 12 foot pounds.
6. Retorquing prior to shipment is recommended but not required.

Note if Vacuum Testing

Testing should be done prior to backfilling so that leaks can be easily located and repaired.

All lift holes need to be plugged with a nonshrinking mortar.

Plug all pipes entering the manhole, taking care to securely brace the pipes and plugs.

Patented Waveband technology "captures" the rubber between itself and the concrete, creating a more effective seal.



*Covered under US Patent No.: 5,738,359

PIPE INSTALLATION

1. Be sure sealing area of pipe is smooth and free of defects. Repair if needed.
2. Center pipe in Connector opening. (Pipe must not rest on Connector Korband)
3. Position the Pipe Clamp in the Connector's Pipe Clamp groove with the screw at the top.
4. Tighten the Pipe Clamp screw to 60 inch pounds with a T-handle Torque Wrench, P/N 80090

Note:

On minimum pipe O.D. installations, tension the rubber under the pipe clamp by lifting the rubber toward pipe clamp screw housing by hand. This will help prevent the rubber from wrinkling or folding over during tightening of hose clamp. Application of a very small amount pipe lube on the pipe clamp track will allow the pipe clamp to slide on the rubber and improve the performance of the hose clamp. Make sure to torque all screw locations on the pipe clamps.

Caution:

Do not use an impact wrench for installation.

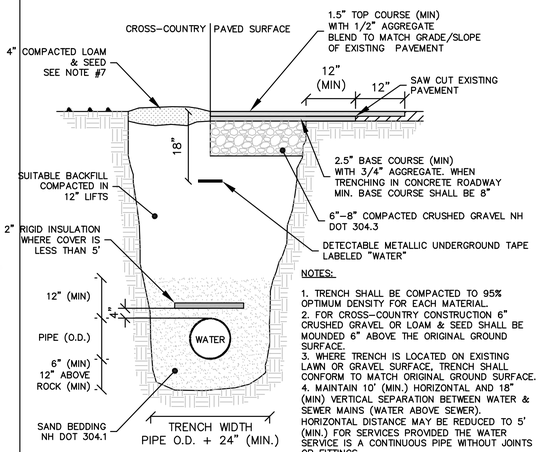
All pipe stubs must be restrained.

Adapters are required when using Corrugated Pipe. Refer to the Corrugated Pipe Adapter Data Sheet for more information.

Check calibration of torque limiters monthly

Torque limiters are available for connectors that can be used with cordless drills and hand or air ratchets.

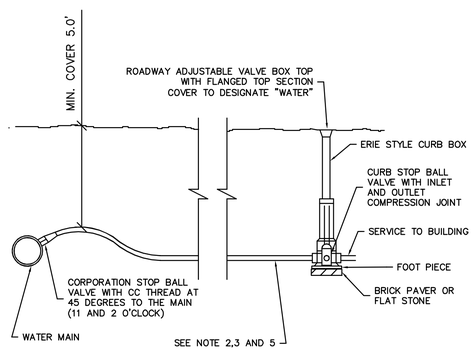
Call 800-626-2180 for information.



NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
8. CLASS 52 DUCTILE IRON PIPE

CITY OF DOVER D-4
WATER TRENCH DETAIL

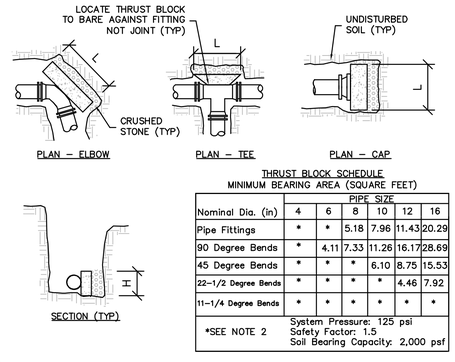
NOT TO SCALE



NOTES:
1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. 3/4"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

CITY OF DOVER D-13
WATER SERVICE CONNECTION DETAIL

NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*

*SEE NOTE 2

System Pressure: 125 psi
Safety Factor: 1.5
Soil Bearing Capacity: 2,000 psf

NOTES:
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

CITY OF DOVER D-15
THRUST BLOCK DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

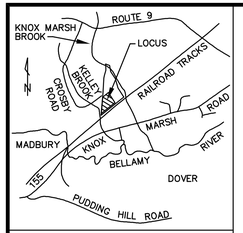
DATE: 8-6-24
SCALE: N.T.S.
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

PLANNING FILE NO.: SITE-2024-0010

DETAILS

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH



LOCATION PLAN
(NO SCALE)

FORMER HANSON ROAD

50' WETLAND BUFFER

EXISTING EDGE OF PAVEMENT

CROSBY ROAD
{75' WIDE R.O.W.}

PUBLIC R.O.W. 75'

312'R

288'R

PEOP

SGC

STOP

20'R

12'R

8'R

3'R

BCC

ICC

35' SETBACK

10' SETBACK

CROSBY ROAD RECONSTRUCTION

PROPOSED 9,600 S.F. BUILDING

LIMITS OF FORMER HANSON ROAD RIGHT OF WAY

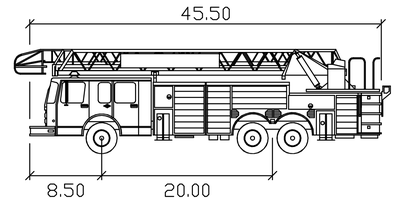
WETLANDS DELINEATED BY BAG LAND CONSULTANTS

50' BUFFER

G / 2-1

NEW PARCEL AREA
267,845 S.F.
6.15 Ac.

NHF&G DEED RESTRICTED WILDLIFE AREA



Dover ladder

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0

NH STATE PLANE NAD 83 - GPS OBS.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

PLANNING FILE NO.: SITE-2024-0010

TRUCK MOVEMENT PLAN

DEL SOL DOVER, LLC
340 CENTRAL AVENUE
SUITE 202
DOVER, NH 03820

LOT 2 DEVELOPMENT
DEL SOL DOVER, LLC
DOVER, NH

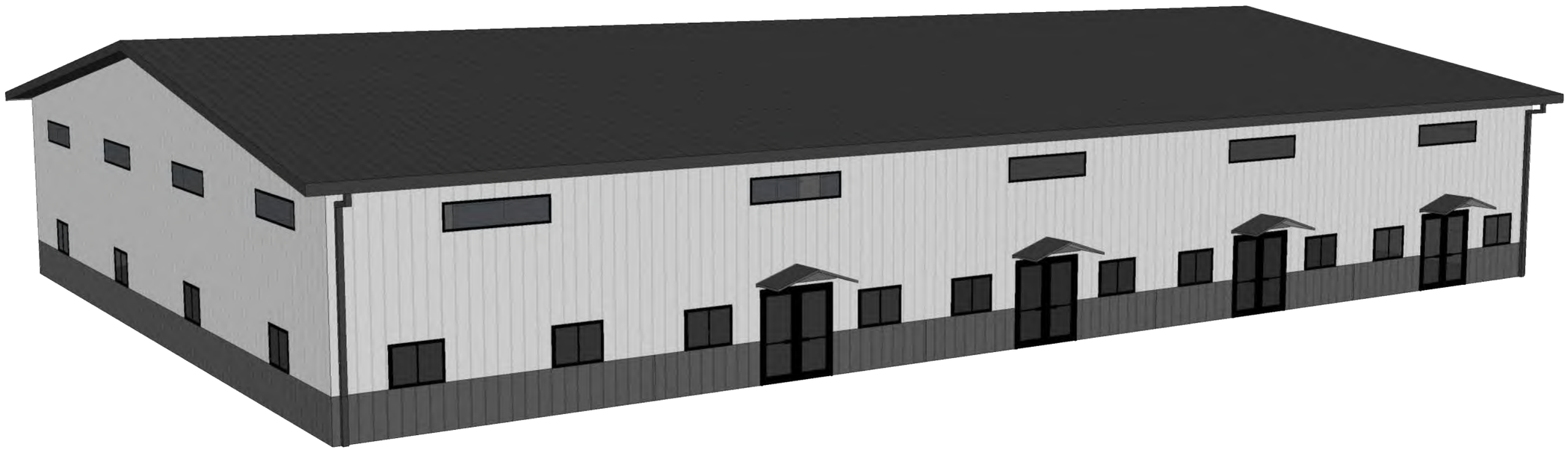
20

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

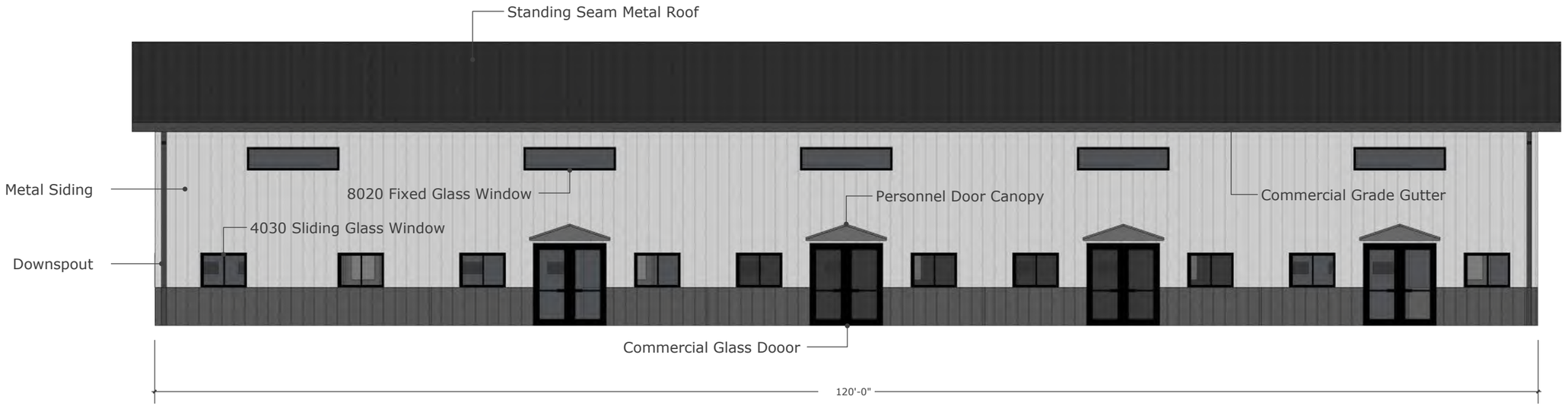
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REV PER TRC COMMENTS	SJH	9-19-24

DATE: 8-6-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: JFG
APPROVED BY:SJH
PROJECT NO: 24085
FILE: SITE.DWG

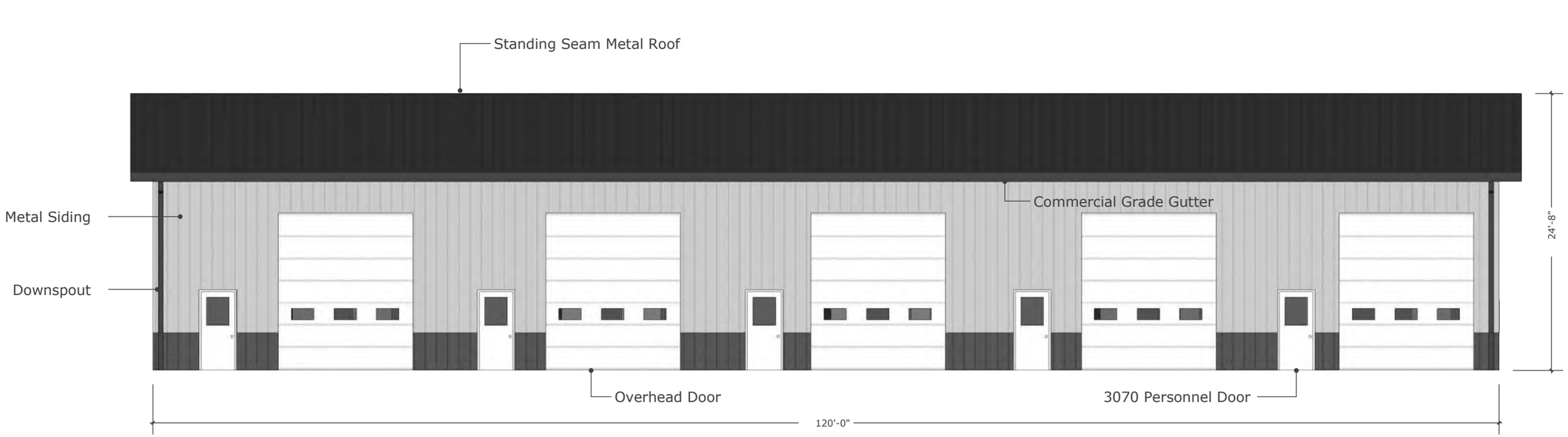


Seacoast Crane & Building Co., Inc.



Front Side Wall Elevation

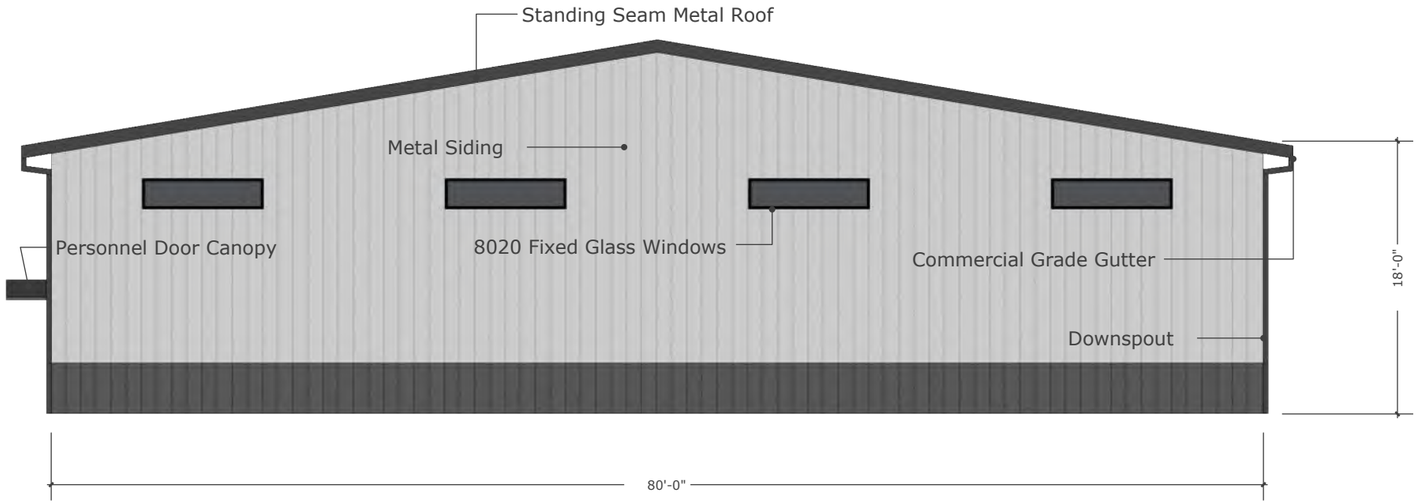
A 01



Back Sidewall Elevations

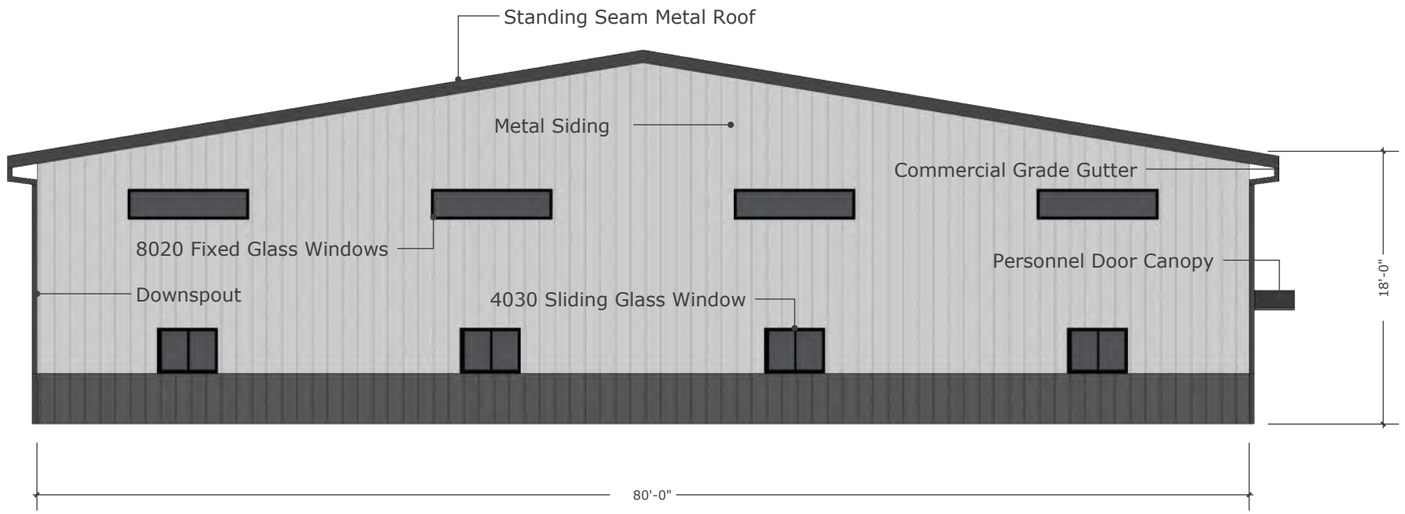
A 02

Seacoast Crane & Building Co., Inc.



Left Endwall Elevation

A
01



Right Endwall Elevation

A
02

Seacoast Crane & Building Co., Inc.

Mourgenos Lawncare

152 Columbus Ave, Dover, NH 03820

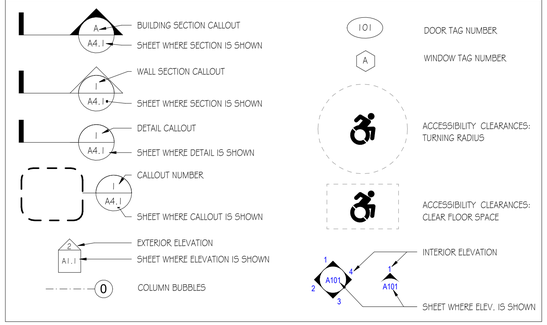
DESIGN INTENT
N.F.C. 091024

LOCUS MAP: (N.T.S.)

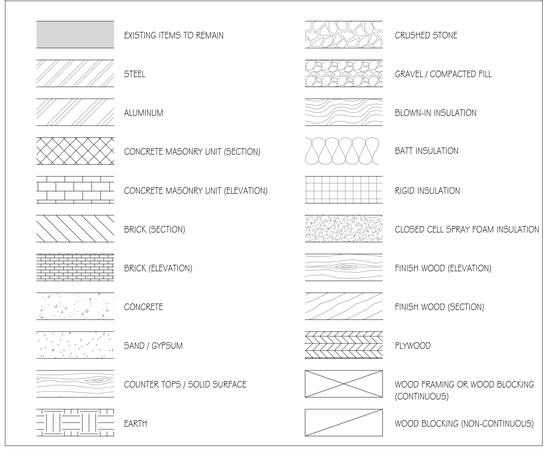
MASTER ABBREVIATION KEY:

AB	ANCHOR BOLT
AC	AIR CONDITIONER
ACI	AMERICAN CONCRETE INSTITUTE
ACOUST	ACOUSTIC
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR
ANOD	ANODIZED
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
BD	BOARD
BIT	BITUMINOUS
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOC	BOTTOM OF CURB
BOF	BOTTOM OF FOOTING ELEVATION
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BSMT	BASEMENT
BTW	BETWEEN
BUR	BUILT-UP ROOF
CAB	CABINET
CB	CATCH BASIN
CER	CERAMIC
CF	CUBIC FOOT
CI	CAST IRON
CJ	CONTROL JOINT
CL	CLOSET
CLCB	CURBLESS CATCH BASIN
CLG	CEILING
CM	CONTRACT MANAGER
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPACTED (COMPOSITION)
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRUGATED
CP	CONTROL PANEL
CSG	CASING
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	CENTER
CY	CUBIC YARD
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DS/C	DRIVE SIDE OF CURB
DTL	DETAIL
DWG	DRAWING
E	EAST
EJ	EXPANSION JOINT
EJC	EXPANSION JOINT COVER
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EQ	EQUAL
EQUIP	EQUIPMENT
ER	EMERGENCY ROOM
EST	ESTIMATE
EWC	ELECTRICAL WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXPD	EXPANDED
EXT	EXTERIOR
F/F	FACE OF FOUNDATION WALL
FA	FRESH AIR
FAP	FIRE ALARM PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH
FL	FLOW LINE
FLR	FLOOR
FND	FOUNDATION
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FR	FIRE RATED
FS	FULL SIZE
FT	FOOT
FTG	FOOTING
FUR	FURRED (FURRING)
FVC	FIRE VALVE CABINET
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLASS
GLZ	GLAZING
GRD	GRADE
GYP	GYPSUM
H4V	HEATING & VENTILATING
HC	HANDICAP
HDWD	HARDWOOD
HGT	HEIGHT
HM	HOLLOW METAL
HP	HIGH POINT
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWH	HOT WATER HEATER
ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JC	JANITOR'S CLOSET
JST	JOIST
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEM	MEMBRANE
MEP	MECHANICAL, ELECTRICAL, PLUMBING
METTP	METAL TOILET PARTITION
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
MULL	MULLION
N	NORTH
NAT	NATURAL
NEC	NECESSARY
NIC	NOT IN CONTRACT
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF/C	OUTSIDE FACE OF CONCRETE
OH	OVERHEAD
OPG	OPENING
OPP	OPPOSITE
OR	OPERATING ROOM
PBD	PARTICLE BOARD
PCF	POUNDS PER CUBIC FOOT
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PAINT
PTD	PAINTED
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
R	RADIUS
R/A	RETURN AIR
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCE
REQD	REQUIRED
RGH	ROUGH
RL	RAIN LEADER
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RQMT	REQUIREMENT
S	SOUTH
S-TRAP	SEDIMENT TRAP
SC	SOLID CORE
SCED	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FOOT
SH	SHOWER
SHT	SHEET
SIM	SIMILAR
SL	SLIDING
SMR	SINGLE PLY MEMBRANE ROOF
SP/PT/FIN	SPECIAL PAINT FINISH
SPEC	SPECIFICATION
SPKR	SPEAKER
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRG	STRINGER
STRUCT	STRUCTURAL
SU	SITE UTILITY
SUSP	SUSPEND (SUSPENDED)
SYMM	SYMMETRICAL
SYS	SYSTEM
T	TREAD
T&G	TONGUE & GROOVED
T/FRM	TOP OF FRAME
T/SLB	TOP OF SLAB
TB	TACKBOARD
TEL	TELEPHONE
TEMP	TEMPORARY
TERR	TERRAZZO
THK	THICK
THLD	THRESHOLD
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOS	TOP OF SLAB
TOW	TOP OF WALL ELEVATION
TR	TO REMAIN
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES, INC.
UOD	UNDERSIDE OF DECK
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UV	UNIT VENTILATOR
VAR	VARIES OR VARIABLE
VB	VINYL BASE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VNR	VENEER
VOL	VOLUME
W	WEST
W/	WITH
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGL	WIRE GLASS
WP	WEATHERPROOF (WATERPROOFING)
WWF	WELDED WIRE FABRIC

GRAPHIC SYMBOLS LEGEND



MATERIAL LEGEND



DRAWING SHEET INDEX:

Sheet	Sheet Name	Issued	Revision	Revision Date
PCS	*PROJECT COVER SHEET*	*NFC - 091024*		
A1.1	*FLOOR PLAN*	*NFC - 091024*		

GENERAL NOTES:

1. DO NOT SCALE DRAWING OR DIMENSIONS. FOR MISSING DIMENSIONS OR DIMENSIONS IN CONFLICT, CONTACT THE CONTRACTOR IMMEDIATELY BEFORE CONTINUING WITH WORK.
2. ANY DISCREPANCIES IN THESE PLANS WILL BE BROUGHT TO THE CONTRACTOR'S ATTENTION IN WRITING IMMEDIATELY
3. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DESIGN-BUILD PLANS AND SPECIFICATION FOR LOCATIONS OF ALL BLOCK OUTS, INSERTS, OPENINGS, CURBS, BASES, & PADS THAT ARE NOT DIMENSIONED OR SHOWN ON CONTRACTOR'S DWG'S. OR STRUCTURAL DWG'S.
4. STRUCTURAL STEEL, MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION PLANS AND SPECIFICATION SHALL BE PROVIDED AND ARE THE RESPONSIBILITY OF THERE RESPECTIVE SUBCONTRACTORS IF NOT CARRIED IN ARCHITECTURAL SERVICES
5. ALL CONSTRUCTION SHALL CONFORM TO AND BE IN ACCORDANCE WITH THE REGULATOR REQUIREMENTS MANDATED BY ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION IN ACCORDANCE TO THE STATE IN WHICH THE WORK IS PERFORMED (STATE BUILDING CODE, STATE LIFE SAFETY & FIRE CODE ETC.)
6. THE CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS, AND SHALL CONFIRM WORK IS BUILDABLE AS SHOWN. ANY CONFLICTS OR OMISSIONS, ETC. SHALL BE IMMEDIATELY REPORTED IN WRITING TO THE ARCHITECT FOR CLARIFICATION
7. DIMENSIONS ARE FROM EXTERIOR FACE OF FOUNDATION, VENEER, OR WALL STUD AND TO CENTER OF ALL INTERIOR STUD WALLS OR FACE OF INTERIOR MASONRY. UNLESS NOTED OTHERWISE.
8. CLEAR DIMENSIONS ARE FROM FACE TO FACE OF WALL FINISH. UNLESS NOTED OTHERWISE
9. REFER TO MECHANICAL DRAWINGS / SPEC. FOR ALL SIZES AND LOCATIONS OF MECHANICAL DUCT WORK.
10. UNLESS OBVIOUSLY SHOWN OTHERWISE, DOOR LOCATIONS NOT DESIGNATED BY WRITTEN DIMENSION SHALL BE CENTERED IN THE WALL OR SHALL BE LOCATED FOUR (4) INCHES FROM FINISH WALL TO EDGE OF DOOR JAMB. PER PLAN.
11. PROVIDE METAL CORNER BEAD AT ALL OUTSIDE CORNERS OF PLASTERED OR DRYWALL SURFACES, UNLESS NOTED OTHERWISE.
12. PENETRATIONS OF ALL FIRE RATED ASSEMBLIES SHALL BE PROTECTED BY LIKE RATED CONSTRUCTION DAMPERS, SEALANTS, COLLARS, ETC., TYPICAL.
13. CONTRACTOR SHALL FURNISH, LOCATE AND INSTALL ALL ACCESS PANELS AS REQUIRED AFTER INSTALLATION OF MECHANICAL DUCTS, PLUMBING AND ELECTRICAL WORK, FIRE RATED AS REQUIRED.
14. FURNISH AND INSTALL SOLID BLOCKING BEHIND ALL WALL HUNG MILLWORK ITEMS, RAILS, FIXTURES,GRAB BARS, ETC., WHERE INDICATED OR REQUIRED.
15. CONTRACTOR SHALL LAYOUT OR MARK, ALL EQUIPMENT, SYSTEMS AND MILLWORK ON THE FLOOR FOR ARCHITECT OR OWNER'S APPROVAL PRIOR TO BEGINNING CEILING / OVER HEAD WORK.
16. ALL SPRINKLER HEAD LOCATIONS, MAINS, BRANCHES AND RISER PIPE LOCATIONS MUST BE COORDINATED WITH THE DESIGN / BUILD CONTRACTOR PRIOR TO WORK.
17. FURNISH AND INSTALL FIRE EXTINGUISHERS IN TYPE, QUANTITY, AND LOCATION PER LOCAL FIRE DEPARTMENT. TYPICAL
18. CONTRACTOR SHALL VERIFY, COORDINATE LOCATION WITH THE ARCHITECT ANY SMOKE, CARBON MONOXIDE DETECTOR OR FIRE ALARM DEVICE AS REQUIRED BY THE LOCAL FIRE DEPARTMENT.
19. FURNISH & INSTALL FIRE DAMPERS WITH FUSIBLE LOUVER WHEREVER DUCT WORK PENETRATES ONE OR TWO HOUR CEILINGS OR WALLS. TYPICAL UNLESS NOTED OTHERWISE.
20. PROVIDE PLASTER AND GYPSUM WALL BOARD CONTROL JOINTS AT 30'-0" ON CENTER FROM FLOOR TO CEILING, OR AS NOTED ON THE CONSTRUCTION DOCUMENTS. VERIFY IN FEILD WITH ARCHITECT PRIOR TO WORK.

TW DESIGNS
254 Drake Hill Rd. Strafford, NH
TW-Designs.com | 603.664.2181

Project Info:

Mourgenos Lawncare
152 Columbus Ave, Dover, NH 03820
DESIGN INTENT

Architect of Record:

T | W Designs, LLC
254 Drake Hill Rd.
Strafford, NH 03884
603-664-2181

Civil Engineer:

CIVIL WORKS NE
DOVER NH

Structural Engineer:

T.B.D.

Electrical Engineer:

T.B.D.

Mechanical Engineer:

T.B.D.

Plumbing Engineer:

T.B.D.

Fire Protection Eng.:

T.B.D.

Contractor of Record:

T.B.D.

Revision Schedule

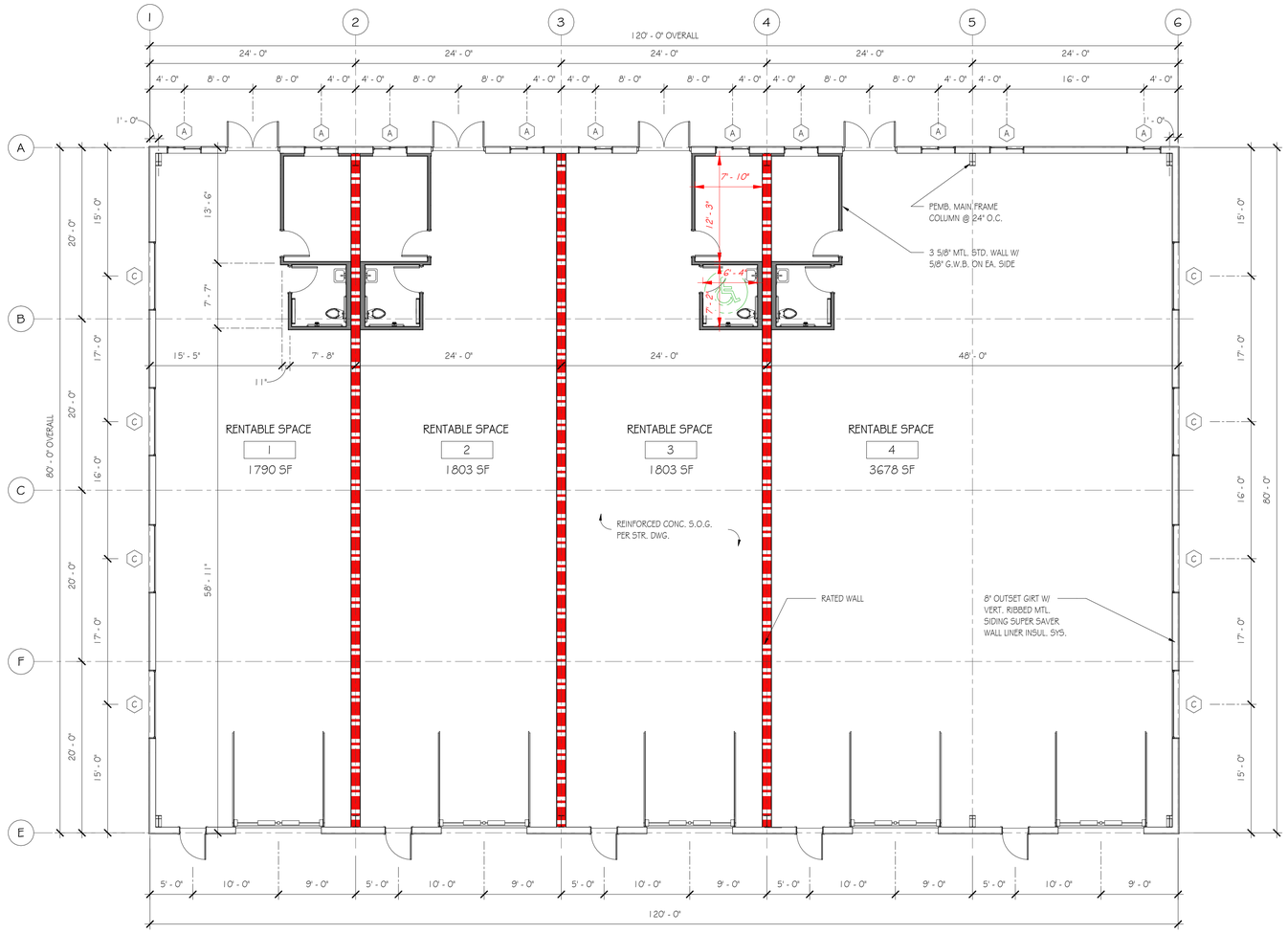
No.	Description	Date

PROJECT COVER SHEET

SHEET NUMBER

PCS

TW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508



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

NOTE:
THIS IS A DESIGN INTENT DOCUMENT ONLY.
BUILDING SUPPLIER AND G.C. SHALL BE RESPONSIBILE FOR ANY AND ALL CODE COMPLIANCE.
THIS DOCUMENT IS NOT FOR CONSTRUCTION.

DESIGN INTENT
9/10/2024
11:39:44 AM

True
PROJECT NORTH

No. Description Date

Revision Schedule

Project Info:
Mourgenos Lawncare

152 Columbus Ave, Dover, NH 03820

Sheet Status:
Latest Release:
Issued For: DESIGN INTENT
Org. Issue Date: N.F.C. 091024

JOB NO:
DRAFTED: JT
CHECKED: JT

SCALE: 1/8" = 1'-0"

Sheet Title:
FLOOR PLAN

Sheet Number:
A1.1

Printed on: 9/10/2024 11:39:44 AM

C:\Users\John\TW-Designs\TW-Designs - Documents\3.Projects\24049 - Mourgenos Lawn Care\24049 - SD.rvt

CITY OF DOVER

PLANNING BOARD - STAFF MEMO

Application Type:	Government Land Use Public Hearing
Applicant(s):	C&J Trailways
Owner(s):	State of NH
Location:	23 Indian Brook (Assessor's Map D, Lot 18-4-LSE)
Meeting Date:	September 24, 2024

INTENT: Proposal is to hold a public hearing regarding changes to implement paid parking controls, traffic flow improvements, and associated infrastructure.

AGENDA ITEM #: 4-G

APPLICANT/OWNER: State of NH

LOCATION: 23 Indian Brook (Assessor's Map D, Lot 004)

LOTS/UNITS PROPOSED: N/A

ACREAGE: 7.75±

ZONING DISTRICT: C

EXISTING USE: Bus transportation and parking

PROPOSED USE: Same with paid parking

SURROUNDING USE: Commercial, Residential

PERMITS: N/A

WAIVERS REQUESTED: N/A

ZBA ACTION: None.

CONSERVATION COMMISSION: N/A

TRC: N/A

ATTACHMENTS: Project description, plans, and construction sequence

Summary of Request and Background
The applicant is proposing to implement paid parking controls (including new barriers, gates and kiosks), traffic flow improvements, and associated infrastructure.

Consistency with Land Use Regulations
NH RSA 674:54 provides for Planning Board review of governmental land uses with nonbinding written comments relative to conformity or nonconformity of the proposal with normally applicable land use regulations.

The site improvements did not meet any of the thresholds of Chapter 153-4.

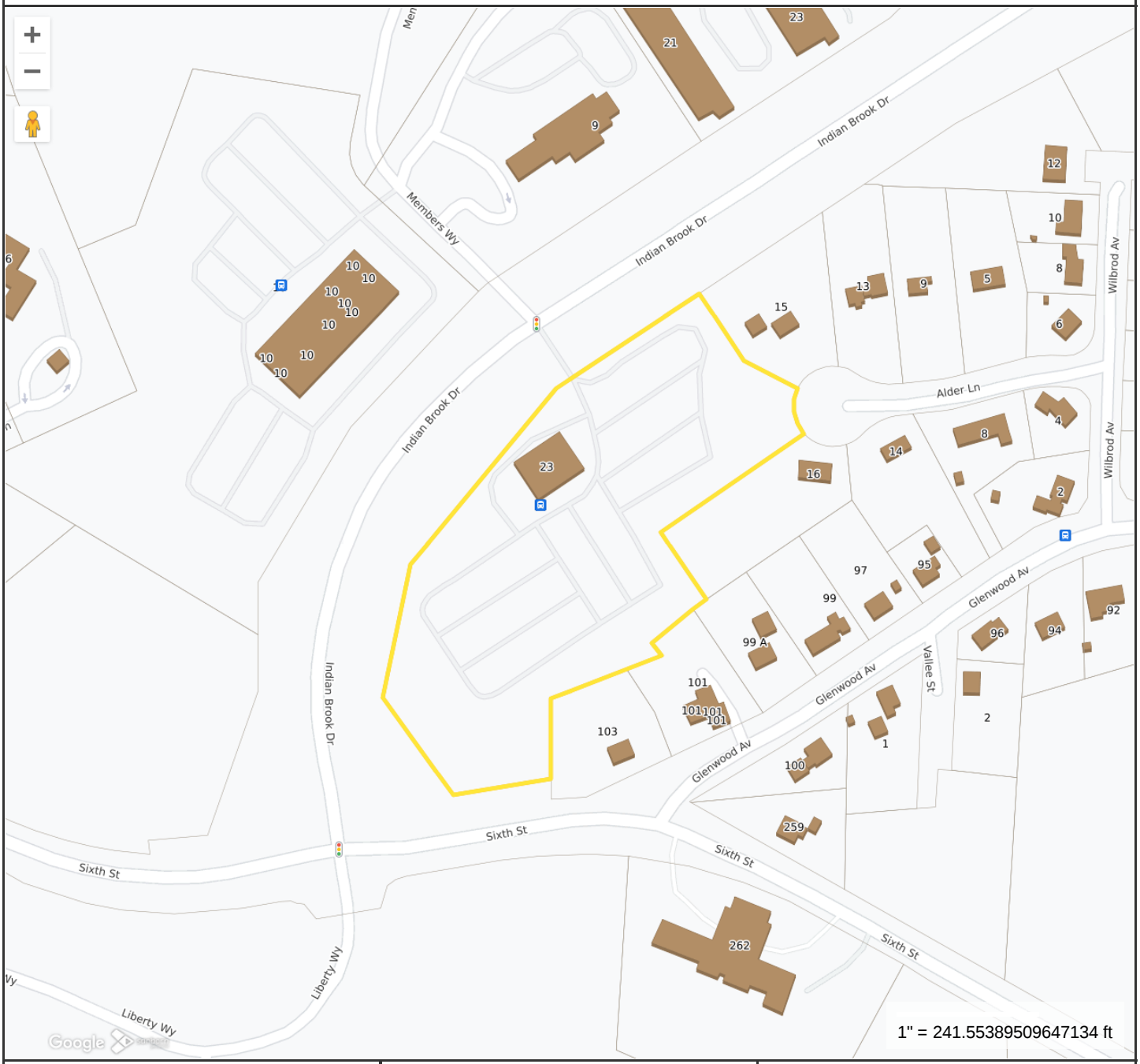
STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board hold a public hearing and make any comments per NH RSA 674:54.

After conferring with public safety staff, the Planning Department offers these non-binding conditions/comments:

1. Provide T-1 turning template to ensure emergency access.
2. Submitted plans should indicate compliance with all accessibility standards/requirements.
3. Submitted plans should indicate compliance with NH RSA 155-A:5-a and NH RSA 155-A:5-b.
4. Note that fencing over 7' requires a building permit.
5. Submitted plans for automatic gate operation shall be in accordance with ASTM F2200.
6. Revise plan to:
   - 6.1. Add PE and LLS stamps and signatures
   - 6.2. Add leader note about COAST bus flow and parking
   - 6.3. Add leader note about short term pick up and drop off parking
   - 6.4. Provide knox box key or other acceptable access to gated area for first responder access
   - 6.5. Add note indicating altered number of parking spaces
   - 6.6. Identify proposed barrier gates (Sheet C-4)
   - 6.7. Clarify style of gate being proposed (on Sheet C-4 and C-9)
   - 6.8. Identify newly proposed travel lanes at kiosk (Sheet C-4)
   - 6.9. Include guardrail detail (Sheet C-4)
   - 6.10. Indicate how vehicle swing gates will be secured and made operable for access

Government Land Use Public Hearing 23 Indian Brook



Property Information

Location	23 INDIAN BROOK DR
Owner	STATE OF NEW HAMPSHIRE
Land Use	
Zoning Code	C
Property Id	D0018-004000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

To whom it may concern,

I am writing on behalf of C&J Bus Lines to formally communicate our plans for further development of the Dover Park & Ride at 23 Indian Brook Drive. Our plans detail the implementation of paid parking controls, traffic flow improvements, and associated infrastructure. These development plans are the result of a nearly decade-long public-private partnership (P3) process with the New Hampshire Department of Transportation (NHDOT), the property owner. This initiative has been undertaken to address both long-term goals and short-term challenges in operating these facilities.

These site development plans aim to establish a secure, fee-based, user-friendly, and low-maintenance parking system that prevents parking abuse, allows for simple administration, and serves the needs of all facility users fairly. Key features of this system will include a fenced perimeter with gated entries and exits, user-friendly parking control kiosks and software, and an enhanced security system. Our goal is to ensure that the traffic flow and user experience remain consistent with what existing facility users are accustomed to. Importantly, access to the fifteen-minute parking spaces and the passenger drop-off curb will remain unobstructed and free to use, with no negative visual or auditory impact on surrounding residential neighborhoods after construction. After four years of successfully operating this model at our Seabrook facility, we have concluded that it significantly enhances public safety, accessibility, and customer experience.

Attached for the Planning Board's review are the following documents:

- **Attachment A**: Fully engineered site development plans
- **Attachment B**: Construction sequencing schedule

The Dover Park & Ride is governed by RSA 674:54 due to its nature as an open and accessible public/private transit facility and public parking area. Therefore, C&J will host a public hearing with the goal of receiving constructive comments on the site development and construction sequencing plans. We value the input of the Dover community and are eager to incorporate their feedback as appropriate to ensure the success of our design.

We have previously held public meetings during the request for qualifications phase of this initiative, and have worked through multiple stages of review with the NHDOT, incorporating rounds of feedback from State engineers. We are now submitting these plans to the NHDOT for their final review and approval.

Subject to the NHDOT's final approval of these plans and an associated lease agreement, we plan to commence construction at the tail-end of the third quarter. C&J proposes the following potential dates and times for the public hearing:

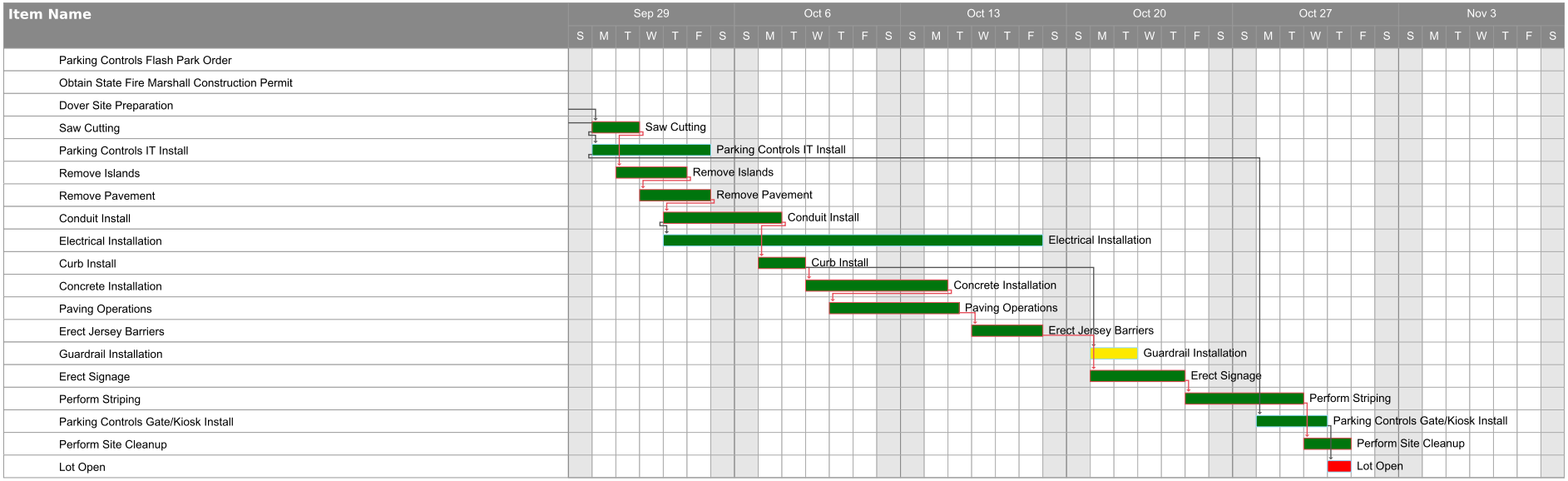
- **Date**: September 3rd, 4th, or 5th
- **Start time**: Between 6:00 PM and 7:00 PM

We eagerly anticipate receiving your comments and look forward to the public hearing, as well as any interim questions you may have.

Brooks Jalbert
Executive
C&J Bus Lines

P3

smartsheet



C&J BUS LINES
PARKING CONTROL PROGRAM
DOVER PARK & RIDE

DOVER, NH 03820

MAY 15, 2024

REVISED: JULY 18, 2024

PREPARED FOR:

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH NH 03801

SITE CIVIL ENGINEER

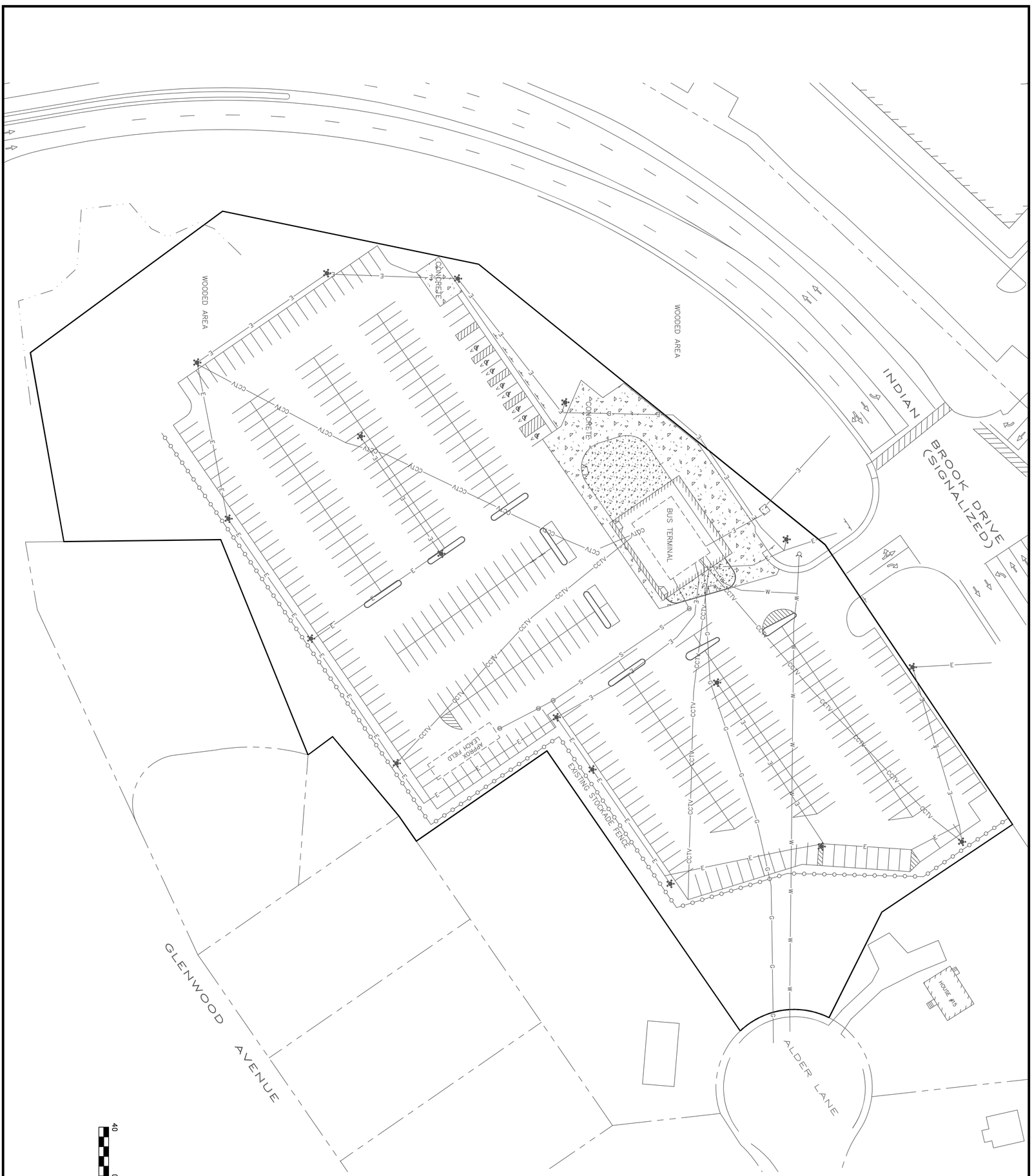
CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

GENERAL NOTES:

1. CONSTRUCT THIS PROJECT IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS UNLESS OTHERWISE INDICATED.
2. ADJUSTING, ALTERING AND RELOCATING THE PROPERTY OF ANY PUBLIC UTILITY SHALL BE DONE BY THE OWNER. THE CONTRACTOR SHALL COOPERATE WITH THE OWNER IN THE PERFORMANCE OF THE WORK.
3. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE EXACT LOCATION SHALL BE ESTABLISHED IN THE FIELD BY THE UTILITY COMPANY PRIOR TO ANY EXCAVATION OF POST DRIVING.
4. NO EXISTING MONUMENTS, BOUNDS OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
5. THE SITE IS NOT WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FLOOD INSURANCE RATE MAP (FORM) 33017C0310E, EFFECTIVE DATE 9–20–2015.

SHEET INDEX

	SHEET
COVER SHEET	1
EXISTING CONDITION PLAN	2
DEMOLITION PLAN	3
SITE PLAN	4
UTILITY PLAN	5
SIGN PLAN	6
SIGN DETAILS	7
DETAILS	8-9



GRAPHIC SCALE
(IN FEET)
40 0 20 40 80 160

PLAN REFERENCE:
1. "DOVER PARK AND RIDE, INDIAN BROOK ROAD, DOVER, NH 03820", SEVERINO TRUCKING CO INC. RECORD DRAWING", OCTOBER 24(), 2006, SHEET 1 OF 1.

EXISTING CONDITIONS PLAN

C-2

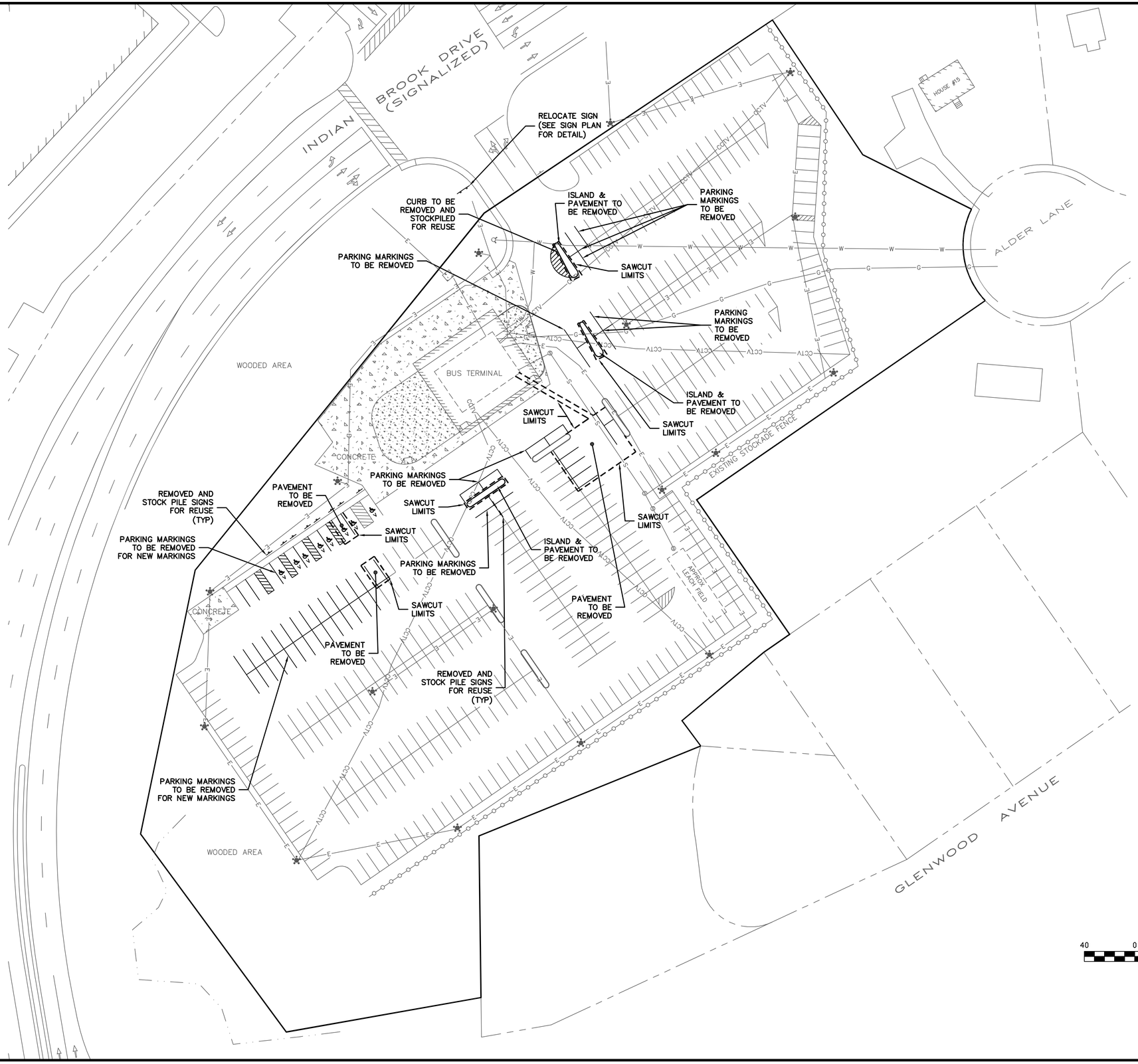
C&J BUS LINES PARKING CONTROL PROGRAM DOVER, PARK & RIDE

JALBERT LEASING, LLC D/B/A C&J BUS LINES 185 GRAFTON DRIVE PORTSMOUTH, NH

DATE: 5-15-24				
SCALE: 1"=40'				
DRAWN BY: SRD				
DESIGN BY: DCL				
APPROVED BY:SJH				
PROJECT NO:1318	1	REVISIONREVS PER NHDOT COMMENTS	DCL	7-18-24
FILE: PARK CON PRO	NO.	REVISION	APP'D	DATE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REVISIONREVS PER NHDOT COMMENTS	DCL	7-18-24

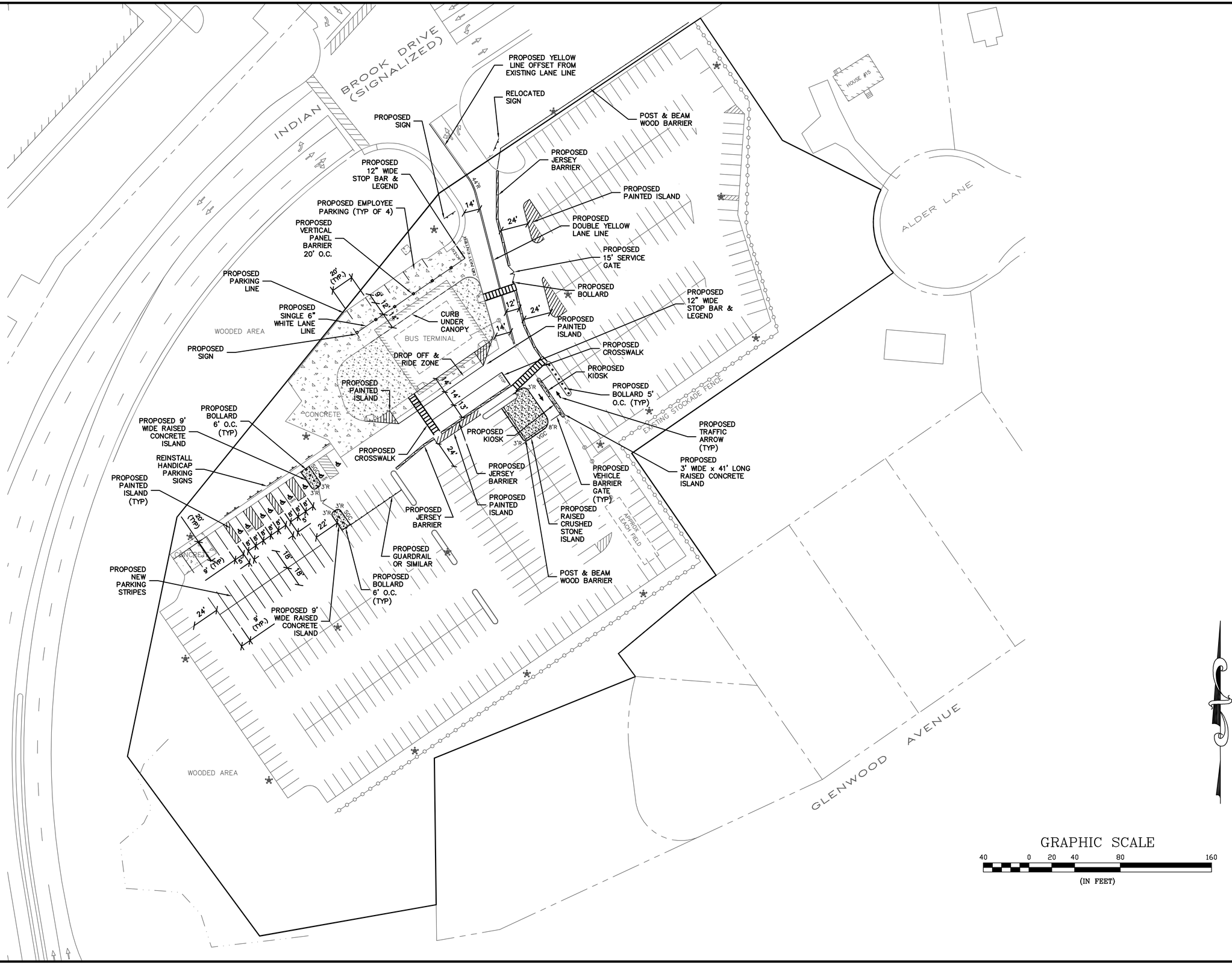
DATE: 5-15-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: DCL
APPROVED BY:SJH
PROJECT NO:1318
FILE: PARK CON PRO

DEMOLITION PLAN

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH, NH

C&J BUS LINES PARKING CONTROL PROGRAM
DOVER, PARK & RIDE

C-3



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DCL APP'D	DATE
1	REVISIONREVS PER NHDOT COMMENTS		7-18-24

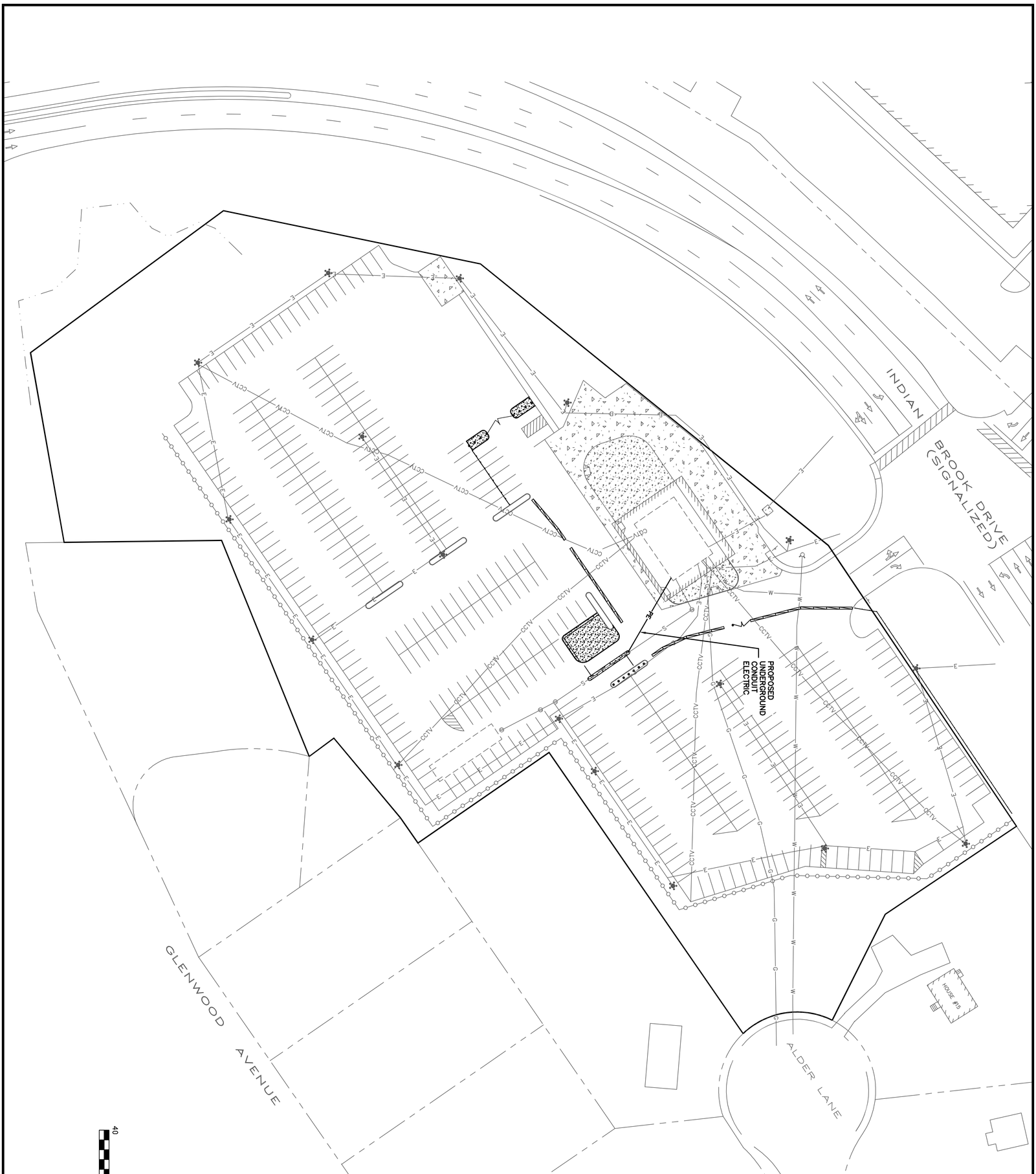
DATE: 5-15-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: DCL
APPROVED BY:SJH
PROJECT NO:1318
FILE: PARK CON PRO

SITE PLAN

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH, NH

C&J BUS LINES PARKING
CONTROL PROGRAM
DOVER, PARK & RIDE

C-4



GRAPHIC SCALE
(IN FEET)
40 0 20 40 80 160

UTILITY PLAN

C-5

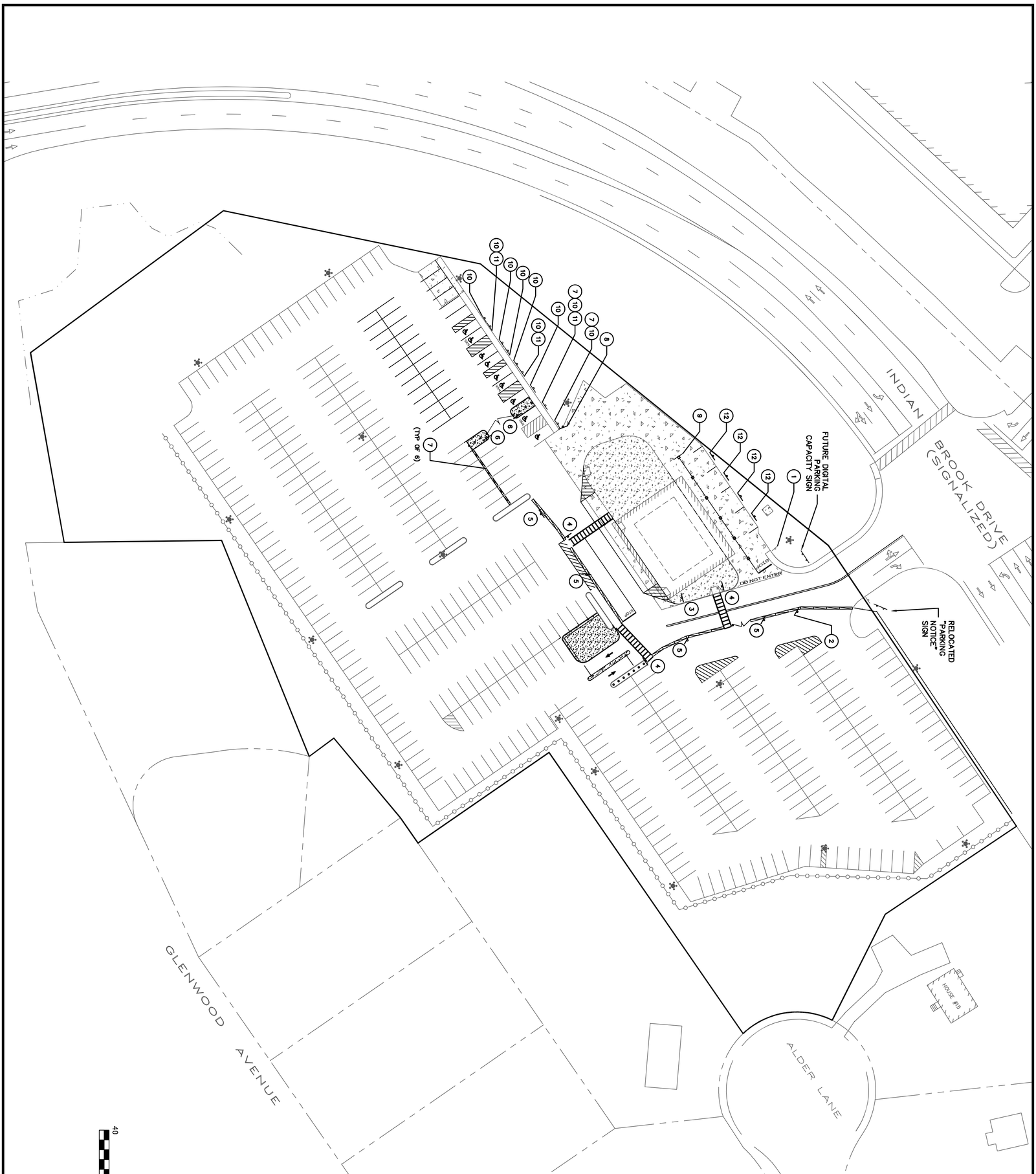
C&J BUS LINES PARKING CONTROL PROGRAM DOVER, PARK & RIDE

JALBERT LEASING, LLC D/B/A C&J BUS LINES 185 GRAFTON DRIVE PORTSMOUTH, NH

DATE: 5-15-24				
SCALE: 1"=40'				
DRAWN BY: SRD				
DESIGN BY: DCL				
APPROVED BY:SJH				
PROJECT NO:1318	1	REVISIONREVS PER NHDOT COMMENTS	DCL	7-18-24
FILE: PARK CON PRO	NO.	REVISION	APP'D	DATE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443



GRAPHIC SCALE
(IN FEET)
40 0 20 40 80 160

SIGN PLAN

C-6

C&J BUS LINES PARKING CONTROL PROGRAM
DOVER, PARK & RIDE

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH, NH

DATE: 5-15-24				
SCALE: 1"=40'				
DRAWN BY: SRD				
DESIGN BY: DCL				
APPROVED BY:SJH				
PROJECT NO:1318	1	REVISIONREVS PER NHDOT COMMENTS	DCL	7-18-24
FILE: PARK CON PRO	NO.	REVISION	APP'D	DATE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443



R1-1

1



INFORMATION SIGN

2



INFORMATION SIGN

3



R1-6a

4



R7-4

5



R5-1

9



INFORMATION SIGN

7



INFORMATION SIGN

8



INFORMATION SIGN

9



R7-8

10



R7-8aP

11



INFORMATION SIGN

12

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE
1	REVISIONREVS PER NHDOT COMMENTS	DCL	7-18-24

DATE: 5-15-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: DCL
APPROVED BY:SJH
PROJECT NO:1318
FILE: PARK CON PRO

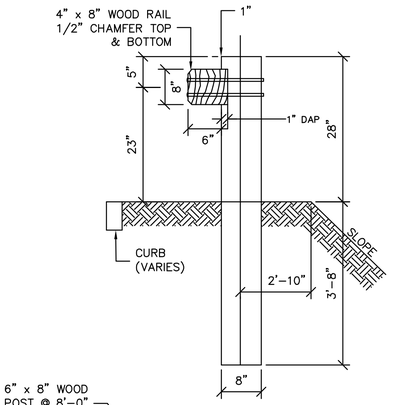
SIGN DETAILS

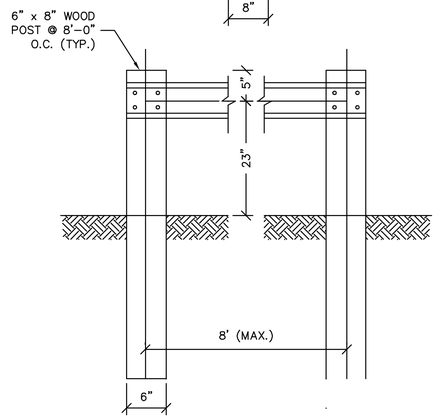
JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH, NH

C&J BUS LINES PARKING
CONTROL PROGRAM
DOVER, PARK & RIDE

C-7

NOTE:
ALL TIMBERS SHALL BE
PRESSURE TREATED.

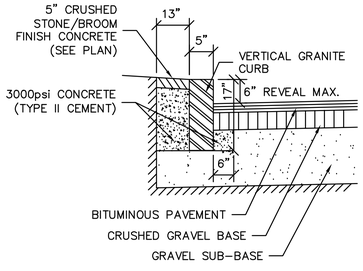




WOOD POST & BEAM BARRIER DETAIL

NOT TO SCALE

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

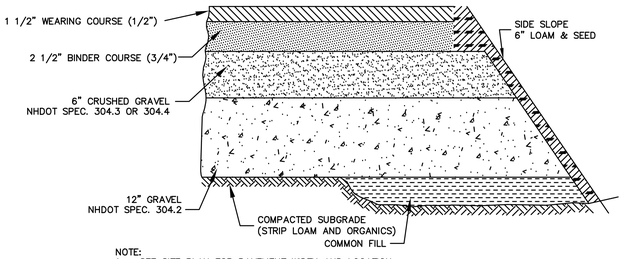


NOTES:

1. SEE SITE PLAN FOR LIMITS OF CURBING.
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF CURB STONES = 3'
4. MAXIMUM LENGTH OF CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE CHART)
6. ALL RADII 20 FEET AND SMALLER TO BE CONSTRUCTED USING CURVED SECTIONS.

VERTICAL GRANITE CURB

NOT TO SCALE

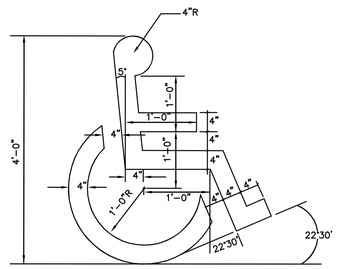


NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.
4. PAVEMENT & BASE MATERIAL DEPTHS SHOWN ARE ORIGINAL NHDOT PROJECT DESIGN/AS-BUILT DRAWINGS. INTENT SHALL BE TO MATCH EXISTING FIELD CONDITIONS UNLESS DIRECTED OTHERWISE.

TYPICAL PAVEMENT SECTION

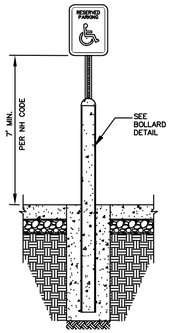
NOT TO SCALE

NOTE: SYMBOL TO BE PAINTED IN ALL
HANDICAPPED SPACES



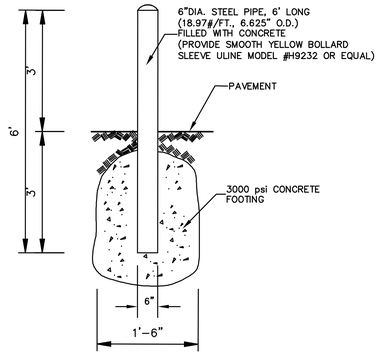
PAINTED
HANDICAP SYMBOL

NOT TO SCALE



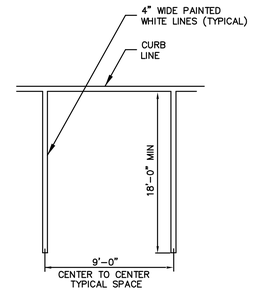
SIGN IN BOLLARD

NOT TO SCALE



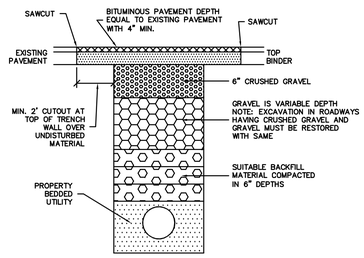
BOLLARD DETAIL

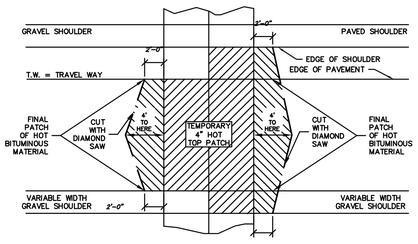
NOT TO SCALE



STANDARD
PARKING STALL

NOT TO SCALE





ALL BACK FILL MATERIAL PLACED IN TRENCHED SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 6" (SIX INCHES) IN COMPACTED THICKNESS AT NEAR OPTIMUM MOISTURE CONTENT USING PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OT OTHER APPROVED MEANS. THE MATERIAL SHALL BE COMPACTED TO NO LESS THAN 95% OF AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, METHOD OF TEST T99, METHOD C. WATER SHALL BE UNIFORMLY APPLIED DURING COMPACTION IN THE AMOUNT NECESSARY FOR PROPER CONSOLIDATION, BUT PUDDING WILL NOT BE ALLOWED.
WITHIN PAVED AREA, CLASS A CRUSHED GRAVEL (AS DESCRIBED IN N.H. STANDARD SPECIFICATIONS) EQUAL TO THE EXISTING GRAVEL COURSE SHALL BE PLACES IN LAYERS NOT EXCEEDING 9" (NINE INCHES) LOOSE DEPTH AND THOROUGHLY COMPACTED. AN APPROVED BITUMINOUS PLANT MIX MATERIAL SHALL BE PLACED AND CAREFULLY GRADED AND ROLLED TO THE ADJACENT PAVEMENT GRADE AS A TEMPORARY PATCH. JUST BEFORE COMPLETION OF THE PROJECT AND SUITABLE EXPOSURE OF THE TEMPORARY PATCHED TO TRAFFIC COMPACTION, THE PAVEMENT SHALL BE SAWN ON EITHER SIDE OF THE TRENCH TO PROVIDE A TWO FOOT MINIMUM OVERLAP OF FINAL PATCH ON UNDISTURBED MATERIAL. IN THE CASE OF TRANSVERSE OR DIAGONAL TRENCHING, THE PAVEMENT SAWN TO PROVIDE A FLAT DIAMOND SHAPED PATCH WITH A TWO FOOT MINIMUM OVERLAP IN UNDISTURBED MATERIAL THAT WILL PERMIT ONLY ONE WHEEL OF A VEHICLE AT A TIME TO STRIKE THE PATCH AREA. WITHIN THE SAWN LIMITS OF THE FINAL PATCH, THE EXISTING PAVEMENT AND TEMPORARY PATCH MATERIAL SHALL BE REMOVED AND REPLACED WITH AN EQUAL DEPTH OF TYPE I-1 HOT ASPHALTIC CONCRETE, LAYED AND COMPACTED TO MEET THE EXISTING PAVEMENT EDGE EXACTLY. SAW CUTS FOR FINAL PATCHING SHALL BE AS DIRECTED BY THE DISTRICT ENGINEER.
SHOULDERS, OTHER THAN PAVED, DISTURBED DURING CONSTRUCTION, SHALL BE RESTORED BY EXCAVATING TO A DEPTH SUFFICIENT TO RECEIVE 3" CRUSHED BANK RUN GRAVEL WHICH SHALL BE GRADED AND COMPACTED ON A SLOPE OF 5/8" PER FOOT AWAY FROM PAVEMENT OR AS ORDERED BY DISTRICT ENGINEER.
OTHER HIGHWAY SLOPES AND SHOULDERS DISTURBED SHALL BE REPLACED PER THE RESPECTIVE SUBDIVISIONS OF THIS PERMIT OR INSTRUCTIONS ISSUED BY THE DISTRICT ENGINEER.
IN OTHER AREA, THE PAVEMENT SURFACE TYPE SHALL BE RESTORED BY PLACING SIMILAR MATERIAL INTO THE TRENCH TO A DEPTH EQUAL TO THAT EXISTING BEFORE EXCAVATION. ANY EXISTING GRASS LAND ADDITIONALLY SHALL BE FERTILIZED AND RESEEDED. ANY ASPHALT OR CONCRETE SIDEWALK SHALL HAVE SURFACES OR EQUAL DEPTH, KIND AND QUALITY PLACED.
TRAFFIC SHALL BE MAINTAINED CONTROLLED AND PROTECTED BY SUITABLE WARNING AND/OR CHANNALIZING DEVICES ADVANCE AND STANDARD WARNING SIGNS AND FLAGS DURING THE PERFORMANCE OF THE WORK AS SHOWN ON THE ATTACHED "WARNING AND SIGN PACKAGE". THE CONTRACTOR SHALL MARK ALL HAZARDS WITH THE LIMITS OF THE PROJECT AND CONNECTING ROADS. THESE DEVICES SHALL BE MOVED, SUPPLEMENTED, CHANGES OR REMOVED SURING THE PROGRESS OF THE CONSTRUCTION. UNIFORMED TRAFFIC CONTROL OFFICERS SHALL BE PROVIDED FOR THE PROTECTION OF THE PUBLIC WHENEVER TWO WAY TRAFFIC CANNOT BE MAINTAINED AND/OR AT THE REQUEST OF THE DISTRICT ENGINEER.
THIS TYPICAL IS TO BE USED IN CONJUNCTION WITH THE STANDARD TRENCH PERMIT. ALL SAW CUTS FOR FINAL PATCH SHALL BE AS DIRECTED BY THE DISTRICT ENGINEER.
IN ALL CASES, TRENCH IS TO BE FLUSH WITH EXISTING PAVEMENT AT THE END OF THE WORK DAY.

TRENCH PATCH DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

GNE CIVILWORKS NEW ENGLAND
CIVIL & MUNICIPAL ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REVISIONREVS PER NHDOT COMMENTS	7-18-24	DCL

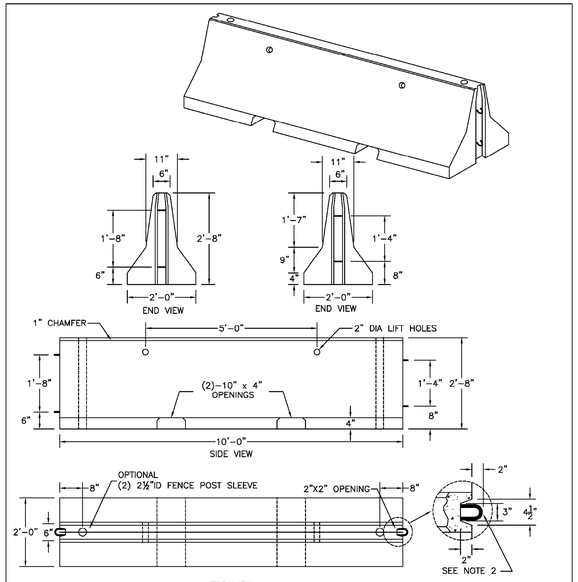
DATE: 5-15-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: DCL
APPROVED BY:SJH
PROJECT NO:1318
FILE: PARK CON PRO

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 GRAFTON DRIVE
PORTSMOUTH, NH

C&J BUS LINES PARKING
CONTROL PROGRAM
DOVER, PARK & RIDE

DETAILS

C-8



NOTES:

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. #5 REBAR BENT TO RECEIVE 1" DIA CONNECTING ROD.
3. LIFTING HOLE ACCEPTS 1 3/4" DIA H.T. ROD.
4. BARRIER RENTAL AVAILABLE.

ITEM NO.	WEIGHT
MC-MBFP10	4,242#

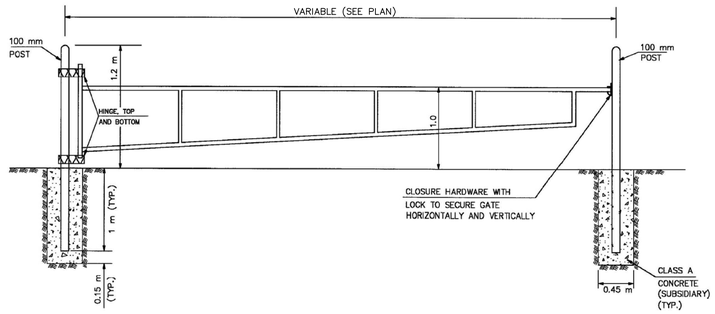
SHEA CONCRETE PRODUCTS — *New England's Premier Precaster*
800-696-7432 (SHEA)
www.sheaconcrete.com
773 Salem Street–Wilmington, MA 153 Cranberry Hwy–Rochester, MA
87 Haverhill Road–Amesbury, MA 160 Old Turnpike Rd–Nottingham, NH
Mail to: PO Box 520–Wilmington, MA 01887

MEDIAN BARRIER 10FT
DOUBLE FACE–FENCE POST
Page: J4.6
medbardf10FP.dwg 3/18/2010

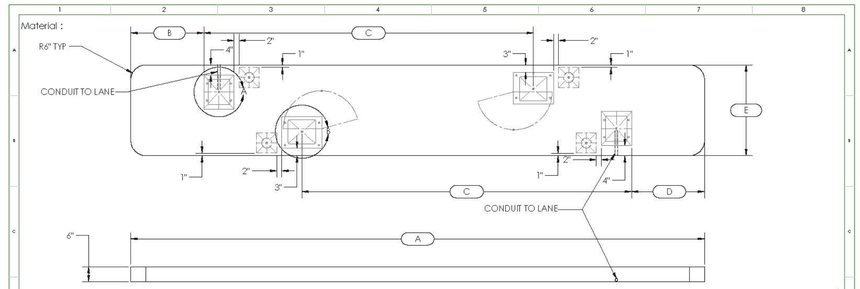
Specifications subject to change without notice

NOTES:

1. CONSTRUCT GATE USING SCHEDULE 40 GALVANIZED STEEL PIPE (INTERNALLY AND EXTERNALLY GALVANIZED TO A WEIGHT OF 0.55 kg/m2, ASTM F1083). TREAT WELDS AND AREAS OF DAMAGED GALVANIZING PER ASTM A780 AFTER FABRICATION
2. TOP RAIL AND DIAGONAL BRACE SHALL BE 50 mm OUTSIDE DIAMETER (MINIMUM). OTHER BRACING SHALL BE 40 mm OUTSIDE DIAMETER (MINIMUM)
3. BRACING ARRANGEMENT MAY VARY FROM THAT SHOWN; DIAGONAL BRACE SHALL EXTEND FROM HINGE POST TO (AT MINIMUM) MIDPOINT OF TOP OF BAR. FREE END OF TOP BAR SHALL NOT DEFLECT MORE THAN 50 mm VERTICALLY UNDER WEIGHT OF GATE.
4. PAINT GATE AS DESCRIBED IN THE SPECIFICATION.
5. PLACE A REFLECTOR EVERY METER ON CROSS BARS OF GATE.

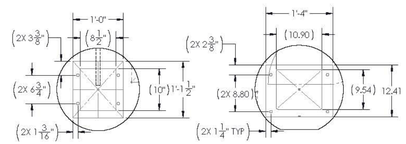


GATE DETAIL
NOT TO SCALE



NOTES:
1. ISLAND LENGTH IS TYPICALLY 19'-0".
2. DISTANCE OF THE KIOSK TO THE GATE (DIM 'C') IS TYPICALLY 10'11". THIS ENSURES 12'-0" FROM THE CENTERLINE OF THE KIOSK TO THE SAFETY LOOP LEADING EDGE.
3. ISLAND WIDTH (DIM 'E') IS TYPICALLY 3'-0".
4. UNLESS OTHERWISE SPECIFIED, BOLLARDS ARE PLACED 2" FROM THE KIOKS AND GATE. MEASURE FROM THE EDGE OF THE BASEPLATE ON THE BOLLARD.

POSITION	DESCRIPTION	DIMENSION
A	ISLAND LENGTH	20'
B	CURB EDGE TO GATE	3'6"
C	KIOSK CENTER TO GATE EDGE	11'
D	CURB TO EDGE OF GATE	3'6"
E	ISLAND WIDTH	3'



FlashParking
3851 E. CAMINO FELIZ, HORIZON CENTER, SUITE 200, AUSTIN, TEXAS 78754

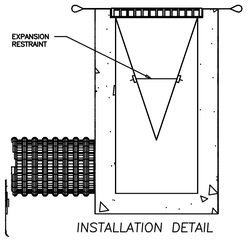
TITLE: STANDARD ISLAND DETAIL
STANDARD ISLAND

	NAME	DATE
DRAWN	MG	11/01/19
CHKD	MG	11/01/19
APPVD	MG	11/01/19

DWG No. 89-1001-100-003 REVISION 01
SCALE: 1:20 DO NOT SCALE DRAWING Doc No: 89011xx-A B

THIS DRAWING IS PROVIDED CONFIDENTIAL AND IS NOT TO BE COPIED OR DISCLOSED TO A THIRD PARTY WITHOUT WRITTEN CONSENT.

PAGE 1 OF 2



INSTALLATION DETAIL

OIL-ABSORBANT SILTSACK®

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)
DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

DETAIL OF INLET SEDIMENT CONTROL DEVICE
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	DATE	APP'D
1	REVISIONREVS PER NHDOT COMMENTS	7-18-24	DCL

DATE: 5-15-24
SCALE: 1"=40'
DRAWN BY: SRD
DESIGN BY: DCL
APPROVED BY:SJH
PROJECT NO:1318
FILE: PARK CON PRO

DETAILS

JALBERT LEASING, LLC
D/B/A C&J BUS LINES
185 CRAFTON DRIVE
PORTSMOUTH, NH

C&J BUS LINES PARKING
CONTROL PROGRAM
DOVER, PARK & RIDE

C-9

To: Planning Board
From: Planning Staff
Cc: Attorney Josh Wyatt

Date: September 18, 2024
Re: Impact Fees

ISSUE:
Since adopting impact fees in 2001, the City has routinely reviewed the methodology for the impact fees. The consultant used has retired, and currently the City has retained Mark Fougere to review the impact fees and recommend updates. Questions about the history of the fee in Dover have arisen.

INTENT:
This memo will serve as an overview of impact fees in Dover.

GOALS:
Provide a summary of the fees, considerations and costs associated with adoption or implementation of said fees. Indicate 3 options the Planning Board could choose.

Background:
Since February, the Planning Board (the Board) has been discussing impact fees off and on during its meetings. At the same time, the Ad-Hoc Housing Committee has also discussed the affect of impact fees on housing prices. These discussions have resulted from the draft Impact Fee analysis that City staff received at the end of 2023 and from responses received as part of the Visioning update of the Master Plan about the need for affordable/attainable housing.

Over the past several months, staff provided a memo outlining the history of impact fees in the City and the administrative time/cost of administering them. Staff also provided a copy of the draft Impact Fee analysis to the Board and placed on the Planning Department's webpage for the Board's and members of the public to review. This most recent draft analysis used a different methodology than the previous consultant's. This caused staff to take time in 2024 to digest, look at other communities' ordinances, and consider options for the Planning Board to consider.

At the Board's August meeting, three options were outlined: (1) stay status quo, (2) Adjust impact fee amount or (3) Suspend invoicing/collection of Impact Fees.

The Board asked staff to provide verbiage for a moratorium and for setting the fee to $0.

To set the fee to $0, staff would revise the fee schedule, impact fee explained information sheet, and the Energov portal.

Therefore, staff have provided two attachments to this memo.

The first (Attachment A) are potential amendments to the Zoning Ordinance to suspend the collection of impact fees indefinitely. Staff would recommend voting to post these after the recodification has been adopted by City Council.

The second (Attachment B) is a table comparing and contrasting the two options asked for at the last meeting along with a brief policy explanation.

§ 170-23.- Reserved. ~~**Impact fees. [Amended 6-22-2016 by Ord. No. 2016.06.08-010]**~~

~~**A. Purpose. This section is enacted pursuant to RSA 674:16 and 674:21 and in order to: [Amended 8-22-2018 by Ord. No. 2018.08.08-009]**~~

~~**(1) Assist in the implementation of the Master Plan and Capital Improvements Program.**~~

~~**(2) Provide adequate public capital facilities necessitated by new development.**~~

~~**(3) Assess an equitable share of the cost of public capital facilities to new development.**~~

~~**B. Authority.**~~

~~**(1) Impact fees may be assessed to new development to compensate the City of Dover and the School District for the proportional share of capital facilities generated by new development in the City of Dover. Any person who seeks approval for new development may be required to pay an impact fee in the manner set forth herein.**~~

~~**(2) The Planning Board may, as a condition of approval of any subdivision, site plan, or change of use, and when consistent with applicable Board regulations, require an applicant to pay an exaction for off site improvements necessitated by the development.**~~

~~**(3) Nothing in this section shall be construed to limit the existing authority of the Planning Board to disapprove proposed development which is scattered or premature, or which would require an excessive expenditure of public funds, or which would otherwise violate applicable ordinances and regulations. Nothing in this section shall be construed to limit the Planning Board's authority to require off site work to be performed by the applicant, in lieu of paying an exaction for off site improvements, or the Board's authority to impose other types of conditions of approval. Nothing in this section shall be construed to affect types of fees governed by other statutes, ordinances or regulations.**~~

~~**C. Assessment methodology.**~~

~~**(1) Proportionality. The amount of the impact fee shall be calculated by the Planning Board to be a proportional share of municipal capital improvement costs which is reasonably related to the capital needs created by the development, and to the benefits accruing to the development from the capital improvements financed by the fee. The Planning Board may prepare, adopt, or amend studies or reports that are consistent with the above standards and which define a methodology for impact fee assessment for public capital facilities and impact fee assessment schedules therefor.**~~

Formatted: Heading 1, Left, Indent: Left: 0.07", Right: 0", Space Before: 0 pt, Line spacing: single, No bullets or numbering, Widow/Orphan control, Tab stops: Not at 0.43"

(2) Existing deficiencies. Upgrading of existing facilities and structures, the need for which is not created by new development, shall not be paid for by impact fees.

(3) In the case of new development created by conversion or modification of an existing use, the impact fee shall be based upon the net positive increase in the impact fee assessed for the new use as compared to the highest impact fee that was or would have been assessed for the previous use in existence on or after the effective date of this chapter. [Added 8-22-2018 by Ord. No. 2018.08.08-009]

D. Administration.

(1) Accounting. In accord with RSA 673:16, II, and 674:21, V(c), impact fees shall be accounted for separately, shall be segregated from the City's general fund, may be spent upon order of the City Council, and shall be used solely for the capital improvements for which they were collected, or to recoup the cost of capital improvements made in anticipation of the needs which the fee was collected to meet. In the event that bonds or similar debt instruments have been or will be issued by the City of Dover or the Dover School District for the funding of capital improvements that are the subject of impact fee assessment, impact fees from the appropriate related capital facility impact fee accounts may be applied to pay debt service on such bonds or similar debt instruments.

(2) Assessment and collection.

(a) Where subdivision or site plan approval is required for new development, impact fees shall be assessed at the time of Planning Board approval of a subdivision plat or site plan. The amount of such assessment shall be applicable to subsequent building construction within the approved subdivision or site plan for a period of five years from the date of Planning Board approval. Once this five-year period has expired, remaining construction for which no building permit has been obtained shall be subject to the adopted fee schedule in force at the time the building permit application is made. [Amended 8-22-2018 by Ord. No. 2018.08.08-009]

(b) With the exception of those plats and site plans meeting the conditions in Subsection D(2)(a) above, and when no other Planning Board approval is required or has been made prior to the adoption or amendment of this section, impact fees shall be assessed upon the issuance of a building permit. In such cases, the impact fee schedule in force at the time of the building permit application shall apply.

(c) Impact fees will be collected prior to or at the time of issuance of a certificate of occupancy, unless the Planning Board establishes an alternate, mutually acceptable schedule of payment of impact fees imposed on an assessed property. If an alternate schedule of payment is established, the Planning Board may require security, in the form of a cash bond, letter of credit, or performance bond, so as to guarantee future payment of impact fees. In no case will an impact fee payment be allowed to be made after the issuance of a certificate of occupancy. [Amended 8-22-2018 by Ord. No. 2018.08.08-009]

Formatted: Heading 1, Indent: Left: 0.07", Space Before: 0 pt

Formatted: Heading 1, Left, Indent: Left: 0.07", Right: 0", Space Before: 0 pt, Line spacing: single, No bullets or numbering, Tab stops: Not at 0.94"

~~(3) Security. In the interim between assessment and collection, the Building Inspector may require developers to post bonds, issue letters of credit, accept liens, or otherwise provide suitable measures of security so as to guarantee future payment of assessed impact fees.~~

~~(4) Refund of fees paid. The current owner of record of property for which an impact fee has been paid shall be entitled to a refund of that fee, plus accrued interest, under the following circumstances:~~

~~(a) When either the full or partial portion of the impact fee, whichever is applicable, has not been encumbered or legally bound to be spent for the purpose for which it was collected within a period of six years from the date of the full and final payment of the fee; or~~

~~(b) When the City of Dover or, in the case of school impact fees, the Dover School District, has failed, within the period of six years from the date of the full and final payment of such fee, to appropriate its proportionate non-impact fee share of related capital improvement costs.~~

~~E. Appeals.~~

~~(1) A party aggrieved by a decision made by the Building Inspector regarding the assessment or collection of impact fees authorized by this section may appeal such decision to the Planning Board.~~

~~(2) In accord with RSA 676:5, III, appeals of the decision of the Planning Board in administering this section may be made to Superior Court, as provided in RSA 676:5, III, and 677:15.~~

~~F. Waivers. The Planning Board may grant full or partial waivers of impact fees where the Planning Board finds that one or more of the following criteria are met with respect to the particular public capital facilities for which impact fees are normally assessed: [Amended 8-22-2018 by Ord. No. 2018.08.08-009; 7-22-2020 by Ord. No. 2020.07.08-006]~~

~~(1) The Planning Board may agree to waive all or part of an impact fee assessment and accept in lieu of a cash payment a proposed contribution of real property or facility improvements of equivalent value and utility to the public. Prior to acting on a request for a waiver of impact fees under this provision that would involve a contribution of real property or the construction of capital facilities, the Planning Board shall submit a copy of the waiver request to the City Council for its review and consent prior to its acceptance of the proposed contribution. The value of contributions or improvements shall be credited only toward facilities of like kind and may not be credited to other categories of impact fee assessment. The applicant shall pay all costs incurred by the City for the review of such proposal, including consultant and counsel fees.~~

Formatted: Heading 1, Left, Indent: Left: 0.07", Right: 0", Space Before: 0 pt, Line spacing: single, No bullets or numbering, Tab stops: Not at 0.8"

Options	Actions Needed to Accomplish:	Positives:	Considerations:
Removing Impact Fee Ordinance	Vote to Post amendments, hold a public hearing, vote on recommendation, have ordinance committee review, have City Council review and vote on adoption.	Saves greatly on administrative costs and potential risk May help reduce housing costs that are passed on to new owners from developers Saves homeowners adding on an ADU or converting to a duplex, etc. impact fees	Removes revenue coming in to offset certain costs caused by developments
Setting $0 Impact Fee for time being	PB votes to set the new impact fee of $0 with an effective date and with or without an end date. Fee schedule, impact fee info sheet, and portal are updated.	May help reduce housing costs that are passed on to new owners from developers Saves homeowners adding on an ADU or converting to a duplex,	Still have administrative need to invoice, process, draft reports We do not have a report recommending a $0 fee Confusing for applicants Would need to revisit at a later date.
		Potential Policy	
Potential Policy if either are put in place:	Any project heard by the PB since 01/01/2024 may get their impact fee invoices redacted or if paid, reimbursed. Any project heard by the PB before 12/31/2023 may seek their impact fees to be reimbursed or invoice redacted, however the PB would be encouraged not to amend the impact fee amount due since the applicant had agreed to the conditions of approval and the impact fees collected have already been allocated or spent If an applicant paid for their new units or developments for items that did not need PB approval since 01/01/2024, they may seek a reimbursement from the PB, however the PB would be encouraged not to amend the fee amount due or already paid since the applicant had agreed to paying the fee and the impact fees invoiced or collected may have already been allocated or spent		