S.L. CHASSE STEEL AMENDED SITE PLANS – 201 & 199 ROBINSON ROAD

SP# 10-22 (AMENDMENT TO SP# 03-21)
SP# 11-22 (AMENDMENT TO SP# 04-21)

STAFF REPORT

October 26, 2022

SITES: SP #10-22: 201 Robinson Road; Map 105 Lot 17-2; SP #11-22: 199 Robinson Road; Map 105 Lot 17-3

ZONING: General-1 (G-1)

PURPOSE OF PLAN: A resubmittal of a proposed 22,500 SF industrial building (Lot 17-2) and 3 proposed industrial buildings totaling 50,400 SF (Lot 17-3) along with associated parking and site improvements on each. The current applications propose revised site grading.

PLANS UNDER REVIEW:

SP #10-22
Non-residential Site Plan / S.L. Chasse Steel, Map 105 Lot 17-2, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for Steel Properties, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 16 sheets plus a separate cover page, with general notes 1-41 on Sheet 1; dated April 6, 2021, last revised September 12, 2022.

SP# 11-22
Non-residential Site Plan / S.L. Chasse Contractor Buildings, Map 105 Lot 17-3, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for SLC Development, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 16 sheets plus a separate cover page, with general notes 1-40 on Sheet 1; dated April 6, 2021, last revised September 12, 2022.

Grading Easement Plan, S.L. Chasse Steel, Map 105 Lots 17-3 & 17-4 prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for Steel Properties, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 1 sheet, dated September 29, 2022.

ATTACHMENTS:

A. Peer Review, prepared by Fuss & O'Neill, received August 31, 2022.
B. Applicant Response to Peer Review, prepared by Keach-Nordstrom Associates, received September 19, 2022. [note this letter is incorrectly dated August 17, 2021]
C. 2nd round of Peer Review, prepared by Fuss & O'Neill, received October 3, 2022.

D. Town Department Comments

E. Copies of previous approvals of SP# 03-21 and SP# 04-21

F. Draft grading easement

APPLICATION TRACKING:

- September 8, 2021 – Original site plan applications approved.
- August 9, 2022 – Application received.
- September-October 2022 – revisions and additional information received.
- October 26, 2022 – Public hearing scheduled.

COMMENTS & RECOMMENDATIONS:

BACKGROUND

The Lot 17-2 site is a 7.107-acre parcel that has been cleared of a single family home and woodlands. A driveway onto Robinson Road remains. The Lot 17-3 site is a 7.009-acre parcel that has been cleared of woodlands. There are no wetlands or access to municipal sewer or water. However on September 8, 2021, a conditional use permit CUP# 07-21 for a water main extension was approved, simultaneously with the approval of two site plans for these lots (**Attachment E**).

Upon commencing site work, the Applicant has found that a different grading scheme is preferable. This change requires a revision to the site plan approval as it changes the grading plan and utility & stormwater layout.

DEPARTMENT COMMENTS

See **Attachment D** for comments from town departments.

1. Engineering: Applicant shall require a water main extension, subject to Board of Selectmen approval, prior to recording the plan, and applicant shall provide all necessary water offsite improvements related to achieving fire suppression at the site.
2. Zoning: Verify that the proposed building heights will conform with 334-14 Building Height. This will be a requirement of the building permit application.

OTHER COMMENTS

Grading

Site grading and swale construction is proposed on adjacent lot 17-4 which is under different ownership. The applicant has since acquired agreement from the owner of Map 105 Lot 17-4 to establish a grading easement for approximately 1,384 square feet at northwest corner of Lot 17-4. An easement plan and a draft easement has been provided (**Attachment F**). The easement area appears to be impacted by drainage, so a drainage easement should be included as well.

Stormwater

In **Attachment C** the peer reviewer has noted that the calculations provided by the applicant show a volumetric increase or stormwater runoff at Analysis Point A for 2-year and 50-year storm events, and that the data provided does not currently meet the Town's regulations (§290-5.A.5). The applicant notes that while they meet Alteration of Terrain requirements it is impossible to match pre-development runoff volumes due to the soil types on the site but infiltration practices have been designed to the maximum extent practicable (**Attachment B**).

The peer reviewer also notes without elevation information they are unable to verify that the sewer system piping does not conflict with any drainage piping. The applicant's response is that it will be reviewed at time of state septic submission.

Staff does not recommend waiving the requirement of §290-5.A.5 or the profile of the piping. However, the Town Engineer is amenable to resolution of these items being a stipulation of approval.

Plan Information/Ownership
The cover sheet of the site plan for Lot 17-3 lists SLC Development LLC as the owner, while the other sheets in the set, and the easement plan, identifies the owner as Steel Properties, LLC. This should be clarified and corrected.

Previous Approvals
These applications should remain subject to the conditions of approval imposed on applications SP #03-21 and SP# 04-21 of September 8, 2022

DRAFT MOTIONS

SP#10-22 MAP 105 LOT 17-2; 201 ROBINSON ROAD

ACCEPT site plan application SP# 10-22:

I move to accept the site plan application, SP# 10-22, for S.L. Chasse Steel at 201 Robinson Road; Map 105 Lot 17-2.

Motion by: _______________Second: _________________Carried/Failed: ___________

CONTINUE the public hearing for SP# 10-22:

I move to continue the site plan application, SP# 10-22, for S.L. Chasse Steel at 201 Robinson Road; Map 105 Lot 17-2, to date certain, ____________, 2022.

Motion by: _______________Second: _________________Carried/Failed: ___________

DEFER the public hearing to a date certain:

I move to defer the site plan application, SP# 10-22, for S.L. Chasse Steel at 201 Robinson Road; Map 105 Lot 17-2, to date certain, ____________, 2022.

Motion by: _______________Second: _________________Carried/Failed: ___________

APPROVE the site plan application:

I move to approve the site plan entitled: Non-residential Site Plan / S.L. Chasse Steel, Map 105 Lot 17-2, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for Steel Properties, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 16 sheets plus a separate cover page, with general notes 1-41 on Sheet 1; dated April 6, 2021, last revised September 12, 2022; subject to, and revised per, the following stipulations:

1. All stipulations of approval shall be incorporated into the Notice of Decision, which shall be recorded at the HCRD, together with the Plan.
2. This approval revises the grading plan, utility layout and stormwater management plan but otherwise remains subject to the stipulations of approval of SP# 03-21 approved on September 8, 2021.
3. The site requires a water main extension, subject Board of Selectmen approval, which shall be required prior to final Planning Board endorsement, or recording, of the plan.
4. Prior to Planning Board endorsement of the Plan, it shall be subject to final administrative review by the Town Planner and Town Engineer.

Motion by: _______________Second: _________________Carried/Failed: ___________

SP#11-22 MAP 105 LOT 17-3; 199 ROBINSON ROAD

ACCEPT site plan application SP# 11-22:

I move to accept the site plan application, SP# 11-22, for S.L. Chasse Contractor Buildings at 199 Robinson Road; Map 105 Lot 17-3.

Motion by: _______________Second: _________________Carried/Failed: ___________

CONTINUE the public hearing for SP# 11-22:

I move to continue the site plan application, SP# 11-22, for S.L. Chasse Contractor Buildings at 199 Robinson Road; Map 105 Lot 17-3, to date certain, ____________, 2022.

Motion by: _______________Second: _________________Carried/Failed: ___________

DEFER the public hearing to a date certain:

I move to defer the site plan application, SP# 11-22, for S.L. Chasse Contractor Buildings at 199 Robinson Road; Map 105 Lot 17-3, to date certain, ____________, 2022.

Motion by: _______________Second: _________________Carried/Failed: ___________

APPROVE the site plan application:

I move to approve the site plan entitled: Non-residential Site Plan / S.L. Chasse Contractor Buildings, Map 105 Lot 17-3, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for SLC Development, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 16 sheets plus a cover page, with general notes 1-40 on Sheet 1; dated April 6, 2021, last revised September 12, 2022; subject to, and revised per, the following stipulations:

1. All stipulations of approval shall be incorporated into the Notice of Decision, which shall be recorded at the HCRD, together with the Plan.
2. This approval revises the grading plan, utility layout and stormwater management plan but otherwise remains subject to the stipulations of approval of SP# 03-21 approved on September 8, 2021.
3. The site requires a water main extension, subject Board of Selectmen approval, which shall be required prior to final Planning Board endorsement of the plan.
4. The Grading Easement shall be amended to include Drainage, and be reviewed favorably by the Town Attorney and recorded with the Plan.
5. The final plan shall be revised to demonstrate conformance with §290-5.A.5 and to show no conflict between sewer and drainage pipes, to the satisfaction of the Town Engineer, prior to Planning Board endorsement of the plan.
6. Prior to Planning Board endorsement of the Plan, it shall be subject to final administrative review by the Town Planner and Town Engineer.

Motion by: _______________Second: _________________Carried/Failed: ___________

FUSS & O'NEILL

August 31, 2022

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

Re: Town of Hudson Planning Board Review
SL Chasse Steel Amended Site Plan, Robinson Road
Tax Map 105 Lot 17-2 & 17-3; Acct. #1350-532
Reference No. 20030249.2020

Dear Mr. Groth:

Fuss & O'Neill (F&O) has reviewed the submission of the materials received on August 9, 2022, related to the above-referenced project. Authorization was received on August 17, 2022. Fuss & O'Neill had reviewed previous versions of these plans, with our most recent review letters dated August 30, 2021. This review is focused on grading changes at both lots as depicted on the current plans, and the impacts of those grading changes to other design elements.

The following items are noted:

1. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)

a. HR 290-5.A.(5). The revised drainage calculations illustrate a volumetric increase from Pre to Post Development at Analysis Point A for both the 2-year and 50-year storm event. The applicant should provide a table listing the volumetric runoff at Analysis Point A for all storms analyzed, including the 25-year storm event. The data provided does not currently meet Town of Hudson Regulations. The applicant shall review this volumetric increase with the Town Engineer to confirm that this increase is allowed.

b. We note the revised drainage calculations provided only contain the NHDES required 2-year, 10-year, and 50-year storm calculations. The applicant shall provide a copy of, at a minimum, the HydroCAD node listing of the 25-Year revised drainage calculations for Town records.

c. (Lot 17-3) The proposed invert in (240.50) to CB #24 is lower than the proposed invert out (240.60). The applicant should review and revise this grading.

d. (Lot 17-3) DMH #30 has two proposed inverts in and no invert out.

e. (Lot 17-3) Grading for the proposed sewer system piping is not shown on the plans so we are unable to verify that sewer piping does not conflict with any drainage piping.

2. Erosion Control/Wetland Impacts

a. The applicant should specify the type/species of grass to be installed within the stormwater basins, which can be inundated by water for up to 72 hours.

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FUSS & O'NEILL

3. Other

a. (Lot 17-3) The applicant has proposed a nearly 20-foot change in grade near proposed Pocket Pond 1, just south of Building #3. The plans do not show any guardrail in this area and have designated this for proposed snow storage. The applicant should provide calculations to confirm that guardrail is not warranted in this location, and coordinate/review with the Town Engineer accordingly.

b. (Lot 17-3) Site Plan Sheet 3 has "proposed outlet structure" and "proposed drain manhole" leader notes south of Building #3 that do not point to the structures.

c. (Lot 17-3) The applicant is proposing some minor site grading and swale construction on adjacent lot 17-4 near Robinson Road. The applicant should coordinate with the adjacent property owner to secure rights to perform this work.

d. (Lot 17-2) The applicant has revised the proposed dumpster enclosure location near the driveway between lots 2 and 3. This enclosure may contribute to sight obstructions between vehicles traveling on the south side of the lot 2 building and vehicles using the driveway between lots.

e. (Both lots) The Integral Curb and Walk Detail shows a 6" reveal at the curb. Spot grades at some of the buildings show a 4" reveal.

Please feel free to call if you have any questions.

Very truly yours,

Steven W. Reichert, P.E.

SWR:

Enclosure

cc: Town of Hudson Engineering Division – File
Keach- Nordstrom Associates, Inc. - svando@keachnordstrom.com

KNA KEACH-NORDSTROM ASSOCIATES, INC.

August 17, 2021

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

Subject: **Town of Hudson Planning Board Review**
SL Chasse Steel Site Plan, Robinson Road
Tax Map 105 Lot 17-3; Acct.# 1350-532
Reference No. 20030249.2020
KNA Project # 20-0921-2

Dear Mr. Groth:

Our office is in receipt of Fuss & O'Neill, Inc. review comments for the Town of Hudson dated August 31, 2022 for the project listed above. Based on the comments, we have made the required modifications to the plan set and attached a copy for final review. A response to each comment has been provided below.

1. ***Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)***

a. *HR 290-5.A.(5). The revised drainage calculations illustrate a volumetric increase from Pre to Post Development at Analysis Point A for both the 2-year and 50-year storm event. The applicant should provide a table listing the volumetric runoff at Analysis Point A for all storms analyzed, including the 25-year storm event. The data provided does not currently meet Town of Hudson Regulations. The applicant shall review this volumetric increase with the Town Engineer to confirm that this increase is allowed.*

The stormwater volume calculation meets the Alteration of Terrain requirements with the state. Given the soil types on this site it is impossible to infiltrate runoff volume to match the pre-development, but infiltration practices have been designed and implemented to the maximum extent practicable.

b. *We note the revised drainage calculations provided only contain the NHDES required 2-year, 10-year, and 50-year storm calculations. The applicant shall provide a copy of, at a minimum, the HydroCAD node listing of the 25-Year revised drainage calculations for Town records.*

The 25-Year Storm is provided with the letter.

c. *(Lot 17-3) The proposed invert in (240.50) to CB #24 is lower than the proposed invert out (240.60). The applicant should review and revise this grading.*

10 Commerce Park North, Suite 3B Bedford, NH 03110 Phone (603) 627-2881 Fax (603) 627-2915

Inverts for CB #24 have been revised on both plan and storm calculations.

d. *(Lot 17-3) DMH #30 has two proposed inverts in and no invert out.*

Plan has been revised to show DMH #30 invert out.

e. *(Lot 17-3) Grading for the proposed sewer system piping is not shown on the plans so we are unable to verify that sewer piping does not conflict with any drainage piping.*

At time of state submission for the Septic, we will verify the crossings have no conflicts with the drainage.

2. ***Erosion Control/Wetland Impacts***

a. *The applicant should specify the type/species of grass to be installed within the stormwater basins, which can be inundated by water for up to 72 hours. Mr. Brian Groth August 31, 2022*

Materials Note #7 on 17-2 Sheet #15 and 17-3 Sheet #14 show the mix that will be provided in the stormwater basins. Although 72 hours is noted the BMP worksheets state the infiltration will take place in 36.6 Hours for Pond #1 and 30.9 Hours for Pond #2.

3. ***Other***

a. *(Lot 17-3) The applicant has proposed a nearly 20-foot change in grade near proposed Pocket Pond 1, just south of Building #3. The plans do not show any guardrail in this area and have designated this for proposed snow storage. The applicant should provide calculations to confirm that guardrail is not warranted in this location, and coordinate/review with the Town Engineer accordingly.*

Guardrail has been added in this area.

b. *(Lot 17-3) Site Plan Sheet 3 has "proposed outlet structure" and "proposed drain manhole" leader notes south of Building #3 that do not point to the structures.*

Leaders have been revised.

c. *(Lot 17-3) The applicant is proposing some minor site grading and swale construction on adjacent lot 17-4 near Robinson Road. The applicant should coordinate with the adjacent property owner to secure rights to perform this work.*

A temporary drainage easement will be provided. Property owner has agreed to this easement as shown in attached letter. A permanent easement is not required as

the existing drainage discharges to this point of analysis and the proposed shows a decrease in runoff.

d. *(Lot 17-2) The applicant has revised the proposed dumpster enclosure location near the driveway between lots 2 and 3. This enclosure may contribute to sight obstructions between vehicles traveling on the south side of the lot 2 building and vehicles using the driveway between lots.*

Shifted dumpster to the West to allow more visibility.

e. *(Both lots) The Integral Curb and Walk Detail shows a 6" reveal at the curb. Spot grades at some of the buildings show a 4" reveal.*

Detail has been revised to note see plan for reveal dimensions.

I trust the content of this response letter and its attachments has addressed each of the comments, as noted. Should you have further questions or require additional information, please do not hesitate to contact our office.

Respectfully,

Shaun Vando
Project Engineer
Keach-Nordstrom Associates, Inc.

FUSS & O'NEILL

October 3, 2022

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

Re: Town of Hudson Planning Board Review
SL Chasse Steel Amended Site Plan, Robinson Road
Tax Map 105 Lot 17-2 & 17-3; Acct. #1350-532
Reference No. 20030249.2020

Dear Mr. Groth:

Fuss & O'Neill (F&O) has reviewed the submission of the materials received on September 12, 2022, related to the above-referenced project. Authorization was received on September 19, 2022. Fuss & This review is focused on grading changes at both lots as depicted on the current plans, and the impacts of those grading changes to other design elements.

The following items require Town evaluation or input:

1. **Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)**

   a. *Former Fuss & O'Neill Comment: HR 290-5.A.(5). The revised drainage calculations illustrate a volumetric increase from Pre to Post Development at Analysis Point A for both the 2-year and 50-year storm event. The applicant should provide a table listing the volumetric runoff at Analysis Point A for all storms analyzed, including the 25-year storm event. The data provided does not currently meet Town of Hudson Regulations. The applicant shall review this volumetric increase with the Town Engineer to confirm that this increase is allowed.*

   Current Fuss & O'Neill Comment: The applicant has provided reasoning for the non-submittal of drainage requirements. This should be reviewed with the Town Engineer if this is acceptable as proposed or if a waiver is required.

   e. *Former Fuss & O'Neill Comment: (Lot 17-3) Grading for the proposed sewer system piping is not shown on the plans so we are unable to verify that sewer piping does not conflict with any drainage piping.*

   Current Fuss & O'Neill Comment: The applicant has noted that the grading will be reviewed at the time of the state septic submission. The applicant should coordinate with the Town for final approval at all sewer and drain crossings to ensure appropriate separation is achieved.

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The following items are resolved or have no further Fuss & O'Neill input:

1. **Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)**

   b. *Former Fuss & O'Neill Comment: We note the revised drainage calculations provided only contain the NHDES required 2-year, 10-year, and 50-year storm calculations. The applicant shall provide a copy of, at a minimum, the HydroCAD node listing of the 25-Year revised drainage calculations for Town records.*

   Current Fuss & O'Neill Comment: The applicant provided the 25-Year calculations. No further Fuss & O'Neill comment.

   c. *Former Fuss & O'Neill Comment: (Lot 17-3) The proposed invert in (240.50) to CB #24 is lower than the proposed invert out (240.60). The applicant should review and revise this grading.*

   Current Fuss & O'Neill Comment: The applicant revised the inverts on Plan Sheet 7 (bottom right of parking lot). No further Fuss & O'Neill comment.

   d. *Former Fuss & O'Neill Comment: (Lot 17-3) DMH #30 has two proposed inverts in and no invert out.*

   Current Fuss & O'Neill Comment: The applicant has revised the inverts on Plan Sheet 7 (above the site specific soil map unit key). No further Fuss & O'Neill comment.

2. **Erosion Control/Wetland Impacts**

   a. *Former Fuss & O'Neill Comment: The applicant should specify the type/species of grass to be installed within the stormwater basins, which can be inundated by water for up to 72 hours.*

   Current Fuss & O'Neill Comment: The applicant has noted the grass seed mix on the plan set. No further Fuss & O'Neill comment.

3. **Other**

   a. *Former Fuss & O'Neill Comment: (Lot 17-3) The applicant has proposed a nearly 20-foot change in grade near proposed Pocket Pond 1, just south of Building #3. The plans do not show any guardrail in this area and have designated this for proposed snow storage. The applicant should provide calculations to confirm that guardrail is not warranted in this location, and coordinate/review with the Town Engineer accordingly.*

   Current Fuss & O'Neill Comment: The applicant has added a wood beam guardrail to the plan set and provided a detail. No further Fuss & O'Neill comment.

   b. *Former Fuss & O'Neill Comment: (Lot 17-3) Site Plan Sheet 3 has "proposed outlet structure" and "proposed drain manhole" leader notes south of Building #3 that do not point to the structures.*

   Current Fuss & O'Neill Comment: The applicant has revised the leader lines. No further Fuss & O'Neill comment.

   c. *Former Fuss & O'Neill Comment: (Lot 17-3) The applicant is proposing some minor site grading and swale construction on adjacent lot 17-4 near Robinson Road. The applicant should coordinate with the adjacent property owner to secure rights to perform this work.*

   Current Fuss & O'Neill Comment: The applicant has stated that the adjacent property owner has agreed to a temporary drainage easement. No further Fuss & O'Neill comment.

   d. *Former Fuss & O'Neill Comment: (Lot 17-2) The applicant has revised the proposed dumpster enclosure location near the driveway between lots 2 and 3. This enclosure may contribute to sight obstructions between vehicles traveling on the south side of the lot 2 building and vehicles using the driveway between lots.*

FUSS & O'NEILL

Current Fuss & O'Neill Comment: The applicant has shifted the proposed dumpster location. No further Fuss & O'Neill comment.

e. *Former Fuss & O'Neill Comment: (Both lots) The Integral Curb and Walk Detail shows a 6" reveal at the curb. Spot grades at some of the buildings show a 4" reveal.*

Current Fuss & O'Neill Comment: The applicant has revised the detail to refer back to the plan. No further Fuss & O'Neill comment.

Please feel free to call if you have any questions.

Very truly yours,

Steven W. Reichert, P.E.

SWR:

Enclosure

cc: Town of Hudson Engineering Division – File
Keach- Nordstrom Associates, Inc. - svando@keachnordstrom.com

Groth, Brian

From:	Dhima, Elvis
Sent:	Thursday, August 18, 2022 3:19 PM
To:	Dubowik, Brooke; Groth, Brian
Subject:	RE: Dept Sign Offs - SL Chasse Steel Amended SP#10-22 & SP#11-22

Please see below

1. Applicant shall require a water main extension , subject to BOS approval, prior to recording the plan
2. Applicant shall provide all necessary water offsite improvements related to achieving fire suppression at the site.

Elvis Dhima, P.E.
Town Engineer

12 School Street
Hudson, NH 03051
Phone: (603) 886-6008
Mobile: (603) 318-8286

Town of Hudson
NEW HAMPSHIRE 03051

TOWN OF HUDSON

Land Use Division

12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-594-1142

Site Plan Review
Zoning Review/Comments

August 24, 2022

Re: **Map 105 Lot 17-2**
Address: Robinson Rd
Zoning district: (G-1) General One

Submitted plan: Sheet 1 of 16 rev 5 dated 05/25/22

Verify that the proposed building height will conform with 334-14 Building Height.

Sincerely,

Bruce Buttrick,
Zoning Administrator/Code Enforcement Officer

cc: B. Groth - Town Planner
file

TOWN OF HUDSON

Land Use Division

12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-594-1142

Site Plan Review #11-22
Zoning Review/Comments

August 24, 2022

Re: **Map 105 Lot 17-3**
Address: Robinson Rd
Zoning district: (G-1) General One

Submitted plan reviewed, Sheets 1 & 3 of 16, Rev 05/25/22.

Verify that the proposed buildings heights will conform with 334-14 Building Height.

Sincerely,

Bruce Buttrick,
Zoning Administrator/Code Enforcement Officer

cc: B. Groth - Town Planner
file

TOWN OF HUDSON

Planning Board

Timothy Malley, Chairman Marilyn McGrath, Selectmen Liaison

12 School Street · Hudson, New Hampshire 03051 · Tel: 603-886-6008 · Fax: 603-594-1142

NOTICE OF APPROVAL

September 23, 2021

Owner or Applicant: S.L. CHASSE STEEL
8 CHRISTINE DRIVE
HUDSON, NH 03051

On Wednesday, September 8, 2021, the Hudson Planning Board heard subject case SP# 03-21 "S.L. Chasse Steel Site Plan".

SUBJECT: PURPOSE OF PLAN: TO SHOW A PROPOSED INDUSTRIAL BUILDING TOTALING 22,500 SF AND ASSOCIATED PARKING. APPLICATION ACCEPTANCE & HEARING.

LOCATION: 201 ROBINSON ROAD, HUDSON NH
MAP 105/LOT 017-002

The Planning Board moved to accept the site plan application for S.L. Chasse Steel at 201 Robinson Road; Map 105/Lot 017-002.

WAIVERS GRANTED*:*

§276-11.1.B(12) – General Plan Requirements.

The Planning Board moved to grant a waiver from §276-11.1.B(12), to reduce the residential buffer to 100-feet, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

§276-11.1.B(25) – General Plan Requirements.

The Planning Board moved to grant a waiver from §276-11.1.B(25), to allow access across the side lot line between lot 17-2 and Lot 17-3, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

MOTION TO APPROVE:

The Planning Board moved to approve the site plan for Non-residential Site Plan, S.L. Chasse Steel, Map 105 Lot 17-2, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for Steel Properties, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 13 sheets plus a cover page, with general notes 1-38 on Sheet 1; dated April 6, 2021, last revised September 2, 2021.; subject to, and revised per, the following stipulations:

1. All stipulations of approval shall be incorporated into the Notice of Decision and the Development Agreement, which shall be recorded at the HCRD, together with the Plan.

2. All improvements shown on the Plan shall be completed in their entirety and at the expense of the applicant or the applicant's assigns.

3. A cost allocation procedure (CAP) amount of $31,050 shall be paid prior to the issuance of a Certificate of Occupancy.

4. An offsite improvement, a Surge Valve for the Route 102 Booster Station, is necessitated by this application in tandem with SP #04-21. This shall be coordinated with the Engineering Department.

5. Prior to the issuance of a Certificate of Occupancy, an L.L.S. Certified "as-built" site plan shall be provided to the Planning Department, confirming that the site conforms to the Plan approved by the Planning Board.

6. The final design and size of the fire suppression water supply tanks shall be subject to the Fire Department's determination. The final Plan will reflect the needs identified during the building permit review process, which may begin prior to recording of the Plan. A building permit will not be issued until the Plan is recorded.

7. Prior to the Planning Board endorsement of the Plan, it shall be subject to final administrative review by Town Planner and Town Engineer.

8. The applicant shall schedule a pre-construction meeting with the Town Engineer prior to applying for a building permit.

9. Construction activities involving the subject lot shall be limited to the hours between 7:00 A.M. and 7:00 P.M. No exterior construction activities shall be allowed on Sundays.

10. Blasting or ramming activities shall be limited to the hours between 9:00 A.M and 5:00 P.M, Monday through Friday. Blasting activities are prohibited on Saturday and Sunday.

11. For the purposes of this site plan approval, the term "active and substantial development" shall mean the completion of grading and stormwater management system.

12. In the event that Lot 17-2 and Lot 17-3 are not under common ownership, an access easement between the two lots shall be recorded.

Signed: ________________________________ Date: __________________________

Brian Groth
Town Planner

cc: Keach-Nordstrom Associates, Inc.

TOWN OF HUDSON

Planning Board

Timothy Malley, Chairman Marilyn McGrath, Selectmen Liaison

12 School Street · Hudson, New Hampshire 03051 · Tel: 603-886-6008 · Fax: 603-594-1142

NOTICE OF APPROVAL

September 23, 2021

Owner or Applicant: S.L. CHASSE STEEL
8 CHRISTINE DRIVE
HUDSON, NH 03051

On Wednesday, September 8, 2021, the Hudson Planning Board heard subject case SP# 04-21 "S.L. Chasse Steel Site Plan".

SUBJECT: PURPOSE OF PLAN: TO SHOW THREE (3) PROPOSED INDUSTRIAL BUILDINGS TOTALING 50,400 SF AND ASSOCIATED PARKING. APPLICATION ACCEPTANCE & HEARING.

LOCATION: 199 ROBINSON ROAD, HUDSON NH
MAP 105/LOT 017-003

The Planning Board moved to accept the site plan application for S.L. Chasse Steel at 199 Robinson Road; Map 105/Lot 017-003.

WAIVERS GRANTED*:*

§276-11.1.B(25) – General Plan Requirements.

The Planning Board moved to grant a waiver from §276-11.1.B(25), to allow access across the side lot line between lot 17-2 and Lot 17-3, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

MOTION TO APPROVE:

The Planning Board moved to approve the site plan for Non-residential Site Plan, S.L. Chasse Steel Contractor Buildings, Map 105 Lot 17-3, Robinson Road, Hudson, New Hampshire; prepared by Keach-Nordstrom Associates, Inc., 10 Commerce Park North, Suite 3, Bedford, New Hampshire 03110; prepared for SLC Development, LLC, 8 Christine Drive, Hudson, New Hampshire 03051; consisting of 12 sheets plus a cover page, with general notes 1-41 on Sheet 1; dated April 6, 2021, last revised September 2, 2021; subject to, and revised per, the following stipulations:

1. All stipulations of approval shall be incorporated into the Notice of Decision and the Development Agreement, which shall be recorded at the HCRD, together with the Plan.

2. All improvements shown on the Plan shall be completed in their entirety and at the expense of the applicant or the applicant's assigns.

3. A cost allocation procedure (CAP) amount of $69,552.00 shall be paid prior to the issuance of a Certificate of Occupancy.

4. An offsite improvement, a Surge Valve for the Route 102 Booster Station, is necessitated by this application in tandem with SP #03-21. This shall be coordinated with the Engineering Department.

5. Prior to the issuance of a Certificate of Occupancy, an L.L.S. Certified "as-built" site plan shall be provided to the Planning Department, confirming that the site conforms to the Plan approved by the Planning Board.

6. The final design and size of the fire suppression water supply tanks shall be subject to the Fire Department's determination. The final Plan will reflect the needs identified during the building permit review process, which may begin prior to recording of the Plan. A building permit will not be issued until the Plan is recorded.

7. Prior to the Planning Board endorsement of the Plan, it shall be subject to final administrative review by Town Planner and Town Engineer.

8. The applicant shall schedule a pre-construction meeting with the Town Engineer prior to applying for a building permit.

9. Construction activities involving the subject lot shall be limited to the hours between 7:00 A.M. and 7:00 P.M. No exterior construction activities shall be allowed on Sundays.

10. Blasting or ramming activities shall be limited to the hours between 9:00 A.M and 5:00 P.M, Monday through Friday. Blasting activities are prohibited on Saturday and Sunday.

11. In the event that Lot 17-2 and Lot 17-3 are not under common ownership, an access easement between the two lots shall be recorded.

12. For the purposes of this site plan approval, the term "active and substantial development" shall mean the completion of grading and stormwater management system.

Signed: ______________________________ Date: ___________________________
Brian Groth
Town Planner

cc: Keach-Nordstrom Associates, Inc.

GRADING EASEMENT

Grey Fox Realty, LLC, a New Hampshire limited liability corporation with an address of 40 Temple Street, Nashua, New Hampshire 03060, for consideration paid, grants to **Steel Properties, LLC**, a New Hampshire limited liability corporation with an address of 8 Christine Drive, Hudson, New Hampshire 03051, a grading easement described as follows:

A grading easement located on the east side of Robinson Road, Town of Hudson, County of Hillsborough, State of New Hampshire, as shown as the "1,348 Square Foot Grading Easement to Benefit Lot 17-3," on the plan entitled: "Grading Easement Plan, S. L. Chasse Steel, Map 105 Lots 17-3 and 17-4, Robinson Road, Hudson, New Hampshire, Hillsborough County;" Owner of Record Lot 17-3: Steel Properties, LLC, Owner of Record Lot 17-4: Grey Fox Realty, LLC; prepared by Keach-Nordstrom Associates, Inc., dated September 29, 2022 and recorded at the Hillsborough County Registry of Deeds as Plan No. ______________. Said grading easement further described as follows:

Beginning at a granite bound on the east side of Robinson Road, being the southwesterly corner of Lot 17-4 and the northwesterly corner of Lot 17-3, then

(1) North 77° 47' 48" East a distance of 90.00 feet along said Lot 17-4 to a point; then

(2) South 59° 05' 08" West a distance 93.39 feet across said Lot 17-4 to a point on the eastern side of Robinson Road; then

(3) North 15° 09' 06" West a distance of 30.00 feet along Robinson Road, to a granite bound, being the point of beginning (the "Easement Area").

The grading easement herein granted shall include the right to enter upon the real estate described at any time that the Grantee may see fit, and to construct, maintain, repair and/or replace the slope as required under the above mentioned plan, together with the right to excavate and refill ditches and/or trenches for the location of said slopes.

The Grantee agrees, by its acceptance of this conveyance, that construction, maintenance and repair or replacement of the slopes shall be conducted in such a manner so as not to unreasonably disrupt the area of the easement or interfere with the Grantor's and Grantor's successors and assigns use of the premises. The Grantee further agrees that it shall repair and replant or reseed any disruption caused by it which exercising its rights described in this Grading Easement.

The Grantor reserves the right to use the above described Easement Area except for any such uses which would materially and adversely affect the Grantee's rights hereunder.

The Grantor reserves the right to convey easements over, under and through the Easement Area to provide utility services customary for residential or commercial uses.

The Grantor and the Grantee may enforce their and its rights under this easement by any proceedings available at law or equity including by seeking the remedies of specific performance and mandatory injunction.

This easement shall be binding upon and inure to the benefit of the parties and their successors, successors-in-title and assigns.

Meaning and intending to convey an easement upon a portion of the property conveyed to Grantor by Warranty Deed dated July 1, 2020 and recorded in said Hillsborough County Registry of Deeds at Book 9315, Page 2447.

Signature page follows.

Dated this ___________ day of ________________________, 2022

GREY FOX REALTY, LLC

____
Benjamin Bosowski, Manager

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

On this the ________ day of ________________, 2022, before me, the undersigned officer, personally appeared the above-named Benjamin Bosowski, Manager of the Grey Fox Realty, LLC known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purpose therein contained.

Before me:

____
Justice of the Peace/Notary Public
My Commission Expires: ______________

KNA KEACH-NORDSTROM ASSOCIATES, INC.

August 8, 2022

Subject: **S.L. Chasse Steel – Site Plan Application**
Map 105; Lot 17-2
Robinson Road, Hudson NH
KNA Project No. 21-0921-2

PROJECT NARRATIVE

The property is located along Robinson Road and is referenced on Hudson's Tax Map 105 as Lot 17-2. The 7.107-acre (309,586 SF) parcel is in Hudson's General – One (G-1) Zoning District. The property is currently owned by Steel Properties, LLC. The site currently has one single family home occupying the front portion of the property with the remaining acreage being undeveloped consisting mainly of grass and woodlands throughout the site. There are no wetlands present on the site.

This application proposes one (1) industrial building on the subject parcel. The proposed industrial building totals 22,500 SF will be serviced by on-site septic and public water. The proposed project includes associated parking as well as loading areas in the rear of the building. The site will be accessed by a driveway off Robinson Road.

In addition to the parking areas and drives, a series of drainage pipes and stormwater ponds must be added to the site. There is a bioretention pond to the north of the site that collects run-off from the parking areas. A detention pond is connected to the bioretention pond in the front to the property. Finally, there is an infiltration pond at the front of the site that collects the remaining pavement and roof run-off. These all help to mitigate any increased run-off this project may produce.

It is our professional opinion that, given the scale of the proposed project, the added industrial building will not adversely impact the Town's roads or other infrastructure now or over a longer period of time.

Civil Engineering *Land Surveying* *Landscape Architecture*

10 Commerce Park North, Suite 3B Bedford, NH 03110 Phone (603) 627-2881 Fax (603) 627-2915

SITE PLAN APPLICATION

Date of Application: AUGUST 3, 2022 Tax Map #: 105 Lot #: 17-2

Site Address: ROBINSON ROAD, HUDSON NH

Name of Project: S.L. CHASSE STEEL

Zoning District: G-1 General SP#: ______ (For Town Use Only)

Z.B.A. Action: ______

PROPERTY OWNER:	DEVELOPER:
Name: STEEL PROPERTIES, LLC	S.L. CHASSE STEEL, STEVE CHASSE
Address: 8 CHRISTINE DRIVE	8 CHRISTINE DRIVE
Address: HUDSON, NH 03051	HUDSON, NH 03051
Telephone # (603) 886-3436	(603) 886-3436
Email: S.CHASSE@SLCHASSESTEELFAB.com	S.CHASSE@SLCHASSESTEELFAB.com

PROJECT ENGINEER:	SURVEYOR:
Name: KEACH NORDSTROM ASSOC.	KEACH NORDSTROM ASSOC.
Address: 10 COMMERCE PARK NORTH	10 COMMERCE PARK NORTH
Address: SUITE 3, BEDFORD, NH 03110	SUITE 3, BEDFORD, NH 03110
Telephone # (603) 627-2881	(603) 627-2881
Email: SVANDO@KEACHNORDSTROM.COM	

PURPOSE OF PLAN:

PLAN SET IS A RESUBMITTAL OF A PROPOSED 22,500 SF INDUSTRIAL BUILDING WITH ASSOCIATED PARKING AND SITE IMPROVEMENTS. SITE GRADING HAS BEEN REVISED FOR THIS SUBMITTAL.

(For Town Use Only)

Routing Date: ______ Deadline Date: ______ Meeting Date: ______

______ I have no comments ______ I have comments (attach to form)

______ Title: ______ Date: ______
(Initials)

Department:

Zoning: ___ Engineering: ___ Assessor: ___ Police: ___ Fire: ___ DPW: ___ Consultant: ___

SITE DATA SHEET

PLAN NAME: S.L. CHASSE STEEL

PLAN TYPE: SITE PLAN

LEGAL DESCRIPTION: MAP 105 LOT 17-2

DATE: ______

Location by Street:	ROBINSON ROAD
Zoning:	G-1
Proposed Land Use:	INDUSTRIAL
Existing Use:	VACANT
Surrounding Land Use(s):	COMMERCIAL/INDUSTRIAL
Number of Lots Occupied:	1
Existing Area Covered by Building:	0 SF
Existing Buildings to be removed:	0
Proposed Area Covered by Building:	22,500 SF
Open Space Proposed:	61.8 %
Open Space Required:	40 %
Total Area:	S.F.: 309,586 Acres: 7.11 ACRES
Area in Wetland:	0 Area Steep Slopes: ______
Required Lot Size:	87,120 SF
Existing Frontage:	345.05' ROBINSON ROAD
Required Frontage:	200'

Building Setbacks:	Required*	Proposed
Front:	50'	163.6'
Side:	15'	42.4'
Rear:	15'	679.2'

SITE DATA SHEET
(Continued)

Flood Zone Reference: FEMA MAP 33011C0508D

Width of Driveways: 30'

Number of Curb Cuts: 1

Proposed Parking Spaces: 38 SPACES

Required Parking Spaces: 38 SPACES

Basis of Required Parking (Use): INDUSTRIAL AND OFFICE

Dates/Case #/Description/Stipulations of ZBA, Conservation Commission, NH Wetlands Board Actions: ______
(Attach stipulations on separate sheet)

Waiver Requests

Town Code Reference: *Regulation Description:*

(For Town Use Only)

Data Sheets Checked By: ______ Date: ______

SITE PLAN APPLICATION AUTHORIZATION

I hereby apply for *Site Plan* Review and acknowledge I will comply with all of the Ordinances of the Town of Hudson, New Hampshire State Laws, as well as any stipulations of the Planning Board, in development and construction of this project. I understand that if any of the items listed under the *Site Plan* specifications or application form are incomplete, the application will be considered rejected.

Pursuant to RSA 674:1-IV, the owner(s) by the filing of this application as indicated above, hereby given permission for any member of the Hudson Planning Board, the Town Planner, the Town Engineer, and such agents or employees of the Town or other persons as the Planning Board may authorize, to enter upon the property which is the subject of this application at all reasonable times for the purpose of such examinations, surveys, tests and inspections as may be appropriate. The owner(s) release(s) any claim to or right he/she (they) may now or hereafter possess against any of the above individuals as a result of any examinations, surveys, tests and/or inspections conducted on his/her (their) property in connection with this applications.

Signature of Owner: Stephen L. Chase MgR. Date: 8-3-2022

Print Name of Owner: STEEL PROPERTIES LLC.

❖ If other than an individual, indicate name of organization and its principal owner, partners, or corporate officers.

Signature of Developer: Stephen L. Chase Date: 8-3-2022

Print Name of Developer: SLC DEVELOPMENT LLC.

❖ The developer/individual in charge must have control over all project work and be available to the Code Enforcement Officer/Building Inspector during the construction phase of the project. The individual in charge of the project must notify the Code Enforcement Officer/Building Inspector within two (2) working days of any change.

KNA KEACH-NORDSTROM ASSOCIATES, INC.

August 8, 2022

Subject: **S.L. Chasse Contractor Buildings – Site Plan Application**
Map 105; Lot 17-3
Robinson Road, Hudson NH
KNA Project No. 21-0921-2

PROJECT NARRATIVE

The property is located along Robinson Road and is referenced on Hudson's Tax Map 105 as Lot 17-3. The 7.009-acre (305,312 SF) parcel is in Hudson's General – One (G-1) Zoning District. The property is currently owned by Steel Properties, LLC. The site is entirely undeveloped consisting mainly of grass and woodlands throughout the site. There are no wetlands present on the site.

This application proposes three (3) industrial buildings on the subject parcel. The three proposed industrial buildings total 50,400 SF (18,400 SF + 18,400 SF + 13,600SF) will be serviced by on-site septic and public water. The proposed project includes associated parking for each building as well as loading areas in the rear of each building. The site will be accessed by a driveway off Robinson Road.

In addition to the parking areas and drives, a series of drainage pipes and stormwater ponds must be added to the site. There is a detention pond in the rear which collects overland flow. There is a pocket pond to the south of building #3 that collects roof drain run-off as well as run-off from the parking areas. Finally, there is an infiltration pond at the front of the site that collects the remaining pavement and roof run-off. These all help to mitigate any increased run-off this project may produce.

It is our professional opinion that, given the scale of the proposed project, the added industrial buildings will not adversely impact the Town's roads or other infrastructure now or over a longer period of time.

10 Commerce Park North, Suite 3B Bedford, NH 03110 Phone (603) 627-2881 Fax (603) 627-2915

SITE PLAN APPLICATION

Date of Application: AUGUST 3, 2022 Tax Map #: 105 Lot #: 17-3

Site Address: ROBINSON ROAD, HUDSON NH

Name of Project: S.L. CHASSE STEEL

Zoning District: G-1 General SP#: ______ (For Town Use Only)

Z.B.A. Action: ______

	PROPERTY OWNER:	DEVELOPER:
Name:	STEEL PROPERTIES, LLC	S.L. CHASSE STEEL, STEVE CHASSE
Address:	8 CHRISTINE DRIVE	8 CHRISTINE DRIVE
Address:	HUDSON, NH 03051	HUDSON, NH 03051
Telephone #	(603) 886-3436	(603) 886-3436
Email:	S.CHASSE@SLCHASSESTEELFAB.com	S.CHASSE@SLCHASSESTEELFAB.com

	PROJECT ENGINEER:	SURVEYOR:
Name:	KEACH NORDSTROM ASSOC.	KEACH NORDSTROM ASSOC.
Address:	10 COMMERCE PARK NORTH	10 COMMERCE PARK NORTH
Address:	SUITE 3, BEDFORD, NH 03110	SUITE 3, BEDFORD, NH 03110
Telephone #	(603) 627-2881	(603) 627-2881
Email:	SVANDO@KEACHNORDSTROM.COM	

PURPOSE OF PLAN:
PLAN SET IS A RESUBMITTAL OF 3 PROPOSED INDUSTRIAL BUILDINGS TOTALING 50,400 SF WITH ASSOCIATED PARKING AND SITE IMPROVEMENTS. SITE GRADING HAS BEEN REVISED FOR THIS SUBMITTAL.

(For Town Use Only)

Routing Date: ______ Deadline Date: ______ Meeting Date: ______

______ I have no comments ______ I have comments (attach to form)

______ Title: ______ Date: ______
(Initials)

Department:

Zoning: ___ Engineering: ___ Assessor: ___ Police: ___ Fire: ___ DPW: ___ Consultant: ___

SITE DATA SHEET

PLAN NAME: S.L. CHASSE STEEL

PLAN TYPE: SITE PLAN

LEGAL DESCRIPTION: MAP 105 LOT 17-3

DATE: ______________________

Location by Street: ROBINSON ROAD

Zoning: G-1

Proposed Land Use: INDUSTRIAL

Existing Use: VACANT

Surrounding Land Use(s): COMMERCIAL/INDUSTRIAL

Number of Lots Occupied: 1

Existing Area Covered by Building: 0 SF

Existing Buildings to be removed: 0

Proposed Area Covered by Building: 50,400 SF

Open Space Proposed: 48 %

Open Space Required: 40 %

Total Area: S.F.: 305,312 Acres: 7.0 ACRES

Area in Wetland: 0 Area Steep Slopes: ________

Required Lot Size: 87,120 SF

Existing Frontage: 322.8' ROBINSON ROAD

Required Frontage: 200'

Building Setbacks:

	Required*	Proposed
Front:	50'	141.9'
Side:	15'	40.2'
Rear:	15'	275.2'

SITE DATA SHEET
(Continued)

Flood Zone Reference: FEMA MAP 33011C0508D

Width of Driveways: 30'

Number of Curb Cuts: 1

Proposed Parking Spaces: 99 SPACES

Required Parking Spaces: 90 SPACES

Basis of Required Parking (Use): INDUSTRIAL AND OFFICE

Dates/Case #/Description/Stipulations of ZBA, Conservation Commission, NH Wetlands Board Actions: ______________________
(Attach stipulations on separate sheet)

____

____

Waiver Requests

Town Code Reference:	*Regulation Description:*

(For Town Use Only)

Data Sheets Checked By: ______________________ Date: __________

SITE PLAN APPLICATION AUTHORIZATION

I hereby apply for *Site Plan* Review and acknowledge I will comply with all of the Ordinances of the Town of Hudson, New Hampshire State Laws, as well as any stipulations of the Planning Board, in development and construction of this project. I understand that if any of the items listed under the *Site Plan* specifications or application form are incomplete, the application will be considered rejected.

Pursuant to RSA 674:1-IV, the owner(s) by the filing of this application as indicated above, hereby given permission for any member of the Hudson Planning Board, the Town Planner, the Town Engineer, and such agents or employees of the Town or other persons as the Planning Board may authorize, to enter upon the property which is the subject of this application at all reasonable times for the purpose of such examinations, surveys, tests and inspections as may be appropriate. The owner(s) release(s) any claim to or right he/she (they) may now or hereafter possess against any of the above individuals as a result of any examinations, surveys, tests and/or inspections conducted on his/her (their) property in connection with this applications.

Signature of Owner: Stephen L. Clason Mgr. Date: 8-3-2022

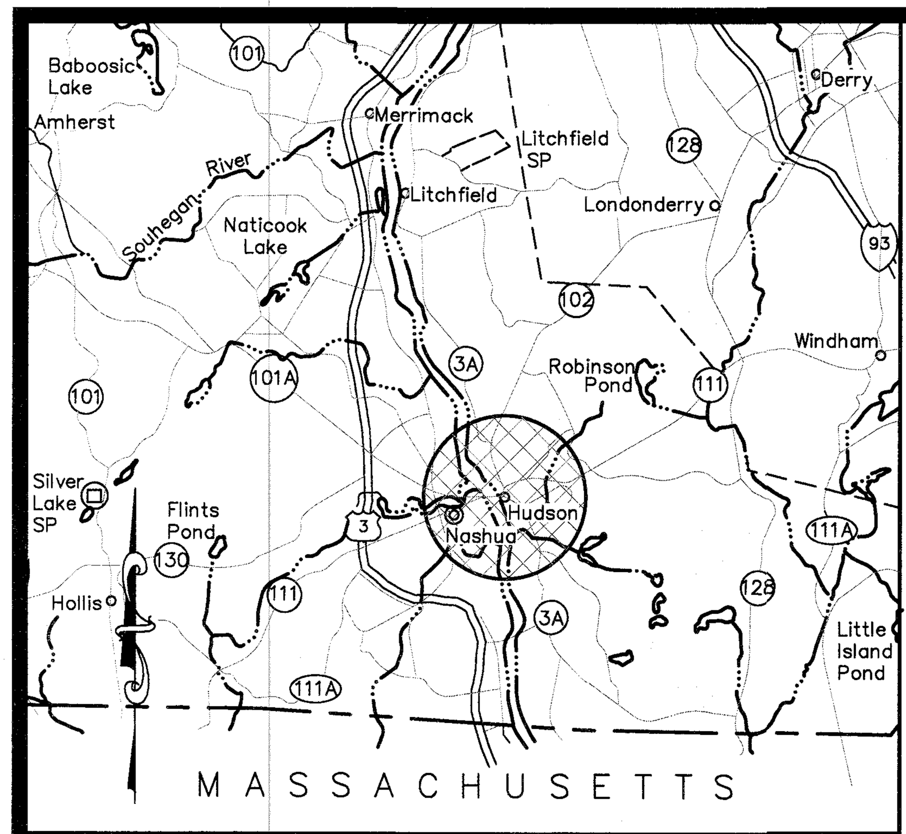
Print Name of Owner: STEEL PROPERTIES LLC.

- ❖ If other than an individual, indicate name of organization and its principal owner, partners, or corporate officers.

Signature of Developer: Stephen L. Clason Date: 8-3-2022

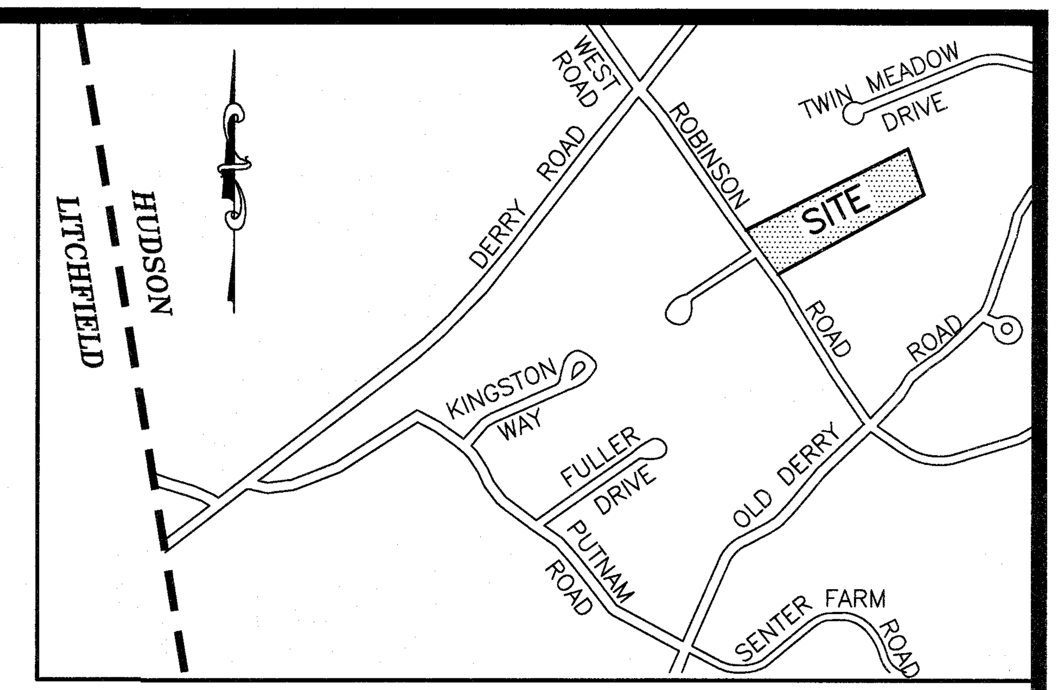
Print Name of Developer: SLC DEVELOPMENT LLC.

- ❖ The developer/individual in charge must have control over all project work and be available to the Code Enforcement Officer/Building Inspector during the construction phase of the project. The individual in charge of the project must notify the Code Enforcement Officer/Building Inspector within two (2) working days of any change.



VICINITY PLAN
NOT TO SCALE

NON-RESIDENTIAL SITE PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE

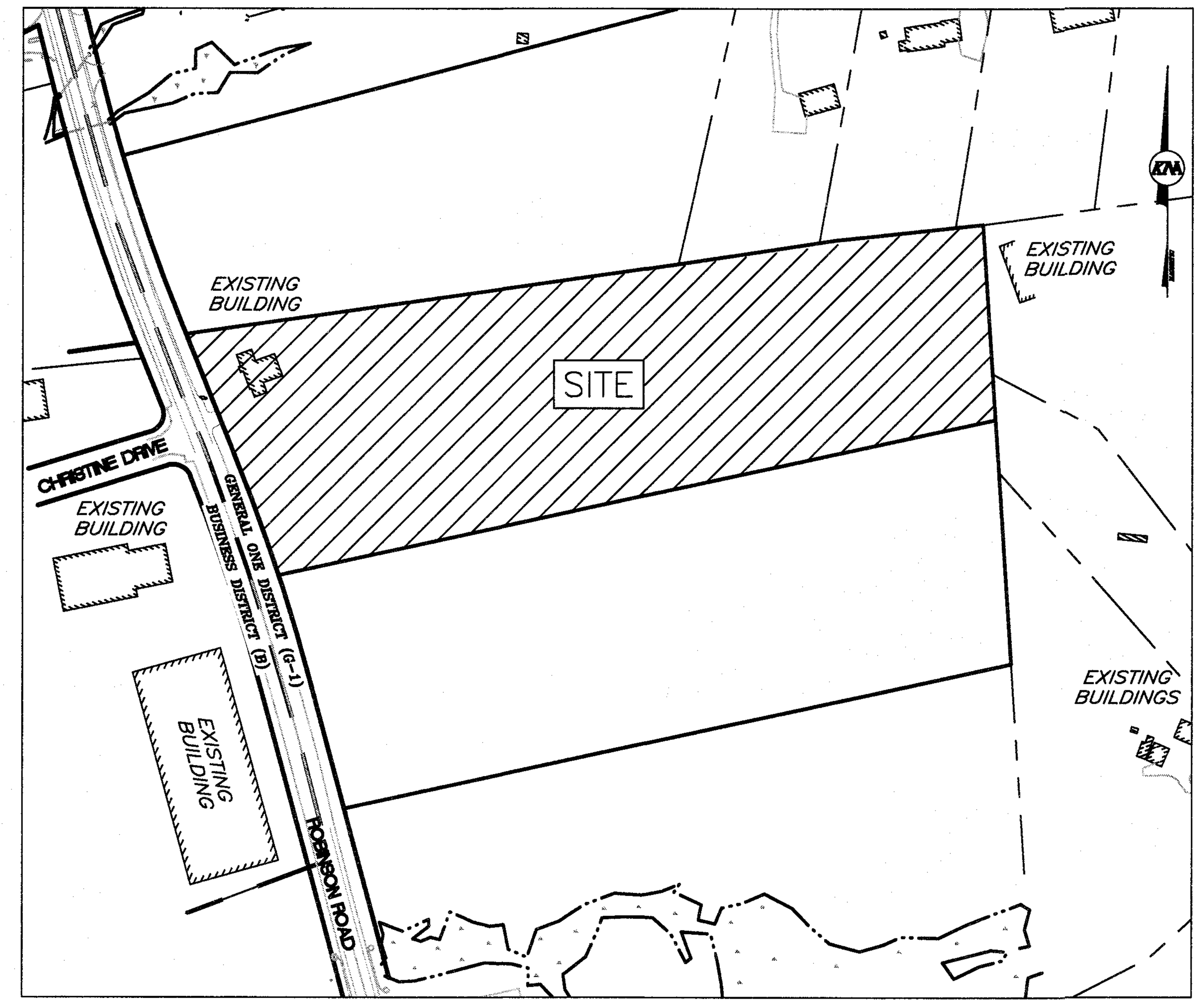


LOCUS PLAN
SCALE: 1" = 1,000'

NEW HAMPSHIRE FISH AND GAME (NHFG) AoT PERMIT CONDITIONS RELATED TO THREATENED & ENDANGERED SPECIES:

1. BLANDING'S TURTLES (STATE ENDANGERED), SPOTTED TURTLES (STATE THREATENED) AND WOOD TURTLES (SPECIES OF SPECIAL CONCERN) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHALL BE MADE AWARE OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED FLYERS THAT HELP TO IDENTIFY THESE SPECIES, ALONG WITH NHFG CONTACT INFORMATION. RARE SPECIES INFORMATION (E.G. IDENTIFICATION, OBSERVATION AND REPORTING OF OBSERVATIONS, WHEN TO CONTACT NHFG IMMEDIATELY AND NHFG CONTACT INFORMATION) SHALL BE COMMUNICATED DURING MORNING TAILGATE MEETINGS PRIOR TO WORK COMMENCEMENT DURING THE CONSTRUCTION PHASE OF THE PROJECT. SEE PLAN SHEET 16.
2. TURTLES ARE ATTRACTED TO DISTURBED GROUND DURING NESTING SEASON (MAY 15TH – JUNE 30TH). ALL TURTLE SPECIES NESTS ARE PROTECTED BY NH LAWS. IF PROJECT WORK IS CONDUCTED DURING NESTING SEASON, MORNING WILDLIFE SURVEYS (E.G. SWEEPS) IN AND AROUND DISTURBED SOILS SHALL BE CONDUCTED FOR TURTLES AND NEST SITES. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS (603–479–1129) AND JOSH MEGYESY (978–578–0802) AT NHFG IMMEDIATELY (PHONE OR TEXT) FOR FURTHER CONSULTATION AND PRIOR TO CONDUCTING WORK IN THAT AREA FOR THE DAY. SUSPECTED NEST AREAS SHALL BE AVOIDED AND MARKED OFF SO THAT NO DISTURBANCE OCCURS TO THE AREA. A PROTECTIVE BUFFER OF THIS AREA SHALL BE ESTABLISHED OF NO LESS THAN 10 FEET AROUND THE SUSPECTED AREA UNTIL NHFG ADVISES ON HOW TO PROCEED.
3. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES;
4. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603–271–2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION;
5. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE;
6. 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 NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.

   SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE AND IF IN DIRECT HARM FROM PROJECT ACTIVITIES. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.
7. THE NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.



EXISTING FEATURES WITHIN 200 FEET
SCALE: 1" = 200'

LEGEND

	WETLAND
	EDGE OF PAVEMENT
	ZONE BOUNDARY
	PROPERTY LINE
	PROPERTY LINE

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NEW HAMPSHIRE 03051

PREPARED BY:
KEACH-NORDSTROM ASSOCIATES, INC.
10 COMMERCE PARK NORTH, SUITE 3
BEDFORD, NEW HAMPSHIRE 03110
(603) 627-2881

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
RI-ME-NH-VT-MA 811 CALL TOLL FREE

PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

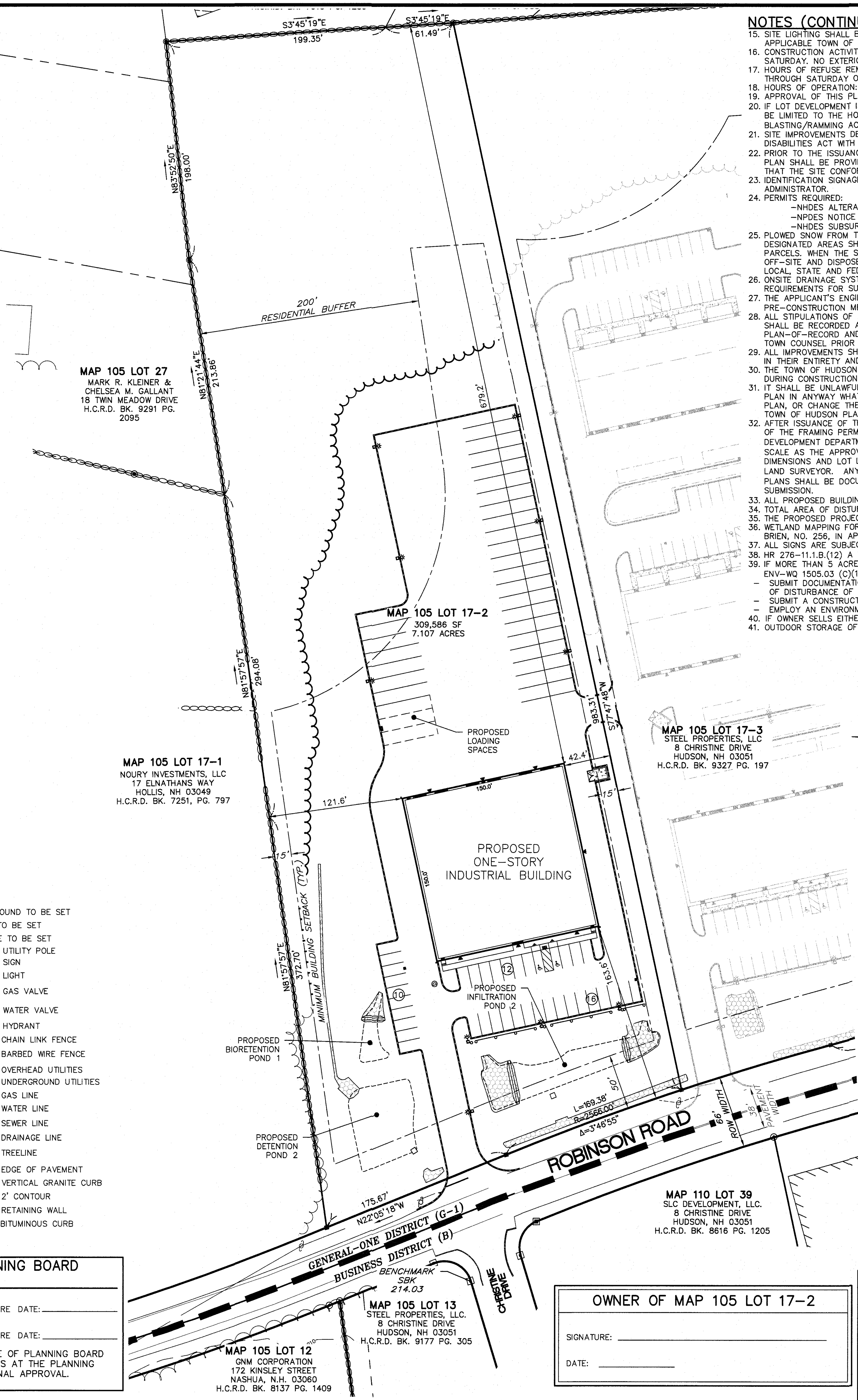
9/12/22

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

APRIL 6, 2021
AMENDED MAY 25, 2022
LAST REVISED: SEPTEMBER 12, 2022
PROJECT NO. 20-0921-2

SHEET TITLE	SHEET No.
MASTER SITE PLAN	1
EXISTING CONDITIONS PLAN	2
REMOVALS PLAN	3
NON-RESIDENTIAL SITE LAYOUT PLAN	4
GRADING, DRAINAGE & UTILITY PLAN	5
EROSION CONTROL PLAN	6
LANDSCAPE PLAN	7
LIGHTING PLAN	8
SIGHT DISTANCE PLAN & PROFILE	9
CONSTRUCTION DETAILS	10-16
OFFSITE WATER MAIN EXTENSION PLAN & PROFILE	1

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

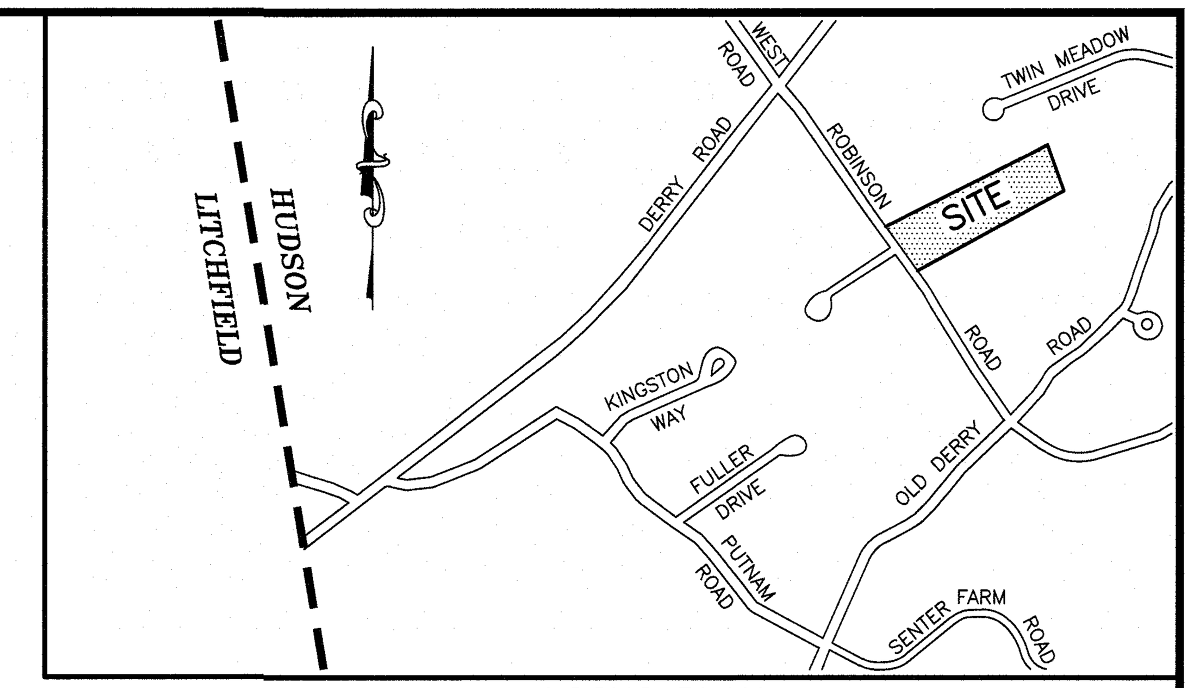


NOTES (CONTINUED):

15. SITE LIGHTING SHALL BE AS SHOWN ON THE PLAN, DIRECTED ONTO SITE, AND SHALL CONFORM WITH ALL APPLICABLE TOWN OF HUDSON ZONING REGULATIONS.
16. CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO THE HOURS OF 7:00 AM & 7:00 PM, MONDAY THROUGH SATURDAY. NO EXTERIOR CONSTRUCTION ACTIVITIES SHALL OCCUR ON SUNDAY.
17. HOURS OF REFUSE REMOVAL SHALL BE EXCLUSIVE TO THE HOURS OF 7:00 AM AND 7:00 PM, MONDAY THROUGH SATURDAY ONLY.
18. HOURS OF OPERATION: 6:00 AM TO 6:00 PM, MONDAY THROUGH SATURDAY.
19. APPROVAL OF THIS PLAN SHALL BE SUBJECT TO FINAL ENGINEERING REVIEW.
20. IF LOT DEVELOPMENT INVOLVES BLASTING AND/OR RAMMING OF BEDROCK MATERIALS, SAID ACTIVITIES SHALL BE LIMITED TO THE HOURS BETWEEN 7:00AM AND 5:00PM MONDAY THROUGH FRIDAY ONLY. SAID BLASTING/RAMMING ACTIVITIES SHALL BE PROHIBITED ON WEEKENDS.
21. SITE IMPROVEMENTS DEPICTED ON THE PLAN SHALL CONFORM WITH TITLE III OF THE AMERICANS WITH DISABILITIES ACT WITH REGARD TO DIMENSION AND GRADE.
22. PRIOR TO THE ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY, AN L.L.S. CERTIFIED "AS-BUILT" SITE PLAN SHALL BE PROVIDED TO THE TOWN OF HUDSON COMMUNITY DEVELOPMENT DEPARTMENT CONFIRMING THAT THE SITE CONFORMS WITH THE PLANNING BOARD APPROVED SITE PLAN.
23. IDENTIFICATION SIGNAGE SHALL NOT BE ERECTED UNTIL APPROVED BY THE BUILDING INSPECTOR AND ZONING ADMINISTRATOR.
24. PERMITS REQUIRED:

PERMITS REQUIRED	STATUS
-NHDES ALTERATION OF TERRAIN	PENDING AMENDMENT (ORIGINAL APPROVAL: AOT-2021)
-NPDES NOTICE OF INTENT	CERTIFIED ON 03/03/2022 (NPDES ID: NHR1001DJ)
-NHDES SUBSURFACE DISPOSAL	PENDING

25. PLOWED SNOW FROM THE FACILITIES, DRIVEWAY, PARKING LOTS AND SIDEWALK SHALL BE STORED IN THE DESIGNATED AREAS SHOWN IN THIS PLAN SET. NO SNOW MAY BE PLOWED OR STORED ON THE ABUTTING PARCELS. WHEN THE SNOW STORAGE AREAS ARE AT CAPACITY, SUBSEQUENT SNOW SHALL BE HAULED OFF-SITE AND DISPOSED OF IN AN ENVIRONMENTALLY SOUND FASHION AND IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
26. ONSITE DRAINAGE SYSTEM SHALL BE CONSTRUCTED AND MAINTAINED IN COMPLIANCE WITH NHDES REQUIREMENTS FOR SUCH SYSTEMS.
27. THE APPLICANT'S ENGINEER AND/OR CONTRACTOR SHALL CONTACT THE TOWN OF HUDSON TO SCHEDULE A PRE-CONSTRUCTION MEETING, WHICH WILL BE HELD WITH STAFF PRIOR TO STARTING CONSTRUCTION.
28. ALL STIPULATIONS OF APPROVAL SHALL BE INCORPORATED INTO THE DEVELOPMENT AGREEMENT, WHICH SHALL BE RECORDED AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS, TOGETHER WITH THE SITE PLAN-OF-RECORD AND ALL AGREED UPON EASEMENT DEEDS, WHICH SHALL BE FAVORABLY REVIEWED BY TOWN COUNSEL PRIOR TO PLANNING BOARD ENDORSEMENT OF PLAN.
29. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN-OF-RECORD, INCLUDING NOTES 1-41, SHALL BE COMPLETED IN THEIR ENTIRETY AND AT THE EXPENSE OF THE APPLICANT OR HIS ASSIGNS.
30. THE TOWN OF HUDSON SHALL RESERVE THE RIGHT TO REQUIRE ADDITIONAL EROSION CONTROL MEASURES DURING CONSTRUCTION.
31. IT SHALL BE UNLAWFUL TO MODIFY, CHANGE, OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN IN ANYWAY WHATSOEVER, OR CONVERT OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN, OR CHANGE THE ABOVE USE INDICATED ON THE PLAN WITHOUT RECEIVING APPROVAL FROM THE TOWN OF HUDSON PLANNING BOARD.
32. AFTER ISSUANCE OF THE FOUNDATION PERMIT FOR THE PROPOSED BUILDING, AND PRIOR TO THE ISSUANCE OF THE FRAMING PERMIT THEREOF, THE APPLICANT SHALL SUBMIT TO THE HUDSON COMMUNITY DEVELOPMENT DEPARTMENT A FOUNDATION "AS-BUILT" PLAN ON A TRANSPARENCY AND TO THE SAME SCALE AS THE APPROVED SITE PLAN. THE FOUNDATION "AS-BUILT" PLAN SHALL INCLUDE ALL STRUCTURAL DIMENSIONS AND LOT LINE SETBACK MEASUREMENTS TO THE FOUNDATION AND BE STAMPED BY A LICENSED LAND SURVEYOR. ANY DISCREPANCY BETWEEN THE APPROVED SITE PLAN AND FOUNDATION "AS-BUILT" PLANS SHALL BE DOCUMENTED BY THE APPLICANT AND BE PART OF THE FOUNDATION "AS-BUILT" SUBMISSION.
33. ALL PROPOSED BUILDING HEIGHTS ARE UNDER 38'.
34. TOTAL AREA OF DISTURBANCE = 191,320 SF.
35. THE PROPOSED PROJECT HAS BEEN DESIGNED TO MEET 2018 MS4 REQUIREMENTS.
36. WETLAND MAPPING FOR THIS SITE AND SURROUNDING SITES WAS DONE BY WETLAND SCIENTIST JOSHUA BRIEN, NO. 256, IN APRIL OF 2020, REFER TO REFERENCE PLAN NUMBER ONE FOR MORE INFORMATION.
37. ALL SIGNS ARE SUBJECT TO APPROVAL BY THE HUDSON PLANNING BOARD PRIOR TO INSTALLATION.
38. HR 276-11.1.B.(12) A WAIVER IS REQUESTED TO ALLOW PAVEMENT WITHIN THE 200' RESIDENTIAL BUFFER.
39. IF MORE THAN 5 ACRES OF OPEN AREA ARE DISTURBED AT ONE TIME THE FOLLOWING SHALL BE MET PER ENV-WQ 1505.03 (C)(1-3):
    - SUBMIT DOCUMENTATION THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLE LIMIT THE CONSTRUCTION SCHEDULE.
    - SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST.
    - EMPLOY AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.
40. IF OWNER SELLS EITHER LOT 17-2 OR 17-3, AN EASEMENT FOR CROSS ACCESS WILL BE NECESSARY.
41. OUTDOOR STORAGE OF MATERIALS MAY OCCUR FROM TIME TO TIME ON THE EAST END OF THE BUILDING.



LOCUS PLAN

SCALE: 1" = 1,000'

REFERENCE PLANS:

1. "SUBDIVISION PLAN, NOURY INVESTMENT, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. (14 SHEETS). H.C.R.D. PLAN NUMBER: 40605

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED 22,500 SF INDUSTRIAL BUILDING AND ASSOCIATED PARKING ON ROBINSON ROAD ON MAP 105 LOT 17-2 IN THE TOWN OF HUDSON, NEW HAMPSHIRE, AND NO OTHER PURPOSE.
2. MAP 105 LOT 17-2 INDICATES TOWN OF HUDSON TAX ASSESSOR'S MAP AND LOT NUMBER.
3. OWNER OF RECORD: STEEL PROPERTIES, LLC.
   8 CHRISTINE DRIVE
   HUDSON, NH 03051
   H.C.R.D. BK. 9327 PG. 197
4. AREA OF SUBJECT PARCEL = 309,586 SF, OR 7.107 ACRES
5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD SURVEY PERFORMED BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST 2015.
6. HORIZONTAL DATUM IS NAD83. VERTICAL DATUM IS NGVD29 FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS.
7. THE SUBJECT PARCEL IS LOCATED WITHIN THE GENERAL-ONE (G-1) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS FOR LOTS SERVICED WITHOUT MUNICIPAL SEWER AND WATER:

	REQUIRED	PROPOSED
MINIMUM LOT AREA	87,120 SF	309,586 SF
MINIMUM LOT FRONTAGE	200 FT	345.05 (ROBINSON),
MINIMUM BUILDING SETBACKS:		
FRONT	50 FT	163.6 FT
SIDE	15 FT	42.4 FT
REAR	15 FT	679.2 FT

8. PARCEL WILL BE SERVICED BY INDIVIDUAL SEPTIC AND MUNICIPAL WATER.
9. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
10. THE SUBJECT PREMISES IS NOT LOCATED WITHIN A DESIGNATED FLOOD ZONE AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 33011C0508D, PANEL 508 OF 701, AND MAP NUMBER 33011C0509D, PANEL 509 OF 701, EFFECTIVE DATE SEPTEMBER 25, 2009. THE SUBJECT PARCEL IS LOCATED IN ZONES 'A' & 'X'.
11. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
12. OPEN SPACE: REQUIRED = 40%, PROPOSED = 62%
13. PARKING CALCULATIONS:
    REQUIRED:
    22,200 SF INDUSTRIAL BUILDING = 1 SPACE/600 SF = 37 SPACES
    300 SF OFFICE = 1 SPACE/300 SF = 1 SPACE
    TOTAL REQUIRED = 38 PARKING SPACES
    PROPOSED:
    TOTAL PROPOSED = 38 PARKING SPACES (INCLUDING 2 ACCESSIBLE PARKING SPACES)
14. LOADING:
    REQUIRED:
    1 SPACE/FIRST 5,000 SF + 1 SPACE/10,000 SF x 17,500 SF = 1 + 2 = 3 SPACES
    PROVIDED = 3 SPACES

DIG SAFE
RI-ME-NH-VT-MA 811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

LEGEND

	ABUTTER LINE	GB-TBS	GRANITE BOUND TO BE SET
	PROPERTY LINE	IPIN-TBS	IRON PIN TO BE SET
	WETLAND	DH-TBS	DRILL HOLE TO BE SET
	EDGE OF PAVEMENT		PROPOSED UTILITY POLE
	10' CONTOUR		PROPOSED SIGN
	2' CONTOUR		PROPOSED LIGHT
	BUILDING SETBACK	GV	PROPOSED GAS VALVE
	GREEN SPACE BUFFER	WV	PROPOSED WATER VALVE
	EASEMENT		PROPOSED HYDRANT
	ZONE LINE		PROPOSED CHAIN LINK FENCE
IPIN	IRON PIN		PROPOSED BARBED WIRE FENCE
SB	STONE BOUND	OHU	PROPOSED OVERHEAD UTILITIES
	UTILITY POLE	UGU	PROPOSED UNDERGROUND UTILITIES
GV	GAS VALVE	G G	PROPOSED GAS LINE
WV	WATER VALVE	W W	PROPOSED WATER LINE
	HYDRANT	S S	PROPOSED SEWER LINE
	WATER SHUT OFF		PROPOSED DRAINAGE LINE
	SEWER MANHOLE		PROPOSED TREELINE
	TREELINE		PROPOSED EDGE OF PAVEMENT
			PROPOSED VERTICAL GRANITE CURB
			PROPOSED 2' CONTOUR
			PROPOSED RETAINING WALL
			PROPOSED BITUMINOUS CURB

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

OWNER OF MAP 105 LOT 17-2

SIGNATURE: ____________

DATE: ____________

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE ON THE GROUND BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST OF 2015. SAID SURVEY HAS AN ERROR OF CLOSURE BETTER THAN ONE PART IN TEN THOUSAND (1:10,000).

____________ LICENSED LAND SURVEYOR ____________ DATE

MASTER SITE PLAN

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE - PAUL CHISHOLM No. 15075 LICENSED - PROFESSIONAL ENGINEER
7/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 60'
PROJECT NO: 20-0921-2	**SHEET** 1 **OF** 16

LEGEND

GB-F	GRANITE BOUND FOUND
IPIN-F	IRON PIN FOUND
DH-F	DRILL HOLE FOUND
	UTILITY POLE
	ABUTTER LINE
	PROPERTY LINE
	WETLAND
	GUARDRAIL
OHU	OVERHEAD UTILITIES
	DRAINAGE LINE
	TREELINE
	EDGE OF PAVEMENT
	STONEWALL
	BUILDING SETBACK
	ZONE LINE
	10' CONTOUR
	2' CONTOUR

SCS SOILS LEGEND

CpB	CHATFIELD–HOLLIS–CANTON, 3 TO 8% SLOPES
CpC	CHATFIELD–HOLLIS–CANTON, 8 TO 15% SLOPES
HsB	HINCKLEY LOAMY SAND, 3 TO 8% SLOPES

SOURCE: USDA–SCS WEB SOIL SURVEY HILLSBOROUGH COUNTY

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN DRAWN FROM FIELD SURVEY INFORMATION AND OR PLOTTED FROM EXISTING DRAWINGS. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, KEACH–NORDSTROM ASSOCIATES, INC. DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. KEACH–NORDSTROM ASSOCIATES, INC. HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL	B
42B	CANTON SANDY LOAM	3–8%	WELL	B
42C	CANTON SANDY LOAM	8–15%	WELL	B
42D	CANTON SANDY LOAM	15–25%	WELL	B
62A	CHARLTON FINE SANDY LOAM	0–3%	WELL	B
62B	CHARLTON FINE SANDY LOAM	3–8%	WELL	B
62C	CHARLTON FINE SANDY LOAM	8–15%	WELL	B
62D	CHARLTON FINE SANDY LOAM	15–25%	WELL	B
178B	CHARLTON–CHATFIELD COMPLEX 60–40	3–8%	WELL	B
178C	CHARLTON–CHATFIELD COMPLEX 60–40	8–15%	WELL	B
178D	CHARLTON–CHATFIELD COMPLEX 60–40	15–25%	WELL	B
178E	CHARLTON–CHATFIELD COMPLEX 60–40	25–50%	WELL	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL	B
444C	NEWFIELDS FINE SANDY LOAM	8–15%	MODERATELY WELL	B
444D	NEWFIELDS FINE SANDY LOAM	15–25%	MODERATELY WELL	B

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

THIS SITE–SPECIFIC SOIL MAP WAS COMPLETED BY CYNTHIA M. BALCIUS, NEW HAMPSHIRE CERTIFIED SOIL SCIENTIST #82 OF STONEY RIDGE ENVIRONMENTAL LLC. FIELD WORK WAS COMPLETED ON THE FOLLOWING DATE(S):

1. Field Indicators of Hydric Soils in the United States, Version 8.1. 2017. L.M. Vasilas, G.W. Hurt, and J.F. Berkkowitz (eds.). United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the National Technical Committee for Hydric Soils.
2. Field Indicators for Identifying Hydric Soils In New England. Version 4. June 2018. New England Hydric Soils Technical Committee.
3. The Site–Specific Soil Mapping Standards For New Hampshire And Vermont. SSSNNE Special Publication No.3, Version 5. December 2017.
4. Soil Survey Manual. United States Department of Agriculture Handbook No.18. Issued March 2017. US Government Printing Office. Soil Survey Staff. Washington D.C. 20402
5. New Hampshire State–Wide Numerical Soils Legend. USDA Natural Resources Conservation Service, Durham, New Hampshire. Issue #10, January 2011.
6. Field Book for Describing and Sampling Soils. Version 3.0 National Soil Survey Center. Natural Resources Conservation Service. U. S. Department of Agriculture, Lincoln, Nebraska. September 2012.
7. Keys to Soil Taxonomy. Twelfth Edition. 2014. United States Department of Agriculture. Natural Resources Conservation Service.

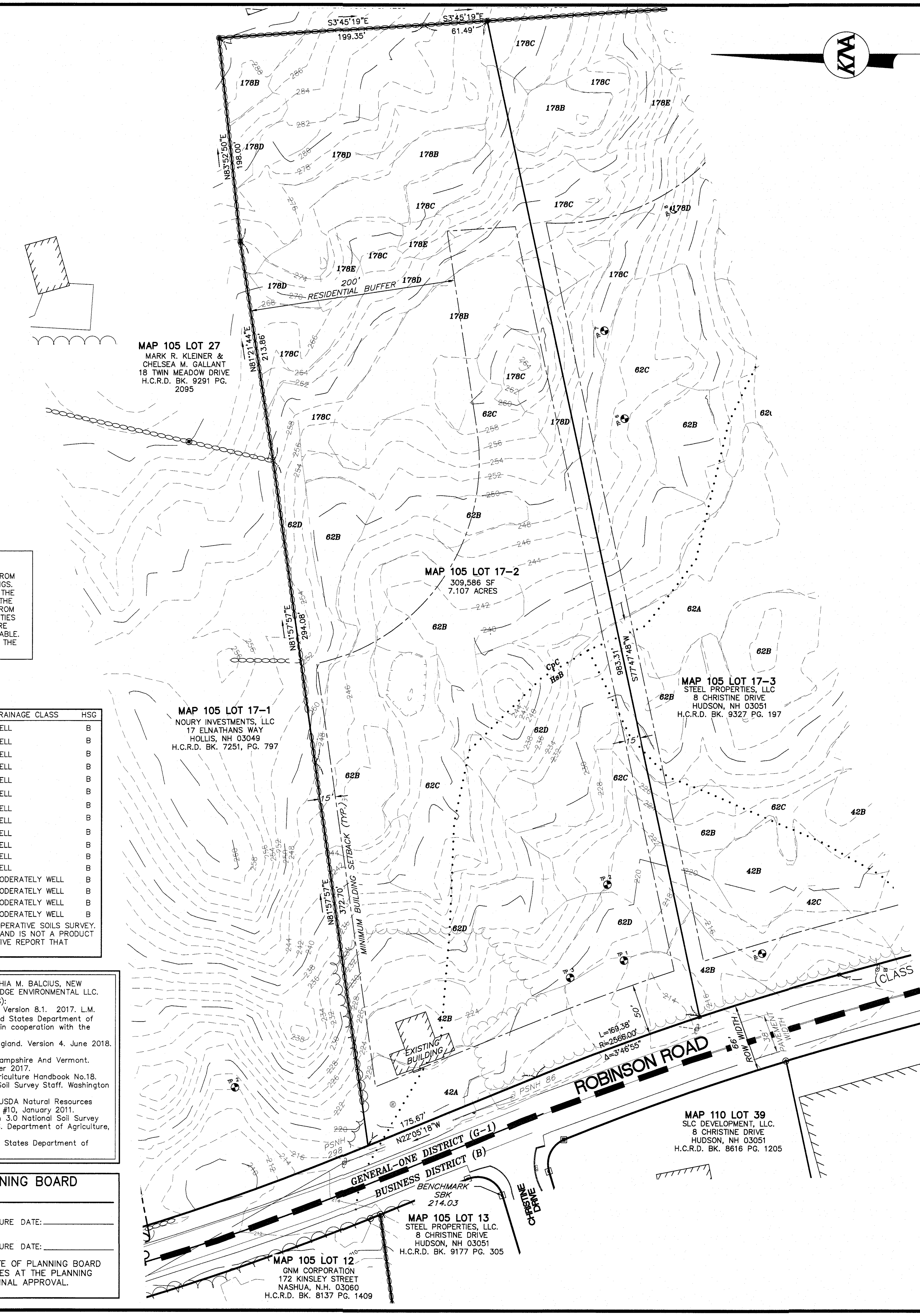
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL

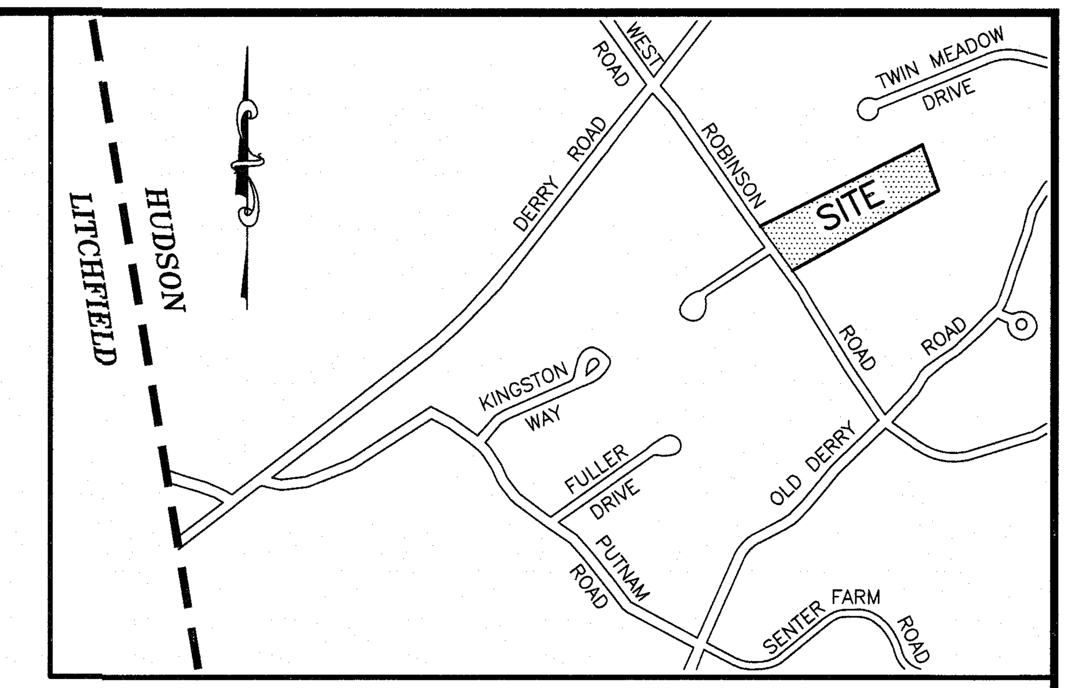
APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: ____________

____________ SIGNATURE DATE: ____________

____________ SIGNATURE DATE: ____________

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.





LOCUS PLAN

SCALE: 1" = 1,000'

REFERENCE PLANS:

1. "SUBDIVISION PLAN, NOURY DEVELOPMENT, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. (14 SHEETS).

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS PRESENT ON MAP 105 LOT 17–2, ON ROBINSON ROAD IN THE TOWN OF HUDSON, NEW HAMPSHIRE AND NO OTHER PURPOSE.
2. TOTAL SITE AREA = 309,586 SF, OR 7.107 ACRES
3. MAP 105 LOT 17–2 INDICATES TOWN OF HUDSON TAX ASSESSOR'S MAP AND LOT NUMBER.
4. OWNER OF RECORD: STEEL PROPERTIES, LLC
   8 CHRISTINE DRIVE
   HUDSON, N.H. 03051
   H.C.R.D. BK. 9327 PG. 197
5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD SURVEY PERFORMED BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST 2015.
6. HORIZONTAL DATUM IS NAD83. VERTICAL DATUM IS NGVD29 FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA–OPUS.
7. THE SUBJECT PARCEL IS LOCATED WITHIN THE GENERAL–ONE (G–1) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS FOR LOTS SERVICED WITHOUT MUNICIPAL SEWER AND WATER:

	REQUIRED
MINIMUM LOT AREA:	87,120 SF
MINIMUM LOT FRONTAGE:	200 FT
MINIMUM BUILDING SETBACKS:	
FRONT	50 FT
SIDE	15 FT
REAR	15 FT
OPEN SPACE:	40%

8. PARCEL WILL BE SERVICED BY INDIVIDUAL SEPTIC AND WELL.
9. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
10. THE SUBJECT PREMISES IS NOT LOCATED WITHIN A DESIGNATED FLOOD ZONE AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 33011C0508D, PANEL 508 OF 701. THE SUBJECT PARCEL IS LOCATED IN ZONE 'X'.
11. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
12. THE CONTRACTOR SHALL ONLY USE BENCHMARKS AS PROVIDED BY THE SURVEYOR.
13. THERE ARE NO WETLANDS ON LOT 17–2. REFERENCE "SUBDIVISION PLAN, NOURY DEVELOPMENT, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. (SHEET 1).

DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

EXISTING CONDITIONS PLAN

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA *KEACH–NORDSTROM ASSOCIATES, INC.*
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

CERTIFICATION:
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE ON THE GROUND BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST OF 2015. SAID SURVEY HAS AN ERROR OF CLOSURE BETTER THAN ONE PART IN TEN THOUSAND (1:10,000).

9/16/22

LICENSED LAND SURVEYOR DATE

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 903 ANTHONY M. BASSO

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 60'
PROJECT NO: 20–0921–2	**SHEET** 2 **OF** 16

LEGEND

GB-F	GRANITE BOUND FOUND	—G—G—	GAS LINE
IPIN-F	IRON PIN FOUND	—W—W—	WATER LINE
DH-F	DRILL HOLE FOUND	—S—S—	SEWER LINE
IPP-F	IRON PIPE FOUND	========	DRAINAGE LINE
RRS-F	RAILROAD SPIKE FOUND		TREELINE
	UTILITY POLE		EDGE OF PAVEMENT
	SIGN		VERTICAL GRANITE CURB
	LIGHT		SLOPED GRANITE CURB
	GAS VALVE		BITUMINOUS CURB
	WATER VALVE		EDGE OF GRAVEL
	HYDRANT		10' CONTOUR
	WATER SHUT OFF		2' CONTOUR
	WELL		STONEWALL
	SEWER MANHOLE		SCS SOIL LINE
	DRAINAGE MANHOLE		BUILDING SETBACK
	CATCH BASIN		EASEMENT
	FLARED END SECTION		
	ABUTTER LINE		LIMIT OF CLEARING
	PROPERTY LINE		
	WETLAND		SAWCUT LINE
	STOCKADE FENCE		PAVEMENT AND BUILDING TO BE REMOVED
—OHU—	OVERHEAD UTILITIES		

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
RI-ME-NH-VT-MA 811 CALL TOLL FREE

REMOVALS NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED REMOVALS ASSOCIATED WITH THE DEVELOPMENT OF MAP 105; LOT 17-2.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
3. ALL STUMPS, ROOTS, BRANCHES, BRUSH, WOODS AND OTHER PERISHABLE MATERIAL RESULTING FROM THE CLEARING AND GRUBBING OPERATIONS SHALL BE DISPOSED OF BY AN APPROVED METHOD.
4. STRIP, STOCKPILE AND REUSE ONSITE GRAVEL AND FILL AREAS WHERE APPROPRIATE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE DESIGN ENGINEER.
5. REMOVE ALL ASPHALT, CURBING, CONCRETE, VEGETATION, TREES, SHRUBS, AND STRUCTURES WITHIN THE HATCHED AREA, UNLESS OTHERWISE NOTED.
6. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
7. EXISTING WELL TO BE DECOMMISSIONED BY A LICENSED CONTRACTOR.

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

REMOVALS PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: 1" = 40'
PROJECT NO: 20-0921-2	SHEET 3 OF 16

LEGEND

- GB-F GRANITE BOUND FOUND
- IPIN-F IRON PIN FOUND
- DH-F DRILL HOLE FOUND
- UTILITY POLE
- PROPOSED SIGN
- PROPOSED LIGHT
- PROPOSED HYDRANT
- PROPOSED WELL
- PROPOSED SEWER MANHOLE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED OUTLET STRUCTURE
- ABUTTER LINE
- PROPERTY LINE
- OHU OVERHEAD UTILITIES
- TREELINE
- EDGE OF PAVEMENT
- STONEWALL
- BUILDING SETBACK
- ZONE LINE
- PROPOSED TREELINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BITUMINOUS CURB
- PROPOSED SWALE
- EASEMENT
- SITE LIGHTING
- BUILDING WALL PACK LIGHTING

DIG SAFE
RI-ME-NH-VT-MA 811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

NON-RESIDENTIAL SITE LAYOUT PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
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STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15079 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

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5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: 1" = 40'
PROJECT NO: 20-0921-2	SHEET 4 OF 16

CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING, DRAINAGE, AND UTILITY SYSTEMS FOR THIS SITE.
2. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF HUDSON, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK PERFORMED IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016 ARE HEREBY INCORPORATED BY REFERENCE.
3. CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR ROAD CONSTRUCTION, PUBLIC WORKS DEPARTMENT, HUDSON, NEW HAMPSHIRE. ALL DRAINAGE PIPES SHOWN SHALL BE HDPE. CATCH BASINS SHALL BE TYPE B, AND HAVE 3' SUMPS UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
5. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. THE WATER, SANITARY SEWER, AND ELECTRICAL UTILITIES SHOWN HERE SHALL BE COORDINATED WITH THE FINAL BUILDING PLANS PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
7. PLANS TO COMPLY WITH THE TOWN OF HUDSON'S MS4 PERMIT.
8. PLAN ELEMENTS RELATED TO FIRE SUPPRESSION SHALL BE SUBJECT TO REVIEW BY THE FIRE DEPARTMENT AT THE TIME OF BUILDING APPLICATION.

LEGEND

- GB-F — GRANITE BOUND FOUND
- IPIN-F — IRON PIN FOUND
- DH-F — DRILL HOLE FOUND
- UTILITY POLE
- PROPOSED SIGN
- PROPOSED LIGHT
- PROPOSED HYDRANT
- PROPOSED WELL
- PROPOSED SEWER MANHOLE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED OUTLET STRUCTURE
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- GUARDRAIL
- OHU — OVERHEAD UTILITIES
- DRAINAGE LINE
- TREELINE
- EDGE OF PAVEMENT
- STONEWALL
- BUILDING SETBACK
- ZONE LINE
- 10' CONTOUR
- 2' CONTOUR
- PROPOSED GUARDRAIL
- OHU — PROPOSED OVERHEAD UTILITIES
- UGU — PROPOSED UNDERGROUND UTILITIES
- G — PROPOSED GAS LINE
- W — PROPOSED WATER LINE
- S — PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- PROPOSED TREELINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED VERTICAL GRANITE CURB
- PROPOSED SLOPED GRANITE CURB
- PROPOSED BITUMINOUS CURB
- PROPOSED 2' CONTOUR
- PROPOSED SWALE
- PROPOSED RETAINING WALL
- PROPOSED STONEWALL
- EASEMENT
- SITE LIGHTING
- BUILDING WALL PACK LIGHTING
- TP 1 — TEST PIT

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0-3%	WELL DRAINED	B
42B	CANTON SANDY LOAM	3-8%	WELL DRAINED	B
42C	CANTON SANDY LOAM	8-15%	WELL DRAINED	B
42D	CANTON SANDY LOAM	15-25%	WELL DRAINED	B
62A	CHARLTON FINE SANDY LOAM	0-3%	WELL DRAINED	B
62B	CHARLTON FINE SANDY LOAM	3-8%	WELL DRAINED	B
62C	CHARLTON FINE SANDY LOAM	8-15%	WELL DRAINED	B
62D	CHARLTON FINE SANDY LOAM	15-25%	WELL DRAINED	B
178B	CHARLTON-CHATFIELD COMPLEX (60-40)	3-8%	WELL DRAINED	B
178C	CHARLTON-CHATFIELD COMPLEX (60-40)	8-15%	WELL DRAINED	B
178D	CHARLTON-CHATFIELD COMPLEX (60-40)	15-25%	WELL DRAINED	B
178E	CHARLTON-CHATFIELD COMPLEX (60-40)	25-50%	WELL DRAINED	B
444A	NEWFIELDS FINE SANDY LOAM	0-3%	MODERATELY WELL DRAINED	B
444B	NEWFIELDS FINE SANDY LOAM	3-8%	MODERATELY WELL DRAINED	B
444C	NEWFIELDS FINE SANDY LOAM	8-15%	MODERATELY WELL DRAINED	B
444D	NEWFIELDS FINE SANDY LOAM	15-25%	MODERATELY WELL DRAINED	B

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

SCS SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS
CpB	CHATFIELD-HOLLIS-CANTON	3-8%
CpC	CHATFIELD-HOLLIS-CANTON	8-15%
HsB	HINCKLEY LOAMY SAND	3-8%
PiA	PIPESTONE LOAMY SAND	0-3%

SOURCE: WEB SOIL SURVEY, WWW.WEBSOILSURVEY.SC.EGOV.USDA.GOV

DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

LOAM & SEED ALL DISTURBED AREAS (TYP.)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

GRADING, DRAINAGE & UTILITY PLAN

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
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STATE OF NEW HAMPSHIRE — PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER

REVISIONS

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6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 40'
PROJECT NO: 20-0921-2	**SHEET** 5 **OF** 16

LOAM & SEED ALL DISTURBED AREAS (TYP.)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES AS WELL AS THE PERMANENT EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUEL TITLED "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION," DATED DECEMBER 2010, AS AMENDED FROM TIME TO TIME.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
7. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON-EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
9. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
10. THE TOWN OF HUDSON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
11. INFILTRATION AREAS ARE TO BE PROTECTED FROM OVER-COMPACTION DURING CONSTRUCTION.
12. SLOPES OVER 2:1 TO BE DESIGNED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
17. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN $\frac{1}{8}$".
18. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DIG SAFE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

ME-NH-VT-MA 811 CALL TOLL FREE

EROSION & SEDIMENT CONTROL LEGEND

	PERMANENT OUTLET PROTECTION APRON (RIP RAP)
	INLET PROTECTION
	PERIMETER CONTROL
	ORANGE CONSTRUCTION FENCING
	TEMPORARY STONE CHECK DAM
	STABILIZED CONSTRUCTION EXIT
	STAGING AND STOCKPILE AREA
	EROSION CONTROL BLANKETS
	NON DISTURBANCE AREA

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

EROSION CONTROL PLAN

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
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STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15075 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

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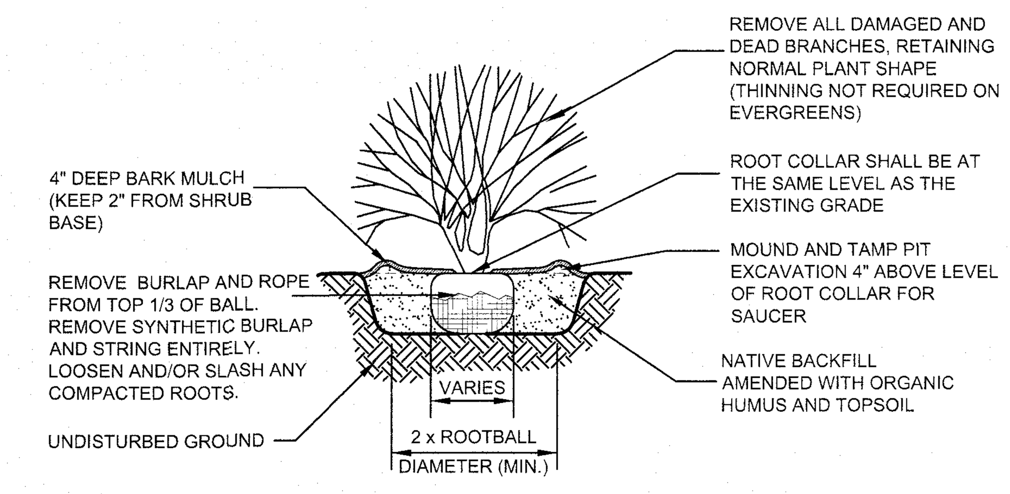
6	08/15/22	AoT COMMENTS	SCV

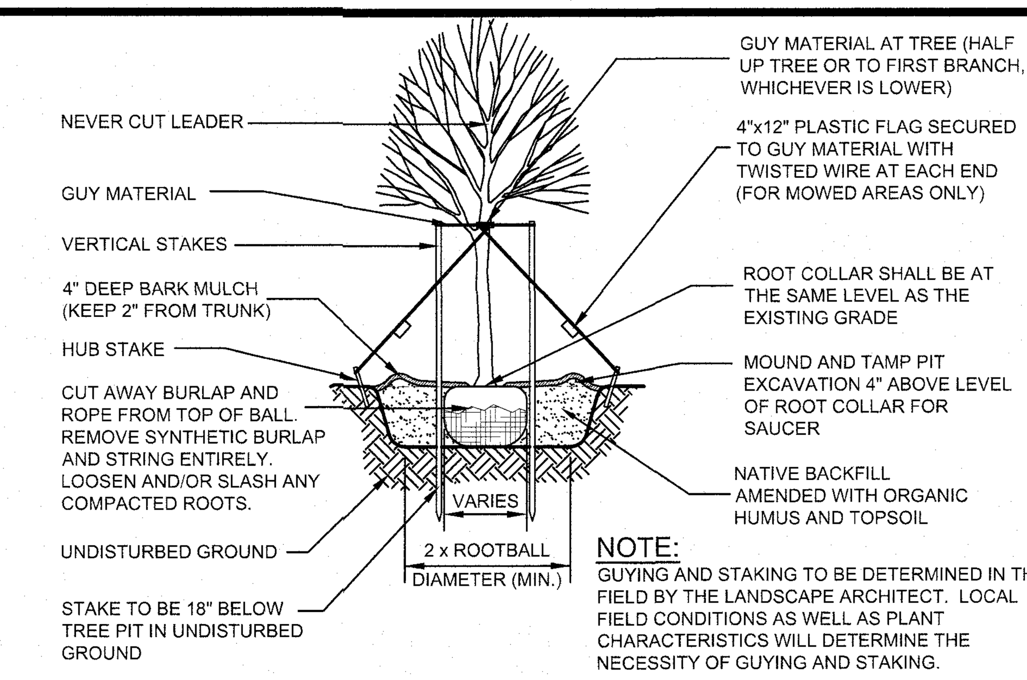
DATE: APRIL 6, 2021	SCALE: 1" = 40'
PROJECT NO: 20-0921-2	SHEET 6 OF 16



BALLED & BURLAP SHRUB PLANTING DETAIL

NOT TO SCALE

(JANUARY 2012)



NOTE:
GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE LANDSCAPE ARCHITECT. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

(JANUARY 2012)

LEGEND

GB-F	GRANITE BOUND FOUND
IPIN-F	IRON PIN FOUND
DH-F	DRILL HOLE FOUND
	UTILITY POLE
	PROPOSED SIGN
	PROPOSED LIGHT
	PROPOSED HYDRANT
	PROPOSED WELL
	PROPOSED SEWER MANHOLE
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	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS CURB
	PROPOSED SWALE
	EASEMENT

DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

LANDSCAPE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
2. ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE; WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
3. IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWED; ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% PEATMOSS AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
4. PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF PINE/HEMLOCK BARK MULCH OVER A 5oz. POLYPROPYLENE WEED CONTROL FABRIC.
5. PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.
6. PLANT TYPES SHOWN ARE SUBJECT TO AVAILABILITY. SUBSTITUTE MATERIALS CAN BE IMPLEMENTED WITH APPROVAL FROM KEACH NORDSTROM ASSOCIATES PRIOR TO CONSTRUCTION.

LANDSCAPE CALCULATIONS

REQUIRED PARKING LOT INTERIOR LANDSCAPE AREA

PROPOSED PARKING AREA PAVED:	29,393 SF
10% REQUIRED LANDSCAPE AREA:	2,939 SF
PROVIDED LANDSCAPE AREA:	6,822 SF

REQUIRED PARKING LOT SHADE TREES AND SHRUBS

PROPOSED PAVED AREA:	9,540 SF
SHADE TREES REQUIRED (9,540/1,600):	6 TREES REQUIRED
(OR 1 TREE/5 PROP. PARKING SPACES)	8 TREES REQUIRED
SHADE TREES PROVIDED:	8 TREES PROPOSED
SHRUBS REQUIRED (9,540/200):	48 SHRUBS, OR
(OR 1.6 x 38 PROP. PARKING SPACES)	61 SHRUBS PROPOSED
SHRUBS PROVIDED:	49 SHRUBS PROPOSED

PLANTING SCHEDULE

Botanical Name/ Common Name	Size	Label	Quantity	Mature Height
Trees				
Betula nigra 'Heritage' / Heritage River Birch	3-3.5" CAL.	BN	8	40-60'
Shrubs				
Cornus sericea 'Arctic Fire' / Arctic Fire Red-Osier Dogwood	#3	CS	23	5-6'
Ilex glabra 'Compacta' / Compact Inkberry	#3	IG	26	5-6'

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SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LANDSCAPE PLAN

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
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9/12/22

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3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: 1" = 40'
PROJECT NO: 20-0921-2	SHEET 7 OF 16

LIGHTING NOTES:

1. ALL LIGHTS/FIXTURES SHALL BE AS SPECIFIED BY CHARRON LIGHTING.
2. ALL PROPOSED LIGHTS/FIXTURES ARE TO BE FULL CUTOFF.
3. FIXTURES SHALL BE MOUNTED AS HEIGHTS AS SPECIFIED IN TABLE.
4. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE LIGHTING.
5. LIGHTING WILL BE ON AT ALL TIMES TO PROVIDE SECURITY AND SAFETY FOR THE FACILITY.

DIG SAFE
RI–ME–NH–VT–MA 811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

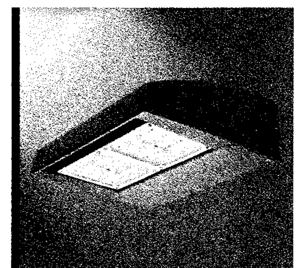
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ____________ ____________ SIGNATURE DATE: ____________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

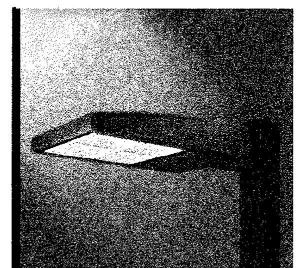
LUMINAIRE SCHEDULE

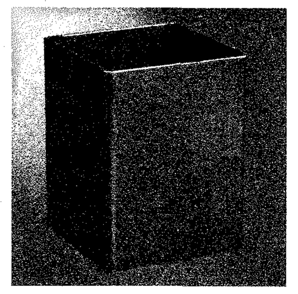
SYMBOL	QTY	LABEL	ARRANGEMENT	DESCRIPTION
	6	P4	SINGLE	GLEON–AF–02–LED–E1–SL4/ SSS4A20SFN1 (20' AFG)
	1	S3	SINGLE	GLEON–AF–01–LED–E1–SL3–HSS/ SSS4A20SFN1 (20' AFG)
	6	S4	SINGLE	GLEON–AF–01–LED–E1–SL4/ SSS4A20SFN1 (20' AFG)
	4	W3	SINGLE	GWC–AF–01–LED–E1–SL3–600/ WALL MTD 15' AFG
	3	W4	SINGLE	GWC–AF–01–LED–E1–SL4–600/ WALL MTD 15' AFG

STATAREA_1
FRONT PARKING LOT
ILLUMINANCE (FC)
AVERAGE = 1.68
MAXIMUM = 2.8
MINIMUM = 0.8
AVG/MIN RATIO = 2.10
MAX/MIN RATIO = 3.50

STATAREA_2
TRUCK YARD
ILLUMINANCE (FC)
AVERAGE = 1.21
MAXIMUM = 4.3
MINIMUM = 0.1
AVG/MIN RATIO = 12.10
MAX/MIN RATIO = 43.00


GWC GALLEON WALL


GLEON GALLEON LED


SSS SQUARE STRAIGHT STEEL

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

LEGEND

GB–F	GRANITE BOUND FOUND
IPIN–F	IRON PIN FOUND
DH–F	DRILL HOLE FOUND
	UTILITY POLE
	PROPOSED SIGN
	PROPOSED LIGHT
	PROPOSED HYDRANT
	PROPOSED WELL
	PROPOSED SEWER MANHOLE
	PROPOSED DRAINAGE MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED OUTLET STRUCTURE
	ABUTTER LINE
	PROPERTY LINE
OHU	OVERHEAD UTILITIES
	TREELINE
	EDGE OF PAVEMENT
	STONEWALL
	BUILDING SETBACK
	ZONE LINE
	PROPOSED TREELINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS CURB
	PROPOSED SWALE
	EASEMENT
	SITE LIGHTING
	BUILDING WALL PACK LIGHTING

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

IN ASSOCIATION WITH:

CHARRON
BRIGHTER.

P.O. BOX 4550
MANCHESTER, NH 03108
(603) 624-4827
FAX (603) 624-9764
SALES@CHARRONINC.COM

LIGHTING PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

STATE OF NEW HAMPSHIRE – PAUL CHISHOLM No. 15076 LICENSED – PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
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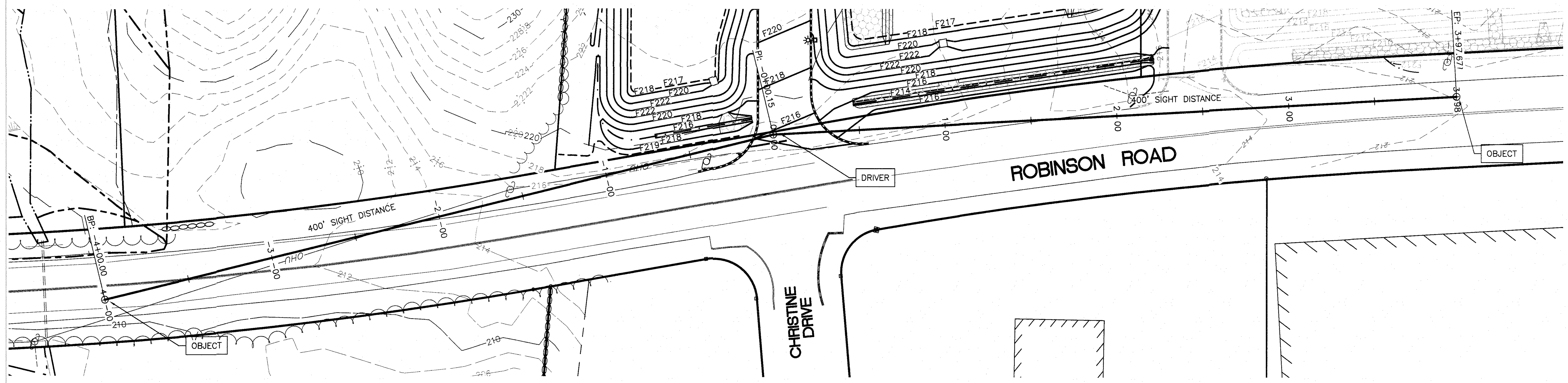
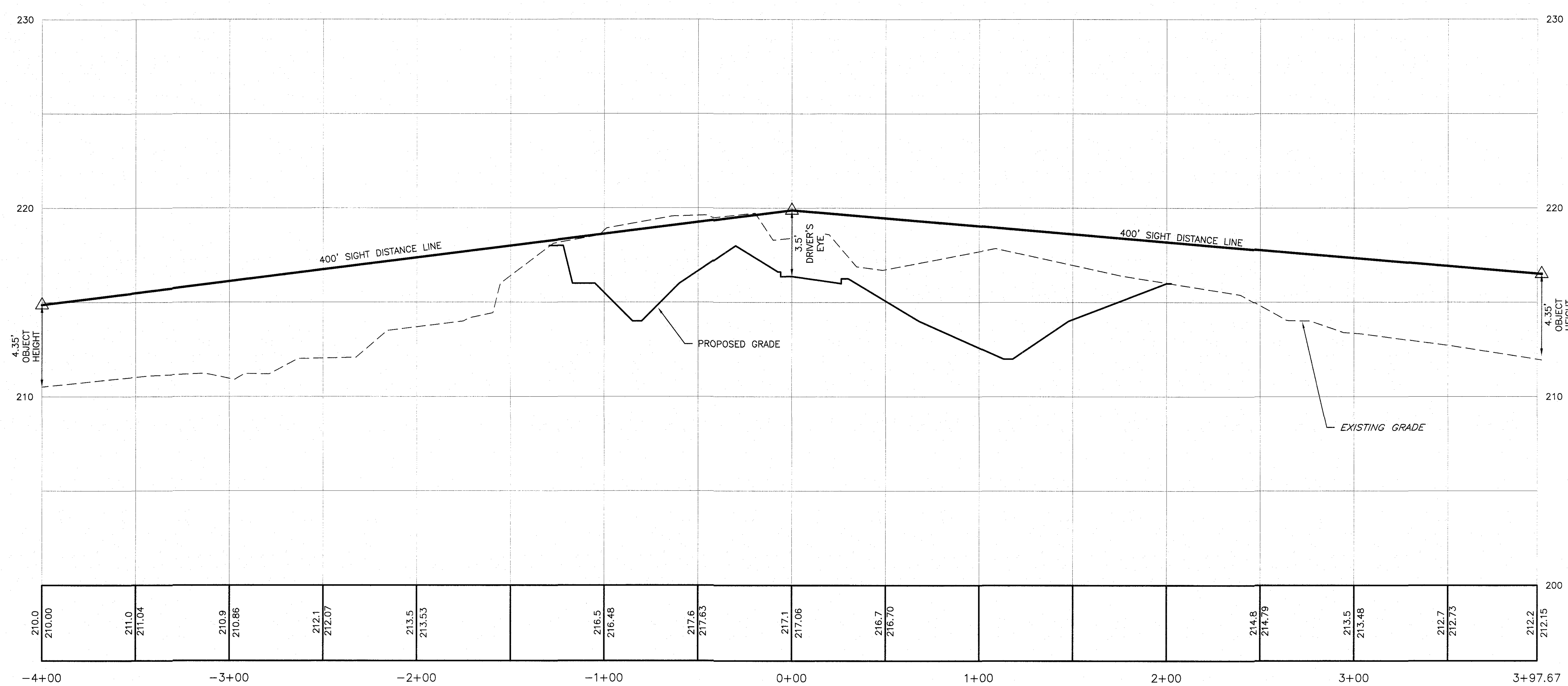
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 40'
PROJECT NO: 20–0921–2	**SHEET** 8 **OF** 16



SIGHT DISTANCE PLAN
SCALE: 1" = 40'

	UTILITY POLE
	ABUTTER LINE
	PROPERTY LINE
OHU	OVERHEAD UTILITIES
	TREELINE
	EDGE OF PAVEMENT
	VERTICAL GRANITE CURB
	BITUMINOUS CURB
	10' CONTOUR
	2' CONTOUR
	BUILDING SETBACK
	PROPOSED SIGN
	PROPOSED LIGHT
	PROPOSED DRAINAGE MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED TREELINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS CURB
	PROPOSED 2' CONTOUR
	PROPOSED SWALE
	SITE LIGHTING
	BUILDING WALL PACK LIGHTING



SIGHT DISTANCE PROFILE
SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811 CALL TOLL FREE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

SIGHT DISTANCE PLAN & PROFILE

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
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STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15078 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
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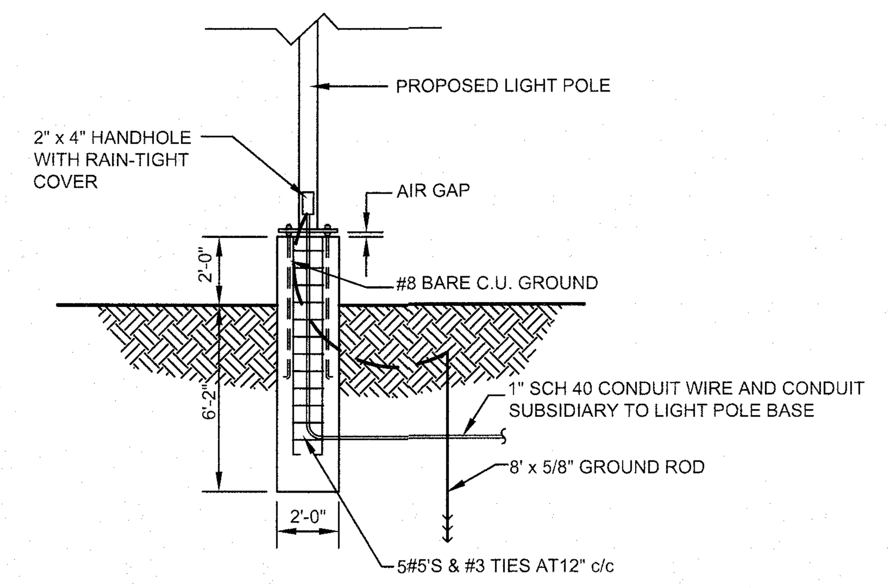
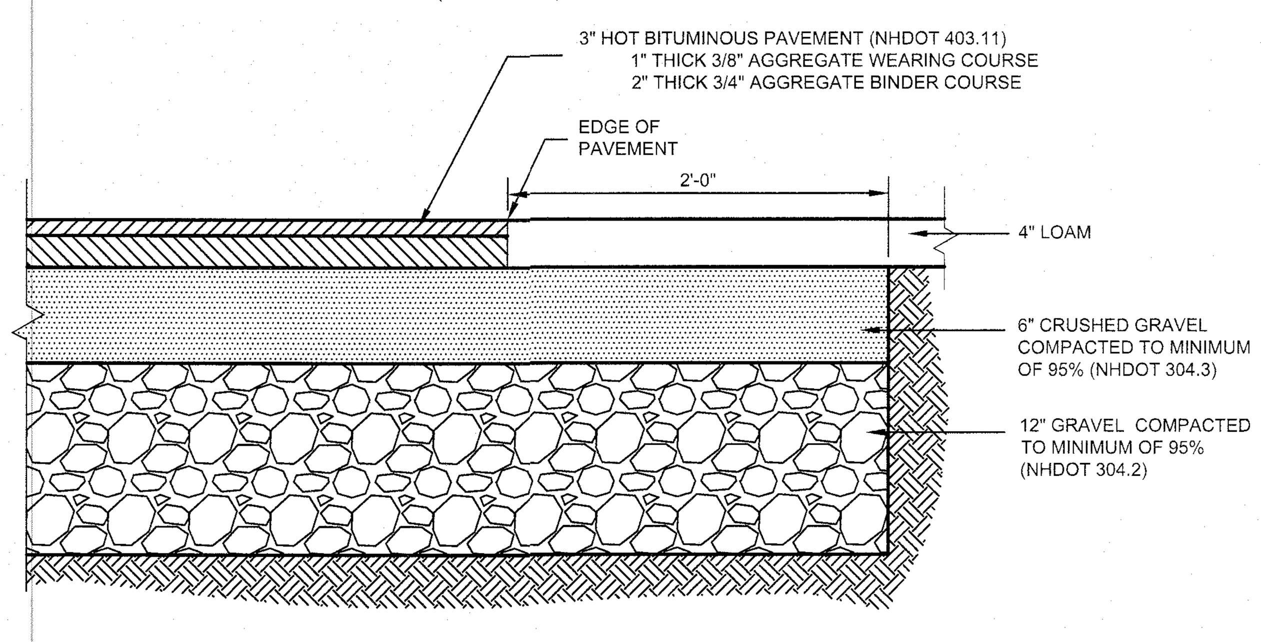
DATE: APRIL 6, 2021	SCALE: 1" = 40'
PROJECT NO: 20–0921–2	SHEET 9 OF 16



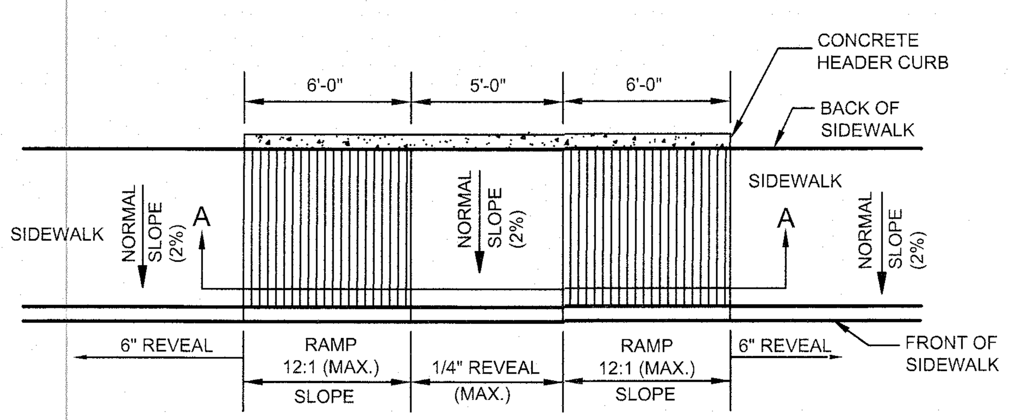
CONCRETE LIGHT POLE BASE DETAIL

NOT TO SCALE
(MARCH 2008)

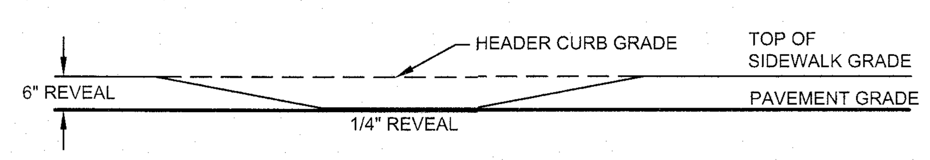


DRIVEWAY AND PARKING LOT SECTION

NOT TO SCALE
(MARCH 2008)



PLAN

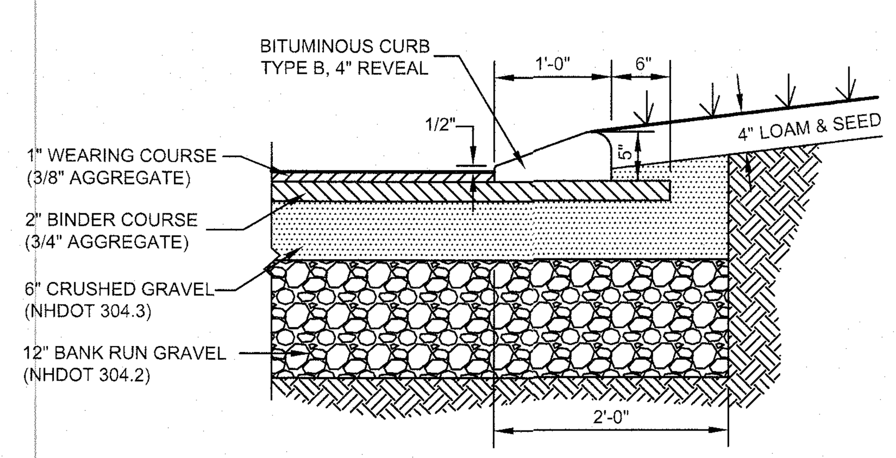


SECTION A-A

NOTES:
1. A BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP SHALL BE USED ON PORTLAND CEMENT CONCRETE RAMPS.
2. MAINTAIN THE NORMAL PAVEMENT PROFILE THROUGHOUT THE RAMP AREA.
3. MAINTAIN A MAXIMUM 1/4" OF CURB REVEAL AT THE RAMP, SEE SECTION A-A

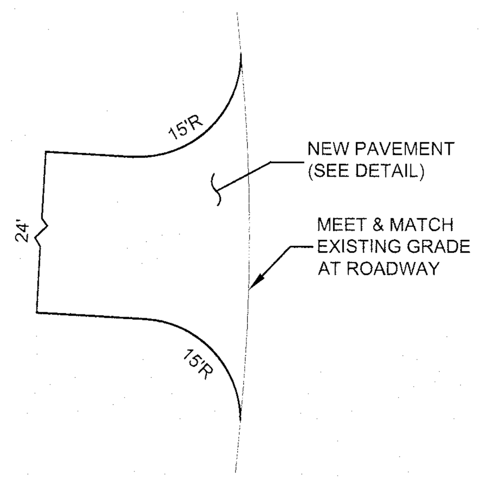
SIDEWALK RAMP

NOT TO SCALE
(JUNE 2012)



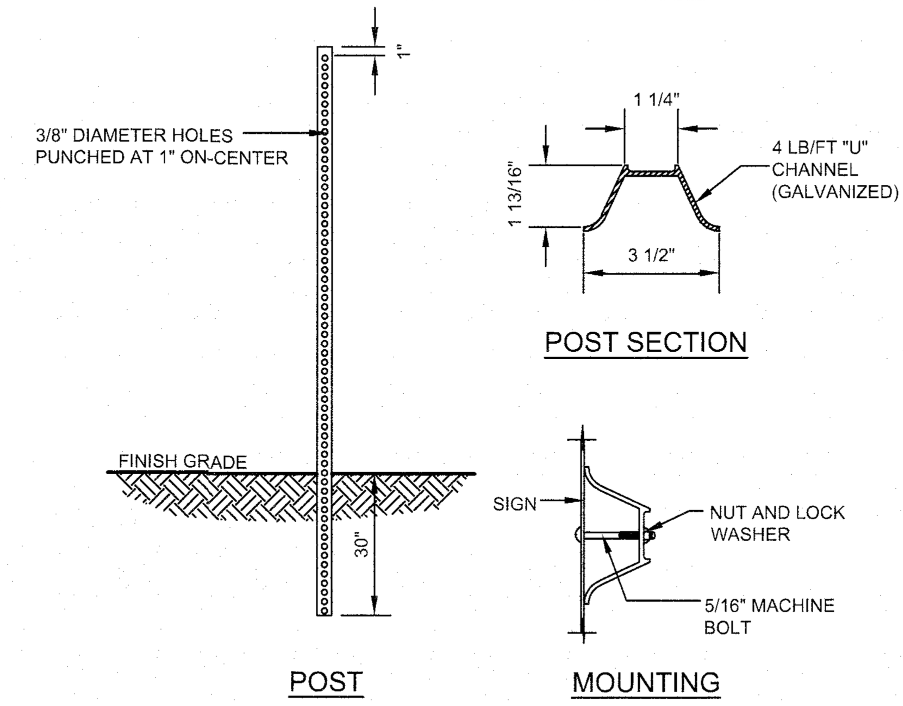
BITUMINOUS CURB TYPE B DETAIL

NOT TO SCALE
(MARCH 2008)



DRIVEWAY DETAIL

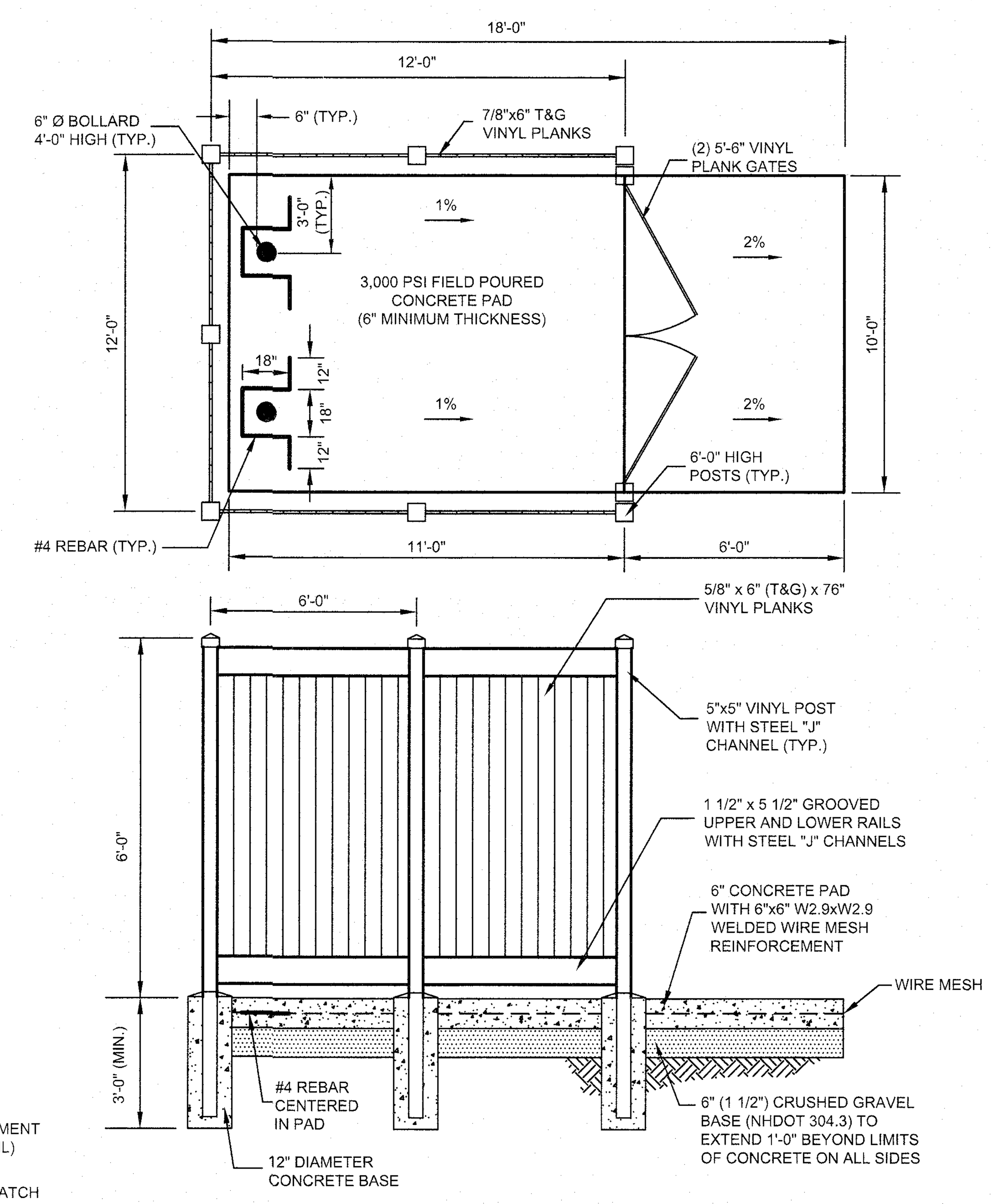
NOT TO SCALE



NOTE:
POST SHALL CONFORM TO NHDOT 615.2.5.3

STEEL SIGN POST DETAIL

NOT TO SCALE
(MARCH 2008)



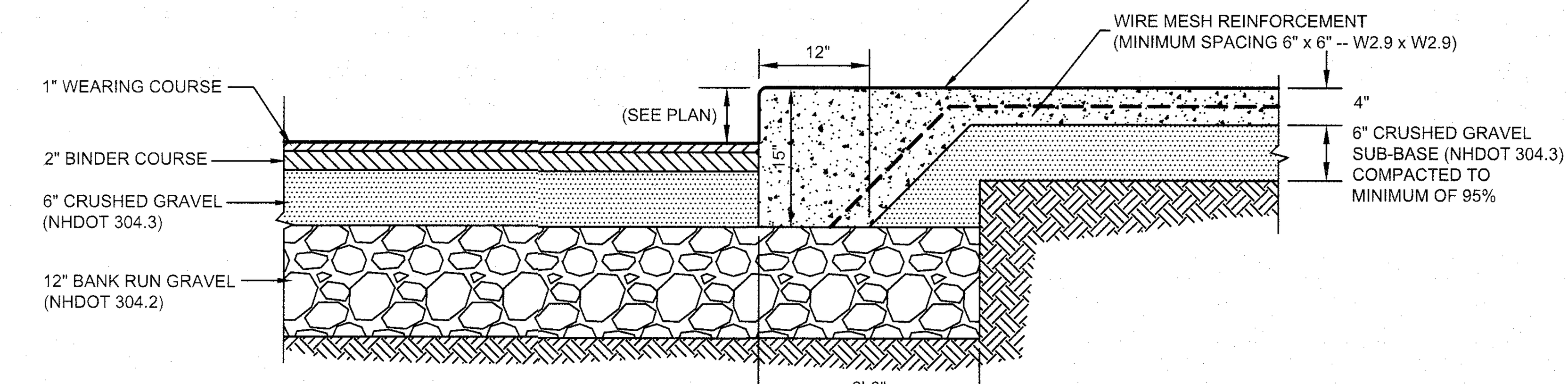
NOTE:
THIS DUMPSTER ENCLOSURE WILL ACCOMMODATE MOST 2, 4, 6 AND 8 CY DUMPSTERS.

VINYL TRASH ENCLOSURE DETAIL

NOT TO SCALE
(MARCH 2008)

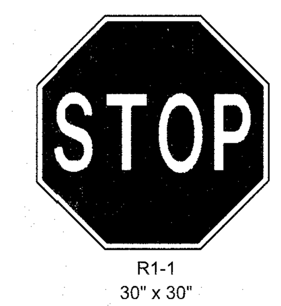
CURB TIP DOWN

NOT TO SCALE



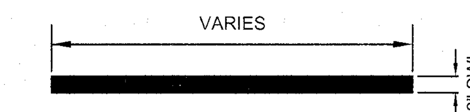
INTEGRAL CURB AND WALK DETAIL

NOT TO SCALE
(MARCH 2008)

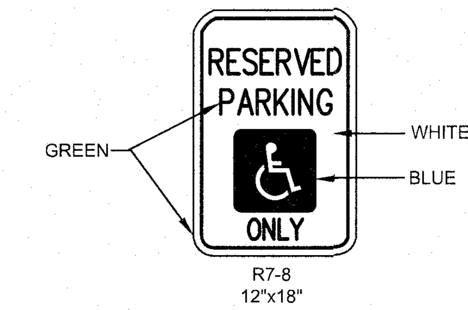


STOP SIGN DETAIL

NOT TO SCALE
(MARCH 2008)

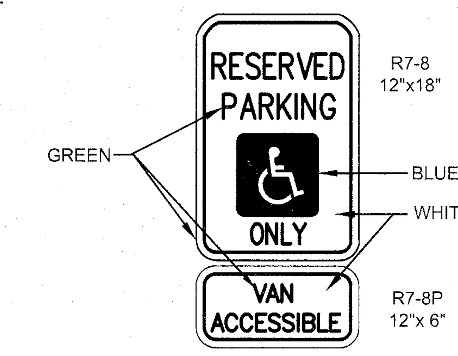


STOP BAR



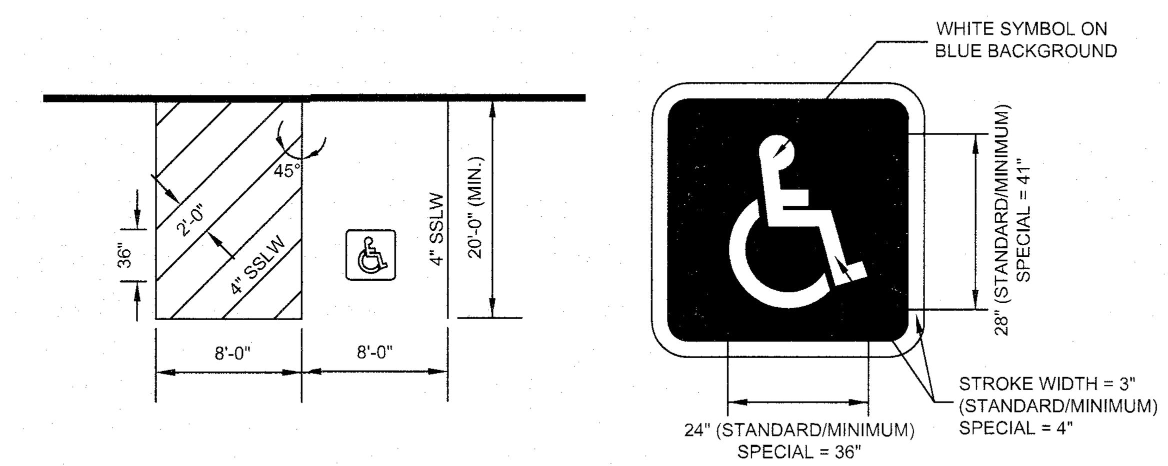
HANDICAP PARKING SIGN DETAIL

NOT TO SCALE
(MARCH 2008)



VAN ACCESSIBLE HANDICAP PARKING SIGN DETAIL

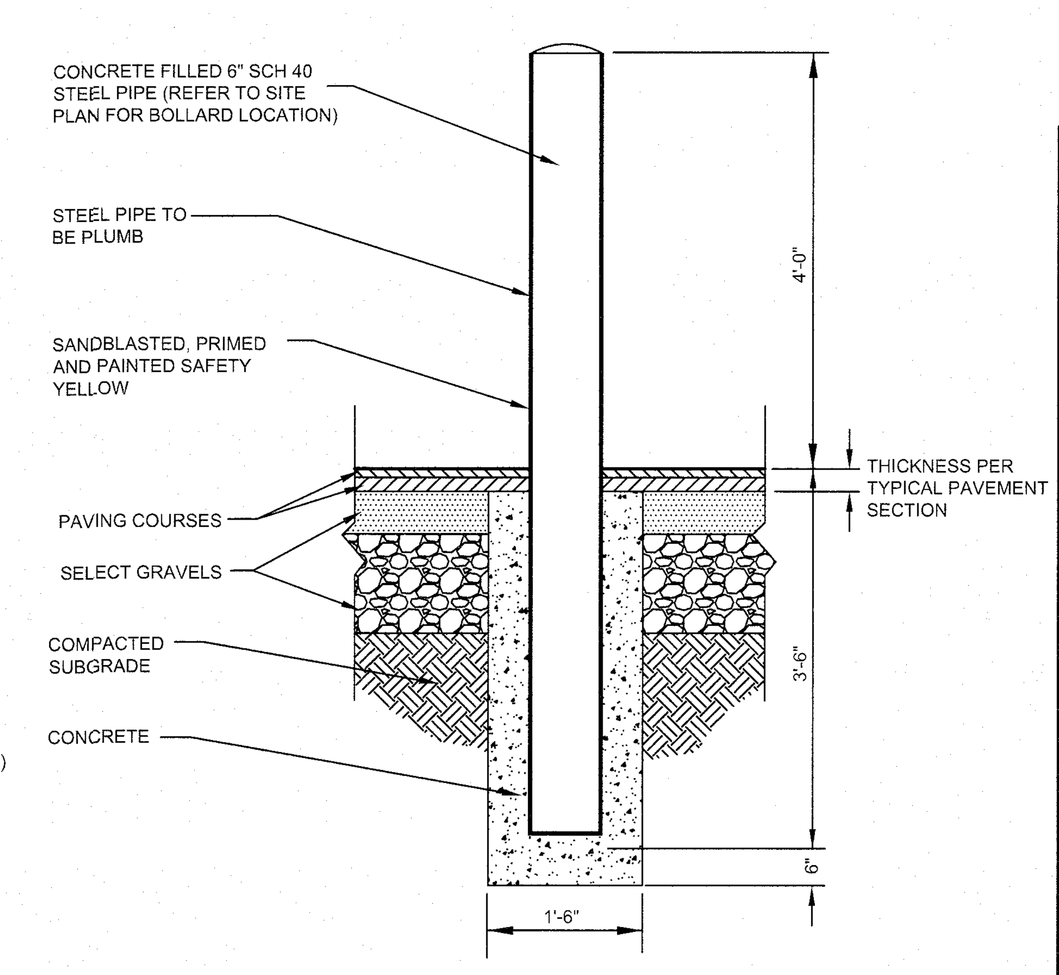
NOT TO SCALE
(NOVEMBER 2016)



HANDICAP STRIPING DETAIL

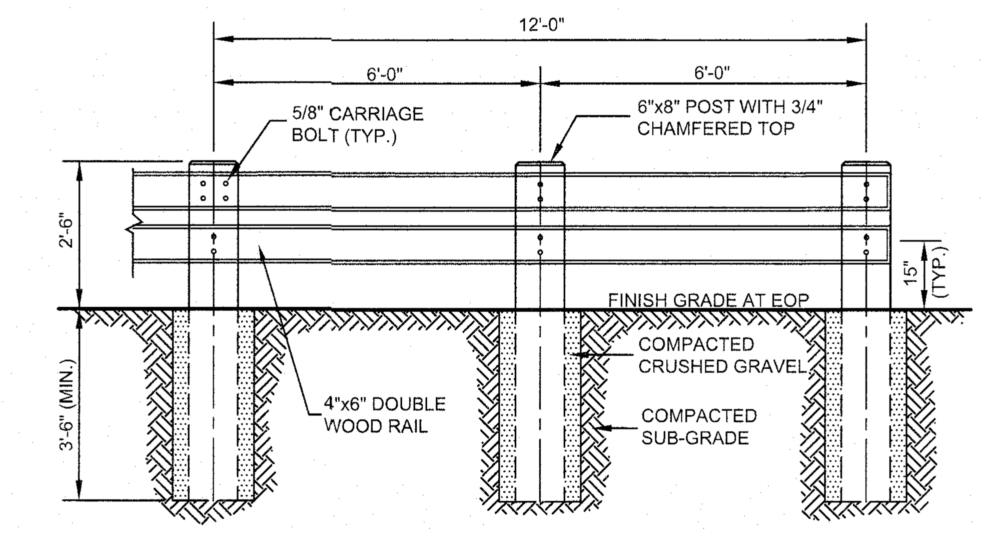
NOT TO SCALE
(MARCH 2012)

STRIPING NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
2. WIDTH OF LINES SHALL VARY NO MORE THAN = 1/4 INCH FROM THAT SPECIFIED.
3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.

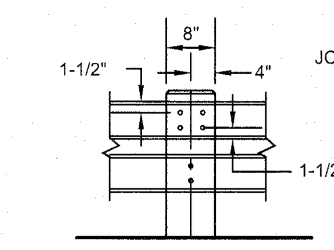


BOLLARD DETAIL

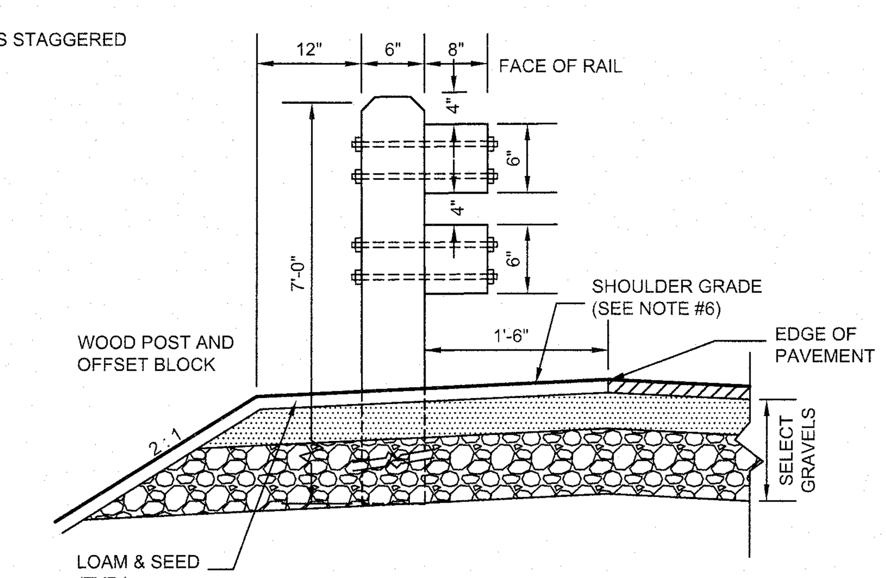
NOT TO SCALE
(MARCH 2008)



ELEVATION



BOLT DETAIL



SIDE VIEW

NOTES:
1. ALL TIMBERS SHALL BE PRESSURE TREATED.
2. PAY LIMIT = PER LINEAR FOOT INCLUDING END SECTION.
3. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED.

WOOD BEAM GUARDRAIL

NOT TO SCALE
(AUGUST 2011)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____ ____ SIGNATURE DATE: ____ ____ SIGNATURE DATE: ____ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
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KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15676 LICENSED PROFESSIONAL ENGINEER
7/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
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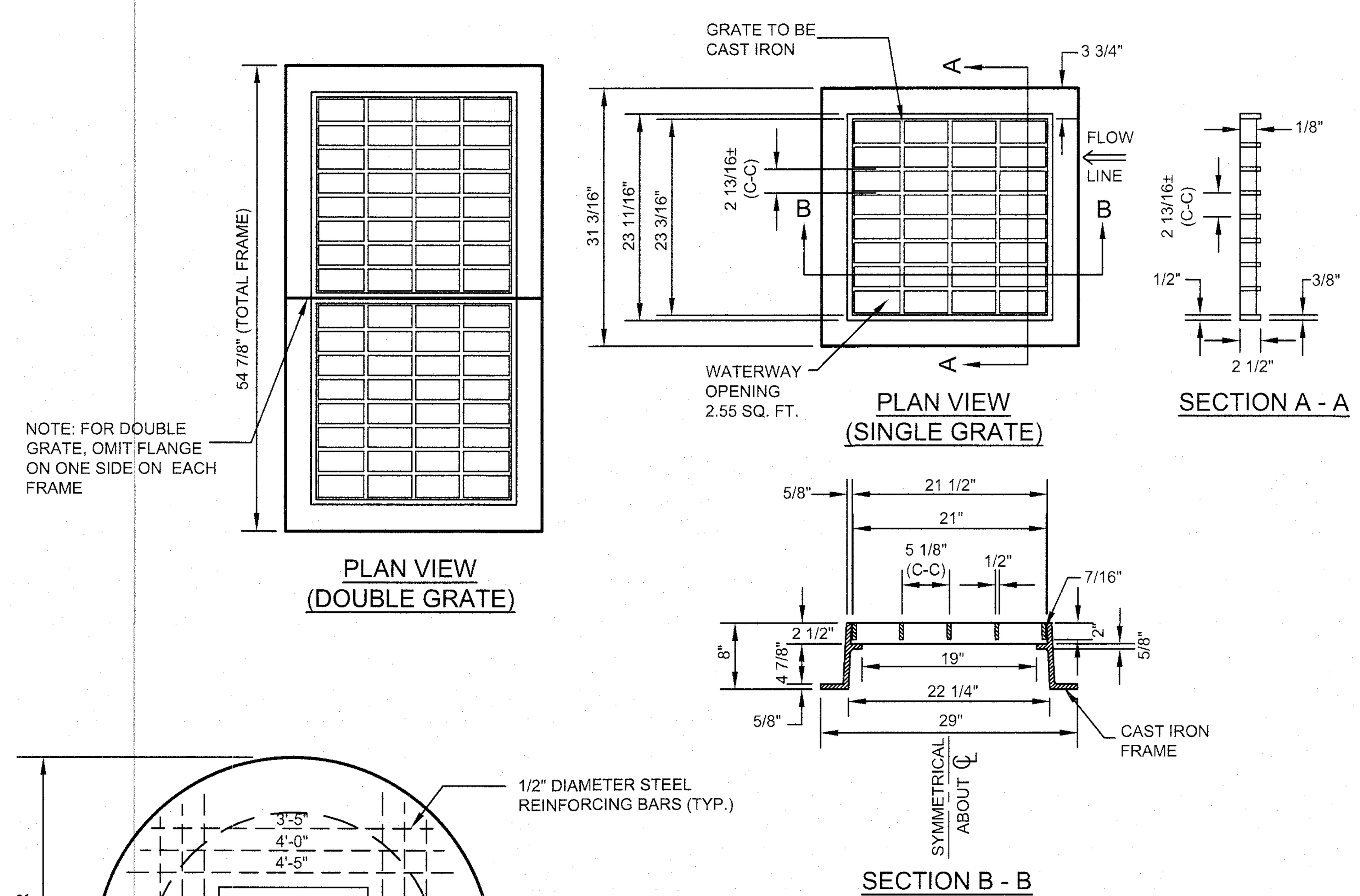
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

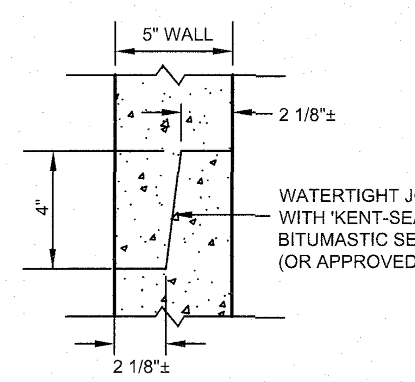
DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 10 OF 16



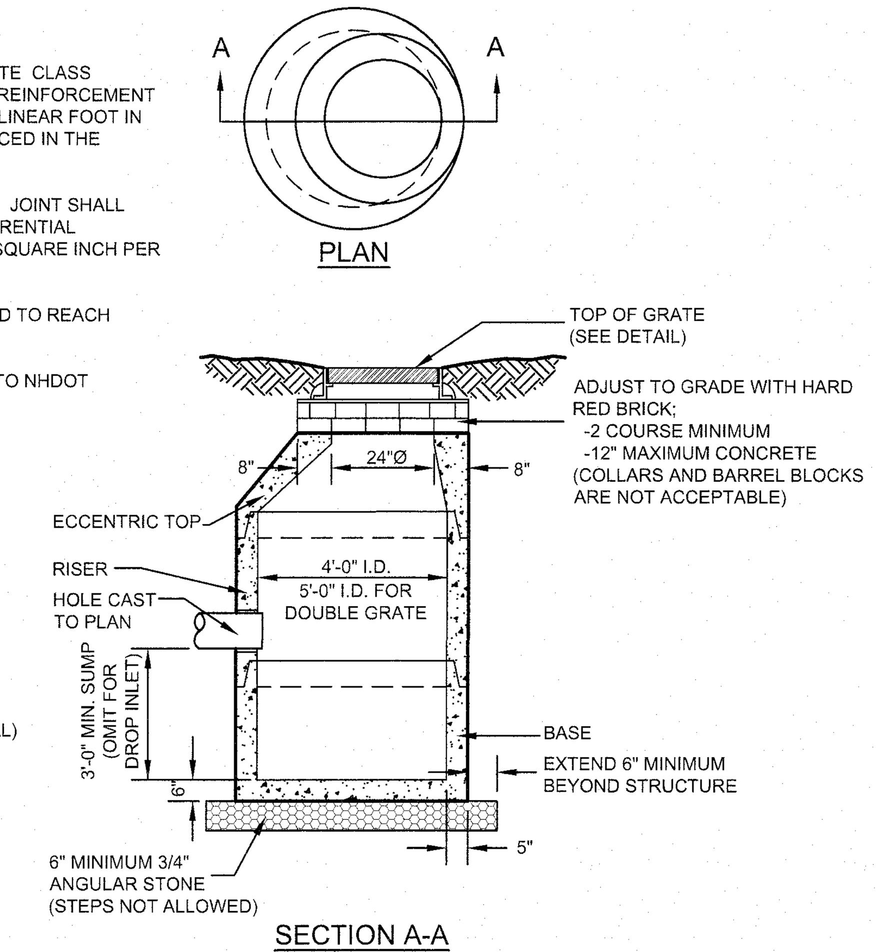
TYPE B FRAME & GRATE DETAIL
NOT TO SCALE
(MARCH 2008)

NOTES:

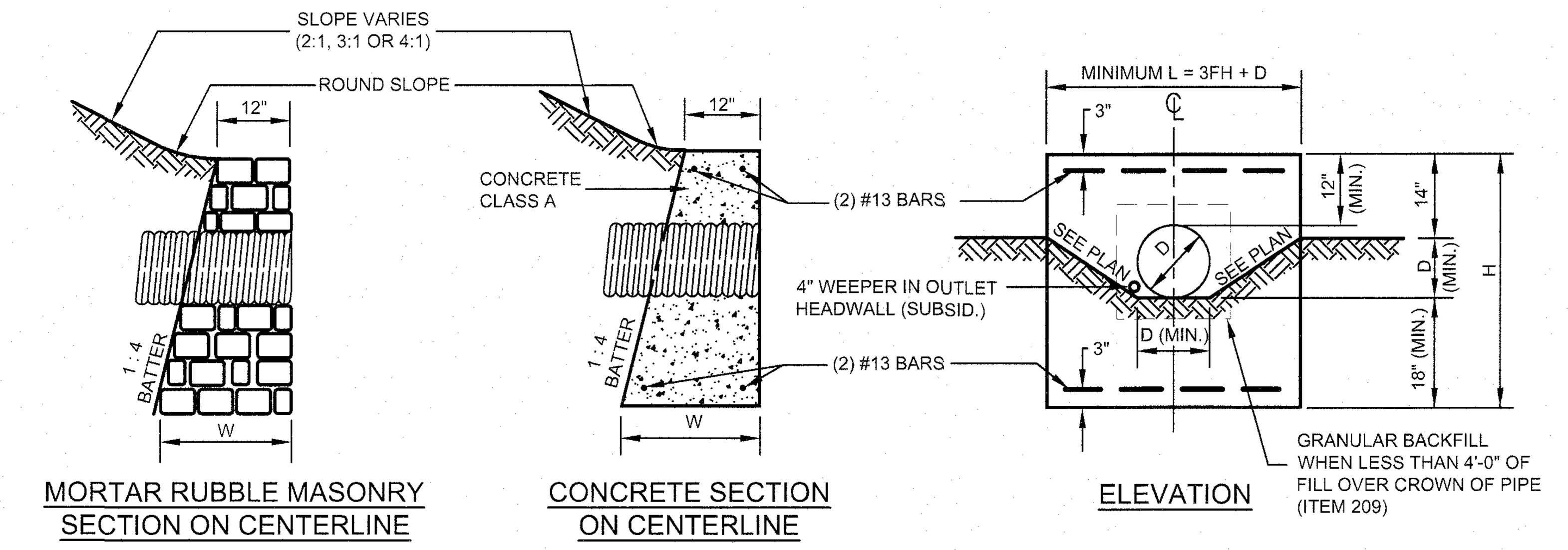
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCH PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
2. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCH PER LINEAR FOOT.
3. RISER OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
4. MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.



DETAIL OF TONGUE AND GROOVE JOINT



PRECAST REINFORCED CATCH BASIN
NOT TO SCALE
(MAY 2012)

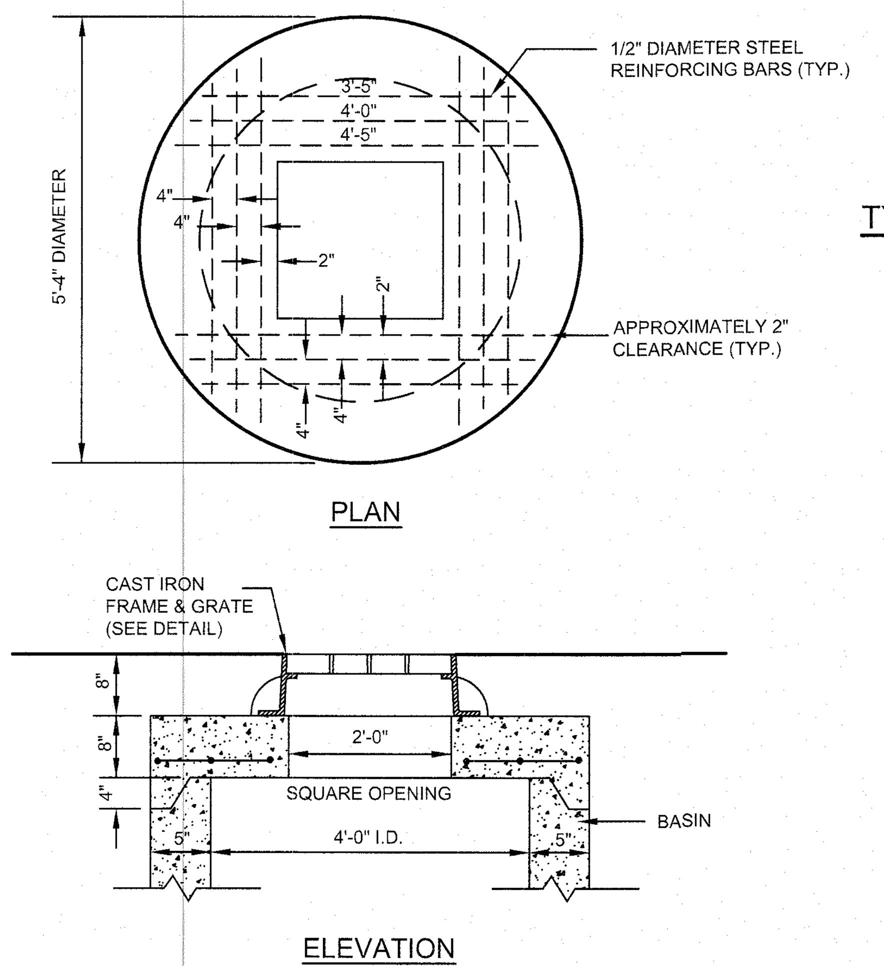


NOTE:
DIMENSIONS SHOWN ARE TO PAYMENT LINES. MORTAR RUBBLE MASONRY TO BE STEPPED OUTSIDE PAYMENT LINES ON SLOPING FACES.

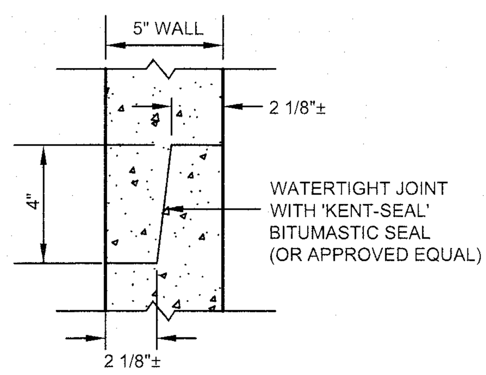
DIAMETER D (INCH)	AREA OF PIPE (SF)	MASONRY PER FOOT OF WALL (CU. YD.)	MASONRY PER HOLE (CU. FT.)	MASONRY PER STANDARD HEADER (CU. YD.)	STEEL PER STANDARD HEADER (LB)	LENGTH OF BARS	PIPE EXC. 1' DEPTH 1' LENGTH (CU. YD.)	HEADER EXC. PER HEADER 1' DEPTH (CU. YD.)	ITEM 209 PER LINEAR FOOT	HEADER LENGTH L	HEADER HEIGHT H	FILL HEIGHT FH	WIDTH AT BOTTOM OF HEADER W	"L" HEADWALL: MASONRY IN CORNER FRUSTRUM (CU. YD)	"L" HEADWALL: HEADER EXC. PER HEADER 1' DEPTH (CU. YD.)
12"	0.79	0.186	1.08	0.61	9	3'-2"	0.111	0.789	0.30	3'-6"	3'-6"	10"	1'-10 1/2"	0.28	1.057
15"	1.23	0.202	1.73	0.85	11	3'-10"	0.120	0.947	0.35	4'-6"	3'-9"	1'-1"	1'-11 1/4"	0.31	1.232
18"	1.77	0.222	2.52	1.13	14	5'-2"	0.130	1.111	0.39	5'-6"	4'-0"	1'-4"	2'-0"	0.35	1.406
24"	3.14	0.260	4.71	1.78	20	7'-2"	0.148	1.451	0.48	7'-6"	4'-6"	1'-10"	2'-1 1/2"	0.42	1.776
30"	4.91	0.301	7.67	2.58	25	9'-2"	0.185	1.810	0.65	9'-6"	5'-0"	2'-4"	2'-3"	0.51	2.164

NOTE: STEEL QUANTITIES ARE FOR CONCRETE HEADWALLS ONLY.

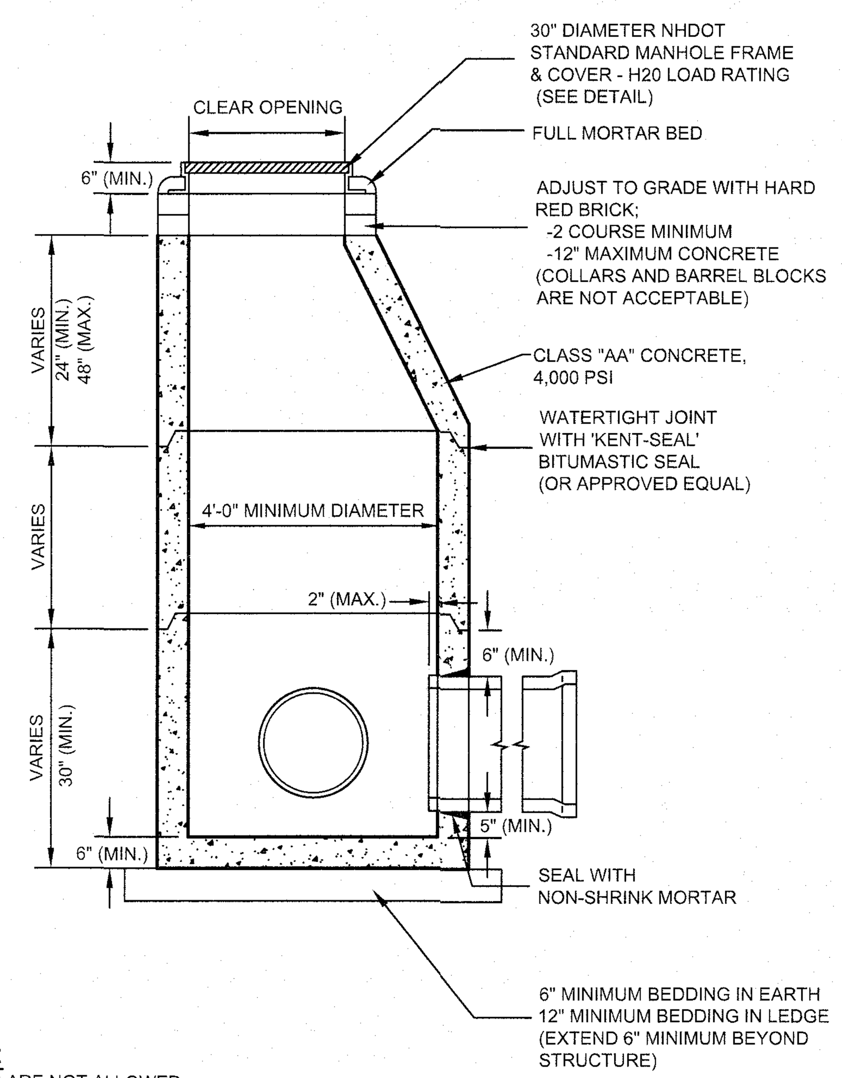
MORTAR RUBBLE MASONRY AND CONCRETE HEADWALLS
NOT TO SCALE
(MARCH 2008)



REINFORCED CONCRETE TOP SLAB (4'-0" I.D.)
NOT TO SCALE
(MARCH 2008)

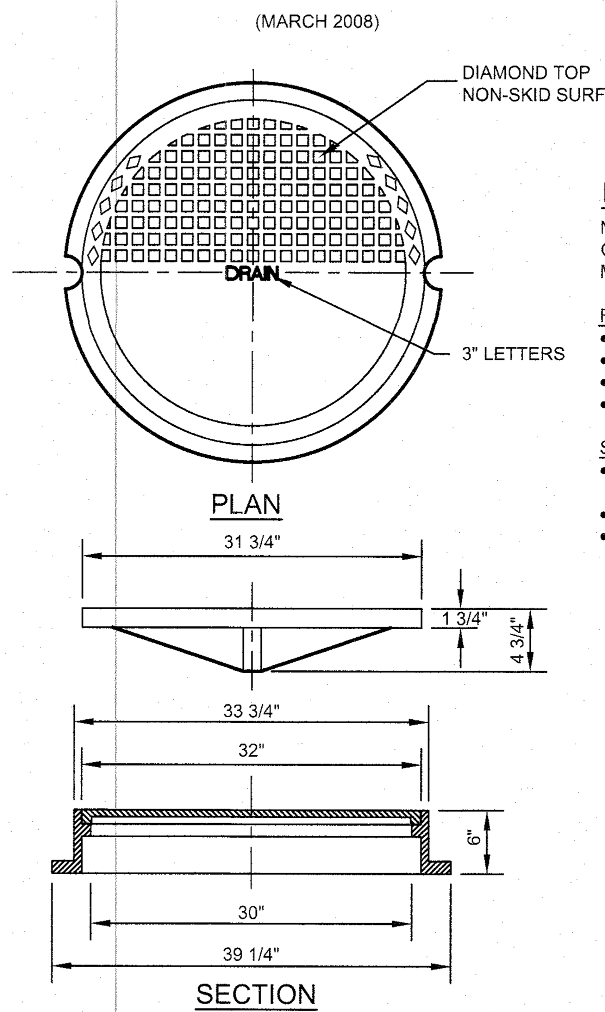


DETAIL OF TONGUE AND GROOVE JOINT



NOTES:
1. STEPS ARE NOT ALLOWED.
2. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4,000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.
4. MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.

PRECAST REINFORCED DRAIN MANHOLE DETAIL
NOT TO SCALE
(MARCH 2008)

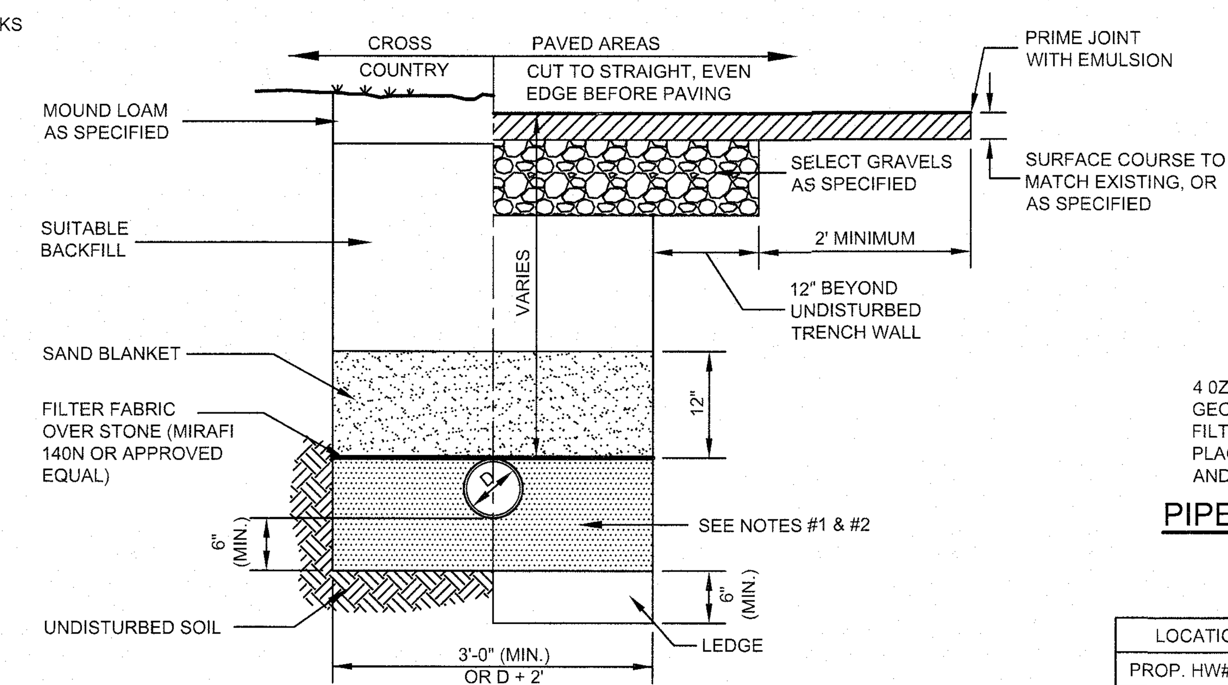


NOTES:
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED DRAIN
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

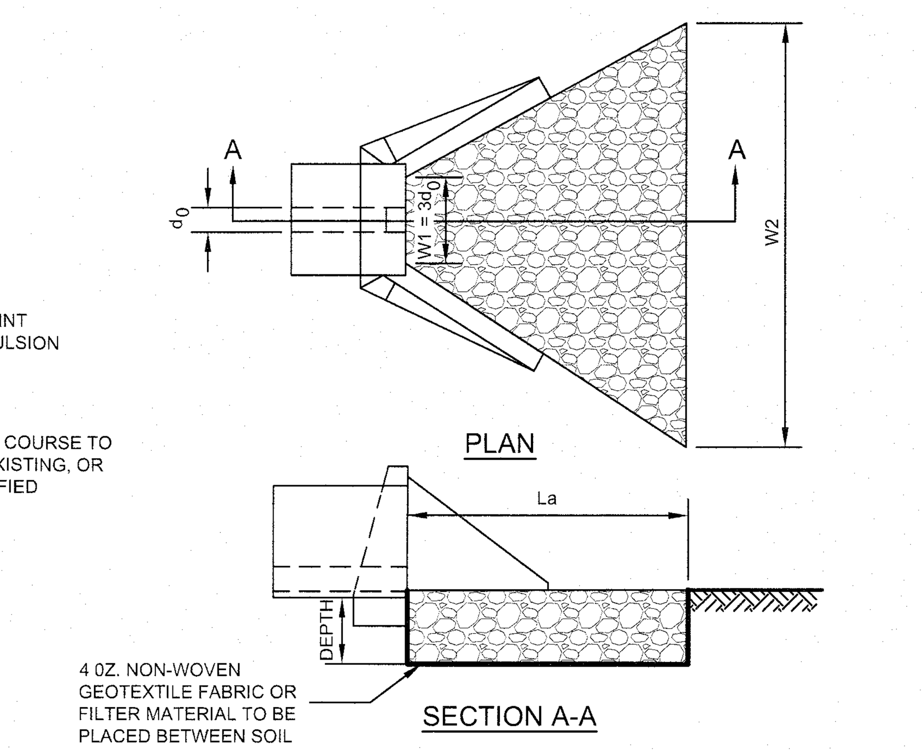
SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30

DRAIN MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE



NOTES
1. THOROUGHLY COMPACTED SCREENED GRAVEL FOR RCP PIPE. SCREENED GRAVEL TO EXTEND TO SELECT FILL LINE.
2. FOR HDPE OR PVC PIPE, BEDDING SHALL BE 3/4" STONE TO THE TOP OF THE PIPE.

STORM DRAINAGE TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)



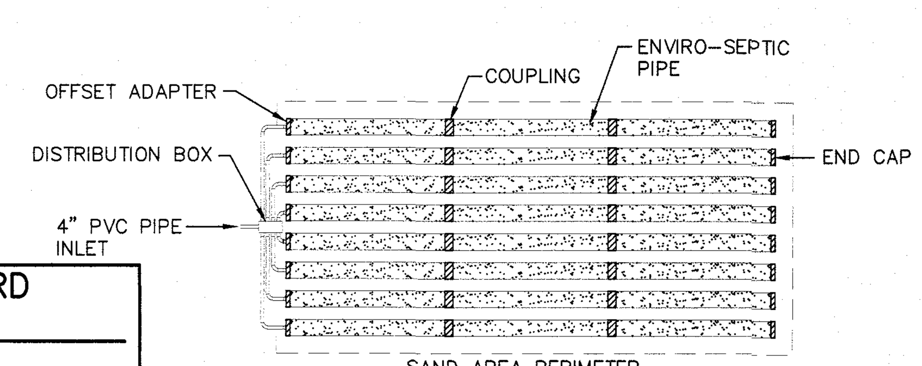
PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL
NOT TO SCALE
(MARCH 2008)

LOCATION	La	W1	W2	d50	DEPTH
PROP. HW#100	13'	3'	8'	4"	10"
PROP. HW#103	7'	3'	10'	4"	10"
PROP. HW#105	12'	3'	15'	4"	10"
PROP. HW#107	10'	4'	14'	4"	10"
PROP. HW#111	9'	3'	12'	4"	10"
PROP. HW#113	17'	6'	23'	4"	10"
PROP. HW#118	18'	6'	24'	4"	10"

TABLE 7-24 -- RECOMMENDED RIP RAP GRADATION RANGES	
PERCENT 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

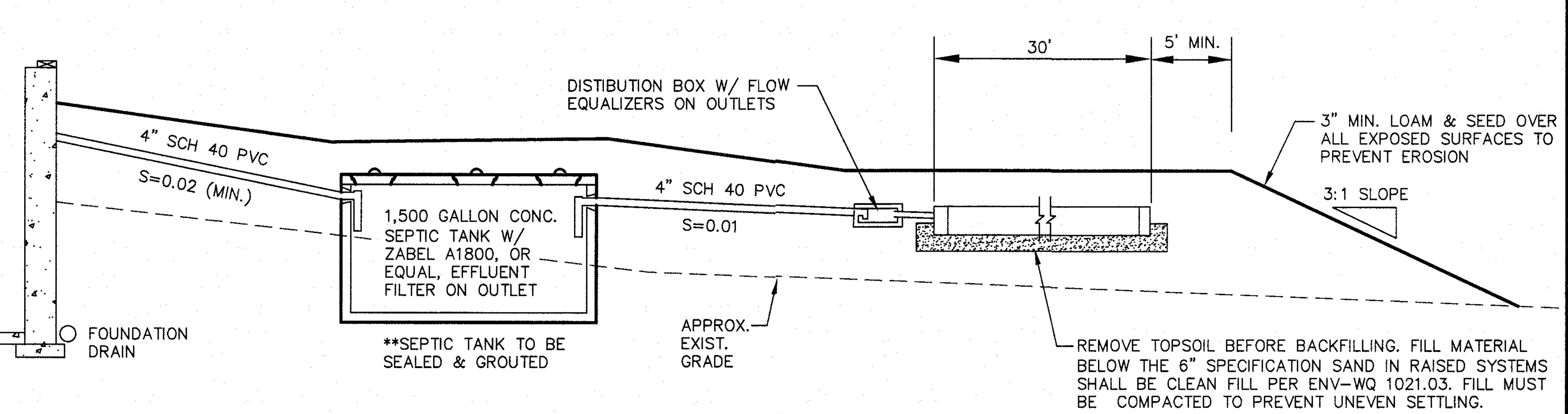
CONSTRUCTION SPECIFICATIONS:
1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. FRACTURED ROCK USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP. 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 REPAIRS OR 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.

MAINTENANCE:
THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR RAIN EVENT. IF THE RIP RAP 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.



NOTE: EFFLUENT DISPOSAL AREA SHOWN IS A "DISTRIBUTION BOX SYSTEM" AS DEPICTED IN THE NEW HAMPSHIRE ENVIRO-SEPTIC DESIGN AND INSTALLATION MANUAL (2003 EDITION).

EDA PLAN DETAIL
NOT TO SCALE



TYPICAL SECTION OF PROPOSED SEPTIC SYSTEM

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

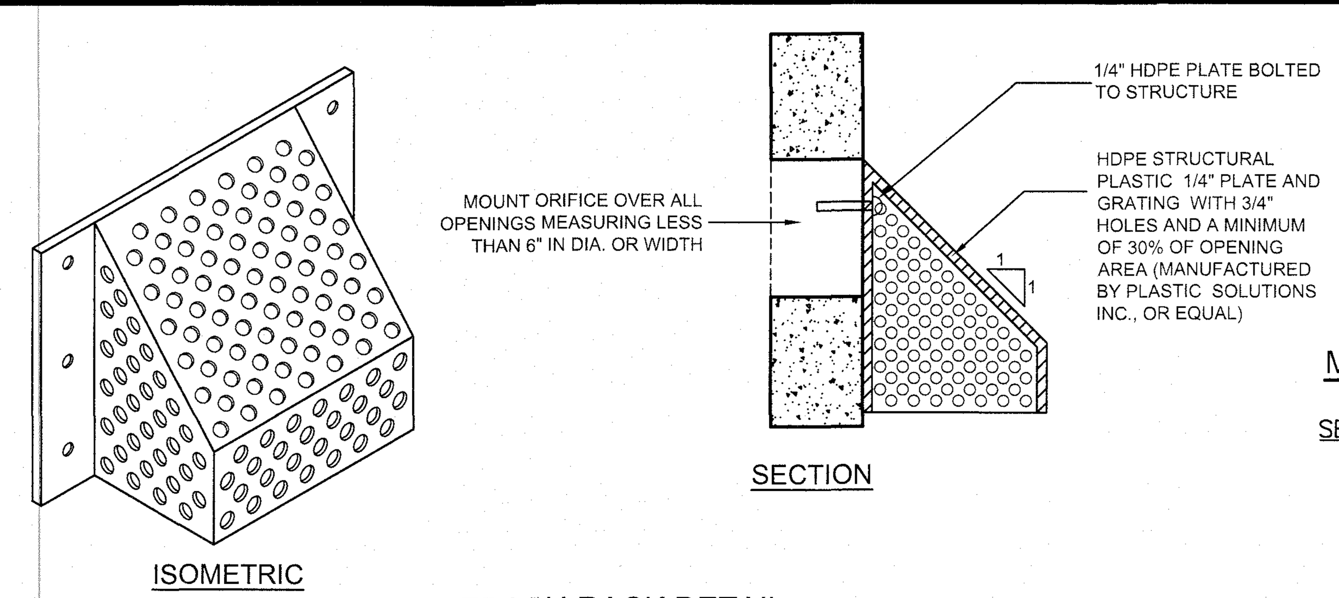
OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER
9/12/22

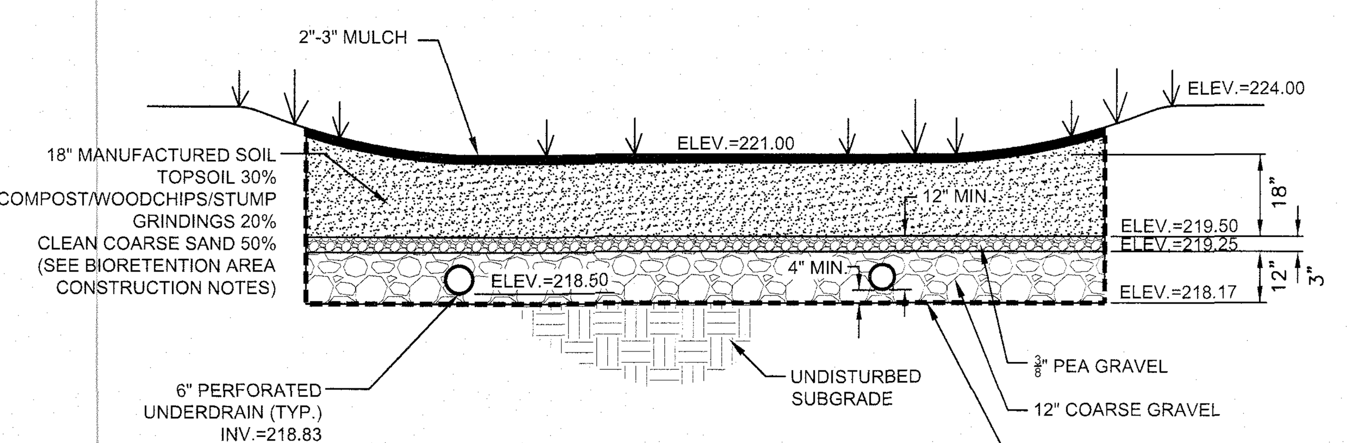
REVISIONS			
No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 11 OF 16



TRASH RACK DETAIL

NOT TO SCALE



BIORETENTION POND 1

NOT TO SCALE

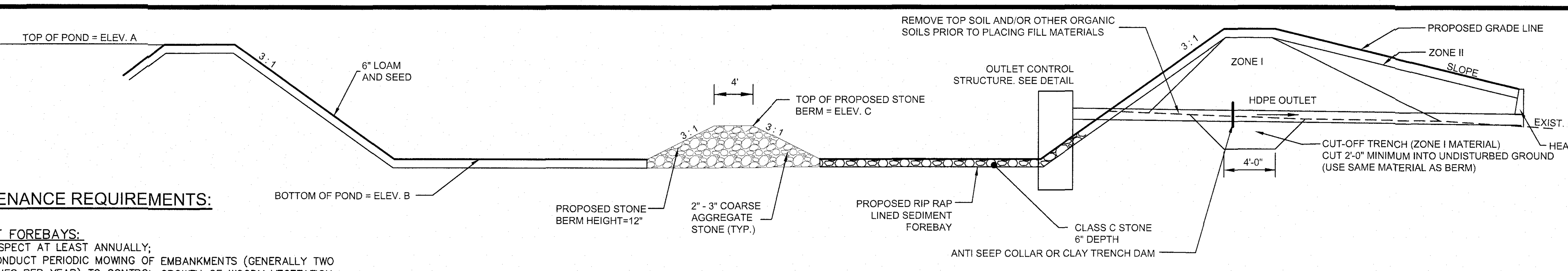
MAINTENANCE REQUIREMENTS:

SEDIMENT FOREBAYS:

- INSPECT AT LEAST ANNUALLY;
- CONDUCT PERIODIC MOWING OF EMBANKMENTS (GENERALLY TWO TIMES PER YEAR) TO CONTROL GROWTH OF WOODY VEGETATION ON EMBANKMENTS;
- REMOVE DEBRIS FROM OUTLET STRUCTURES AT LEAST ONCE ANNUALLY;
- REMOVE AND DISPOSE OF ACCUMULATED SEDIMENT BASED ON INSPECTION;
- INSTALL AND MAINTAIN A STAFF GAGE OR OTHER MEASURING DEVICE, TO INDICATE DEPTH OF SEDIMENT ACCUMULATION AND LEVEL AT WHICH CLEAN-OUT IS REQUIRED.

INFILTRATION:

- REMOVAL OF DEBRIS FROM INLET AND OUTLET STRUCTURES;
- REMOVAL OF ACCUMULATED SEDIMENT;
- INSPECTION AND REPAIR OF OUTLET STRUCTURES AND APPURTENANCES;
- INSPECTION OF INFILTRATION COMPONENTS 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;
- INSPECTION OF PRETREATMENT MEASURES AT LEAST TWICE ANNUALLY, AND REMOVAL OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY;
- PERIODIC MOWING OF EMBANKMENTS;
- REMOVAL OF WOODY VEGETATION FROM EMBANKMENTS;
- INSPECTION AND REPAIR OF EMBANKMENTS AND SPILLWAYS;
- IF AN INFILTRATION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE INFILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE INFILTRATION TRENCH.



TYPICAL INFILTRATION POND SECTION - WITH FOREBAY

NOT TO SCALE

POND NUMBER	ELEV. A	ELEV. B	ELEV. C
2	222.00	217.00	218.00

CONSTRUCTION PRACTICE REQUIREMENTS:

1. STORMWATER PONDS, INFILTRATION BASINS, AND SWALES MUST BE INSTALLED BEFORE ROUGH GRADING TO SITE.
2. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED.
3. STORMWATER PONDS, INFILTRATION BASINS, AND SWALES MUST BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
4. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
5. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
6. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
7. INFILTRATION BASIN FLOOR PREPARATION WILL INCLUDE GRASS TURF THAT CAN BE INUNDATED FOR UP TO 72 HOURS.
8. INFILTRATION AREAS ARE TO BE PROTECTED FROM OVER-COMPACTION DURING CONSTRUCTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I

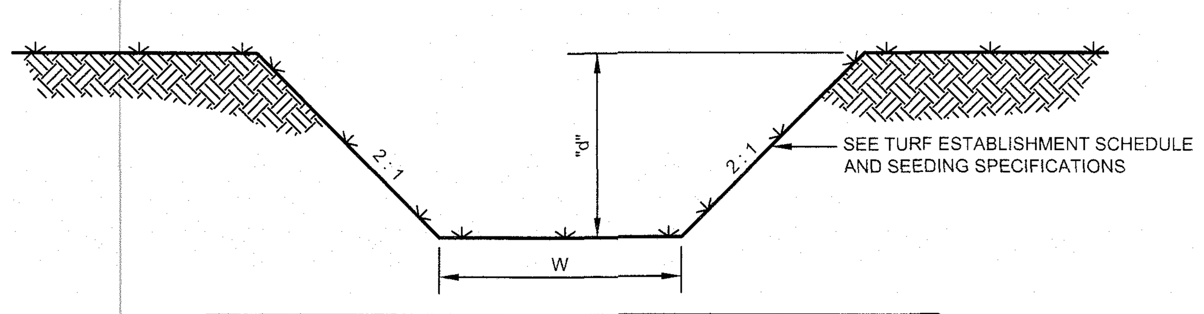
WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6-INCH
SIZE STONE AND GEADATION AS INDICATED BELOW. PLACE IN MAX. 12-INCH
THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557.
SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION, REMOVE ORGANIC SOILS.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
6-INCH	100
NO. 4	50 TO 100
NO. 40	30 TO 70
NO. 200	20 TO 40

ZONE II

DRAINAGE LAYER: PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX. DRY
DENSITY IN ACCORDANCE WITH ASTM D1557.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
1-INCH	100
NO. 4	70-100
NO. 200	0-12 (IN SAND PORTION ONLY)



SWALE	SWALE WIDTH "W"	SWALE LENGTH	SWALE SLOPE	DEPTH "d"
3	2'	550'	VARIES (SEE PLAN)	2'
33	2'	182'	0.0330 FT/FT	1'
4	2'	177'	0.0050 FT/FT	2'

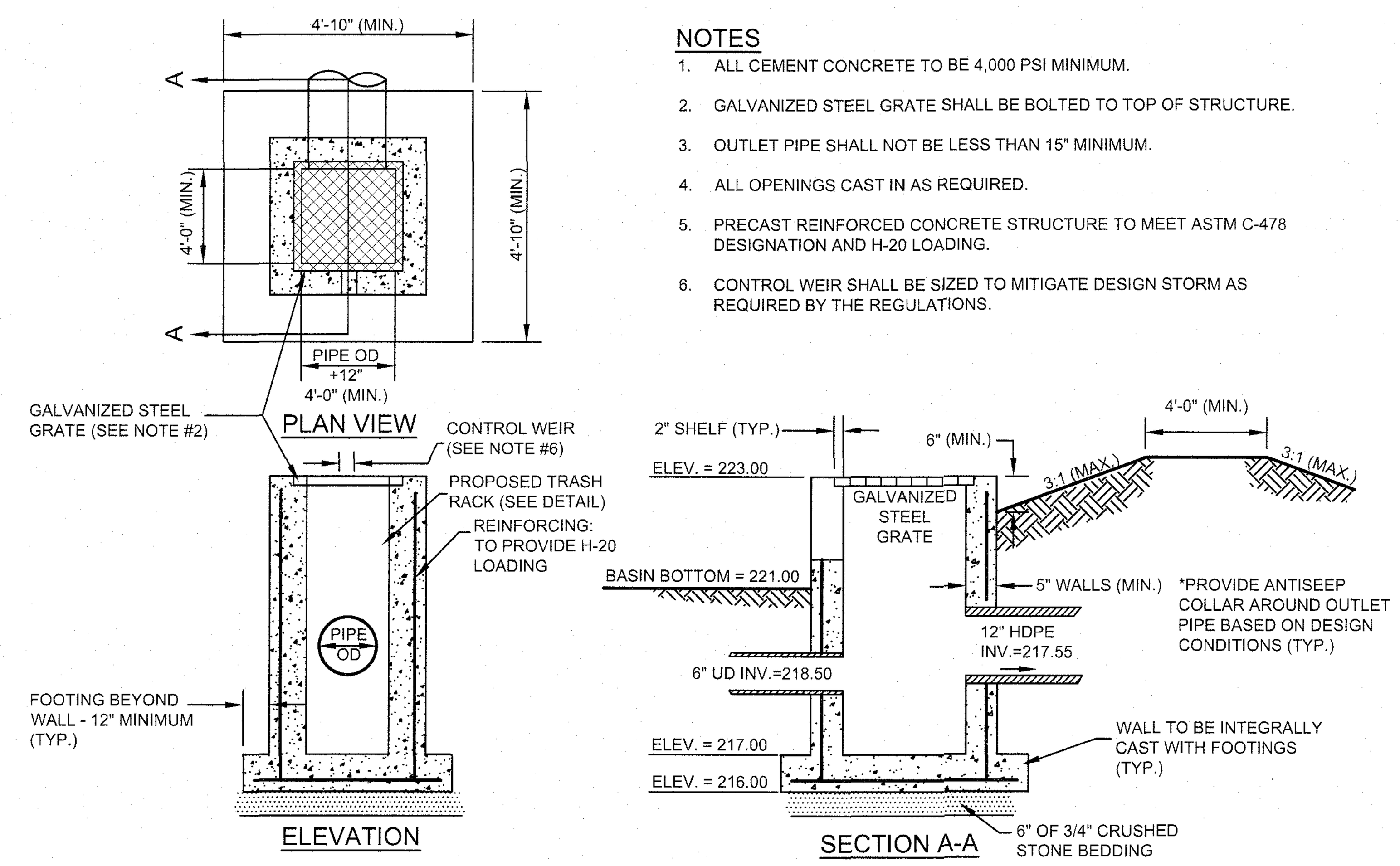
MAINTENANCE

1. 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 SO AS TO REDUCE THE FILTERING EFFECT. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.
2. 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 RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

CONVEYANCE SWALE DETAIL

NOT TO SCALE

(MARCH 2008)



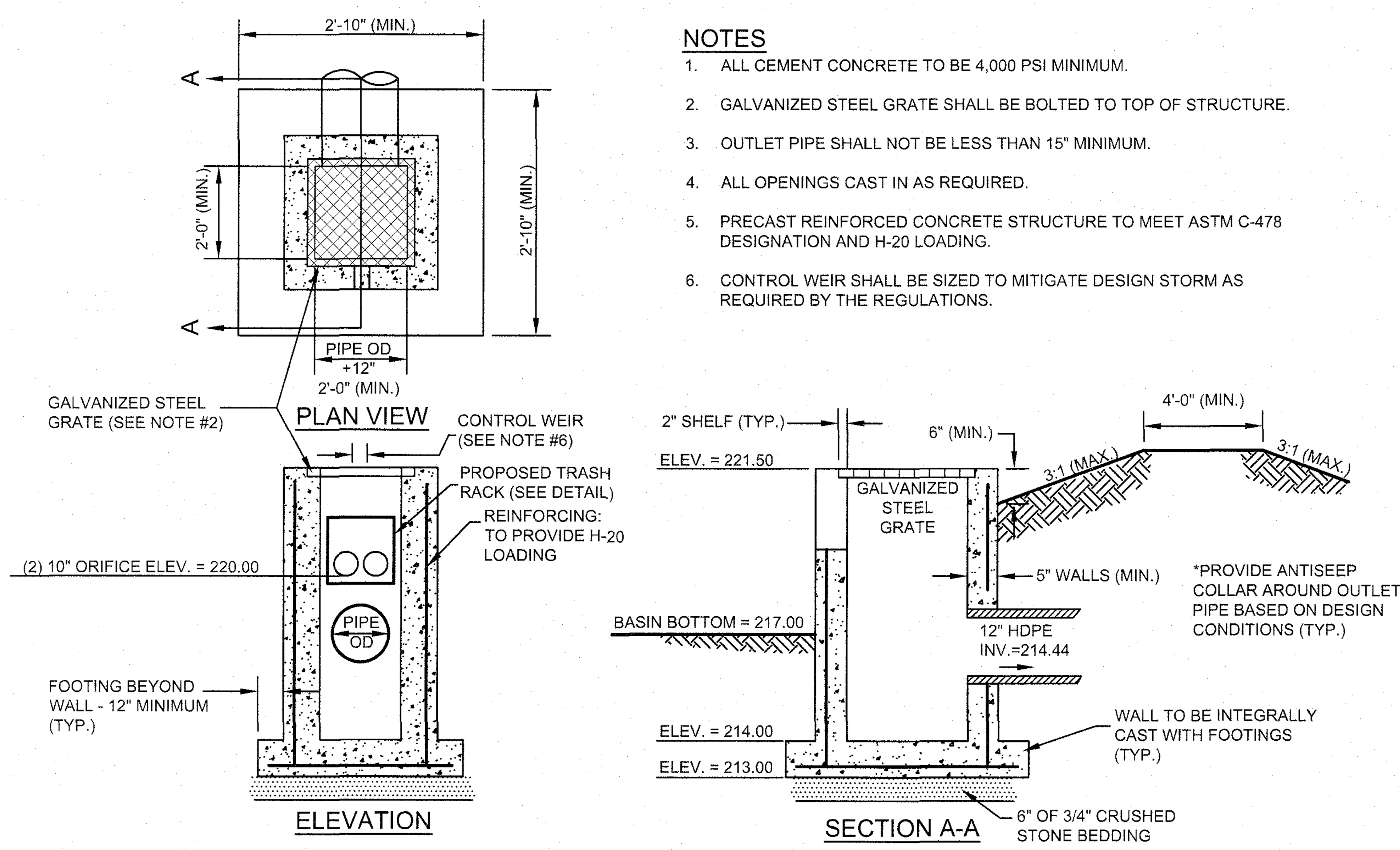
NOTES

1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" MINIMUM.
4. ALL OPENINGS CAST IN AS REQUIRED.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS.

OUTLET STRUCTURE #106 AT BIORETENTION POND #1

NOT TO SCALE

(AUGUST 2011)



NOTES

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4. ALL OPENINGS CAST IN AS REQUIRED.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS.

OUTLET STRUCTURE #109 AT INFILTRATION POND #2

NOT TO SCALE

(AUGUST 2011)

TP #1

LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-1-2021
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – 12"	FOREST MAT
12" – 36"	10YR 5/4, COARSE SAND, SINGLE GRAIN, STONES, MASSIVE
36" – 72" BOTTOM OF HOLE	10YR 5/6, GRANULAR, FRIABLE, SAND, SINGLE GRAIN, MASSIVE

TP #2

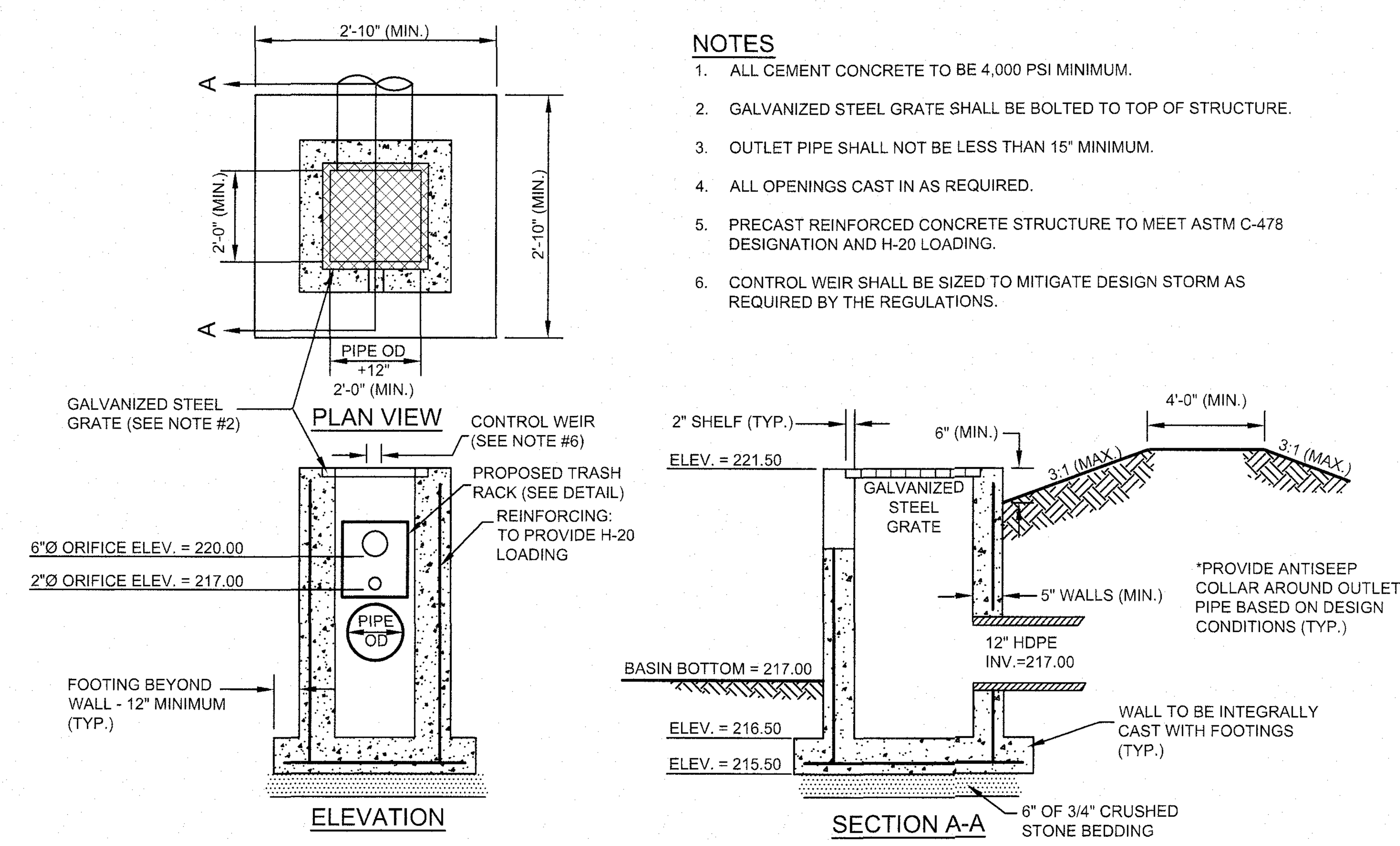
LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-1-2021
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – 4"	FOREST MAT
4" – 32"	5Y 3/4, SANDY LOAM, GRANULAR FRIABLE, STONES, MASSIVE
32" – 72" BOTTOM OF HOLE	10YR 5/6, GRANULAR, FRIABLE, SAND, SINGLE GRAIN, MASSIVE

TP #3

LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-16-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – 8"	TOP SOIL
8" – 18"	5Y 5/4, GRANULAR, FRIABLE LOAMY SAND, ROOTS
18" – 28"	10YR 5/6, GRANULAR, FRIABLE, LOAMY SAND, FEW ROOTS
28" – 70" BOTTOM OF HOLE	10YR 6/6, SAND SINGLE GRAIN GRAVELLY



NOTES

1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" MINIMUM.
4. ALL OPENINGS CAST IN AS REQUIRED.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS.

OUTLET STRUCTURE #104 AT DETENTION POND #2

NOT TO SCALE

(AUGUST 2011)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ________ ________ SIGNATURE DATE: ________ ________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE – PAUL CHISHOLM No. 15078 – LICENSED – PROFESSIONAL ENGINEER
9/12/22

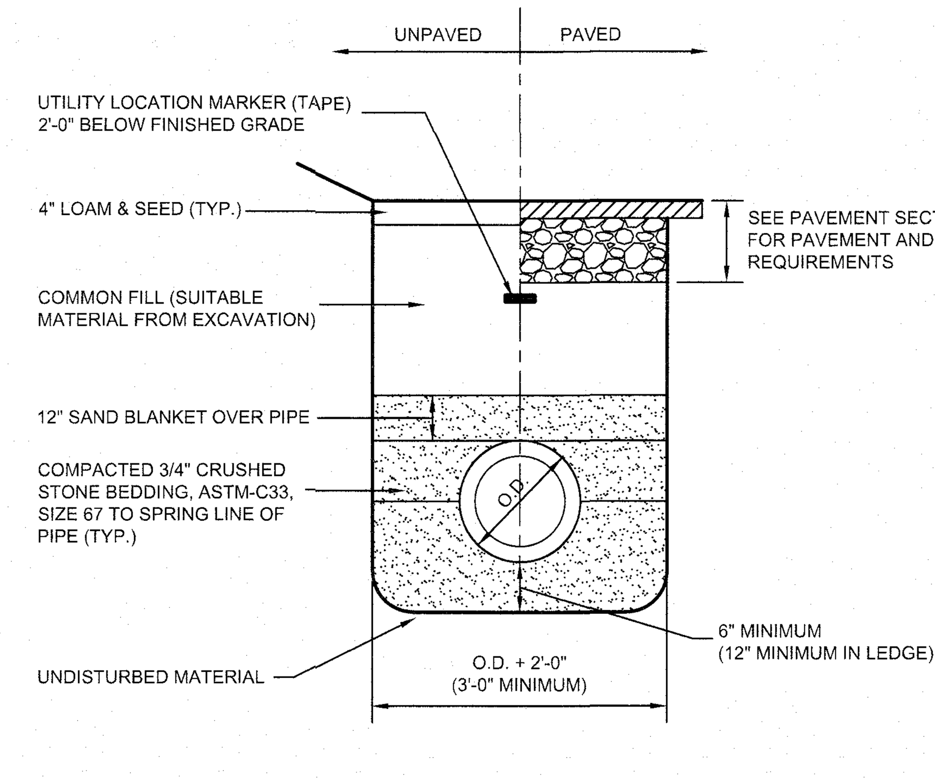
REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

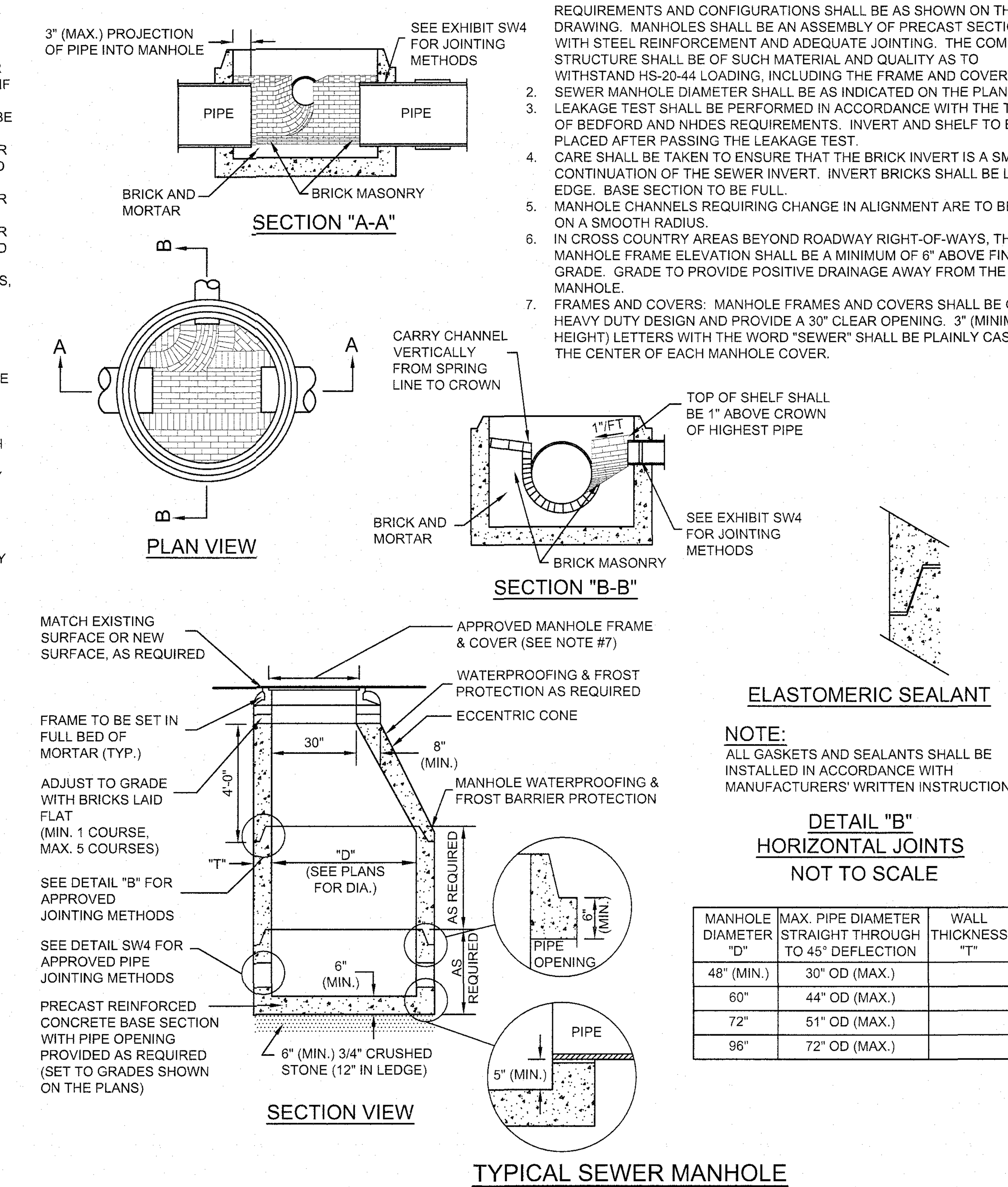
DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 12 OF 16

NOTES:

1. MINIMUM SIZE PIPE FOR HOUSE SERVICE SHALL BE 4 INCHES. MINIMUM SIZE FOR STREET SEWER LINES SHALL BE 8 INCHES.
2. PIPE AND JOINT MATERIALS:
   A. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA):
      1. AWWA C151/A21.51-02 - FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND-LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
      2. AWWA C150/A21.50-02 - FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A536-84 (2004) DUCTILE IRON CASTINGS;
      3. JOINTS SHALL BE MECHANICAL, PUSH-ON OR BALL-AND-SOCKET TYPE.
   B. PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
      1. ASTM D3034-04A - PVC, SOLID WALL;
      2. AT LEAST 46 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2414-02 DURING MANUFACTURING; AND
      3. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
4. JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
5. SERVICE CONNECTIONS SHALL USE SANITARY TEE OR WYE FITTINGS FOR ALL NEW CONSTRUCTION. THE CENTERLINE OF ALL BUILDING CONNECTIONS SHALL ENTER THE TOP HALF OF THE SEWER. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 4 FEET MAY HAVE THE SEWER FITTING SET VERTICALLY. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 12 FEET SHALL EMPLOY NON-ENCASED RISERS THAT PROTECT AGAINST PIPE PENETRATION OR FAILURE AT THE FITTING BY THE USE OF BELL-ON-BELL CONNECTIONS. FOR EXISTING SEWER WHERE FITTINGS CANNOT BE INSTALLED, SADDLE CONNECTIONS SHALL BE USED. PRESSURE SEWERAGE SHALL HAVE AN ISOLATION VALVE OR CURB STOP VALVE INSTALLED AT THE PROPERTY LINE. IF A CHECK VALVE IS USED AT THE PROPERTY LINE, THE VALVE SHALL BE INSTALLED WITHIN A VAULT TO FACILITATE MAINTENANCE. ROOF DOWNSPOUTS, EXTERIOR OR INTERIOR FOUNDATION DRAINS, SUMP PUMPS OR OTHER SOURCE OF SURFACE WATER RUN-OFF OR GROUND WATER SHALL NOT BE DIRECTLY OR INDIRECTLY CONNECTED TO A PUBLIC SEWER.
6. PIPE INSTALLATION:
   A. THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
   B. PIPES SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL.
   C. BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
   D. THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
   E. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
7. TESTING: THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)
   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEAN OUT WITH A FLASHLIGHT.
   C. DRY FLUORESCENCE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.
   D. LEAKAGE OBSERVED IN ANY OF THE ABOVE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP, IF NECESSARY, AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS.
8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.
9. WATER SERVICE SHALL NOT BE LAID IN THE SAME TRENCH AS THE SEWER SERVICE, UNLESS NECESSARY AND APPROVED BY THE AHJ. WHEN NECESSARY, THE WATER SERVICE SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE SEWER SERVICE, AS SHOWN.
10. LOCATION: THE LOCATION OF THE WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS MATERIAL, ROD OR PIPE SHALL BE PLACED OVER THE WYE TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.
11. CHIMNEY CONNECTIONS ARE ONLY PERMITTED IF ALLOWED BY THE AHJ. ANY VERTICAL RISE GREATER THAN 4 FEET SHALL BE PROVIDED WITH ADDED SUPPORT BY ENCASING THE FITTING AND RISER IN A PRECAST CONCRETE CHIMNEY. UP TO 12 FEET OF VERTICAL RISE CAN ALSO BE SECURED BY PROPER MEANS AS LONG AS IT CONSISTS OF A BELL-ON-BELL CONNECTION PROPERLY PROTECTED AGAINST PIPE PENETRATION AND IF IT IS ALLOWED BY THE AHJ.
12. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST DENSITY.



TYPICAL SEWER SERVICE PIPE TRENCH
NOT TO SCALE
EXHIBIT SW1



NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

DETAIL "B"
HORIZONTAL JOINTS
NOT TO SCALE

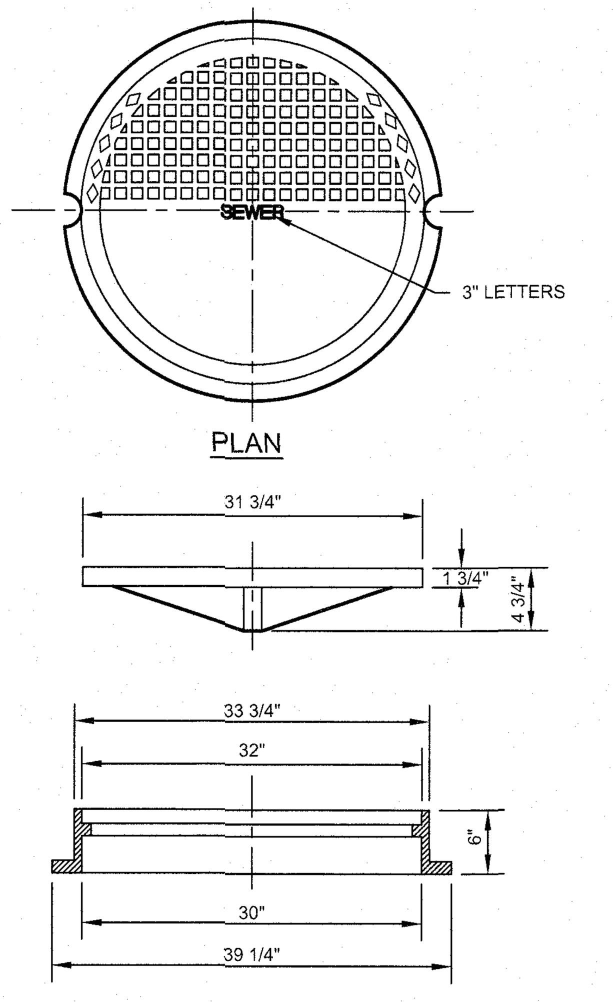
MANHOLE DIAMETER "D"	MAX. PIPE DIAMETER STRAIGHT THROUGH TO 45° DEFLECTION	WALL THICKNESS "T"
48" (MIN.)	30" OD (MAX.)	
60"	44" OD (MAX.)	
72"	51" OD (MAX.)	
96"	72" OD (MAX.)	

TYPICAL SEWER MANHOLE

NOTES:

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE FRAME AND COVER.
2. SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.
3. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF BEDFORD AND NHDES REQUIREMENTS. INVERT AND SHELF TO BE PLACED AFTER PASSING THE LEAKAGE TEST.
4. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. BASE SECTION TO BE FULL.
5. MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT ARE TO BE BUILT ON A SMOOTH RADIUS.
6. IN CROSS COUNTRY AREAS BEYOND ROADWAY RIGHT-OF-WAYS, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE.
7. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30" CLEAR OPENING. 3" (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER.

1. ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND SPACE NECESSARY FOR THE INTENDED SERVICE.
2. MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
3. MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF ONE GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
4. BARRELS, CONCRETE GRADE RINGS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE AND SHALL CONFORM TO ASTM C478.
5. BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33
   100% PASSING 1 INCH SCREEN
   90% PASSING 3/4 INCH SCREEN
   20-55% PASSING 3/8 INCH SCREEN
   0-10% PASSING #4 SIEVE
   0-5% PASSING #8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.
6. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
7. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
8. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
   A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
   B. CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
   C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
   D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
9. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
10. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
11. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
12. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
13. MATERIALS OF CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS.
   A. CONCRETE FOR PRECAST BASES OR GRADE RINGS SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   B. REINFORCING FOR PRECAST CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   C. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORM TO ASTM C478;
   D. THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
   E. THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE;
   F. THE CASTINGS SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS;
   G. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION;
   H. CASTINGS SHALL BE EQUAL TO CLASS 30, BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM A48/48M;
   I. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM C32, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
   J. MORTAR SHALL BE COMPOSED OF TYPE II PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   K. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      1. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      2. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PARTS HYDRATED LIME;
   L. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150/C150M;
   M. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
   N. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
   O. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   P. SUBJECT TO (Q) BELOW, A FLEXIBLE PIPE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION:
      1. WITHIN 48-INCHES FOR REINFORCED CONCRETE (RC) PIPE; AND
      2. WITHIN 60-INCHES FOR PVC PIPE LARGER THAN 15-INCH DIAMETER;
   Q. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR D.I. PIPE OR FOR PVC PIPE UP THROUGH 15-INCH DIAMETER; AND
   R. WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND IS CAPABLE OF SUPPORTING H-20 LOADS.
14. MANHOLE TESTING:
   A. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
   B. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
      1. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg: AND
      2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCH Hg SHALL BE:
         a. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;
         b. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND
         c. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
   C. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (B) ABOVE.
   D. INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETED.
   E. FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENTS TO GRADE.

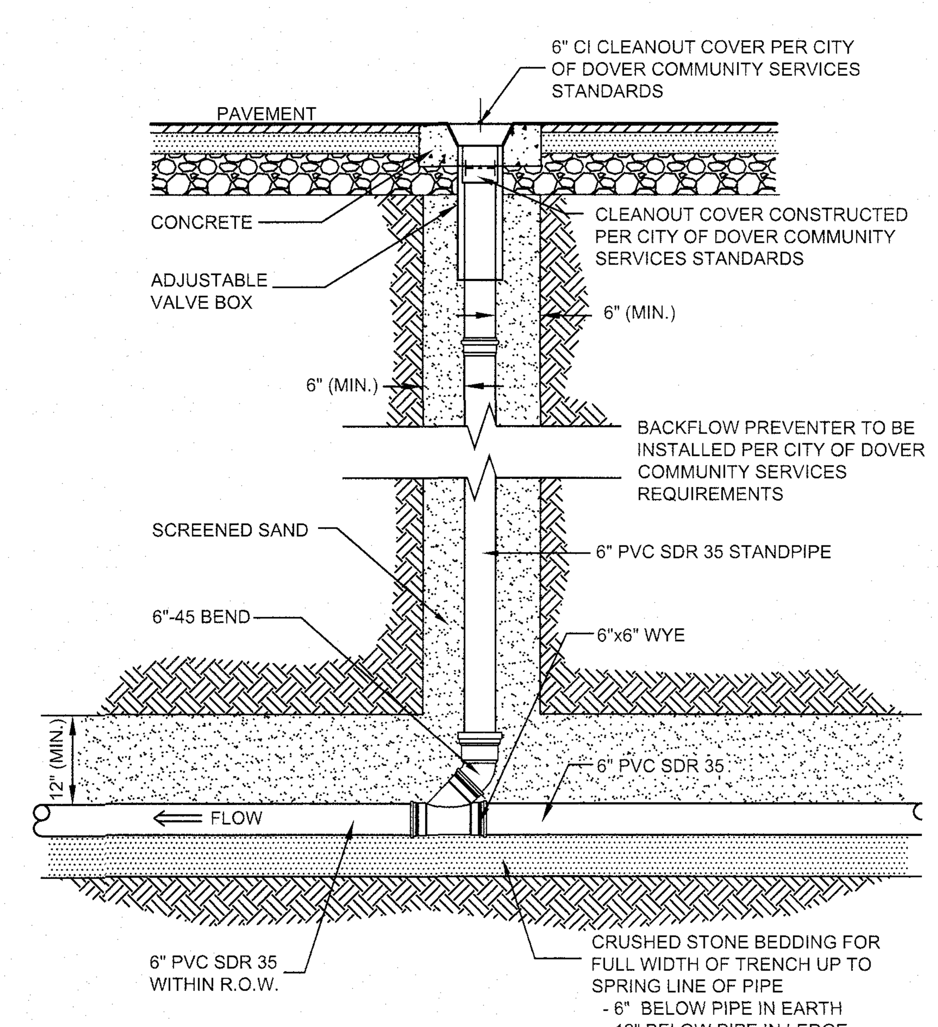


NOTES:
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED SEWER
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30

SEWER MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE
(MARCH 2008)



SEWER SERVICE CLEANOUT
NOT TO SCALE

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

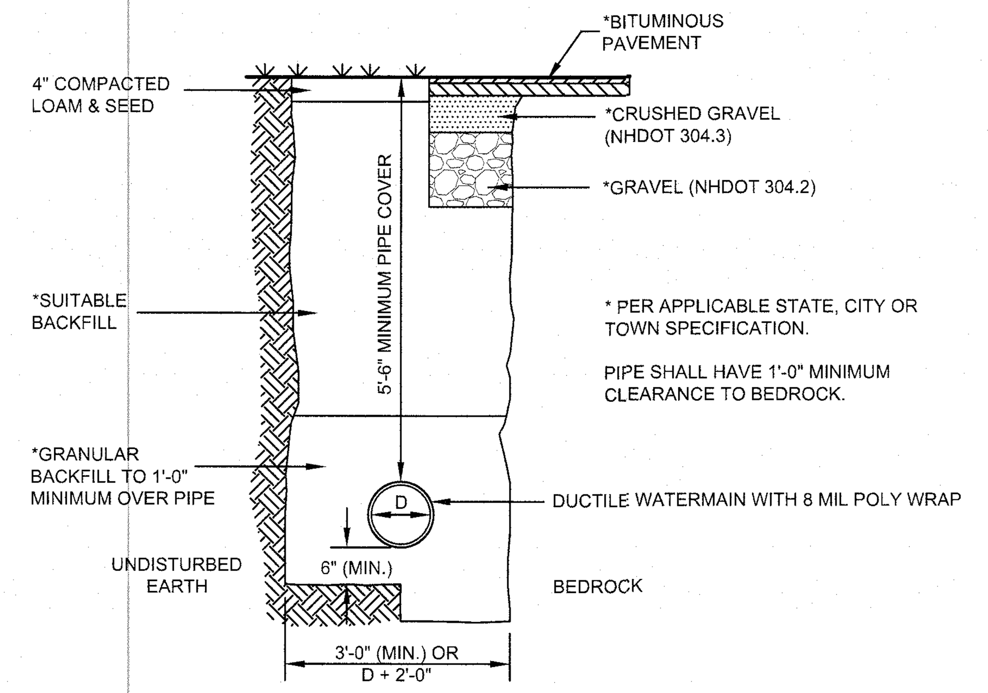
KNA
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PAUL CHISHOLM No. 15975 LICENSED PROFESSIONAL ENGINEER
9/12/22

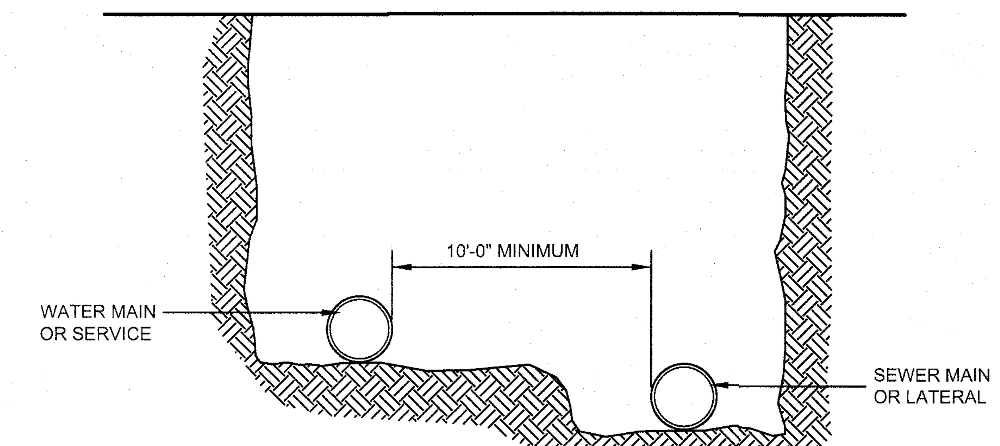
REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

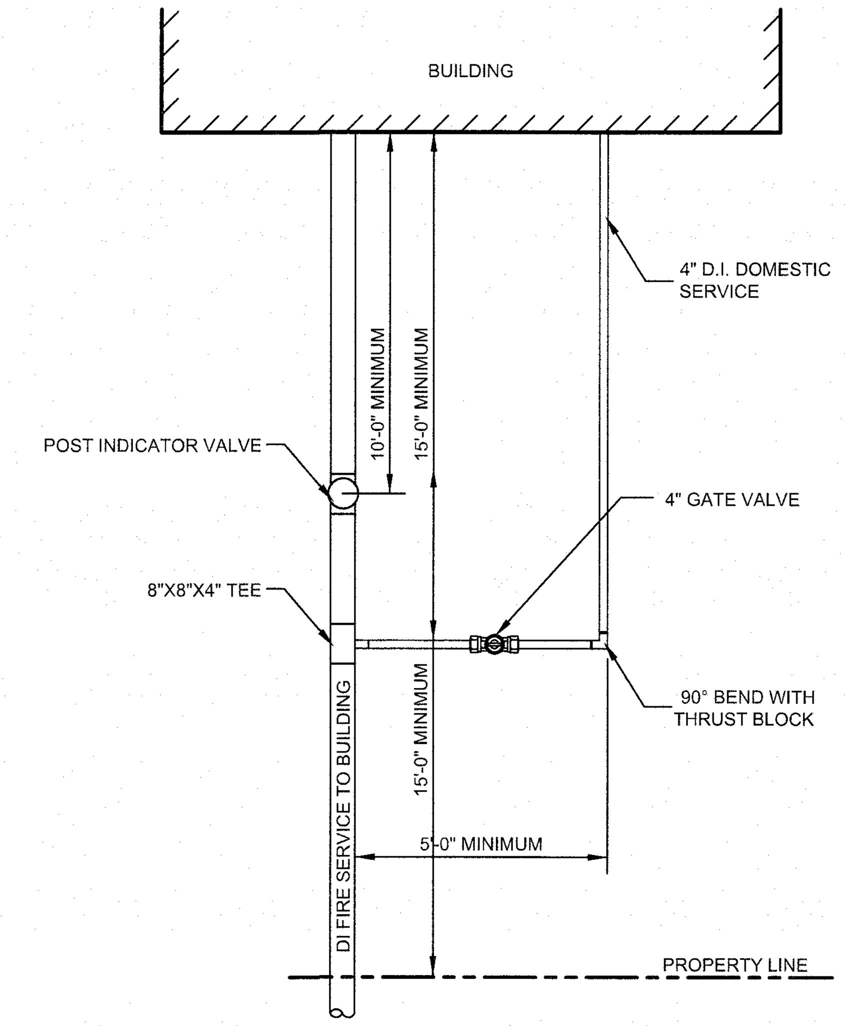
DATE: APRIL 6, 2021 | SCALE:
PROJECT NO: 20-0921-2 | SHEET 13 OF 16



WATER LINE TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)

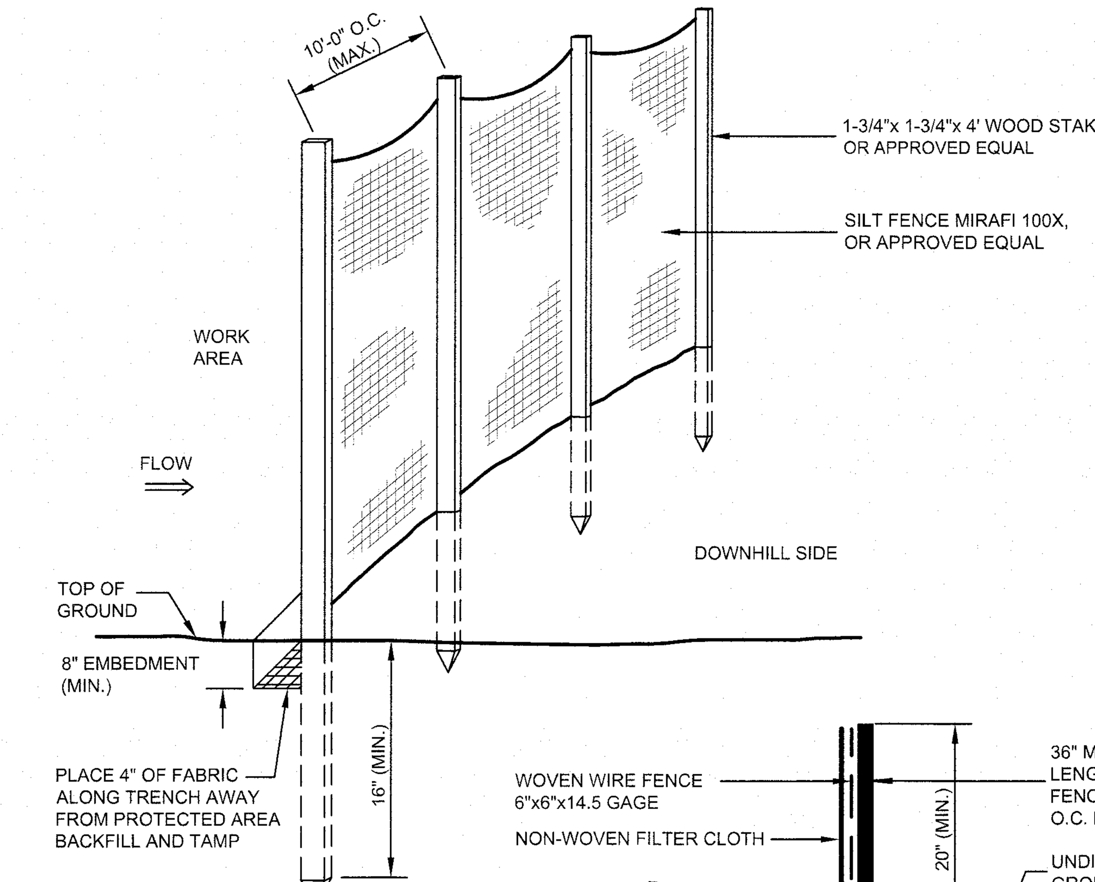


PARALLEL INSTALLATION

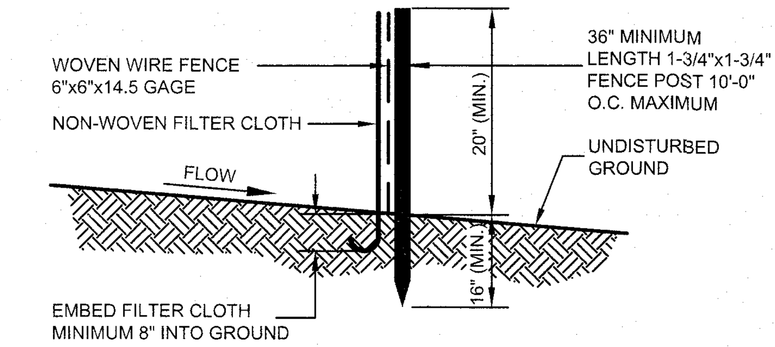


NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO MANCHESTER WATER WORKS, INC. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5'-6" FROM TOP OF PIPE TO FINISH GRADE.
3. SEE DETAIL FOR SERVICE AND VALVE BOX INSTALLATION DETAIL.
4. SEE DETAIL A-11 FOR OUTSIDE SERVICE ENTRANCE PLAN VIEW.

DOMESTIC SERVICE TAPPED OFF FIRE SERVICE
(A-24)
NOT TO SCALE
(MARCH 2008)



PERSPECTIVE VIEW

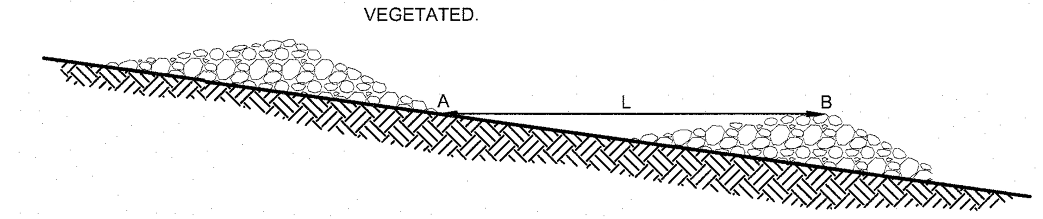


SECTION

SILT FENCE DETAIL
NOT TO SCALE
(MARCH 2008)

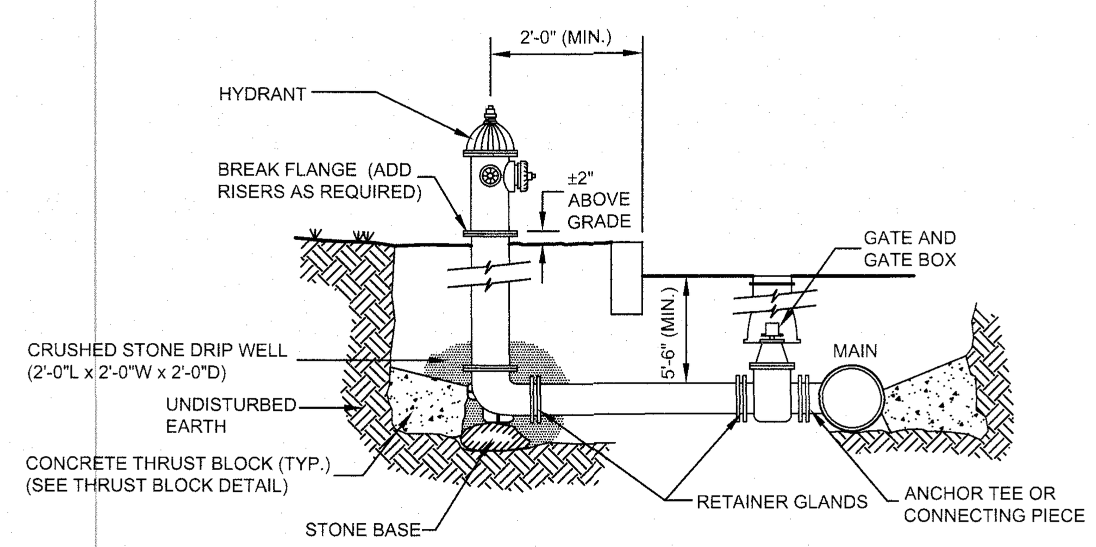
CONSTRUCTION SPECIFICATIONS:
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

MAINTENANCE:
1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

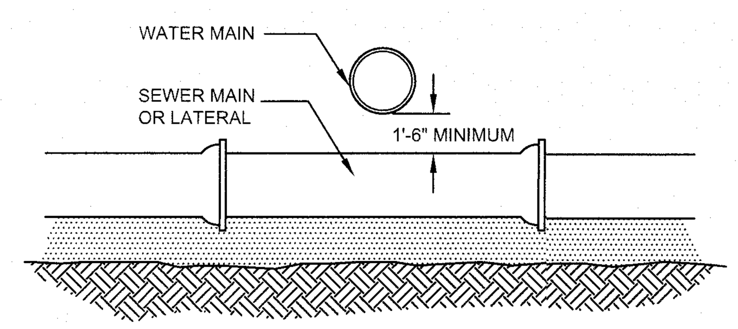


L = THE DISTANCE SUCH THAT POINTS A AND B ARE EQUAL ELEVATION, OR FOR FLAT SLOPES L = 75' MAXIMUM

STONE CHECK DAM SPACING DETAIL
NOT TO SCALE
(MARCH 2008)

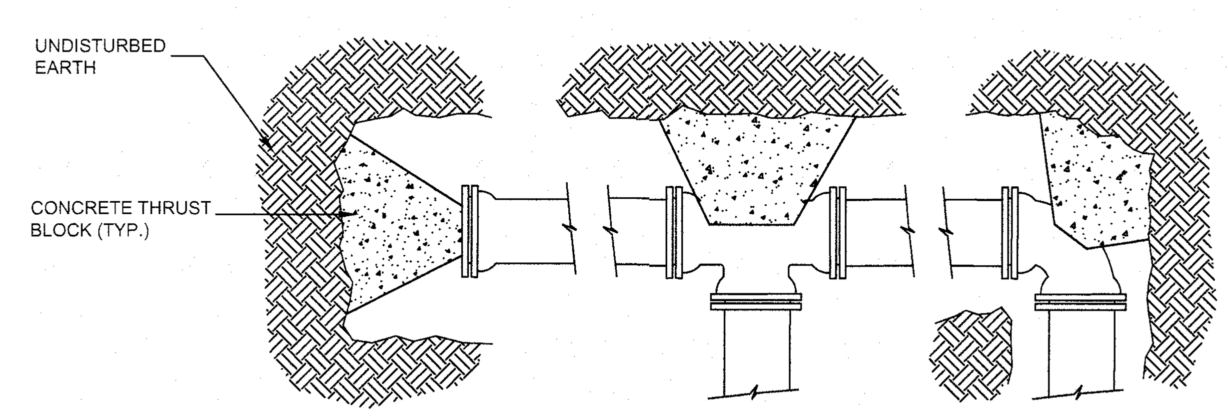


HYDRANT INSTALLATION
NOT TO SCALE
(MARCH 2008)

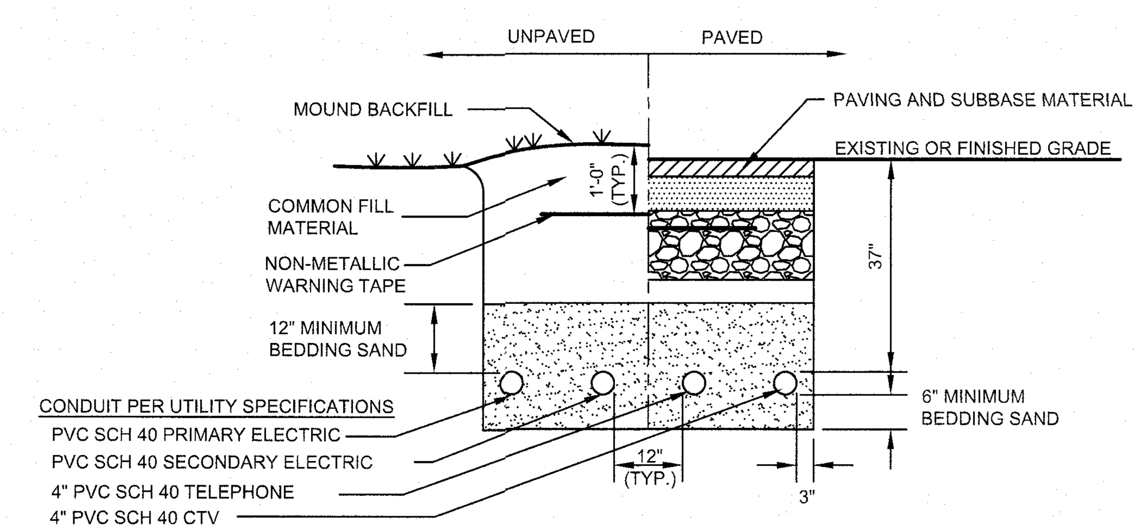


MAIN CROSSINGS

WATER MAIN/SEWER MAIN SEPARATION
NOT TO SCALE
(AUGUST 2011)

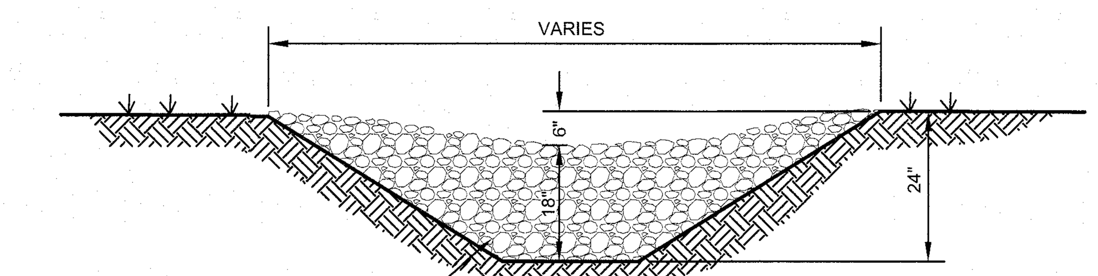


PLAN - HORIZONTAL BENDS, TEES AND PLUGS



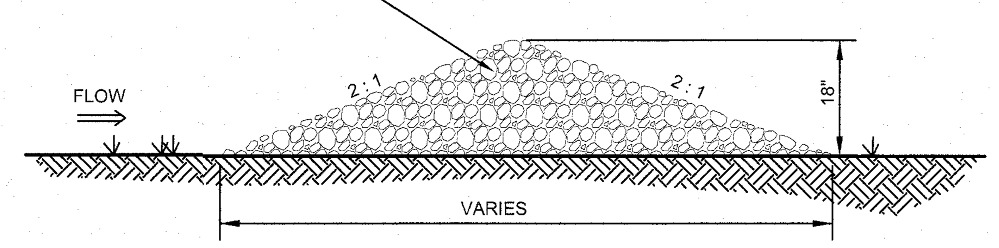
NOTES:
1. INSTALLATION AND MATERIALS OF UNDERGROUND UTILITIES SHALL CONFORM TO LOCAL UTILITY COMPANY SPECIFICATIONS.
2. COORDINATE WITH UTILITY COMPANIES PRIOR TO THE START OF CONSTRUCTION.

UTILITY TRENCH DETAIL
NOT TO SCALE



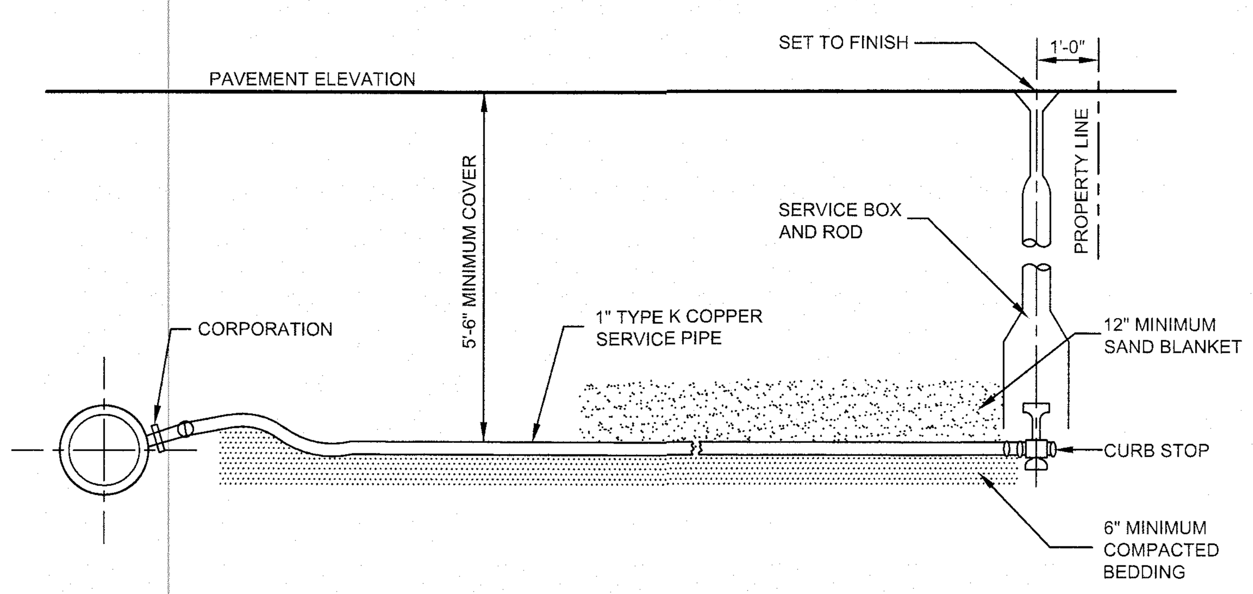
ELEVATION

2" - 3" COARSE AGGREGATE STONE (TYP.)

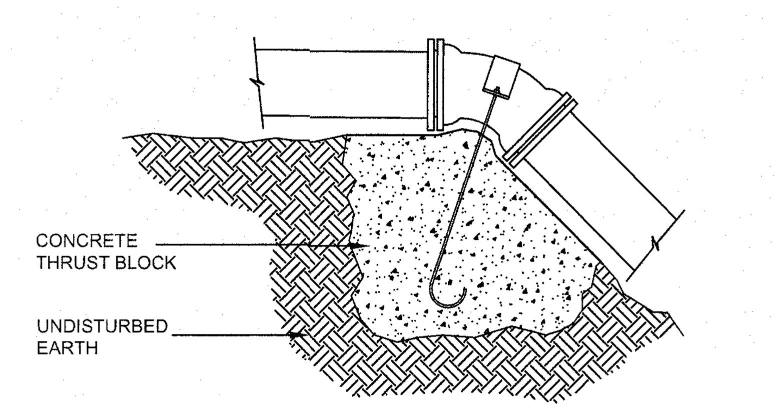


CROSS-SECTION

STONE CHECK DAM DETAIL
NOT TO SCALE



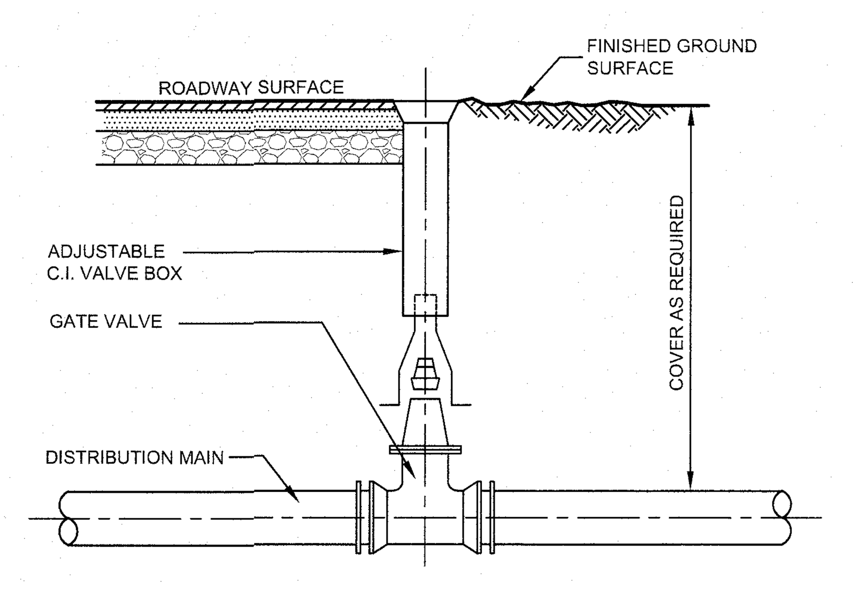
WATER SERVICE CONNECTION
NOT TO SCALE
(MARCH 2008)



ELEVATION - VERTICAL BENDS

NOTES
1. THRUST BLOCK DIMENSIONS TO BE DETERMINED IN FIELD BY ENGINEER BASED ON PIPE SIZE, WATER PRESSURE AND SOIL TYPE.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED EARTH.
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).

THRUST BLOCKS
NOT TO SCALE
(MARCH 2008)



WATER AND GAS GATE VALVE
NOT TO SCALE
(MARCH 2008)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

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STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

DATE: APRIL 6, 2021 | SCALE: AS SHOWN
PROJECT NO: 20-0921-2 | SHEET 14 OF 16

TURF ESTABLISHMENT SCHEDULE

PURPOSE:

TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

PREPARATION AND EXECUTION:

1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEEDED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED; TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY NO PHOSPHATE, SLOW RELEASE FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF, HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING FOR PERMANENT COVER SHALL OCCUR BETWEEN SEPTEMBER 15 AND OCTOBER 15 AND BETWEEN APRIL 15 AND JUNE 15. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER, WHEN THE GROUND IS FROZEN OR EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH STRAW. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3 : 1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 15, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

MAINTENANCE:

ALL SEEDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDED AREA. MAINTAIN SEEDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

APPLICATION RATES:

1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 4 INCHES.
2. LIME SHALL BE APPLIED AT A RATE OF 75 TO 100 POUNDS PER 1,000 S.F.
3. FERTILIZER SHALL BE APPLIED AT A RATE OF 30 POUNDS PER 1,000 S.F. IT IS RECOMMENDED THAT THE SOIL BE TESTED PRIOR TO APPLYING ANY FERTILIZERS TO DETERMINE WHAT LEVELS AND RATES ARE NECESSARY.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE APPLIED AT A RATE OF AT LEAST 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
5. TEMPORARY SEED MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 S.F.
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.6 POUNDS PER 1,000 S.F.
8. MULCH SHALL BE APPLIED AT A RATE OF 90 POUNDS PER 1,000 S.F.

MATERIALS:

1. LOAM USED FOR TOPSOIL SHALL BE FRIABLE, FERTILE, NATURAL FREE-DRAINING LOAM; FREE OF ROOTS, GRASS, STICKS, WEEDS, CLAY, SOD LUMPS, DEBRIS AND STONES LARGER THAN 1 INCH IN ANY DIMENSION. SOIL SHALL NOT BE EXCESSIVELY ACID OR ALKALINE AND CONTAIN NO TOXIC MATERIALS.
2. LIME SHALL BE GROUND LIMESTONE CONTAINING NO LESS THAN 95% CALCIUM AND MAGNESIUM CARBONATES.
3. FERTILIZER SHALL BE NO PHOSPHORUS, SLOW RELEASE.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE 99% PURE LIVE SEED AND CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   25% KENTUCKY BLUEGRASS
   25% REDTOP
   25% MANHATTAN PERENNIAL RYEGRASS

5. TEMPORARY SEEDING MIXTURE SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:

   15% BLACKWELL OR SHELTER SWITCHGRASS
   30% NIAGRA OR KAW BIG BLUESTEM
   30% CAMPER OR BLAZE LITTLESTEM
   15% NE-27 OR BLAZE SAND LOVEGRASS
   10% VIKING BIRDSFOOT TREFOIL

   INOCULUM SPECIFIC TO BIRDSFOOT TREFOIL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.

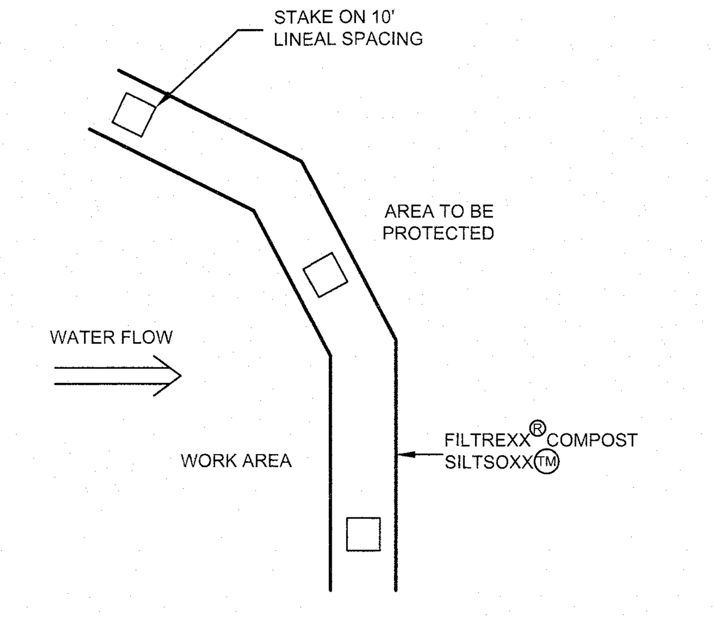
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE 99% PURE LIVE SEED AND SHALL CONSIST OF THE FOLLOWING:

   30% CREEPING RED FESCUE
   40% PERENNIAL RYE GRASS
   15% REDTOP
   15% BIRDSFOOT TREFOIL
   *IN ADDITION TO THE MIX SPECIFIED ABOVE, CROWN VETCH SHALL BE USED ON ALL SLOPES STEEPER THAN 3 : 1. CROWN VETCH SHALL BE APPLIED AT A RATE OF 10 POUNDS PER ACRE AND INOCULUM SPECIFIC TO CROWN VETCH MUST BE USED.

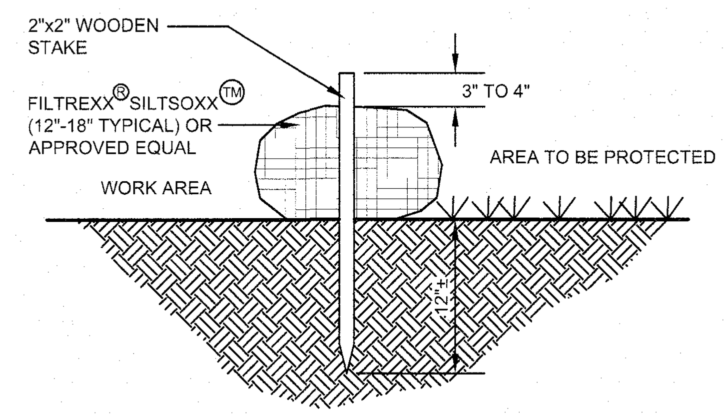
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES SHALL CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   15% SWITCH GRASS
   15% FOX SEDGE
   15% CREEPING BENTGRASS
   10% FLATPEA
   20% WILDFLOWER VARIETY

8. STRAW USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.
9. NATIVE PLANTINGS SHOULD BE USED FOR ALL NEW GREENSCAPES.
10. ALL WILDFLOWER SEEDING MIXES SHOULD BE FREE OF INVASIVE SPECIES.



PLAN VIEW

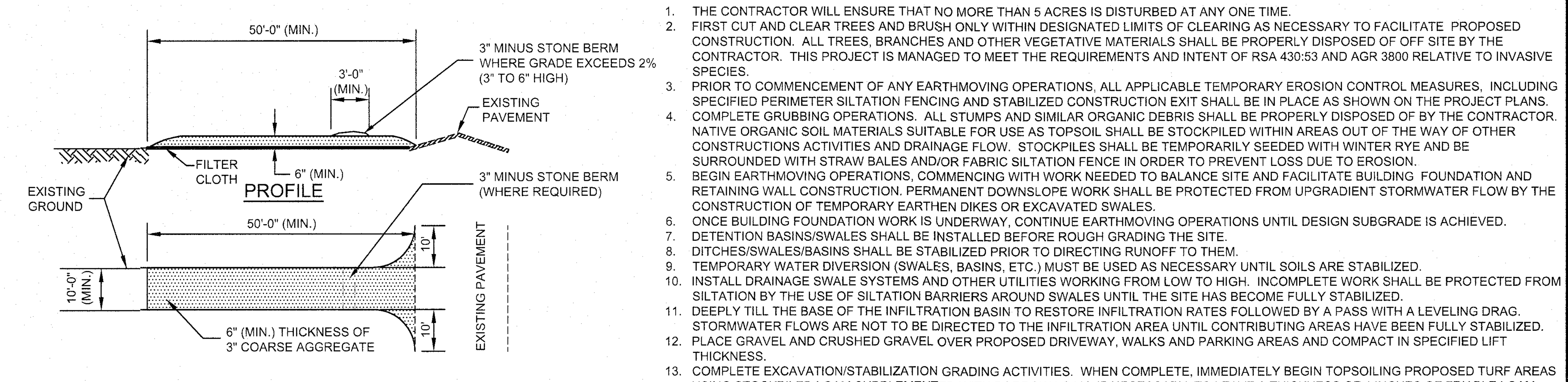


SECTION VIEW

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. GREAT SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® SILTSOXX™ DETAIL
NOT TO SCALE
(AUGUST 2011)



PLAN VIEW

STABILIZED CONSTRUCTION EXIT DETAIL
NOT TO SCALE

MAINTENANCE:

1. MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE CRUSHED STONE AND THE EFFECTIVENESS OF THE CRUSHED STONE PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOPDRESSED WITH NEW CRUSHED STONE OR COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2. IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH MINIMUM STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 3 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. THE MOUNTABLE BERM IS REQUIRED FOR 50' LONG EXITS.

CONSTRUCTION SEQUENCE

1. THE CONTRACTOR WILL ENSURE THAT NO MORE THAN 5 ACRES IS DISTURBED AT ANY ONE TIME.
2. FIRST CUT AND CLEAR TREES AND BRUSH ONLY WITHIN DESIGNATED LIMITS OF CLEARING AS NECESSARY TO FACILITATE PROPOSED CONSTRUCTION. ALL TREES, BRANCHES AND OTHER VEGETATIVE MATERIALS SHALL BE PROPERLY DISPOSED OF OFF SITE BY THE CONTRACTOR. THIS PROJECT IS MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS, ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES, INCLUDING SPECIFIED PERIMETER SILTATION FENCING AND STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTIONS ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED WITH STRAW BALES AND/OR FABRIC SILTATION FENCE IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. BEGIN EARTHMOVING OPERATIONS, COMMENCING WITH WORK NEEDED TO BALANCE SITE AND FACILITATE BUILDING FOUNDATION AND RETAINING WALL CONSTRUCTION. PERMANENT DOWNSLOPE WORK SHALL BE PROTECTED FROM UPGRADIENT STORMWATER FLOW BY THE CONSTRUCTION OF TEMPORARY EARTHEN DIKES OR EXCAVATED SWALES.
6. ONCE BUILDING FOUNDATION WORK IS UNDERWAY, CONTINUE EARTHMOVING OPERATIONS UNTIL DESIGN SUBGRADE IS ACHIEVED.
7. DETENTION BASINS/SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
8. DITCHES/SWALES/BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL SOILS ARE STABILIZED.
10. INSTALL DRAINAGE SWALE SYSTEMS AND OTHER UTILITIES WORKING FROM LOW TO HIGH. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF SILTATION BARRIERS AROUND SWALES UNTIL THE SITE HAS BECOME FULLY STABILIZED.
11. DEEPLY TILL THE BASE OF THE INFILTRATION BASIN TO RESTORE INFILTRATION RATES FOLLOWED BY A PASS WITH A LEVELING DRAG. STORMWATER FLOWS ARE NOT TO BE DIRECTED TO THE INFILTRATION AREA UNTIL CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
12. PLACE GRAVEL AND CRUSHED GRAVEL OVER PROPOSED DRIVEWAY, WALKS AND PARKING AREAS AND COMPACT IN SPECIFIED LIFT THICKNESS.
13. COMPLETE EXCAVATION/STABILIZATION GRADING ACTIVITIES. WHEN COMPLETE, IMMEDIATELY BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE A THICKNESS OF 4 INCHES OF FRIABLE LOAM.
14. FINE GRADE ALL FUTURE TURF AREAS AND HYDROSEED WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
15. INSTALL THE BINDER COURSE OF PAVEMENT OVER ALL DESIGNATED AREAS.
16. CONTINUE TO MONITOR AND RECTIFY MINOR SITE AND SLOPE EROSION UNTIL ENTIRE SITE APPEARS TO BE COMPLETELY STABILIZED AND VEGETATED WITH A HEALTHY STAND OF TURF OR GROUND COVER. MAINTAIN SPECIFIED SILTATION/EROSION CONTROL MEASURES THROUGH ONE WINTER.
17. INSTALL THE SPECIFIED WEARING COURSE OF PAVEMENT OVER THE BINDER COURSE.
18. COMPLETE INSTALLATION OF LANDSCAPING, SIGNAGE AND OTHER SITE AMENITIES.

CERTIFICATE OF OCCUPANCY PHASING PLAN AGREEMENT:

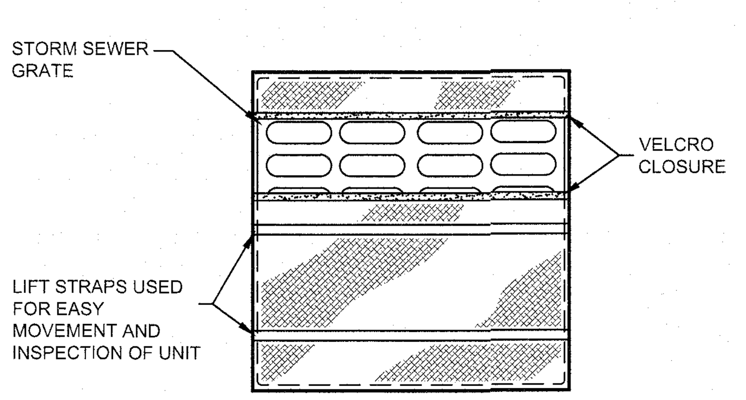
1. THE FOLLOWING SITE IMPROVEMENTS ARE REQUIRED FOR INDIVIDUAL CERTIFICATES OF OCCUPANCY AS CONSTRUCTION PROGRESSES:
   A. ROAD BASE COAT;
   B. STOP SIGNS AND TEMPORARY STRIPING OF STOP BARS;
   C. GRADING AND DRAINAGE;
   D. LOAM AND SEED THAT SUPPORTS THE SUBJECT UNIT OF THE CERTIFICATE OF OCCUPANCY;
   E. TEMPORARY STRIPING OF VISITOR PARKING; AND
   F. UTILITIES.

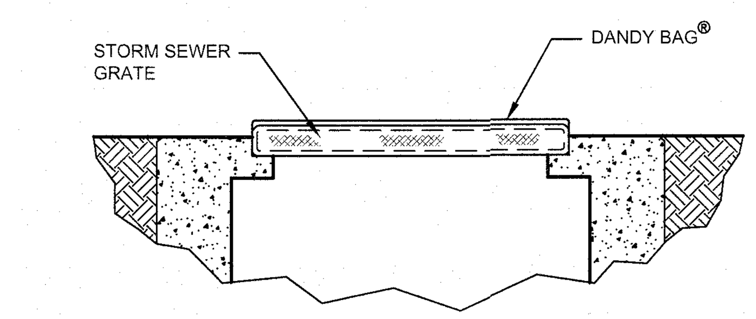
EROSION CONTROL NOTES

1. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION UNLESS AN ENVIRONMENTAL MONITOR IS EMPLOYED THROUGH THE DURATION OF CONSTRUCTION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING FORTY-FIVE (45) CALENDAR DAYS.
2. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
3. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
4. EROSION CONTROL AND STABILIZATION SHALL BE IN ACCORDANCE WITH HILLSBOROUGH COUNTY CONSERVATION DISTRICT-VEGETATIVE STANDARD AND SPECIFICATIONS FOR SEEDING GRASSES AND LEGUMES FOR LONG-TERM COVER ON EXCAVATED AREAS.
5. ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.
6. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
7. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
8. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
9. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
10. THE TOWN RESERVES THE RIGHT TO REQUIRE ADDITIONAL EROSION CONTROL MEASURES DURING CONSTRUCTION.
11. AREAS HAVING FINISH GRADE SLOPES OF 3 : 1 OR STEEPER, SHALL BE STABILIZED WITH JUTE MATTING WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION."
12. DETENTION BASINS/SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
13. DITCHES/SWALES/BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
14. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL SOILS ARE STABILIZED.
15. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
17. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ⅛".
18. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

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 4:1, 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 EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR 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.
4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

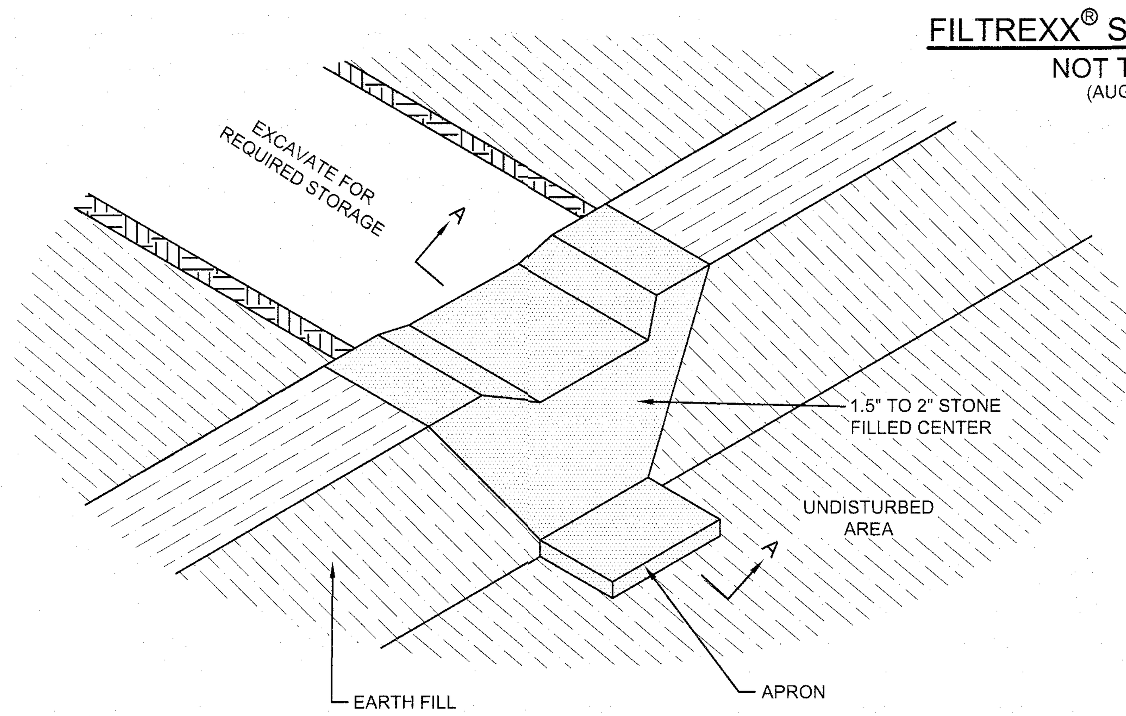




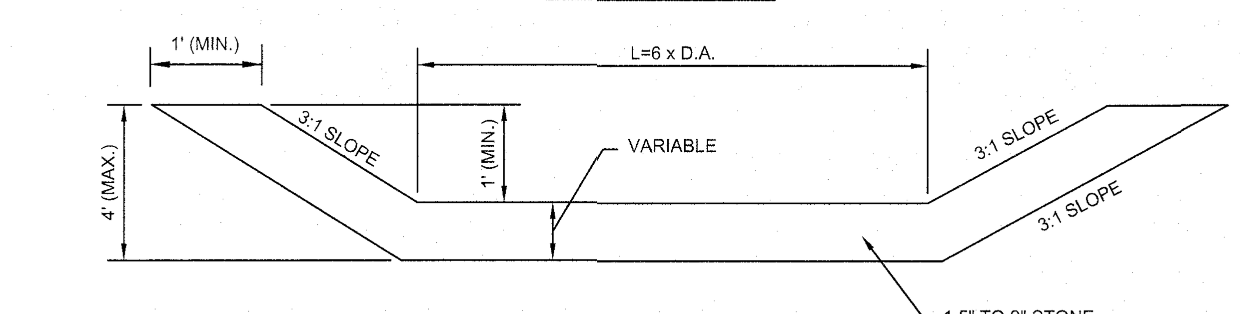
HI-FLOW DANDY BAG® (SAFETY ORANGE)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) x 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	1/min/m² (gal/min/ft²)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	2.1

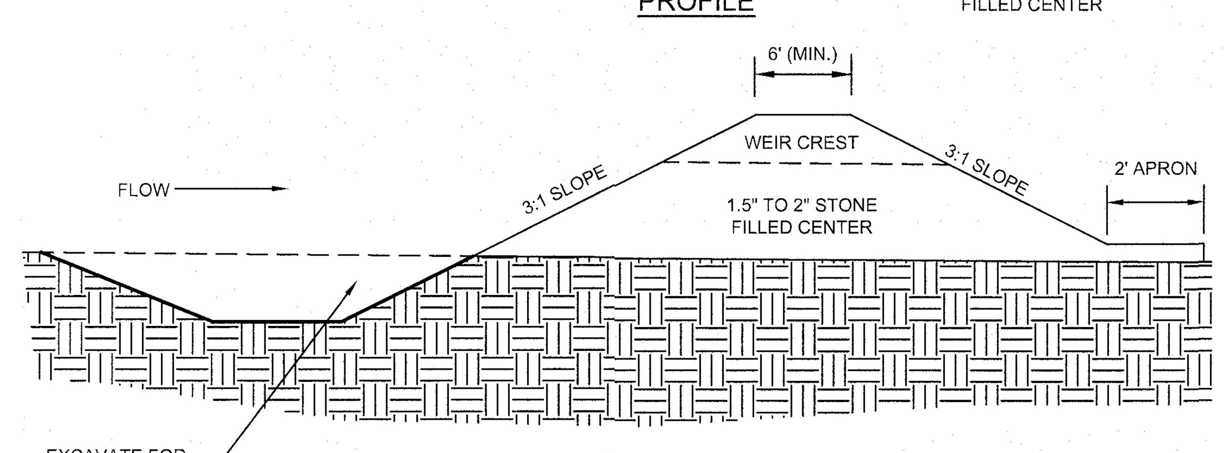
DANDY BAG®
NOT TO SCALE
(APRIL 2010)



ISOMETRIC VIEW



PROFILE

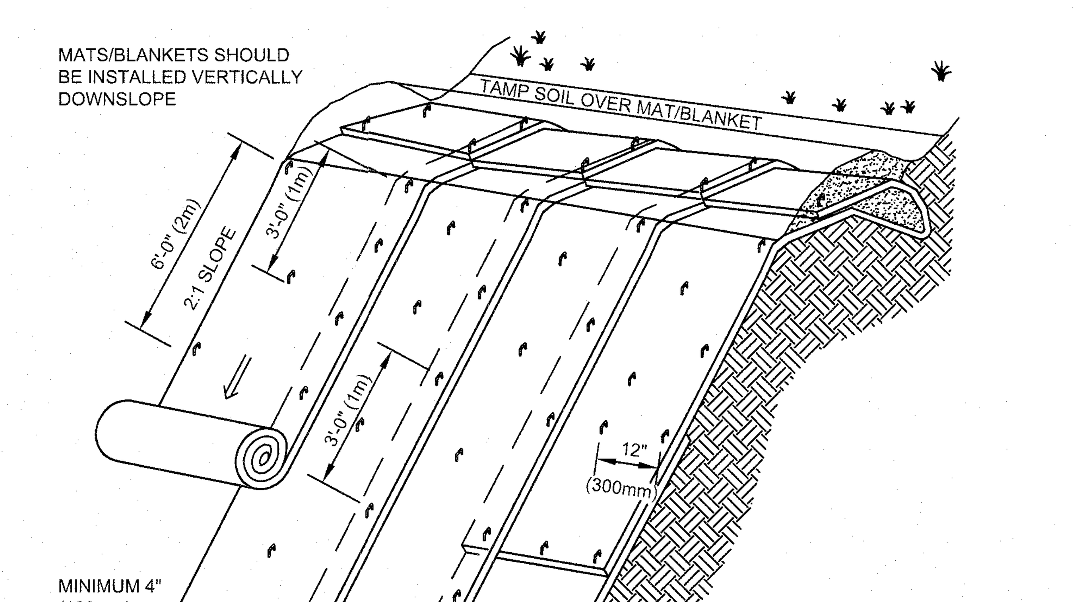


SECTION A-A

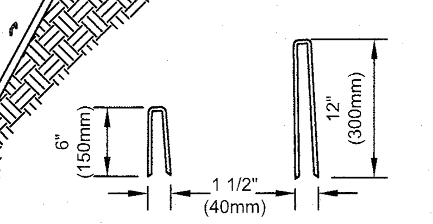
NOTES:

1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER, AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS AND/OR BASINS SHOULD BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL BASINS/PONDS ARE STABILIZED.

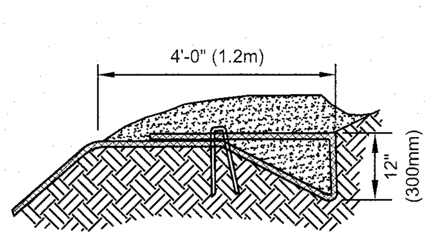
TEMPORARY SEDIMENT TRAP DETAIL
NOT TO SCALE



ISOMETRIC VIEW



STAPLES



BERM

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. EROSION BLANKETS TO BE A BCN150 OR AN APPROVED ALTERNATIVE WHICH MUST CONSIST OF ALL NATURAL FIBERS.

EROSION CONTROL BLANKETS - SLOPE INSTALLATION
NOT TO SCALE
(AUGUST 2011)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE
PAUL CHISHOLM
No. 15073
LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV

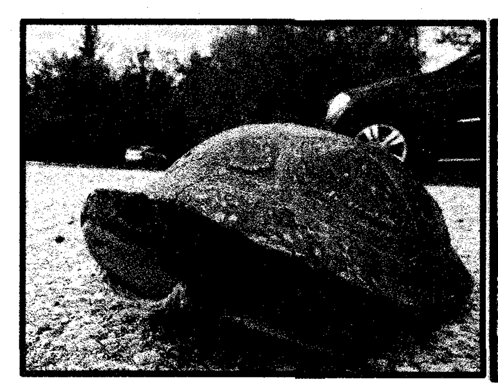
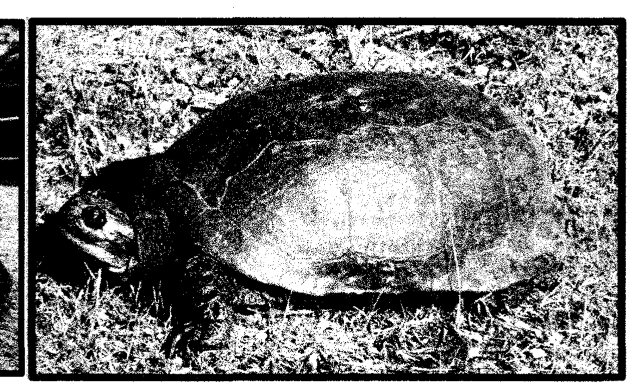
DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 15 OF 16

PLEASE REPORT RARE TURTLES

The NH Fish & Game Department is requesting observations of three turtle species that could be encountered onsite.

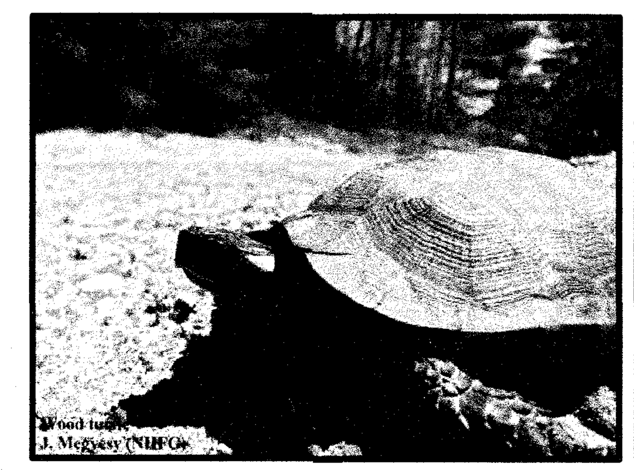
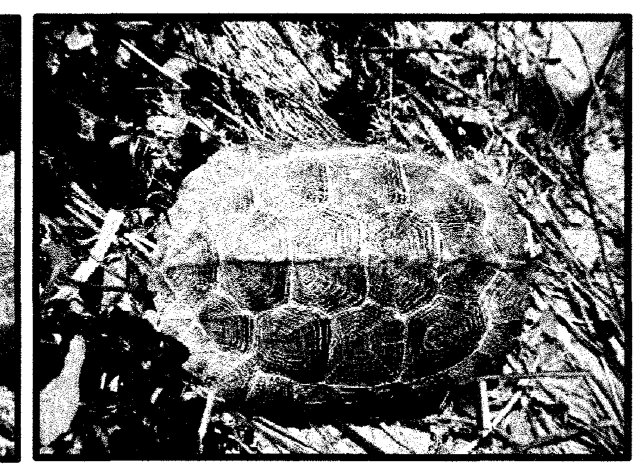
Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

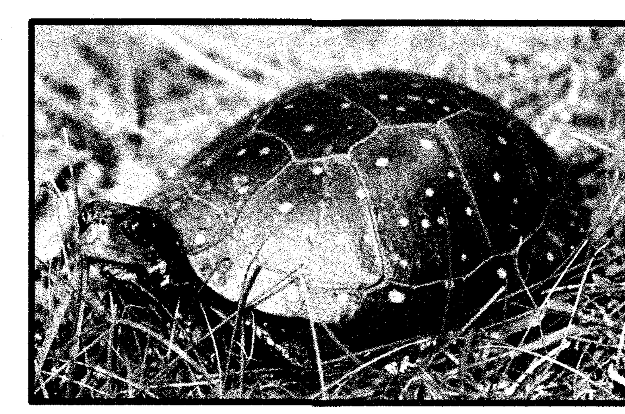
Blanding's turtle (state endangered)

- 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




Spotted turtle (state threatened)

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

CONSTRUCTION DETAILS

S.L. CHASSE STEEL

MAP 105 LOT 17-2
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, N.H. 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PAUL CHISHOLM No. 15078 LICENSED PROFESSIONAL ENGINEER
9/2/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AOT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
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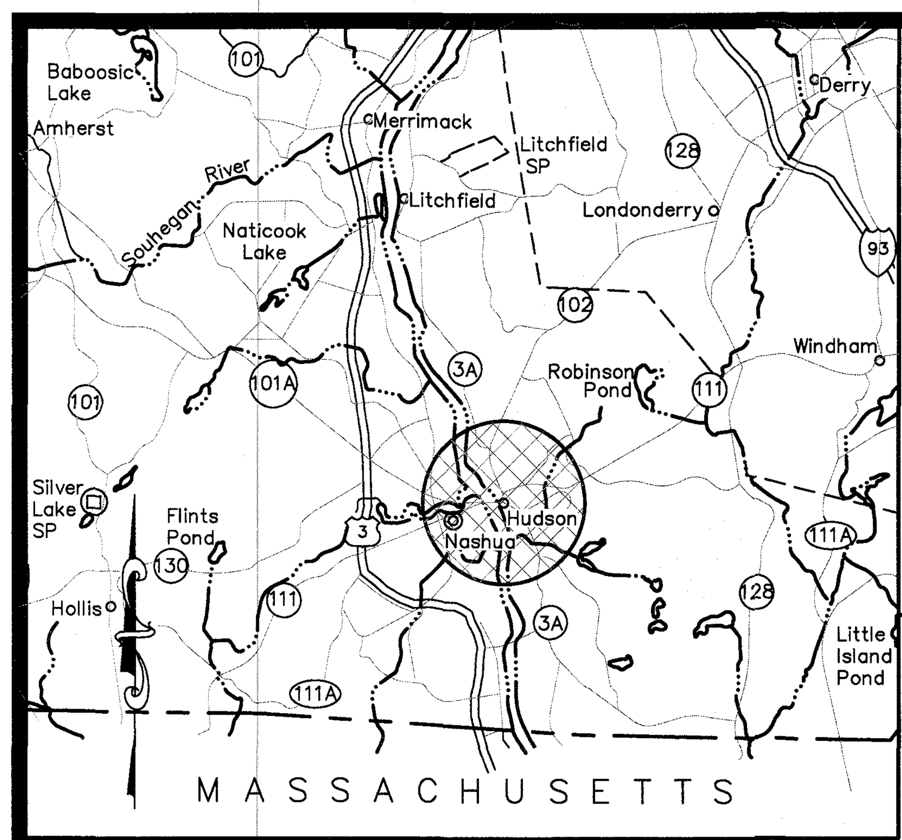
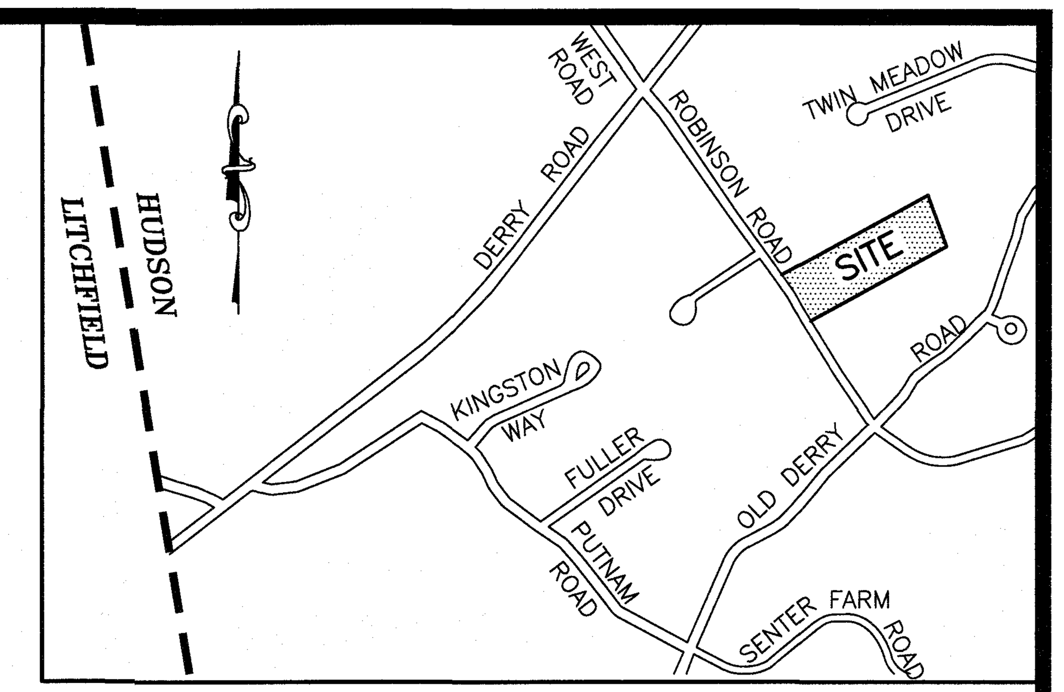
DATE: APRIL 6, 2021 SCALE: AS SHOWN
PROJECT NO: 20-0921-2 SHEET 16 OF 16



VICINITY PLAN
NOT TO SCALE

NON-RESIDENTIAL SITE PLAN
S.L. CHASSE CONTRACTOR BUILDINGS
MAP 105 LOT 17-3
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE

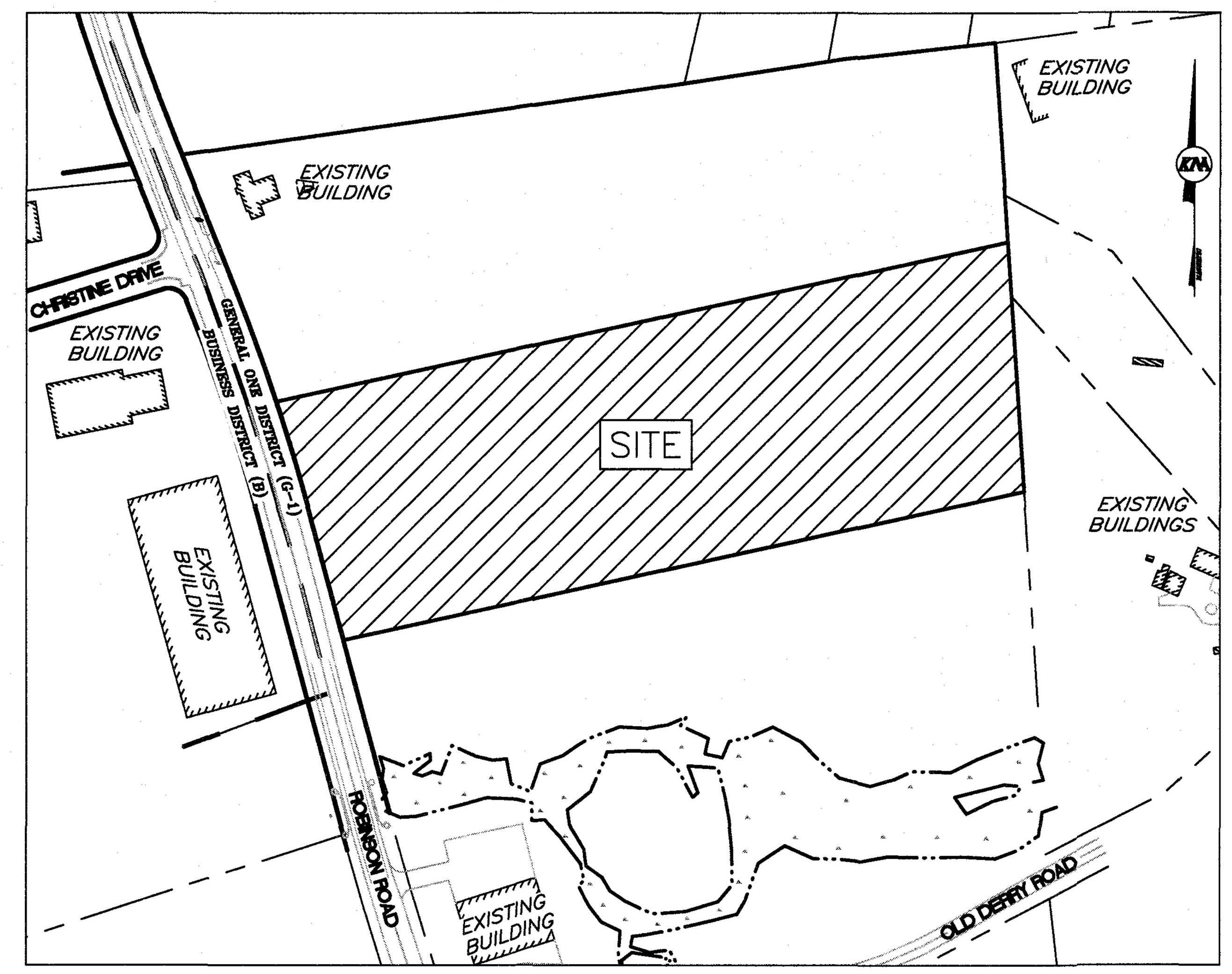


LOCUS PLAN
SCALE: 1" = 1,000'

NEW HAMPSHIRE FISH AND GAME (NHFG) AoT PERMIT CONDITIONS RELATED TO THREATENED & ENDANGERED SPECIES:

1. BLANDING'S TURTLES (STATE ENDANGERED), SPOTTED TURTLES (STATE THREATENED) AND WOOD TURTLES (SPECIES OF SPECIAL CONCERN) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHALL BE MADE AWARE OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED FLYERS THAT HELP TO IDENTIFY THESE SPECIES, ALONG WITH NHFG CONTACT INFORMATION. RARE SPECIES INFORMATION (E.G. IDENTIFICATION, OBSERVATION AND REPORTING OF OBSERVATIONS, WHEN TO CONTACT NHFG IMMEDIATELY AND NHFG CONTACT INFORMATION) SHALL BE COMMUNICATED DURING MORNING TAILGATE MEETINGS PRIOR TO WORK COMMENCEMENT DURING THE CONSTRUCTION PHASE OF THE PROJECT. SEE PLAN SHEET 16.
2. TURTLES ARE ATTRACTED TO DISTURBED GROUND DURING NESTING SEASON (MAY 15TH – JUNE 30TH). ALL TURTLE SPECIES NESTS ARE PROTECTED BY NH LAWS. IF PROJECT WORK IS CONDUCTED DURING NESTING SEASON, MORNING WILDLIFE SURVEYS (E.G. SWEEPS) IN AND AROUND DISTURBED SOILS SHALL BE CONDUCTED FOR TURTLES AND NEST SITES. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS (603–479–1129) AND JOSH MEGYESY (978–578–0802) AT NHFG IMMEDIATELY (PHONE OR TEXT) FOR FURTHER CONSULTATION AND PRIOR TO CONDUCTING WORK IN THAT AREA FOR THE DAY. SUSPECTED NEST AREAS SHALL BE AVOIDED AND MARKED OFF SO THAT NO DISTURBANCE OCCURS TO THE AREA. A PROTECTIVE BUFFER OF THIS AREA SHALL BE ESTABLISHED OF NO LESS THAN 10 FEET AROUND THE SUSPECTED AREA UNTIL NHFG ADVISES ON HOW TO PROCEED.
3. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES;
4. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603–271–2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION;
5. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE;
6. 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 NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.

   SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE AND IF IN DIRECT HARM FROM PROJECT ACTIVITIES. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.
7. THE NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.



EXISTING FEATURES WITHIN 200 FEET
SCALE: 1" = 200'

LEGEND

WETLAND
EDGE OF PAVEMENT
ZONE BOUNDARY
PROPERTY LINE
PROPERTY LINE

OWNER OF RECORD/APPLICANT:
SLC DEVELOPMENT, LLC
8 CHRISTINE DRIVE
HUDSON, NEW HAMPSHIRE 03051

PREPARED BY:
KEACH–NORDSTROM ASSOCIATES, INC.
10 COMMERCE PARK NORTH, SUITE 3
BEDFORD, NEW HAMPSHIRE 03110
(603) 627–2881

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL TOLL FREE 811

9/14/22

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

APRIL 6, 2021
AMENDED MAY 25, 2022
LAST REVISED: SEPTEMBER 12, 2022
PROJECT NO. 20–0921–2

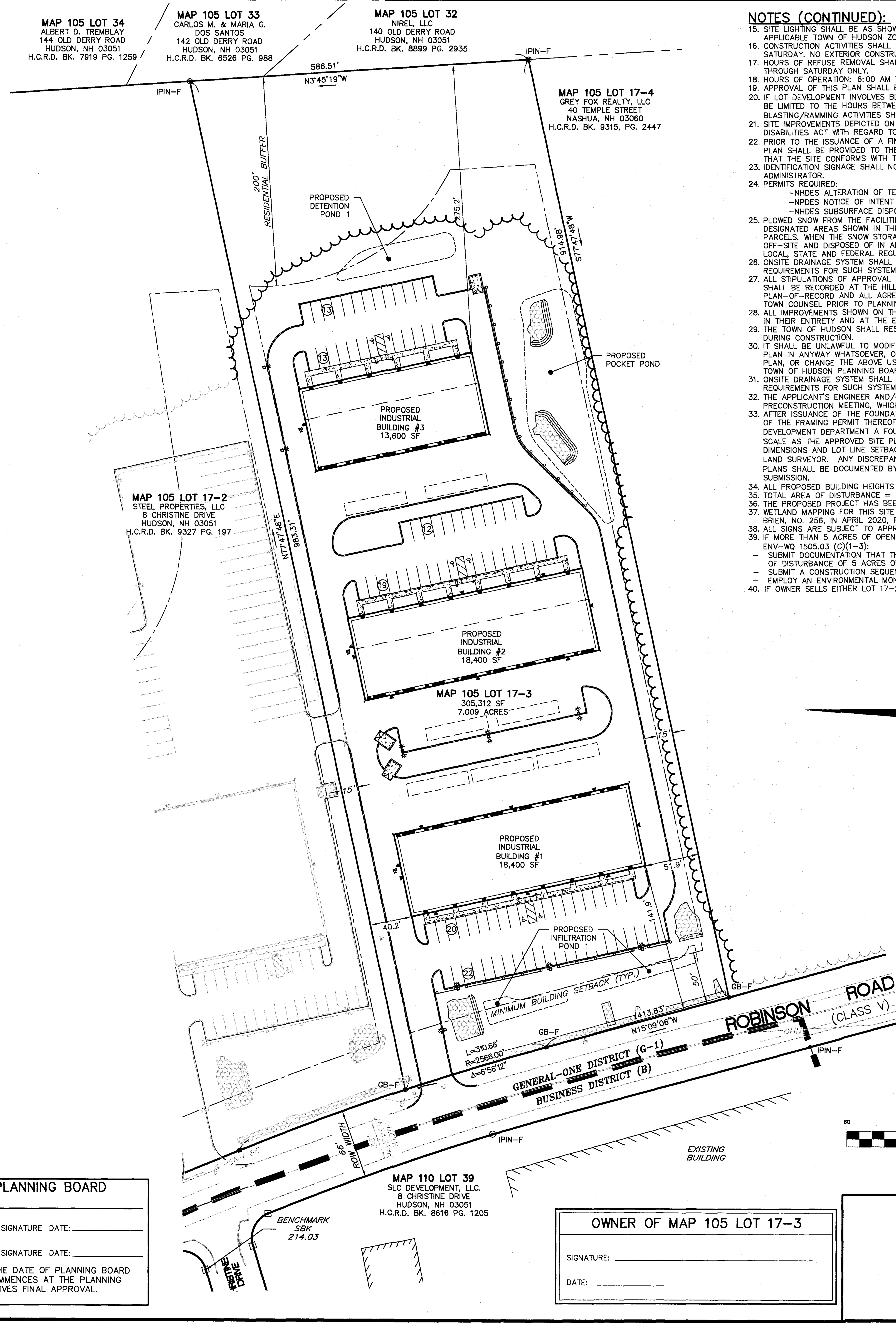
SHEET TITLE	SHEET No.
MASTER SITE PLAN	1
EXISTING CONDITIONS PLAN	2
NON-RESIDENTIAL SITE LAYOUT PLAN	3
GRADING, DRAINAGE & UTILITY PLAN	4
EROSION CONTROL PLAN	5
LANDSCAPE PLAN	6
LIGHTING PLAN	7
SIGHT DISTANCE PLAN & PROFILE	8
CONSTRUCTION DETAILS	9 – 15
TEST PITS	16

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

LEGEND

GB–TBS	GRANITE BOUND TO BE SET
IPIN–TBS	IRON PIN TO BE SET
DH–TBS	DRILL HOLE TO BE SET
	PROPOSED UTILITY POLE
	PROPOSED SIGN
	PROPOSED LIGHT
GV	PROPOSED GAS VALVE
WV	PROPOSED WATER VALVE
	PROPOSED HYDRANT
	PROPOSED CHAIN LINK FENCE
	PROPOSED BARBED WIRE FENCE
OHU	PROPOSED OVERHEAD UTILITIES
UGU	PROPOSED UNDERGROUND UTILITIES
G	PROPOSED GAS LINE
W	PROPOSED WATER LINE
S	PROPOSED SEWER LINE
	PROPOSED DRAINAGE LINE
	PROPOSED TREELINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED VERTICAL GRANITE CURB
	PROPOSED 2' CONTOUR
	PROPOSED RETAINING WALL
	PROPOSED BITUMINOUS CURB
	ABUTTER LINE
	PROPERTY LINE
	WETLAND
	EDGE OF PAVEMENT
	10' CONTOUR
	2' CONTOUR
	BUILDING SETBACK
	GREEN SPACE BUFFER
	EASEMENT
	ZONE LINE
IPIN	IRON PIN
SB	STONE BOUND
	UTILITY POLE
GV	GAS VALVE
WV	WATER VALVE
	HYDRANT
	WATER SHUT OFF
	SEWER MANHOLE
	TREELINE

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

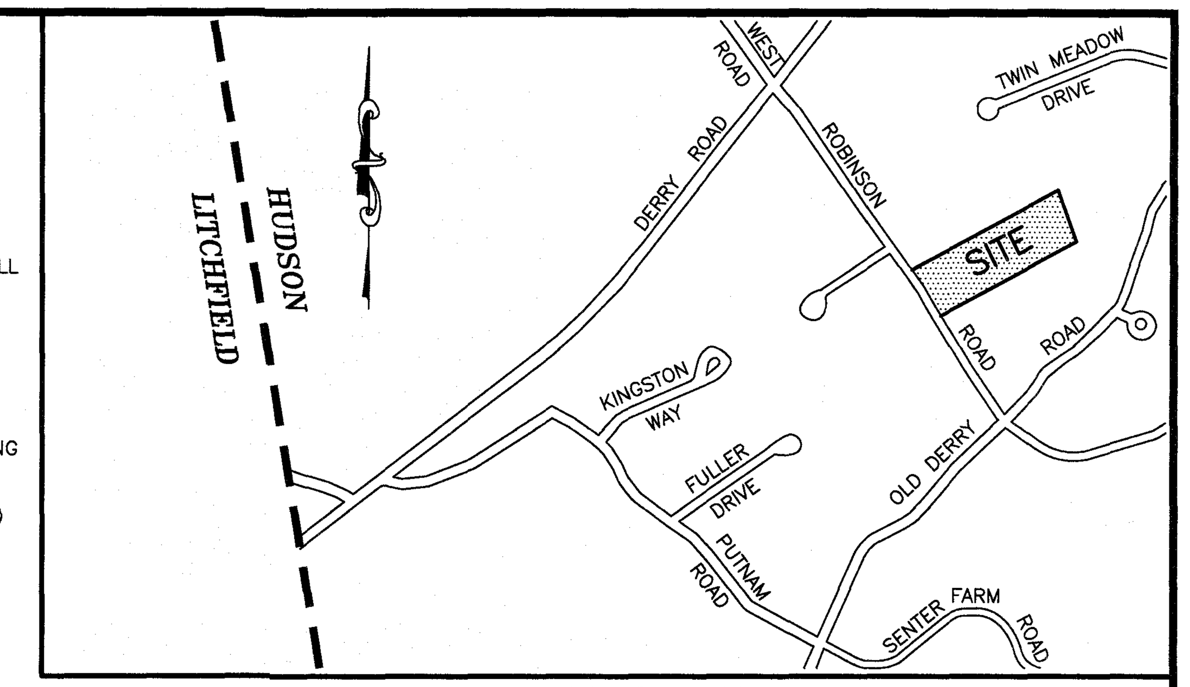


NOTES (CONTINUED):

15. SITE LIGHTING SHALL BE AS SHOWN ON THE PLAN, DIRECTED ONTO SITE, AND SHALL CONFORM WITH ALL APPLICABLE TOWN OF HUDSON ZONING REGULATIONS.
16. CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO THE HOURS OF 7:00 AM & 7:00 PM, MONDAY THROUGH SATURDAY. NO EXTERIOR CONSTRUCTION ACTIVITIES SHALL OCCUR ON SUNDAY.
17. HOURS OF REFUSE REMOVAL SHALL BE EXCLUSIVE TO THE HOURS OF 7:00 AM AND 7:00 PM, MONDAY THROUGH SATURDAY ONLY.
18. HOURS OF OPERATION: 6:00 AM TO 6:00 PM, MONDAY THROUGH SATURDAY.
19. APPROVAL OF THIS PLAN SHALL BE SUBJECT TO FINAL ENGINEERING REVIEW.
20. IF LOT DEVELOPMENT INVOLVES BLASTING AND/OR RAMMING OF BEDROCK MATERIALS, SAID ACTIVITIES SHALL BE LIMITED TO THE HOURS BETWEEN 7:00AM AND 5:00PM MONDAY THROUGH FRIDAY ONLY. SAID BLASTING/RAMMING ACTIVITIES SHALL BE PROHIBITED ON WEEKENDS.
21. SITE IMPROVEMENTS DEPICTED ON THE PLAN SHALL CONFORM WITH TITLE III OF THE AMERICANS WITH DISABILITIES ACT WITH REGARD TO DIMENSION AND GRADE.
22. PRIOR TO THE ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY, AN L.L.S. CERTIFIED "AS-BUILT" SITE PLAN SHALL BE PROVIDED TO THE TOWN OF HUDSON COMMUNITY DEVELOPMENT DEPARTMENT CONFIRMING THAT THE SITE CONFORMS WITH THE PLANNING BOARD APPROVED SITE PLAN.
23. IDENTIFICATION SIGNAGE SHALL NOT BE ERECTED UNTIL APPROVED BY THE BUILDING INSPECTOR AND ZONING ADMINISTRATOR.
24. PERMITS REQUIRED:

	STATUS
–NHDES ALTERATION OF TERRAIN	PENDING AMENDMENT (ORIGINAL APPROVAL: AOT–2021)
–NPDES NOTICE OF INTENT	CERTIFIED ON 03/03/2022 (NPDES ID: NHR1001DJ)
–NHDES SUBSURFACE DISPOSAL	APPROVED ON 10/05/2021 (eCA2021100533)

25. PLOWED SNOW FROM THE FACILITIES, DRIVEWAY, PARKING LOTS AND SIDEWALK SHALL BE STORED IN THE DESIGNATED AREAS SHOWN IN THIS PLAN SET. NO SNOW MAY BE PLOWED OR STORED ON THE ABUTTING PARCELS. WHEN THE SNOW STORAGE AREAS ARE AT CAPACITY, SUBSEQUENT SNOW SHALL BE HAULED OFF-SITE AND DISPOSED OF IN AN ENVIRONMENTALLY SOUND FASHION AND IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
26. ONSITE DRAINAGE SYSTEM SHALL BE CONSTRUCTED AND MAINTAINED IN COMPLIANCE WITH NHDES REQUIREMENTS FOR SUCH SYSTEMS.
27. ALL STIPULATIONS OF APPROVAL SHALL BE INCORPORATED INTO THE DEVELOPMENT AGREEMENT, WHICH SHALL BE RECORDED AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS, TOGETHER WITH THE SITE PLAN-OF-RECORD AND ALL AGREED UPON EASEMENT DEEDS, WHICH SHALL BE FAVORABLY REVIEWED BY TOWN COUNSEL PRIOR TO PLANNING BOARD ENDORSEMENT OF PLAN.
28. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN-OF-RECORD, INCLUDING NOTES 1-40, SHALL BE COMPLETED IN THEIR ENTIRETY AND AT THE EXPENSE OF THE APPLICANT OR HIS ASSIGNS.
29. THE TOWN OF HUDSON SHALL RESERVE THE RIGHT TO REQUIRE ADDITIONAL EROSION CONTROL MEASURES DURING CONSTRUCTION.
30. IT SHALL BE UNLAWFUL TO MODIFY, CHANGE, OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN IN ANYWAY WHATSOEVER, OR CONVERT OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN, OR CHANGE THE ABOVE USE INDICATED ON THE PLAN WITHOUT RECEIVING APPROVAL FROM THE TOWN OF HUDSON PLANNING BOARD.
31. ONSITE DRAINAGE SYSTEM SHALL BE CONSTRUCTED AND MAINTAINED IN COMPLIANCE WITH NHDES REQUIREMENTS FOR SUCH SYSTEMS.
32. THE APPLICANT'S ENGINEER AND/OR CONTRACTOR SHALL CONTACT THE TOWN OF HUDSON TO SCHEDULE A PRECONSTRUCTION MEETING, WHICH WILL BE HELD WITH STAFF PRIOR TO STARTING CONSTRUCTION.
33. AFTER ISSUANCE OF THE FOUNDATION PERMIT FOR THE PROPOSED BUILDING, AND PRIOR TO THE ISSUANCE OF THE FRAMING PERMIT THEREOF, THE APPLICANT SHALL SUBMIT TO THE HUDSON COMMUNITY DEVELOPMENT DEPARTMENT A FOUNDATION "AS-BUILT" PLAN ON A TRANSPARENCY AND TO THE SAME SCALE AS THE APPROVED SITE PLAN. THE FOUNDATION "AS-BUILT" PLAN SHALL INCLUDE ALL STRUCTURAL DIMENSIONS AND LOT LINE SETBACK MEASUREMENTS TO THE FOUNDATION AND BE STAMPED BY A LICENSED LAND SURVEYOR. ANY DISCREPANCY BETWEEN THE APPROVED SITE PLAN AND FOUNDATION "AS-BUILT" PLANS SHALL BE DOCUMENTED BY THE APPLICANT AND BE PART OF THE FOUNDATION "AS-BUILT" SUBMISSION.
34. ALL PROPOSED BUILDING HEIGHTS ARE UNDER 38'.
35. TOTAL AREA OF DISTURBANCE = 250,930 SF
36. THE PROPOSED PROJECT HAS BEEN DESIGNED TO MEET 2018 MS4 REQUIREMENTS.
37. WETLAND MAPPING FOR THIS SITE AND SURROUNDING SITES WAS DONE BY WETLAND SCIENTIST JOSHUA BRIEN, NO. 256, IN APRIL 2020, REFER TO REFERENCE PLAN NUMBER ONE FOR MORE INFORMATION.
38. ALL SIGNS ARE SUBJECT TO APPROVAL BY HUDSON PLANNING BOARD PRIOR TO INSTALLATION.
39. IF MORE THAN 5 ACRES OF OPEN AREA ARE DISTURBED AT ONE TIME THE FOLLOWING SHALL BE MET PER ENV-WQ 1505.03 (C)(1-3):
   - SUBMIT DOCUMENTATION THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLE LIMIT THE CONSTRUCTION SCHEDULE.
   - SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST.
   - EMPLOY AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.
40. IF OWNER SELLS EITHER LOT 17-2 OR 17-3, AN EASEMENT FOR CROSS ACCESS WILL BE NECESSARY.



LOCUS PLAN
SCALE: 1" = 1,000'

REFERENCE PLANS:

1. "SUBDIVISION PLAN, NOURY INVESTEMENTS, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. (14 SHEETS)
   H.C.R.D. PLAN NUMBER: 40605

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THREE PROPOSED INDUSTRIAL BUILDINGS TOTALING 50,400 SF AND ASSOCIATED PARKING ON ROBINSON ROAD ON MAP 105 LOT 17-3 IN THE TOWN OF HUDSON, NEW HAMPSHIRE, AND NO OTHER PURPOSE.
2. MAP 105 LOT 17-3 INDICATES TOWN OF HUDSON TAX ASSESSOR'S MAP AND LOT NUMBER.
3. OWNER OF RECORD: STEEL PROPERTIES, LLC.
   8 CHRISTINE DRIVE
   HUDSON, N.H. 03051
   H.C.R.D. BK. 9327 PG. 197
4. AREA OF SUBJECT PARCEL = 305,312 SF, OR 7.009 ACRES
5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD SURVEY PERFORMED BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST 2015.
6. HORIZONTAL DATUM IS NAD83. VERTICAL DATUM IS NGVD29 FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS.
7. THE SUBJECT PARCEL IS LOCATED WITHIN THE GENERAL-ONE (G-1) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS FOR LOTS SERVICED WITHOUT MUNICIPAL SEWER AND WATER:

	REQUIRED	PROPOSED
MINIMUM LOT AREA	87,120 SF	305,312 SF
MINIMUM LOT FRONTAGE	200 FT	322.8 (ROBINSON),
MINIMUM BUILDING SETBACKS:		
FRONT	50 FT	141.9 FT
SIDE	15 FT	40.2 FT
REAR	15 FT	275.2 FT

8. PARCEL WILL BE SERVICED BY INDIVIDUAL SEPTIC AND TOWN WATER.
9. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
10. THE SUBJECT PREMISES IS NOT LOCATED WITHIN A DESIGNATED FLOOD ZONE AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 33011C0508D, PANEL 508 OF 701, AND MAP NUMBER 33011C0509D, PANEL 509 OF 701, EFFECTIVE DATE SEPTEMBER 25, 2009. THE SUBJECT PARCEL IS LOCATED IN ZONES 'A' & 'X'.
11. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
12. OPEN SPACE: REQUIRED = 40%, PROPOSED = 48%
13. PARKING CALCULATIONS:
    REQUIRED:
    INDUSTRIAL = 1 SPACE/600 SF
    BUILDING 1: 1 SPACE/600 SF X 17,480 SF = 29.13 SPACES
    BUILDING 2: 1 SPACE/600 SF X 17,480 SF = 29.13 SPACES
    BUILDING 3: 1 SPACE/600 SF X 12,920 SF = 21.53 SPACES
    OFFICE = 1 SPACE/300 SF
    BUILDING 1: 1 SPACE/300 SF X 920 SF = 3.07 SPACES
    BUILDING 2: 1 SPACE/300 SF X 920 SF = 3.07 SPACES
    BUILDING 3: 1 SPACE/300 SF X 680 SF = 2.27 SPACES
    TOTAL
    BUILDING 1: 29.13 SPACES + 3.07 SPACES = 33 SPACES
    BUILDING 2: 29.13 SPACES + 3.07 SPACES = 33 SPACES
    BUILDING 3: 21.53 SPACES + 2.27 SPACES = 24 SPACES
    TOTAL COMBINED SPACES REQUIRED = 90 SPACES
    PROPOSED:
    BUILDING 1: 43 SPACES + 2 HANDICAP SPACES = 44 SPACES
    BUILDING 2: 32 SPACES + 2 HANDICAP SPACES = 31 SPACES
    BUILDING 3: 27 SPACES + 2 HANDICAP SPACES = 26 SPACES
    TOTAL PROPOSED = 44 SPACES + 31 SPACES + 26 SPACES = 99 TOTAL SPACES
14. LOADING:
    REQUIRED:
    1 SPACE/FIRST 5,000 SF + 1 SPACE/10,000 SF x 45,400 SF = 1 + 4.54 = 6 SPACES
    BUILDING 1: 1 + 1.34 = 3 LOADING SPACES
    BUILDING 2: 1 + 1.34 = 3 LOADING SPACES
    BUILDING 3: 1 + 0 = 1 LOADING SPACE

    PROPOSED:
    BUILDING 1: 3 SPACES
    BUILDING 2: 3 SPACES
    BUILDING 3: 1 SPACE
    TOTAL PROPOSED: 7 SPACES

MASTER SITE PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

OWNER OF MAP 105 LOT 17-3
SIGNATURE: ______
DATE: ______

CERTIFICATION:
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE ON THE GROUND BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST OF 2015. SAID SURVEY HAS AN ERROR OF CLOSURE BETTER THAN ONE PART IN TEN THOUSAND (1:10,000).

LICENSED LAND SURVEYOR DATE

STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER 9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021 | SCALE: 1" = 60'
PROJECT NO: 20-0921-2 | SHEET 1 OF 16

LEGEND

⊡ GB-F	GRANITE BOUND FOUND
⊙ IPIN-F	IRON PIN FOUND
⊛ DH-F	DRILL HOLE FOUND
	UTILITY POLE
	ABUTTER LINE
	PROPERTY LINE
	WETLAND
	GUARDRAIL
OHU	OVERHEAD UTILITIES
	DRAINAGE LINE
	TREELINE
	EDGE OF PAVEMENT
	STONEWALL
	BUILDING SETBACK
	ZONE LINE
	10' CONTOUR
	2' CONTOUR

SCS SOILS LEGEND

CpB	CHATFIELD–HOLLIS–CANTON, 3 TO 8% SLOPES
CpC	CHATFIELD–HOLLIS–CANTON, 8 TO 15% SLOPES
HsB	HINCKLEY LOAMY SAND, 3 TO 8% SLOPES

SOURCE: USDA–SCS WEB SOIL SURVEY HILLSBOROUGH COUNTY

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN DRAWN FROM FIELD SURVEY INFORMATION AND OR PLOTTED FROM EXISTING DRAWINGS. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, KEACH–NORDSTROM ASSOCIATES, INC. DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. KEACH–NORDSTROM ASSOCIATES, INC. HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL	B
42B	CANTON SANDY LOAM	3–8%	WELL	B
42C	CANTON SANDY LOAM	8–15%	WELL	B
42D	CANTON SANDY LOAM	15–25%	WELL	B
62A	CHARLTON FINE SANDY LOAM	0–3%	WELL	B
62B	CHARLTON FINE SANDY LOAM	3–8%	WELL	B
62C	CHARLTON FINE SANDY LOAM	8–15%	WELL	B
62D	CHARLTON FINE SANDY LOAM	15–25%	WELL	B
178B	CHARLTON–CHATFIELD COMPLEX 60–40	3–8%	WELL	B
178C	CHARLTON–CHATFIELD COMPLEX 60–40	8–15%	WELL	B
178D	CHARLTON–CHATFIELD COMPLEX 60–40	15–25%	WELL	B
178E	CHARLTON–CHATFIELD COMPLEX 60–40	25–50%	WELL	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL	B
444C	NEWFIELDS FINE SANDY LOAM	8–15%	MODERATELY WELL	B
444D	NEWFIELDS FINE SANDY LOAM	15–25%	MODERATELY WELL	B

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

THIS SITE–SPECIFIC SOIL MAP WAS COMPLETED BY CYNTHIA M. BALCIUS, NEW HAMPSHIRE CERTIFIED SOIL SCIENTIST #82 OF STONEY RIDGE ENVIRONMENTAL LLC. FIELD WORK WAS COMPLETED ON THE FOLLOWING DATE(S):

1. Field Indicators of Hydric Soils in the United States, Version 8.1. 2017. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the National Technical Committee for Hydric Soils.
2. Field Indicators for Identifying Hydric Soils in New England. Version 4. June 2018. New England Hydric Soils Technical Committee.
3. The Site–Specific Soil Mapping Standards For New Hampshire And Vermont. SSSNNE Special Publication No.3, Version 5. December 2017.
4. Soil Survey Manual. United States Department of Agriculture Handbook No.18. Issued March 2017. US Government Printing Office. Soil Survey Staff. Washington D.C. 20402
5. New Hampshire State–Wide Numerical Soils Legend. USDA Natural Resources Conservation Service, Durham, New Hampshire. Issue #10, January 2011.
6. Field Book for Describing and Sampling Soils. Version 3.0 National Soil Survey Center. Natural Resources Conservation Service. U. S. Department of Agriculture, Lincoln, Nebraska. September 2012.
7. Keys to Soil Taxonomy. Twelfth Edition. 2014. United States Department of Agriculture. Natural Resources Conservation Service.

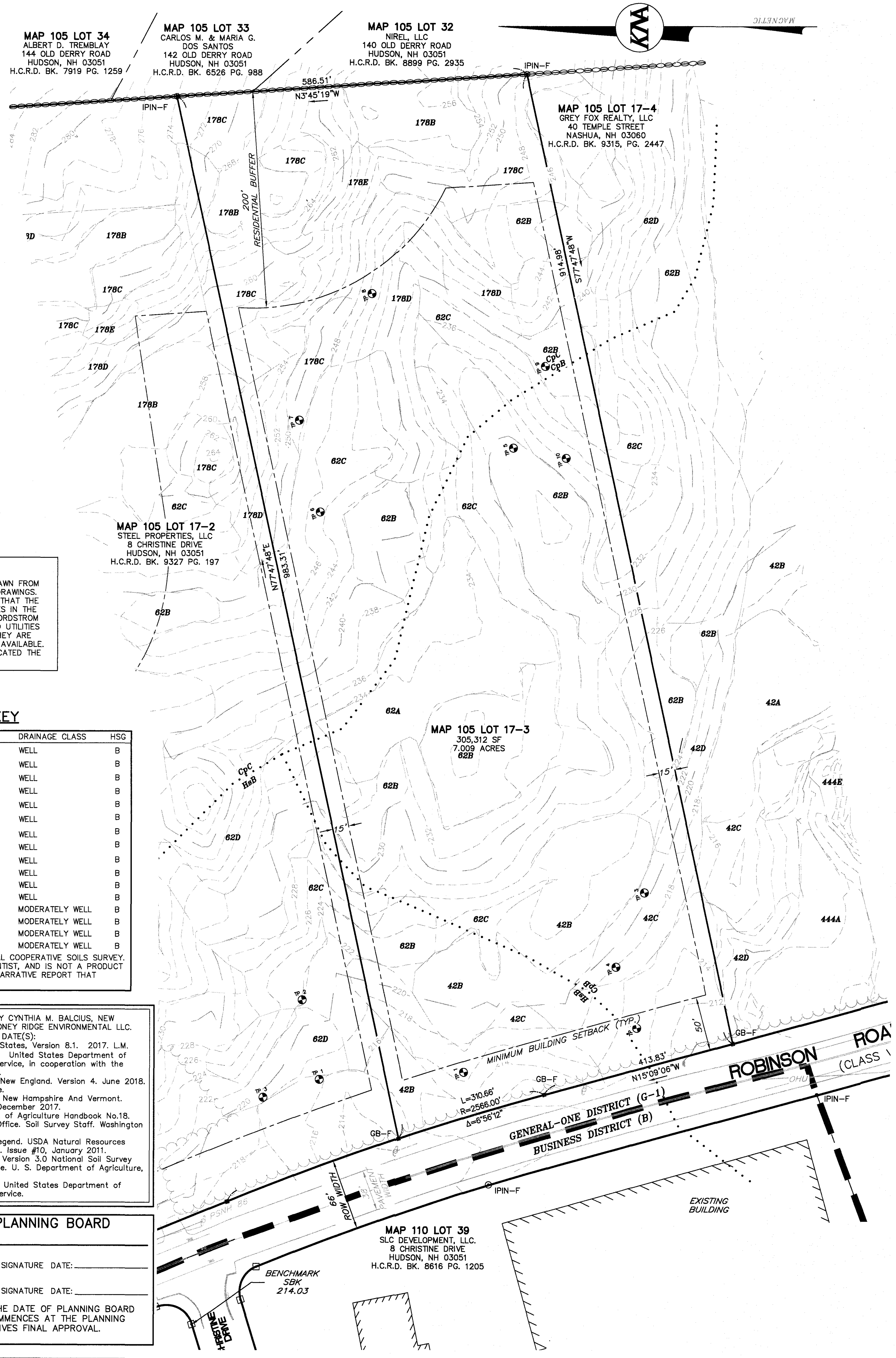
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL

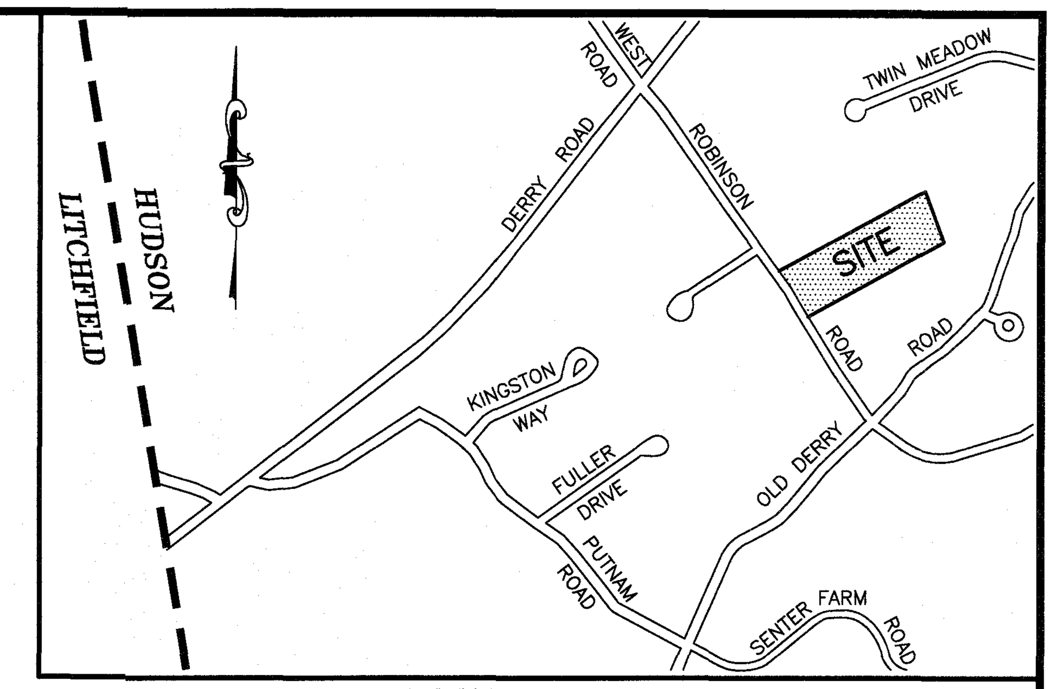
APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: ____________

____________ SIGNATURE DATE: ____________

____________ SIGNATURE DATE: ____________

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.





LOCUS PLAN

SCALE: 1" = 1,000'

REFERENCE PLANS:

1. "SUBDIVISION PLAN, NOURY INVESTMENT, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. (14 SHEETS) H.C.R.D. PLAN NUMBER: 40605

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS PRESENT ON MAP 105 LOT 17–3, ON ROBINSON ROAD IN THE TOWN OF HUDSON, NEW HAMPSHIRE AND NO OTHER PURPOSE.
2. TOTAL SITE AREA = 305,312 SF, OR 7.009 ACRES
3. MAP 105 LOT 17–3 INDICATES TOWN OF HUDSON TAX ASSESSOR'S MAP AND LOT NUMBER.
4. OWNER OF RECORD: SDJ DEVELOPMENT, LLC
   8 CHRISTINE DRIVE
   HUDSON, N.H. 03051
   H.C.R.D. BK. 9327 PG. 197
5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD SURVEY PERFORMED BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST 2015.
6. HORIZONTAL DATUM IS NAD83. VERTICAL DATUM IS NGVD29 FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA–OPUS.
7. THE SUBJECT PARCEL IS LOCATED WITHIN THE GENERAL–ONE (G–1) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS FOR LOTS SERVICED WITHOUT MUNICIPAL SEWER AND WATER:

	REQUIRED
MINIMUM LOT AREA:	87,120 SF
MINIMUM LOT FRONTAGE:	200 FT
MINIMUM BUILDING SETBACKS:	
FRONT	50 FT
SIDE	15 FT
REAR	15 FT
OPEN SPACE:	40%

8. PARCEL WILL BE SERVICED BY INDIVIDUAL SEPTIC AND WELL.
9. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
10. THE SUBJECT PREMISES IS NOT LOCATED WITHIN A DESIGNATED FLOOD ZONE AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 33011C0508D, PANEL 508 OF 701. THE SUBJECT PARCEL IS LOCATED IN ZONE 'X'.
11. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
12. THE CONTRACTOR SHALL ONLY USE BENCHMARKS AS PROVIDED BY THE SURVEYOR.
13. THERE ARE NO WETLANDS ON LOT 17–3. REFERENCE "SUBDIVISION PLAN, NOURY DEVELOPMENT, LLC, MAP 105 LOTS 16 & 17, ROBINSON ROAD & OLD DERRY ROAD, HUDSON, NEW HAMPSHIRE, DATED NOVEMBER 20, 2019, WITH REVISIONS THROUGH 05/13/20, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. (SHEET 1).

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811 CALL TOLL FREE

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft

EXISTING CONDITIONS PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

CERTIFICATION:
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE ON THE GROUND BY THIS OFFICE DURING DECEMBER 2009 AND AUGUST OF 2015. SAID SURVEY HAS AN ERROR OF CLOSURE BETTER THAN ONE PART IN TEN THOUSAND (1:10,000).

9/12/22

LICENSED LAND SURVEYOR DATE

REVISIONS			
No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: 1" = 60'
PROJECT NO: 20–0921–2	SHEET 2 OF 16

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

LEGEND

GB-F	GRANITE BOUND FOUND
IPIN-F	IRON PIN FOUND
DH-F	DRILL HOLE FOUND
	UTILITY POLE
	PROPOSED SIGN
	PROPOSED LIGHT
	PROPOSED HYDRANT
	PROPOSED WELL
	PROPOSED SEWER MANHOLE
	PROPOSED DRAINAGE MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED OUTLET STRUCTURE
	ABUTTER LINE
	PROPERTY LINE
OHU	OVERHEAD UTILITIES
	TREELINE
	EDGE OF PAVEMENT
	STONEWALL
	BUILDING SETBACK
	ZONE LINE
	PROPOSED TREELINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS CURB
	PROPOSED SWALE
	EASEMENT
	SITE LIGHTING
	BUILDING WALL PACK LIGHTING

DIG SAFE
RI-ME-NH-VT-MA 811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL

APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: ____________

____________ SIGNATURE DATE: ____________

____________ SIGNATURE DATE: ____________

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

NON-RESIDENTIAL SITE LAYOUT PLAN
S.L. CHASSE STEEL

MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE – PAUL CHISHOLM No. 15078 LICENSED – PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021 | **SCALE:** 1" = 40'
PROJECT NO: 20-0921-2 | **SHEET** 3 OF 16

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING, DRAINAGE, AND UTILITY SYSTEMS FOR THIS SITE.
2. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF HUDSON, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK PERFORMED IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016 ARE HEREBY INCORPORATED BY REFERENCE.
3. CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR ROAD CONSTRUCTION, PUBLIC WORKS DEPARTMENT, HUDSON, NEW HAMPSHIRE. ALL DRAINAGE PIPES SHOWN SHALL BE HDPE. CATCH BASINS SHALL BE TYPE B, AND HAVE 3' SUMPS UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
5. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. THE WATER, SANITARY SEWER, AND ELECTRICAL UTILITIES SHOWN HERE SHALL BE COORDINATED WITH THE FINAL BUILDING PLANS PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
7. PLANS TO COMPLY WITH THE TOWN OF HUDSON MS4 PERMIT.
8. PLAN ELEMENTS RELATED TO FIRE SUPPRESSION SHALL BE SUBJECT TO REVIEW BY THE FIRE DEPARTMENT AT THE TIME OF BUILDING APPLICATION.

LEGEND

- GB-F — GRANITE BOUND FOUND
- IPIN-F — IRON PIN FOUND
- DH-F — DRILL HOLE FOUND
- UTILITY POLE
- PROPOSED SIGN
- PROPOSED LIGHT
- PROPOSED HYDRANT
- PROPOSED WELL
- PROPOSED SEWER MANHOLE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED OUTLET STRUCTURE
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- GUARDRAIL
- OVERHEAD UTILITIES
- DRAINAGE LINE
- TREELINE
- EDGE OF PAVEMENT
- STONEWALL
- BUILDING SETBACK
- ZONE LINE
- 10' CONTOUR
- 2' CONTOUR
- PROPOSED CHAIN LINK FENCE
- PROPOSED STOCKADE FENCE
- PROPOSED POST & RAIL FENCE
- PROPOSED BARBED WIRE FENCE
- PROPOSED GUARDRAIL
- PROPOSED OVERHEAD UTILITIES
- PROPOSED UNDERGROUND UTILITIES
- PROPOSED GAS LINE
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- PROPOSED TREELINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED VERTICAL GRANITE CURB
- PROPOSED SLOPED GRANITE CURB
- PROPOSED BITUMINOUS CURB
- PROPOSED 2' CONTOUR
- PROPOSED SWALE
- PROPOSED RETAINING WALL
- PROPOSED STONEWALL
- EASEMENT
- SITE LIGHTING
- BUILDING WALL PACK LIGHTING
- TP 1 — TEST PIT

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL DRAINED	B
42B	CANTON SANDY LOAM	3–8%	WELL DRAINED	B
42C	CANTON SANDY LOAM	8–15%	WELL DRAINED	B
42D	CANTON SANDY LOAM	15–25%	WELL DRAINED	B
62A	CHARLTON FINE SANDY LOAM	0–3%	WELL DRAINED	B
62B	CHARLTON FINE SANDY LOAM	3–8%	WELL DRAINED	B
62C	CHARLTON FINE SANDY LOAM	8–15%	WELL DRAINED	B
62D	CHARLTON FINE SANDY LOAM	15–25%	WELL DRAINED	B
178B	CHARLTON–CHATFIELD COMPLEX (60–40)	3–8%	WELL DRAINED	B
178C	CHARLTON–CHATFIELD COMPLEX (60–40)	8–15%	WELL DRAINED	B
178D	CHARLTON–CHATFIELD COMPLEX (60–40)	15–25%	WELL DRAINED	B
178E	CHARLTON–CHATFIELD COMPLEX (60–40)	25–50%	WELL DRAINED	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL DRAINED	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL DRAINED	B
444C	NEWFIELDS FINE SANDY LOAM	8–15%	MODERATELY WELL DRAINED	B
444D	NEWFIELDS FINE SANDY LOAM	15–25%	MODERATELY WELL DRAINED	B

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

SCS SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS
CpB	CHATFIELD–HOLLIS–CANTON	3–8%
CpC	CHATFIELD–HOLLIS–CANTON	8–15%
HsB	HINCLKEY LOAMY SAND	3–8%
PlA	PIPESTONE LOAMY SAND	0–3%

SOURCE: WEB SOIL SURVEY, WWW.WEBSOILSURVEY.SC.EGOV.USDA.GOV

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811 CALL TOLL FREE

LOAM & SEED ALL DISTURBED AREAS (TYP.)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

GRADING, DRAINAGE & UTILITY PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA *KEACH–NORDSTROM ASSOCIATES, INC.*
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

STATE OF NEW HAMPSHIRE – PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 40'
PROJECT NO: 20–0921–2	**SHEET** 4 **OF** 16

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES AS WELL AS THE PERMANENT EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUEL TITLED "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION," DATED DECEMBER 2010, AS AMENDED FROM TIME TO TIME.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
7. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON-EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
9. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
10. THE TOWN OF HUDSON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
11. INFILTRATION AREAS ARE TO BE PROTECTED FROM OVER-COMPACTION DURING CONSTRUCTION.
12. SLOPES OVER 2:1 TO BE DESIGNED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
17. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN $\frac{1}{8}$".
18. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______ ______ SIGNATURE DATE: ______ ______ SIGNATURE DATE: ______ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DIG SAFE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

811 CALL TOLL FREE

EROSION & SEDIMENT CONTROL LEGEND

- PERMANENT OUTLET PROTECTION APRON (RIP RAP)
- INLET PROTECTION
- PERIMETER CONTROL
- ORANGE CONSTRUCTION FENCING
- TEMPORARY STONE CHECK DAM
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKETS
- NON DISTURBANCE AREA

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

EROSION CONTROL PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA *KEACH-NORDSTROM ASSOCIATES, INC.*
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 15073 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	**SCALE:** 1" = 40'
PROJECT NO: 20-0921-2	**SHEET** 5 **OF** 16

PLANTING SCHEDULE

Botanical Name/ Common Name	Size	Label	Quantity	Mature Height
Trees				
Acer rubrum 'Redpointe' / Redpointe Red Maple	3-3.5" CAL.	AR	7	40-60'
Betula nigra 'Heritage' / Heritage River Birch	3-3.5" CAL.	BN	15	40-60'
Shrubs				
Cornus sericea 'Arctic Fire' / Arctic Fire Red-Osier Dogwood	#3	CS	102	5-6'
Ilex glabra 'Compacta' / Compact Inkberry	#3	IG	72	5-6'
Grasses				
Calamagrostis a. 'Karl Foerster' / Karl Foerster Feather Reed Grass	#2	KF	20	5'

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

MAP 105 LOT 17-4
GREY FOX REALTY, LLC
40 TEMPLE STREET
NASHUA, NH 03060
H.C.R.D. BK. 9315, PG. 2447

LEGEND

- GB-F — GRANITE BOUND FOUND
- IPIN-F — IRON PIN FOUND
- DH-F — DRILL HOLE FOUND
- UTILITY POLE
- PROPOSED SIGN
- PROPOSED LIGHT
- PROPOSED HYDRANT
- PROPOSED WELL
- PROPOSED SEWER MANHOLE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED OUTLET STRUCTURE
- ABUTTER LINE
- PROPERTY LINE
- OHU — OVERHEAD UTILITIES
- TREELINE
- EDGE OF PAVEMENT
- STONEWALL
- BUILDING SETBACK
- ZONE LINE
- PROPOSED TREELINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BITUMINOUS CURB
- PROPOSED SWALE
- EASEMENT

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811 CALL TOLL FREE

LANDSCAPE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
2. ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE; WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
3. IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWED; ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% PEATMOSS AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
4. PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF PINE/HEMLOCK BARK MULCH OVER A 5oz. POLYPROPYLENE WEED CONTROL FABRIC.
5. PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.
6. PLANT TYPES SHOWN ARE SUBJECT TO AVAILABILITY. SUBSTITUTE MATERIALS CAN BE IMPLEMENTED WITH APPROVAL FROM KEACH NORDSTROM ASSOCIATES PRIOR TO CONSTRUCTION.

LANDSCAPE CALCULATIONS

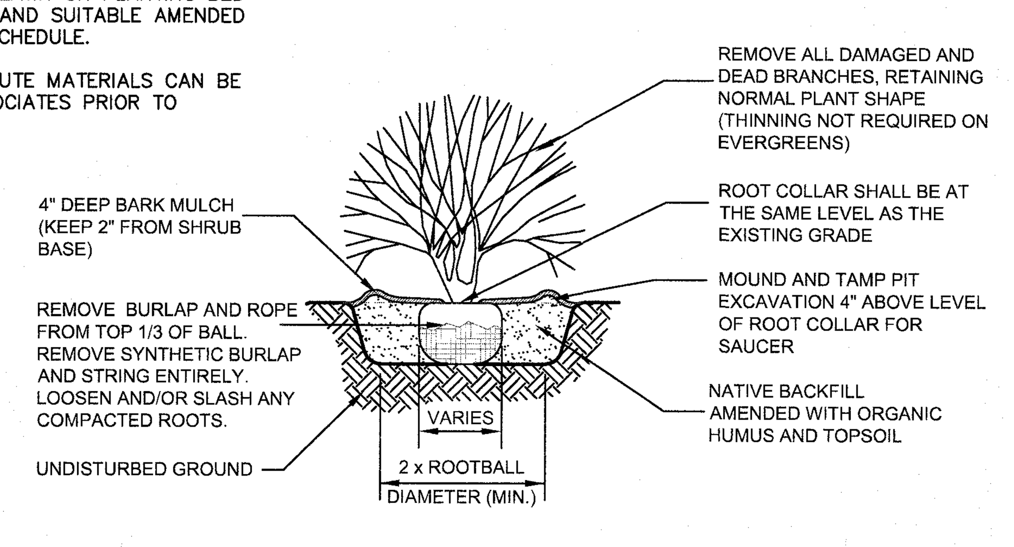
REQUIRED PARKING LOT INTERIOR LANDSCAPE AREA

PROPOSED PARKING AREA PAVED:	11,452 SF
10% REQUIRED LANDSCAPE AREA:	1,145 SF
PROVIDED LANDSCAPE AREA:	9,426 SF

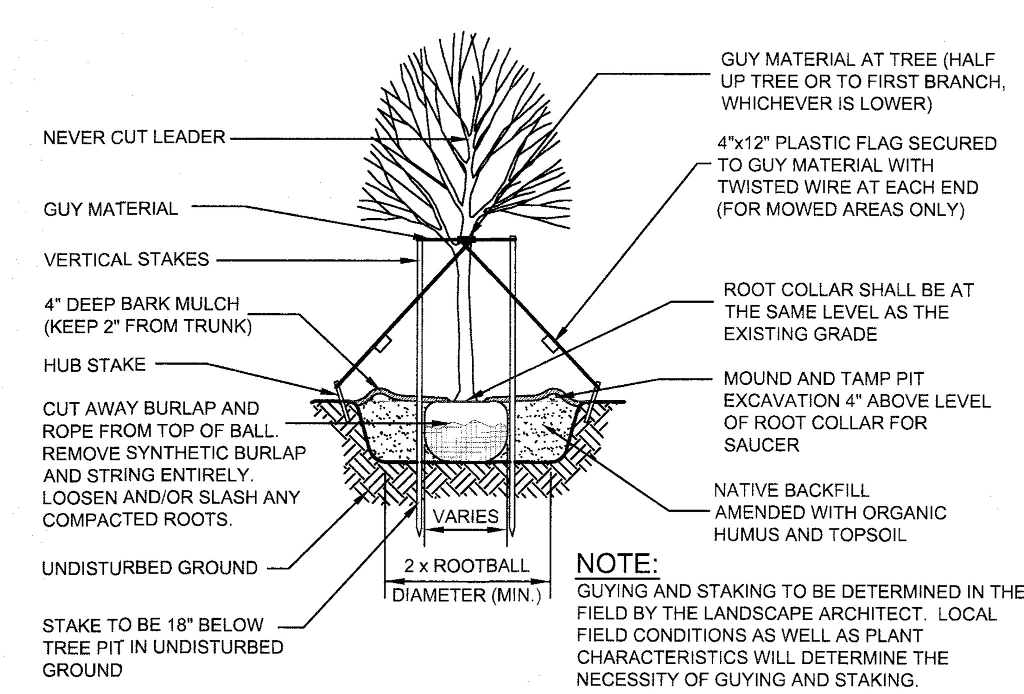
REQUIRED PARKING LOT SHADE TREES AND SHRUBS

PROPOSED PAVED AREA:	11,452 SF
SHADE TREES REQUIRED (11,452/1,600):	8 TREES REQUIRED
(OR 1 TREE/5 PROP. PARKING SPACES)	22 TREES REQUIRED
SHADE TREES PROVIDED:	22 TREES PROPOSED
SHRUBS REQUIRED (11,452/200):	58 SHRUBS, OR
(OR 1.6 x 108 PROP. PARKING SPACES)	173 SHRUBS PROPOSED
SHRUBS PROVIDED:	174 SHRUBS PROPOSED

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



BALLED & BURLAP SHRUB PLANTING DETAIL
NOT TO SCALE
(JANUARY 2012)



NOTE:
GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE LANDSCAPE ARCHITECT. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING.

DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE
(JANUARY 2012)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL

APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: ____________________

____________________ SIGNATURE DATE: __________

____________________ SIGNATURE DATE: __________

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

LANDSCAPE PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE – PAUL CHISHOLM No. 15079 – LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021 — **SCALE:** 1" = 40'

PROJECT NO: 20-0921-2 — **SHEET** 6 OF 16

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

LIGHTING NOTES:

1. ALL LIGHTS/FIXTURES SHALL BE AS SPECIFIED BY CHARRON LIGHTING.
2. ALL PROPOSED LIGHTS/FIXTURES ARE TO BE FULL CUTOFF.
3. FIXTURES SHALL BE MOUNTED AS HEIGHTS AS SPECIFIED IN TABLE.
4. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE LIGHTING.
5. LIGHTING WILL BE ON AT ALL TIMES TO PROVIDE SECURITY AND SAFETY FOR THE FACILITY.

LUMINAIRE SCHEDULE

SYMBOL	QTY	LABEL	ARRANGEMENT	DESCRIPTION
	3	S3	SINGLE	GLEON-AF-01-LED-E1-SL3-HSS/ SSS4A20SFN1 (20' AFG)
	8	S4	SINGLE	GLEON-AF-01-LED-E1-SL4/ SSS4A20SFN1 (20' AFG)
	3	S5-2	BACK-BACK	GLEON-AF-01-LED-E1-5WQ/ SSS4A20SFN2 (20' AFG)
	15	W3	SINGLE	GWC-AF-01-LED-E1-SL3-600/ WALL MTD 15' AFG
	7	W4	SINGLE	GWC-AF-01-LED-E1-SL4-600/ WALL MTD 15' AFG

STATAREA_1
1ST PARKING LOT
ILLUMINANCE (FC)
AVERAGE = 1.29
MAXIMUM = 2.7
MINIMUM = 0.5
AVG/MIN RATIO = 2.58
MAX/MIN RATIO = 5.40

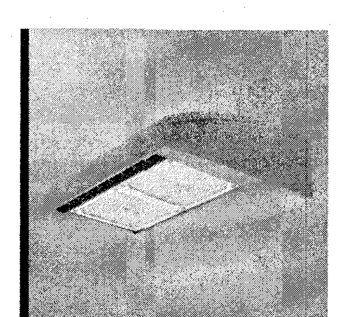
STATAREA_2
2ND PARKING LOT (BETWEEN THE 2 BUILDINGS)
ILLUMINANCE (FC)
AVERAGE = 1.48
MAXIMUM = 4.7
MINIMUM = 0.6
AVG/MIN RATIO = 2.47
MAX/MIN RATIO = 7.83

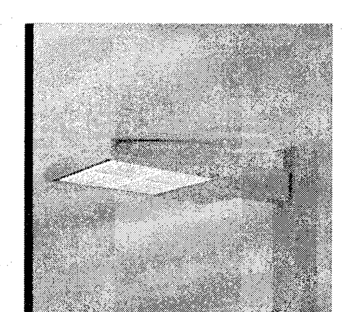
STATAREA_3
3RD PARKING LOT
ILLUMINANCE (FC)
AVERAGE = 1.11
MAXIMUM = 2.1
MINIMUM = 0.6
AVG/MIN RATIO = 1.85
MAX/MIN RATIO = 3.50

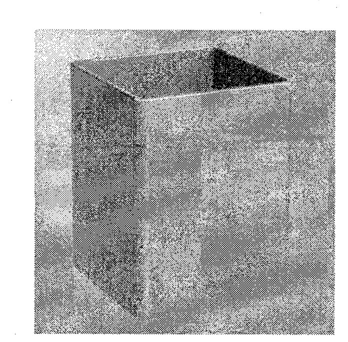
STATAREA_4
4TH PARKING LOT
ILLUMINANCE (FC)
AVERAGE = 1.36
MAXIMUM = 2.2
MINIMUM = 1.0
AVG/MIN RATIO = 1.36
MAX/MIN RATIO = 2.20

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM


GWC GALLEON WALL


GLEON GALLEON LED


SSS SQUARE STRAIGHT STEEL

LEGEND

GB-F	GRANITE BOUND FOUND
IPIN-F	IRON PIN FOUND
DH-F	DRILL HOLE FOUND
	UTILITY POLE
	PROPOSED SIGN
	PROPOSED LIGHT
	PROPOSED HYDRANT
	PROPOSED WELL
	PROPOSED SEWER MANHOLE
	PROPOSED DRAINAGE MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED OUTLET STRUCTURE
	ABUTTER LINE
	PROPERTY LINE
OHU	OVERHEAD UTILITIES
	TREELINE
	EDGE OF PAVEMENT
	STONEWALL
	BUILDING SETBACK
	ZONE LINE
	PROPOSED TREELINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS CURB
	PROPOSED SWALE
	EASEMENT
	SITE LIGHTING
	BUILDING WALL PACK LIGHTING

IN ASSOCIATION WITH:

CHARRON
BRIGHTER.

P.O. BOX 4550
MANCHESTER, NH 03108
(603) 624-4827
FAX (603) 624-9764
SALES@CHARRONINC.COM

LIGHTING PLAN
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
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8 CHRISTINE DRIVE
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10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE - PAUL CHISHOLM No. 15076 LICENSED - PROFESSIONAL ENGINEER
9/12/22

REVISIONS

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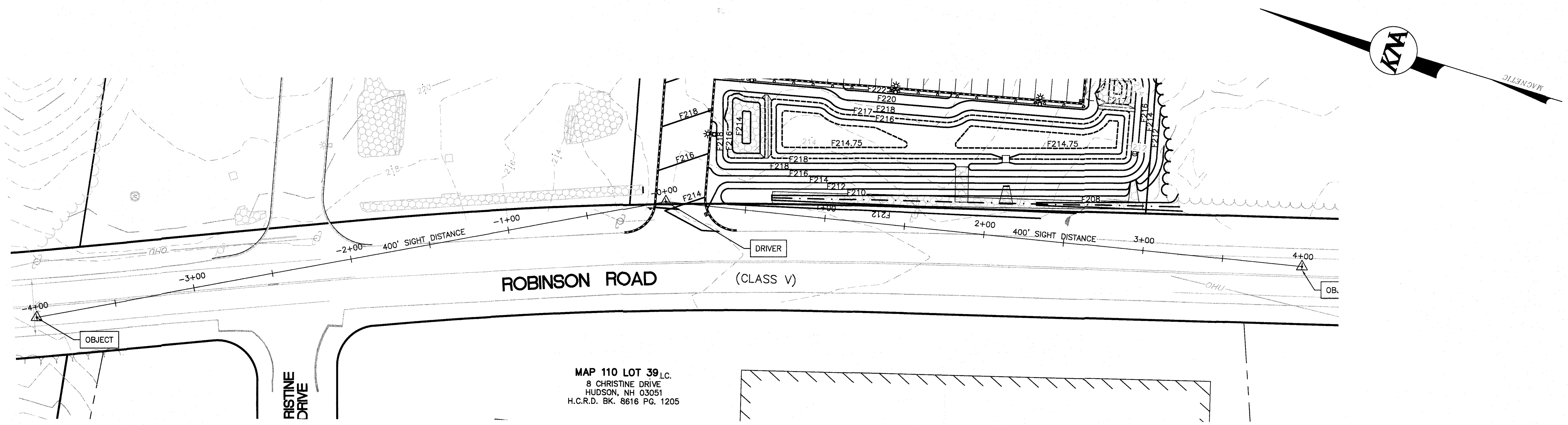
DATE: APRIL 6, 2021 | **SCALE:** 1" = 40'
PROJECT NO: 20-0921-2 | **SHEET** 7 **OF** 16



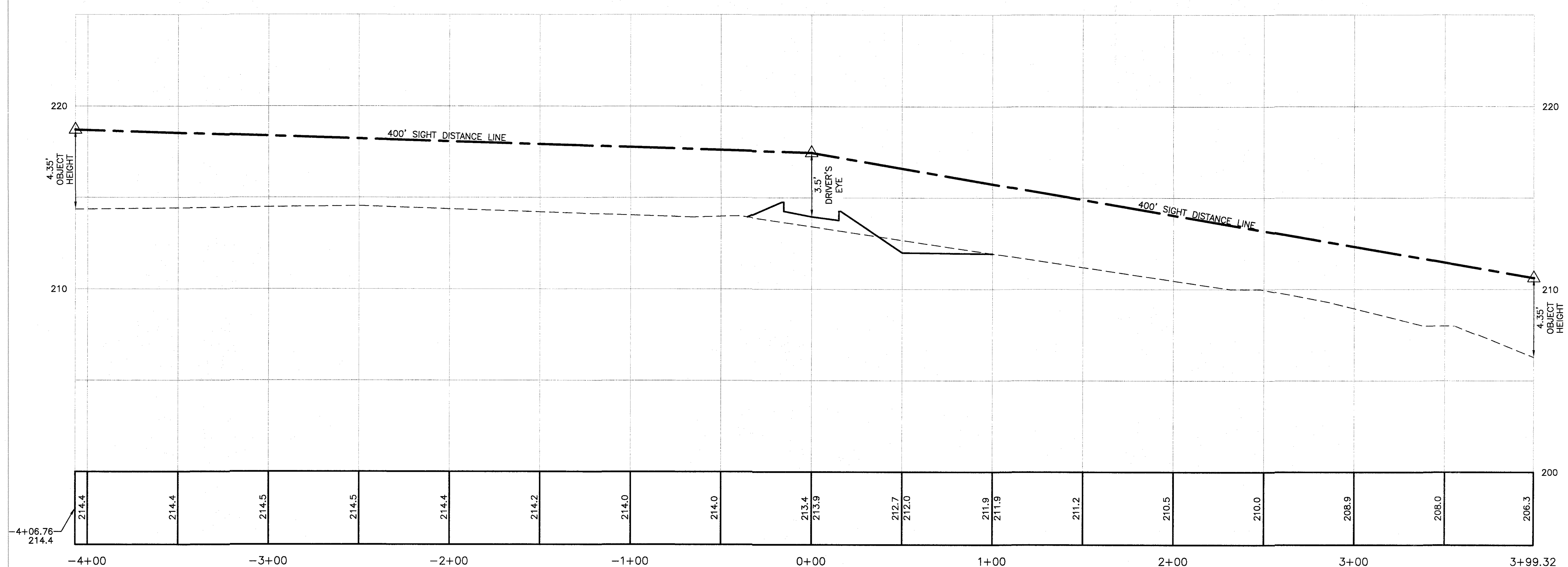
SIGHT DISTANCE PLAN
SCALE: 1" = 40'

LEGEND

UTILITY POLE	
ABUTTER LINE	
PROPERTY LINE	
OVERHEAD UTILITIES	
TREELINE	
EDGE OF PAVEMENT	
VERTICAL GRANITE CURB	
BITUMINOUS CURB	
10' CONTOUR	
2' CONTOUR	
BUILDING SETBACK	
PROPOSED SIGN	
PROPOSED LIGHT	
PROPOSED DRAINAGE MANHOLE	
PROPOSED CATCH BASIN	
PROPOSED TREELINE	
PROPOSED EDGE OF PAVEMENT	
PROPOSED BITUMINOUS CURB	
PROPOSED 2' CONTOUR	
PROPOSED SWALE	
SITE LIGHTING	

DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811 CALL TOLL FREE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



SIGHT DISTANCE PROFILE
SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL

APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: ______________

______________ SIGNATURE DATE: ______________

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SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

SIGHT DISTANCE PLAN & PROFILE
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
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STATE OF NEW HAMPSHIRE
PAUL CHISHOLM
No. 15075
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY
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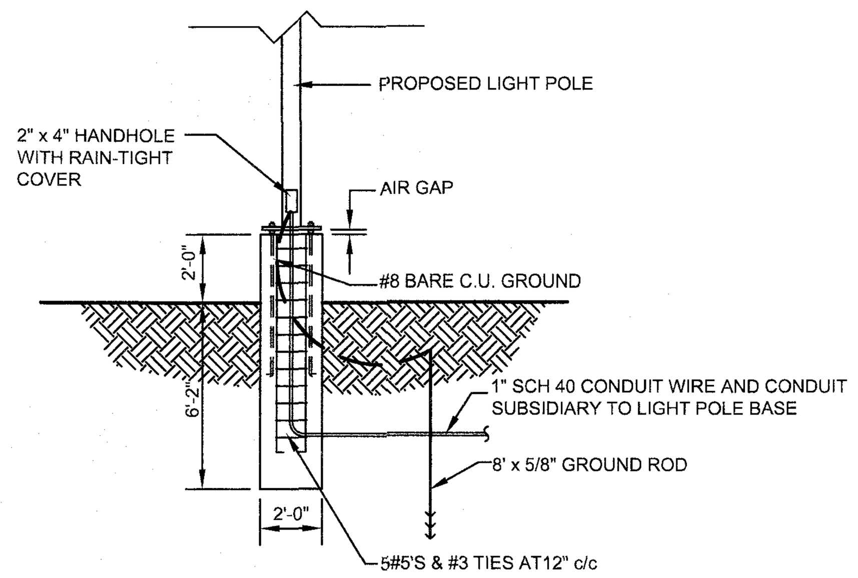
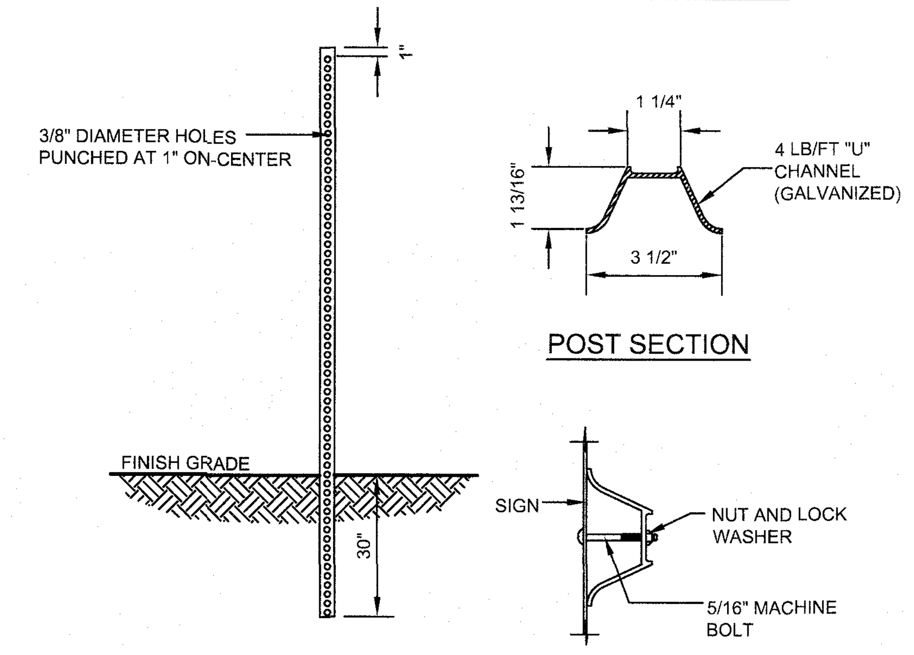
DATE: APRIL 6, 2021 | SCALE: 1" = 40'
PROJECT NO: 20-0921-2 | SHEET 8 OF 16



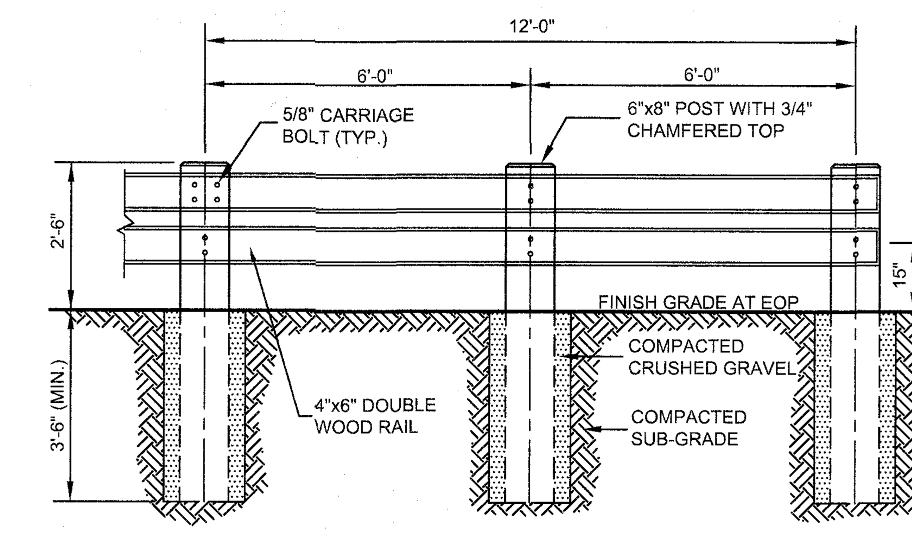
CONCRETE LIGHT POLE BASE DETAIL
NOT TO SCALE
(MARCH 2008)

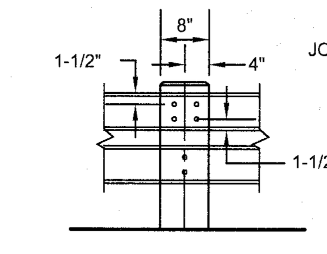


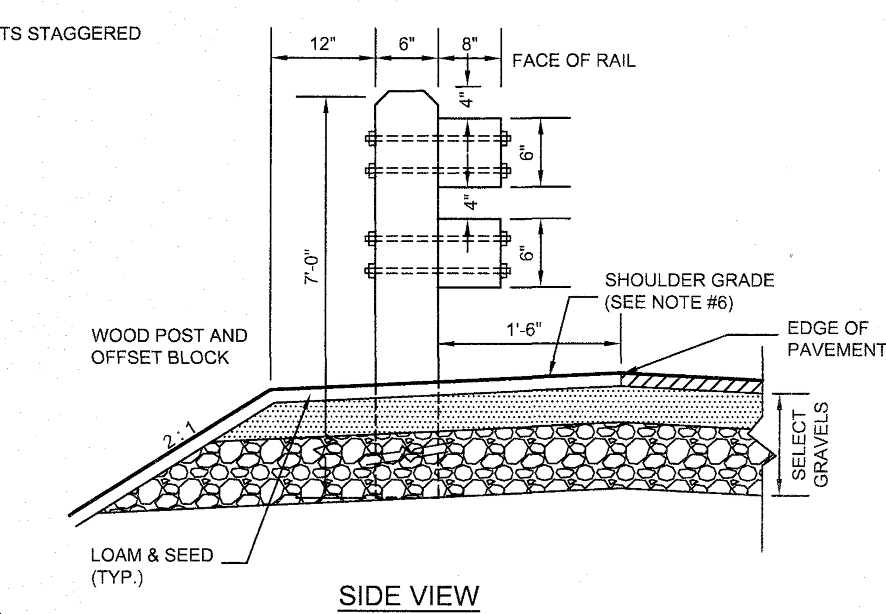
NOTE:
POST SHALL CONFORM TO NHDOT 615.2.5.3

STEEL SIGN POST DETAIL
NOT TO SCALE
(MARCH 2008)

STOP SIGN DETAIL
NOT TO SCALE
(MARCH 2008)

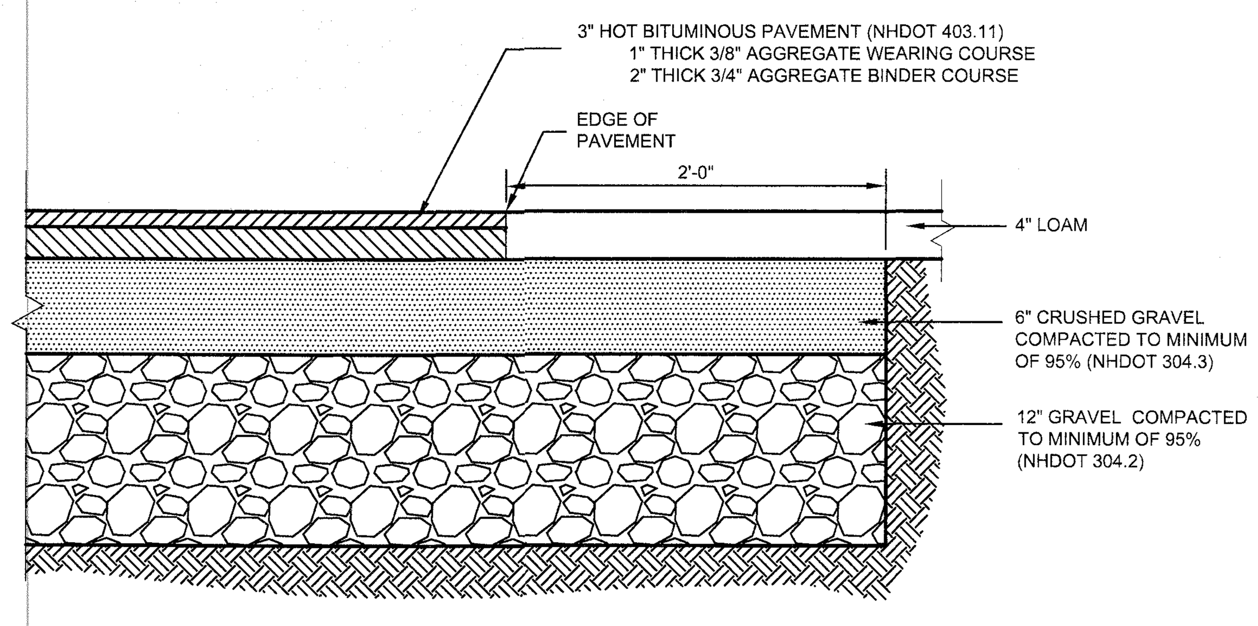




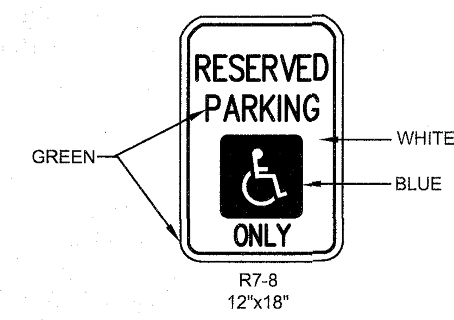


NOTES:
1. ALL TIMBERS SHALL BE PRESSURE TREATED.
2. PAY LIMIT = PER LINEAR FOOT INCLUDING END SECTION.
3. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED.

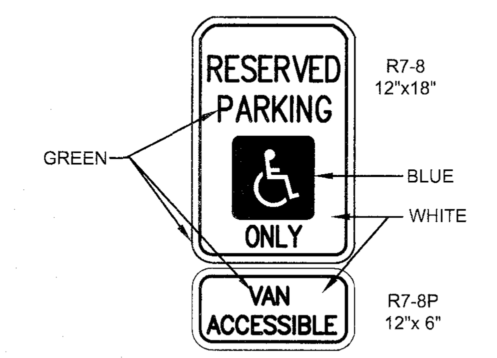
WOOD BEAM GUARDRAIL
NOT TO SCALE
(AUGUST 2011)



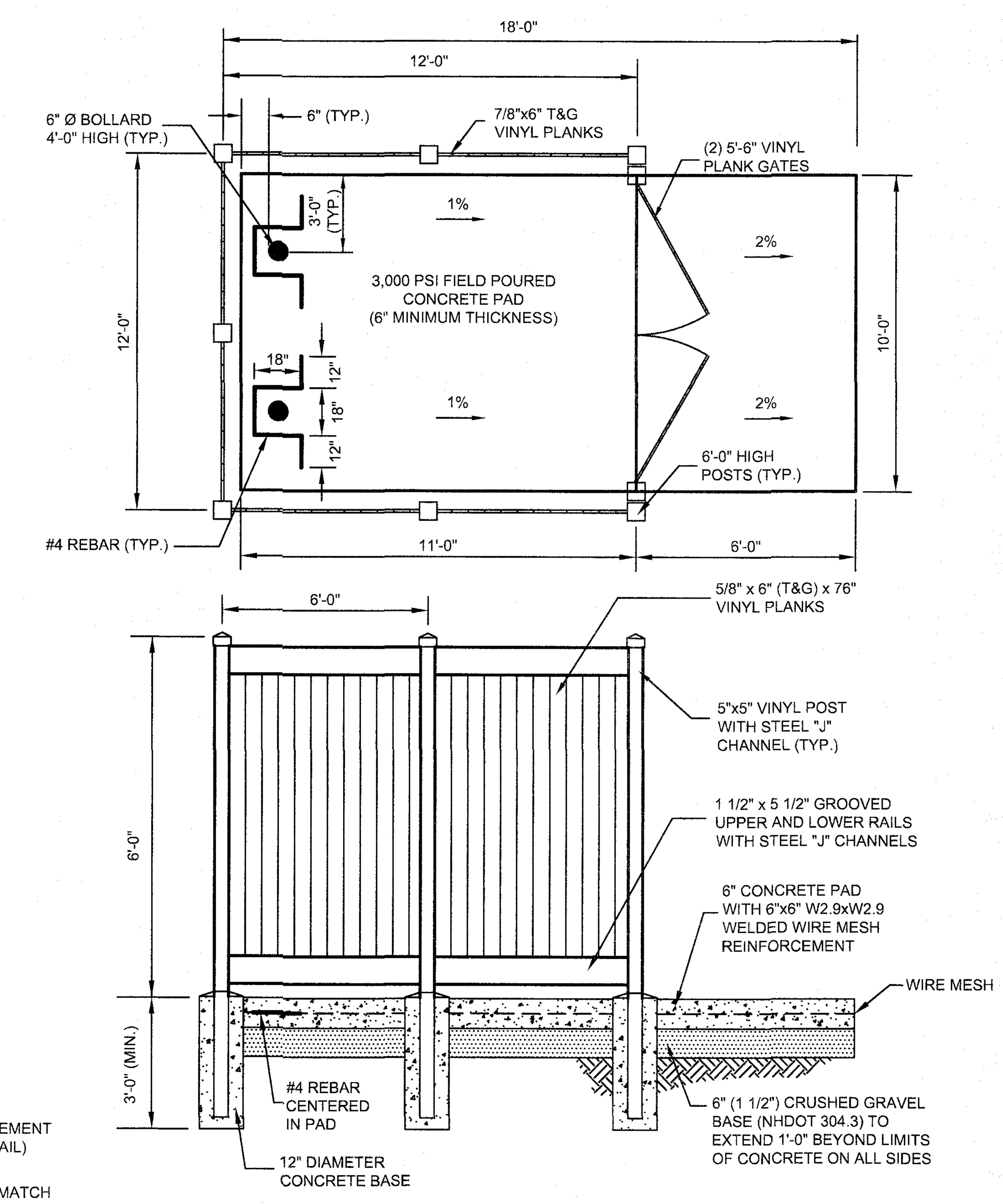
DRIVEWAY AND PARKING LOT SECTION
NOT TO SCALE
(MARCH 2008)



HANDICAP PARKING SIGN DETAIL
NOT TO SCALE
(MARCH 2008)

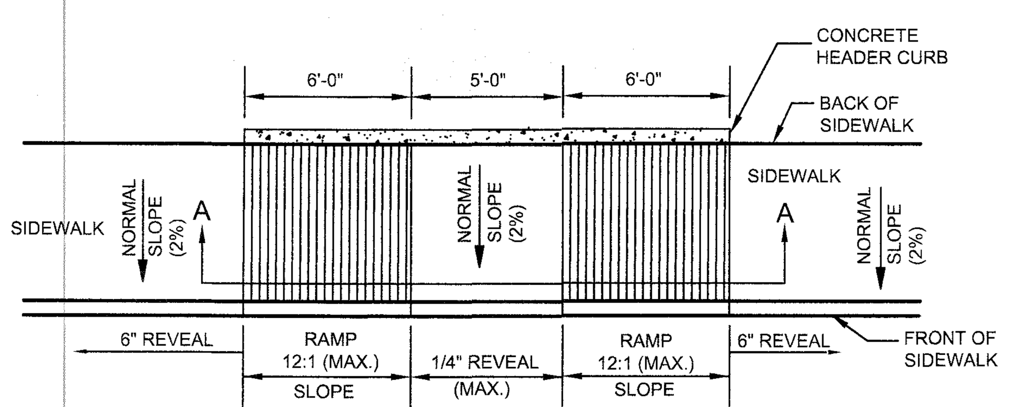


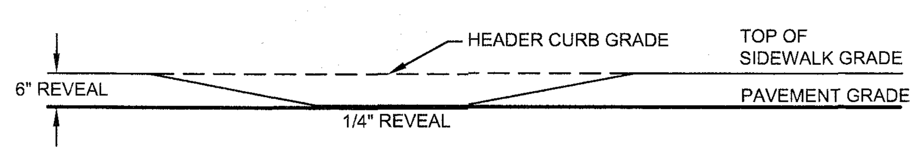
VAN ACCESSIBLE HANDICAP PARKING SIGN DETAIL
NOT TO SCALE
(NOVEMBER 2016)



NOTE:
THIS DUMPSTER ENCLOSURE WILL ACCOMMODATE MOST 2, 4, 6 AND 8 CY DUMPSTERS.

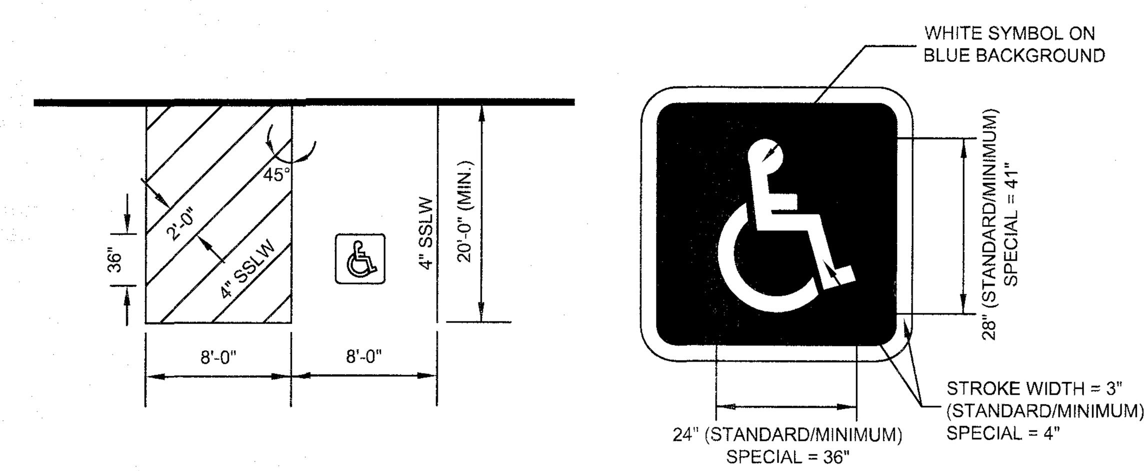
VINYL TRASH ENCLOSURE DETAIL
NOT TO SCALE
(MARCH 2008)





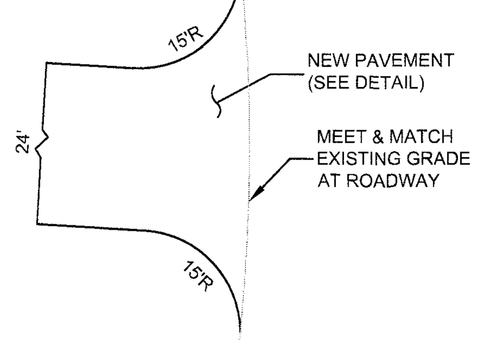
NOTES:
1. A BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP SHALL BE USED ON PORTLAND CEMENT CONCRETE RAMPS.
2. MAINTAIN THE NORMAL PAVEMENT PROFILE THROUGHOUT THE RAMP AREA.
3. MAINTAIN A MAXIMUM 1/4" OF CURB REVEAL AT THE RAMP, SEE SECTION A-A

SIDEWALK RAMP
NOT TO SCALE
(JUNE 2012)

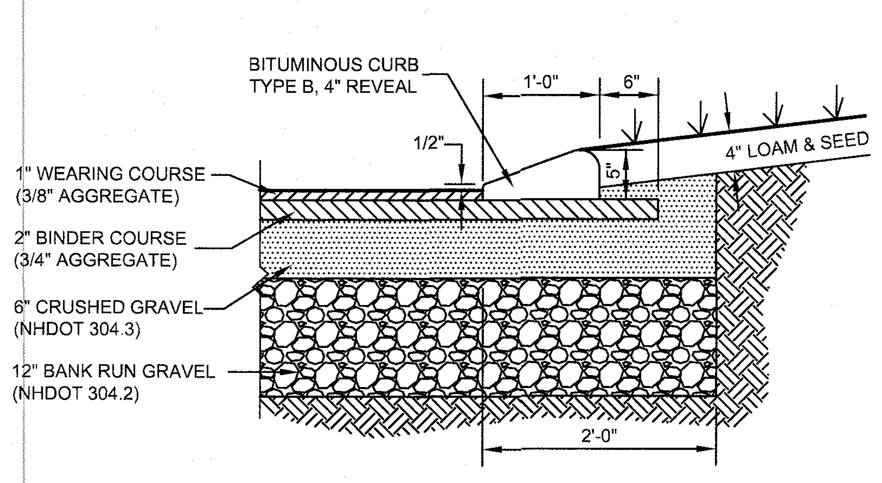


HANDICAP STRIPING DETAIL
NOT TO SCALE
(MARCH 2012)

STRIPING NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
2. WIDTH OF LINES SHALL VARY NO MORE THAN = 1/4 INCH FROM THAT SPECIFIED.
3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.

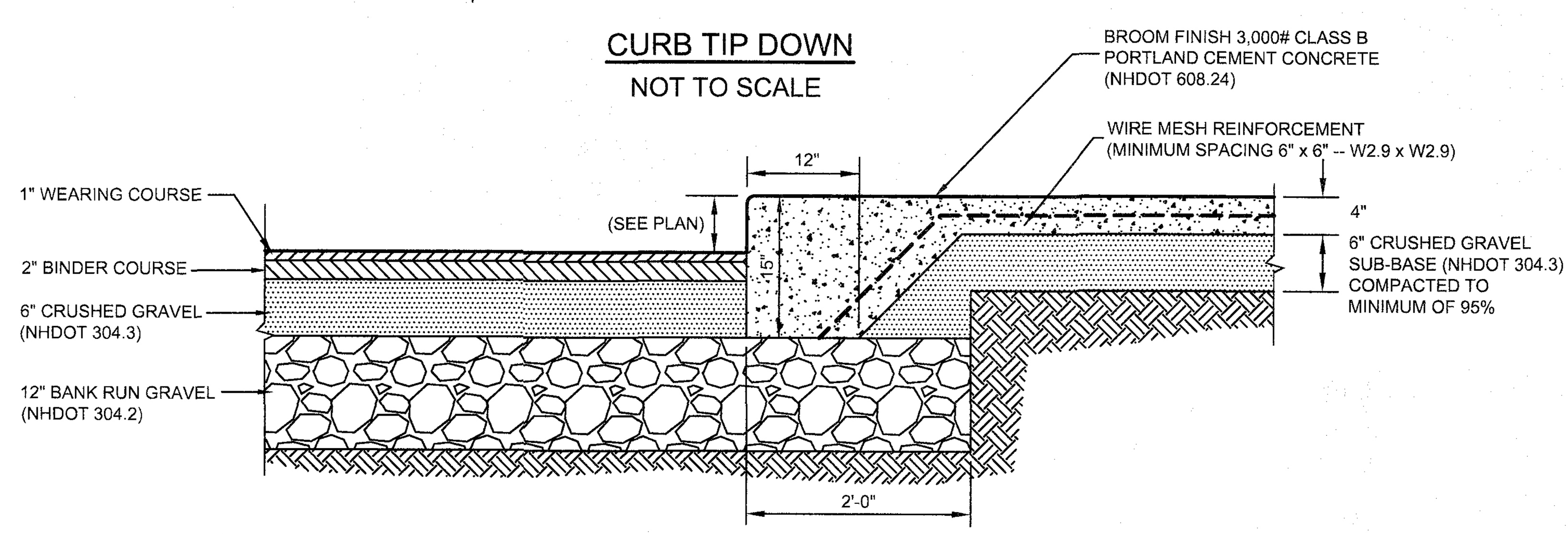


DRIVEWAY DETAIL
NOT TO SCALE

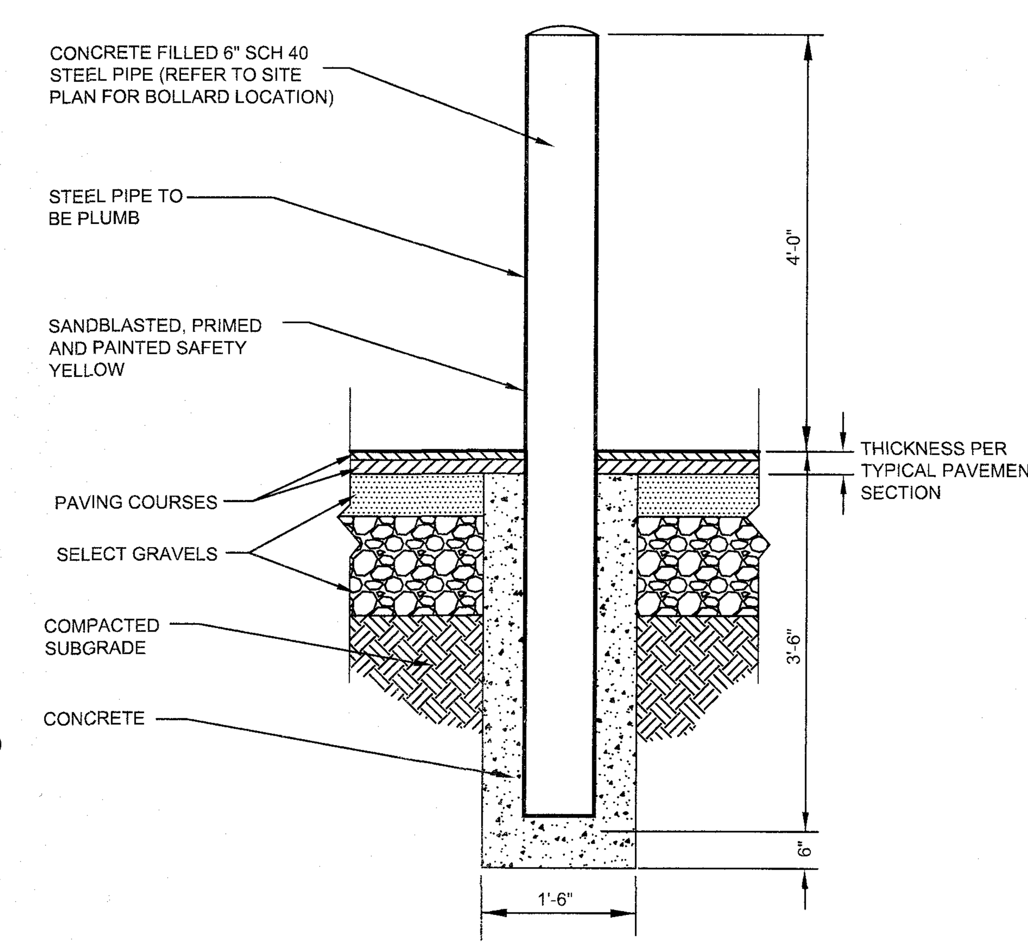


BITUMINOUS CURB TYPE B DETAIL
NOT TO SCALE
(MARCH 2008)

CURB TIP DOWN
NOT TO SCALE



INTEGRAL CURB AND WALK DETAIL
NOT TO SCALE
(MARCH 2008)



BOLLARD DETAIL
NOT TO SCALE
(MARCH 2008)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ____________ ____________ SIGNATURE DATE: ____________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

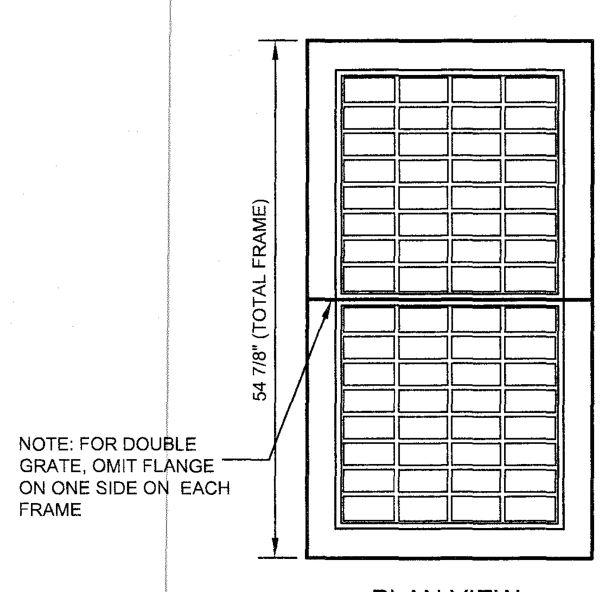
KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PAUL CHISHOLM No. 10379 LICENSED PROFESSIONAL ENGINEER
9/12/22

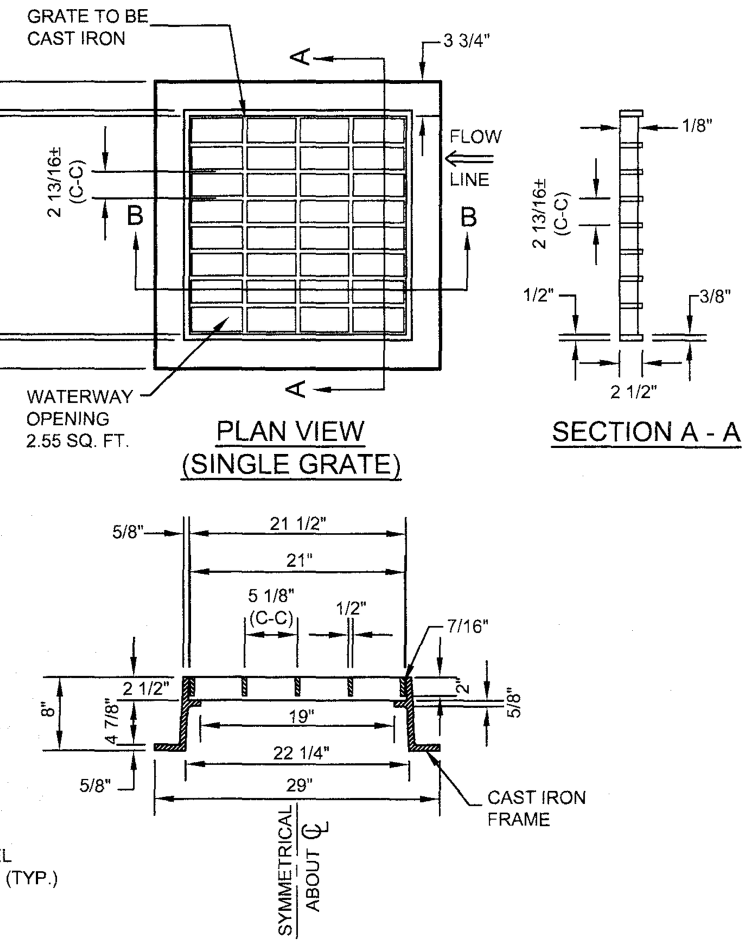
REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 9 OF 16



PLAN VIEW (DOUBLE GRATE)



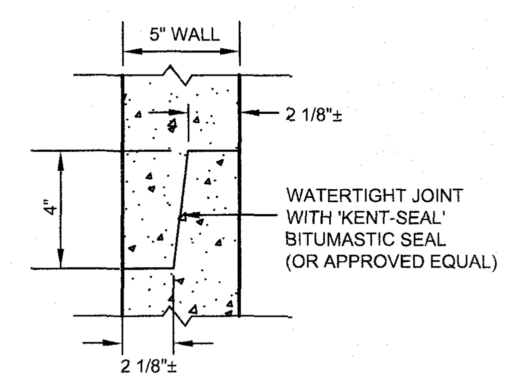
TYPE B FRAME & GRATE DETAIL

NOT TO SCALE

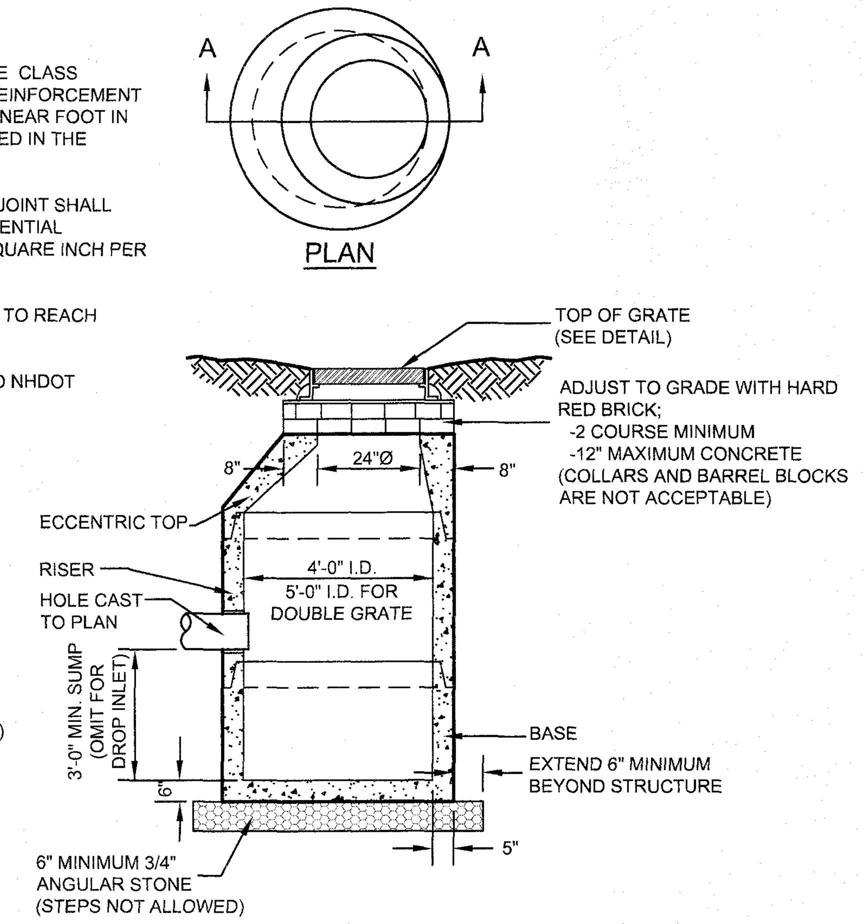
(MARCH 2008)

NOTES:

1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCH PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
2. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCH PER LINEAR FOOT.
3. RISER OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
4. MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.



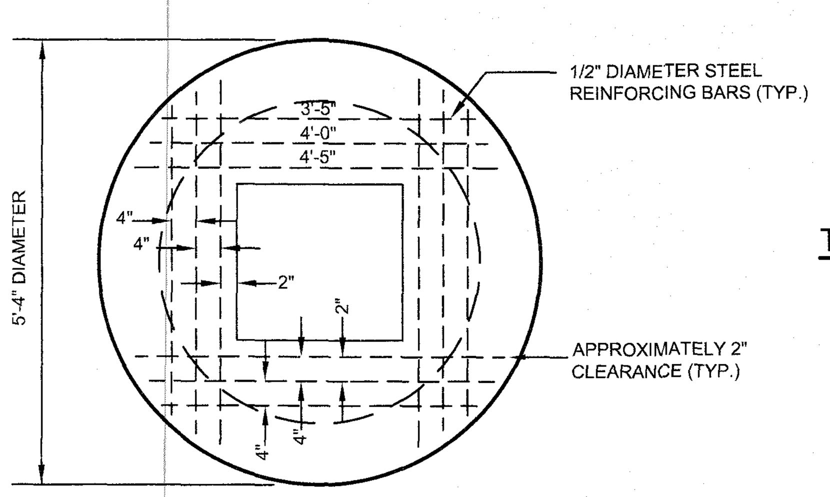
DETAIL OF TONGUE AND GROOVE JOINT



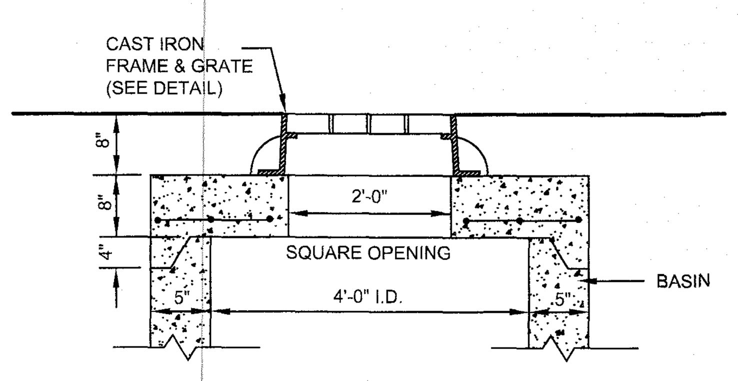
PRECAST REINFORCED CATCH BASIN

NOT TO SCALE

(MAY 2012)



PLAN

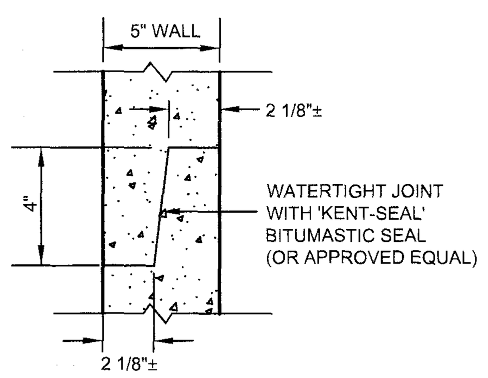


ELEVATION

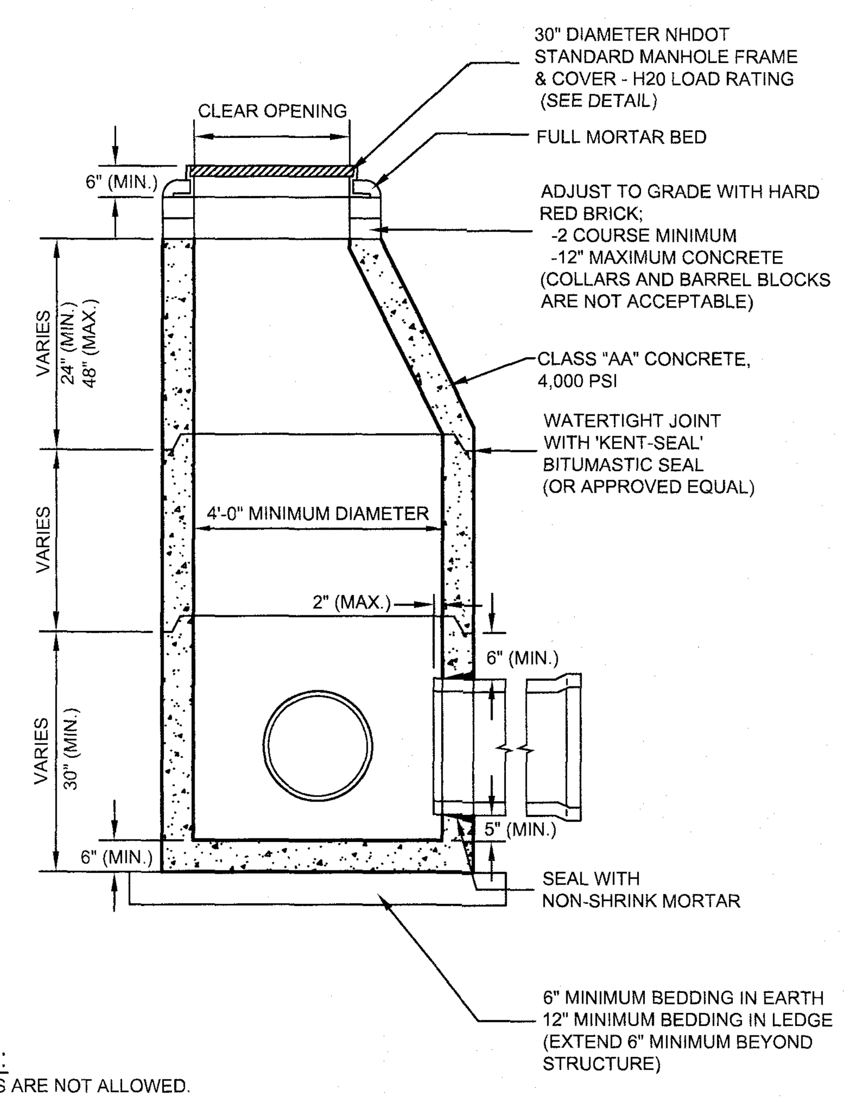
REINFORCED CONCRETE TOP SLAB (4'-0" I.D.)

NOT TO SCALE

(MARCH 2008)



DETAIL OF TONGUE AND GROOVE JOINT



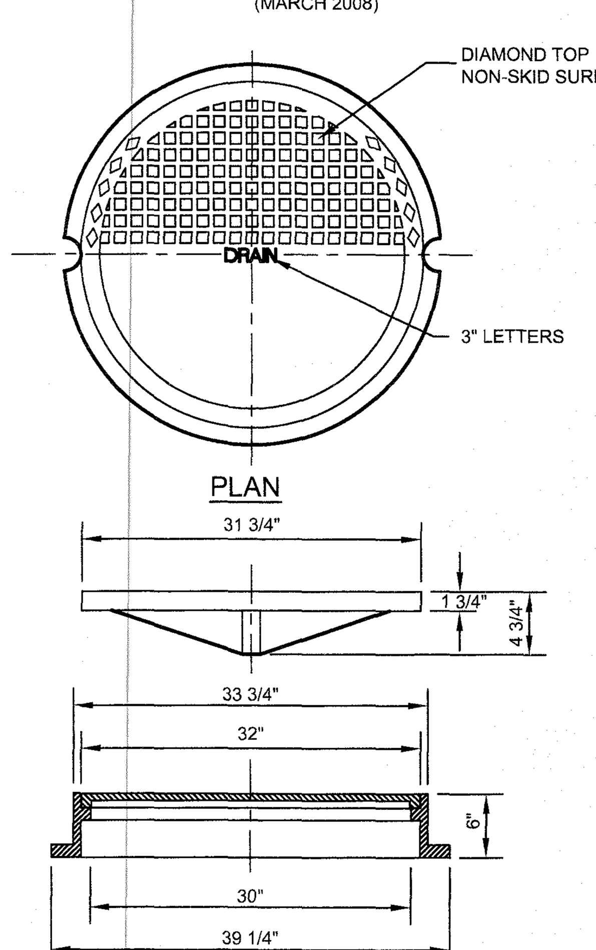
NOTES:

1. STEPS ARE NOT ALLOWED.
2. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4,000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.
4. MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.

PRECAST REINFORCED DRAIN MANHOLE DETAIL

NOT TO SCALE

(MARCH 2008)



NOTES:

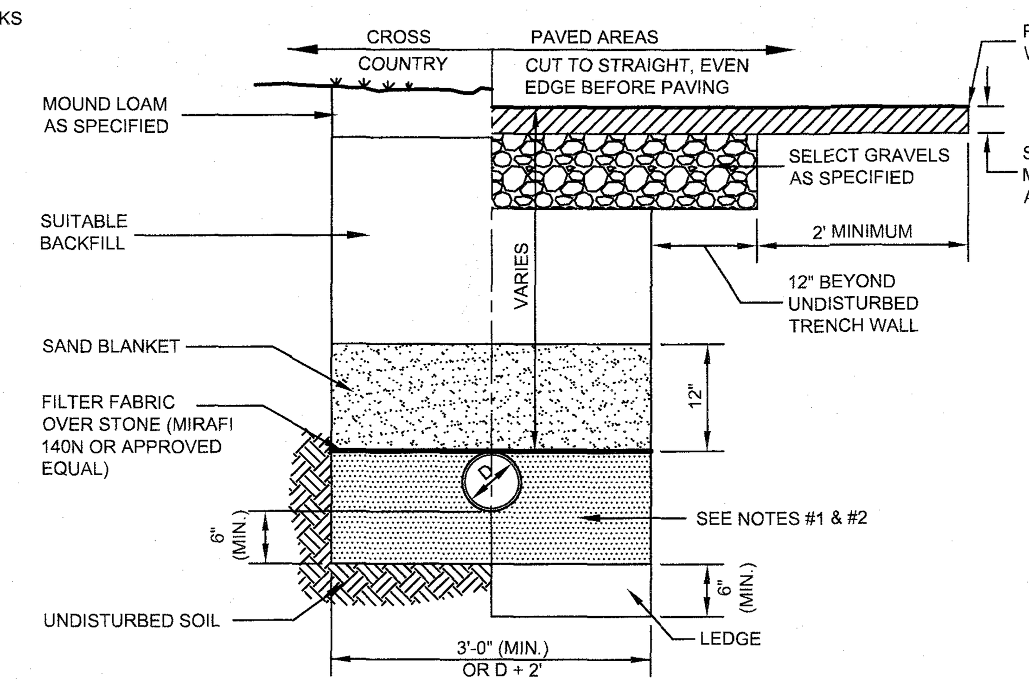
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED DRAIN
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30

DRAIN MANHOLE FRAME AND COVER DETAIL

NOT TO SCALE



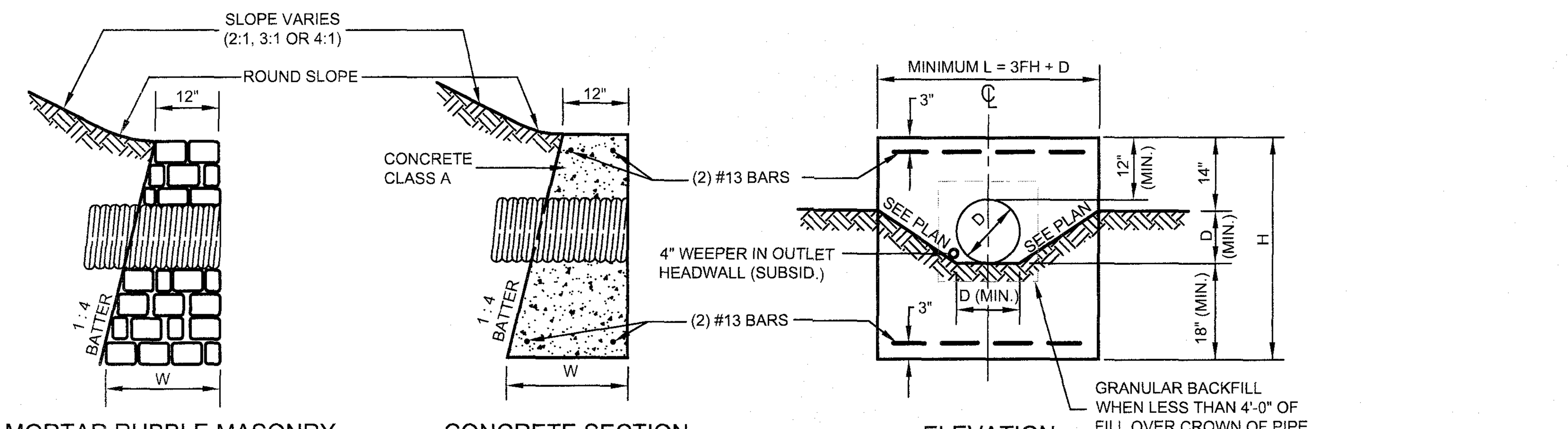
NOTES

1. THOROUGHLY COMPACTED SCREENED GRAVEL FOR RCP PIPE. SCREENED GRAVEL TO EXTEND TO SELECT FILL LINE.
2. FOR HDPE OR PVC PIPE, BEDDING SHALL BE 3/4" STONE TO THE TOP OF THE PIPE.

STORM DRAINAGE TRENCH DETAIL

NOT TO SCALE

(MARCH 2008)



MORTAR RUBBLE MASONRY SECTION ON CENTERLINE

CONCRETE SECTION ON CENTERLINE

ELEVATION

NOTE:
DIMENSIONS SHOWN ARE TO PAYMENT LINES. MORTAR RUBBLE MASONRY TO BE STEPPED OUTSIDE PAYMENT LINES ON SLOPING FACES.

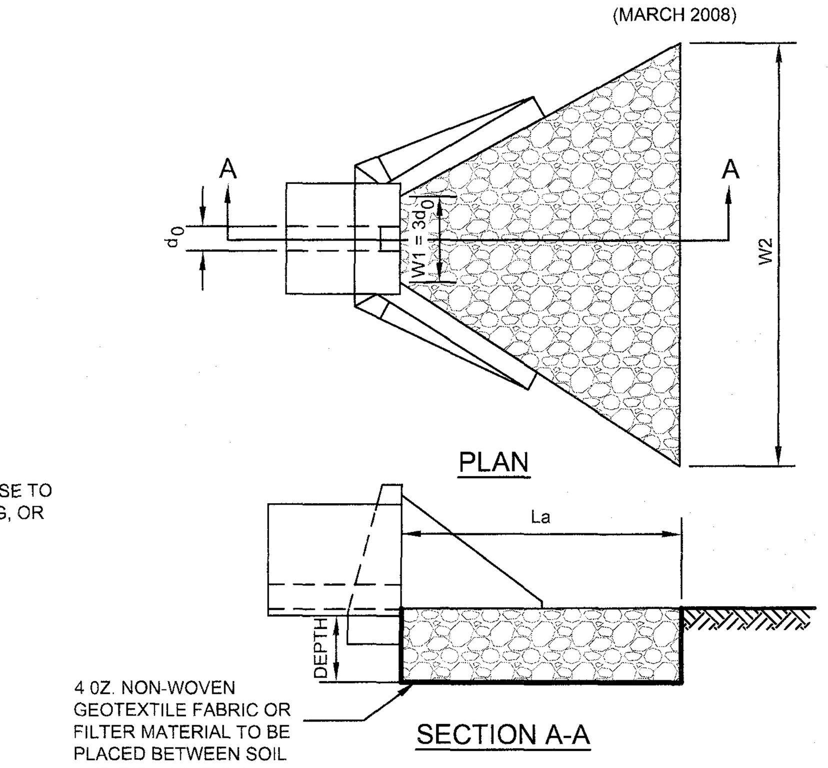
DIAMETER D (INCH)	AREA OF PIPE (SF)	MASONRY PER FOOT OF WALL (CU. YD.)	MASONRY PER HOLE (CU. FT.)	MASONRY PER STANDARD HEADER (CU. YD.)	STEEL PER STANDARD HEADER (LB)	LENGTH OF BARS	PIPE EXC. 1' DEPTH 1' LENGTH (CU. YD.)	HEADER EXC. PER HEADER 1' DEPTH (CU. YD.)	ITEM 209 PER LINEAR FOOT	HEADER LENGTH L	HEADER HEIGHT H	FILL HEIGHT FH	WIDTH AT BOTTOM OF HEADER W	"L" HEADWALL MASONRY IN CORNER FRUSTRUM (CU. YD)	"L" HEADWALL HEADER EXC. PER HEADER 1' DEPTH (CU. YD.)
12"	0.79	0.186	1.08	0.61	9	3'-2"	0.111	0.789	0.30	3'-6"	3'-6"	10"	1'-10 1/2"	0.28	1.057
15"	1.23	0.202	1.73	0.85	11	3'-10"	0.120	0.947	0.35	4'-6"	3'-9"	1'-1"	1'-11 1/4"	0.31	1.232
18"	1.77	0.222	2.52	1.13	14	5'-2"	0.130	1.111	0.39	5'-6"	4'-0"	1'-4"	2'-0"	0.35	1.406
24"	3.14	0.260	4.71	1.78	20	7'-2"	0.148	1.451	0.48	7'-6"	4'-6"	1'-10"	2'-1 1/2"	0.42	1.776
30"	4.91	0.301	7.67	2.58	25	9'-2"	0.185	1.810	0.65	9'-6"	5'-0"	2'-4"	2'-3"	0.51	2.164

NOTE: STEEL QUANTITIES ARE FOR CONCRETE HEADWALLS ONLY.

MORTAR RUBBLE MASONRY AND CONCRETE HEADWALLS

NOT TO SCALE

(MARCH 2008)



PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

NOT TO SCALE

(MARCH 2008)

LOCATION	La	W1	W2	d50	DEPTH
PROP. HW#3	19'	5'	12'	4"	10"
PROP. HW#4	26'	4'	14'	4"	10"
PROP. HW#6	14'	3'	8'	4"	10"
PROP. HW#11	16'	3'	9'	4"	10"
PROP. HW#13	13'	5'	18'	4"	10"
PROP. HW#20	11'	4'	15'	4"	10"
PROP. HW#23	13'	3'	16'	4"	10"
PROP. HW#26	11'	4'	15'	4"	10"
PROP. HW#34	13'	4'	17'	4"	10"
PROP. HW#50	18'	4'	11'	4"	10"

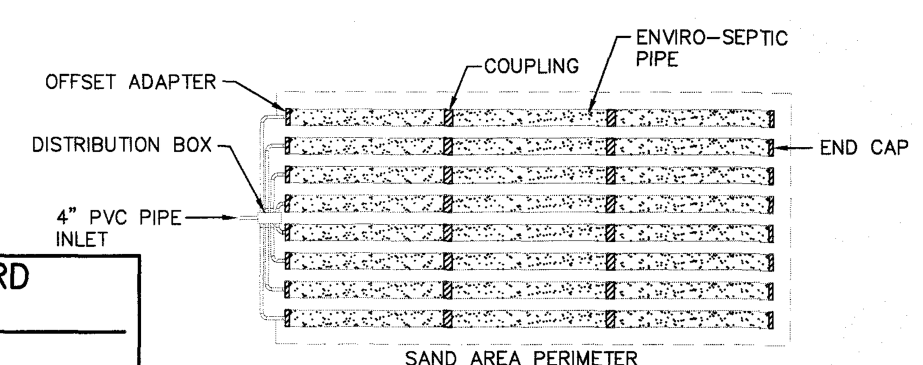
TABLE 7-24 -- RECOMMENDED RIP RAP GRADATION RANGES	
PERCENT OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100%	1.5 TO 2.0 d50
85%	1.3 TO 1.8 d50
50%	1.0 TO 1.5 d50
15%	0.3 TO 0.5 d50

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. FRACTURED ROCK USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP. 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 REPAIRS OR 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.

MAINTENANCE:

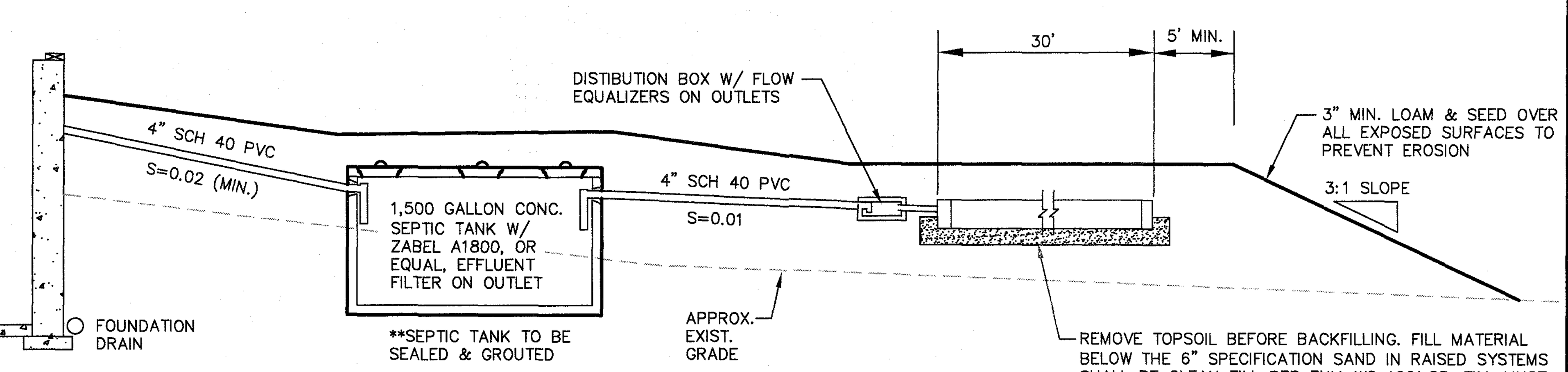
THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR RAIN EVENT. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED, OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL 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.



NOTE: EFFLUENT DISPOSAL AREA SHOWN IS A "DISTRIBUTION BOX SYSTEM" AS DEPICTED IN THE NEW HAMPSHIRE ENVIRO-SEPTIC DESIGN AND INSTALLATION MANUAL (2003 EDITION).

EDA PLAN DETAIL

NOT TO SCALE



TYPICAL SECTION OF PROPOSED SEPTIC SYSTEM

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ____________ ____________ SIGNATURE DATE: ____________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
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OWNER OF RECORD/APPLICANT:
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8 CHRISTINE DRIVE
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KNA *KEACH–NORDSTROM ASSOCIATES, INC.*
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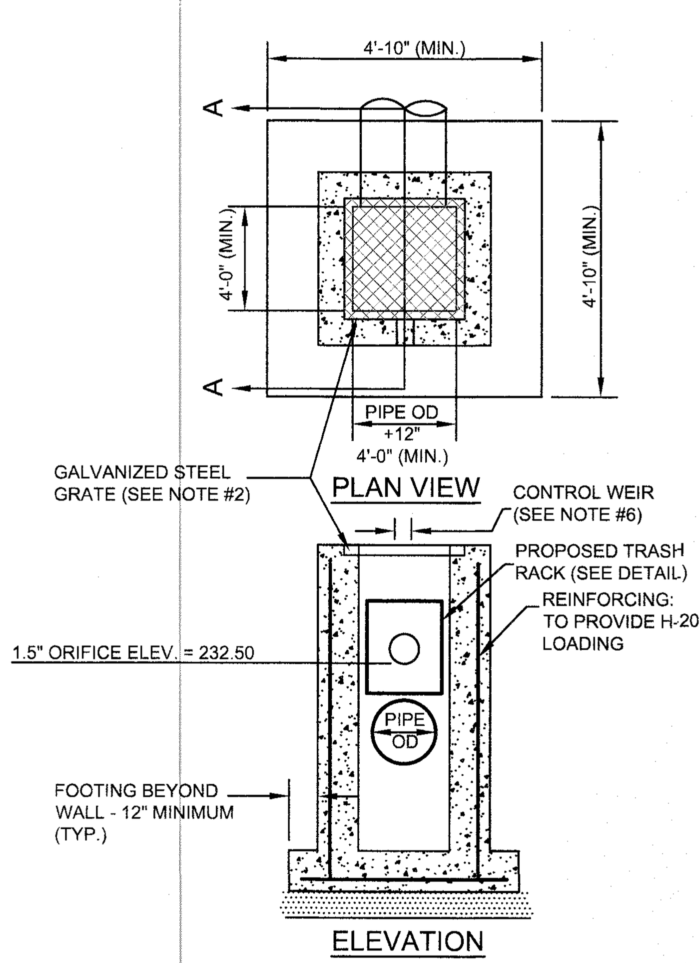
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE - PAUL CHISHOLM No. 15076 LICENSED - PROFESSIONAL ENGINEER
9/12/22

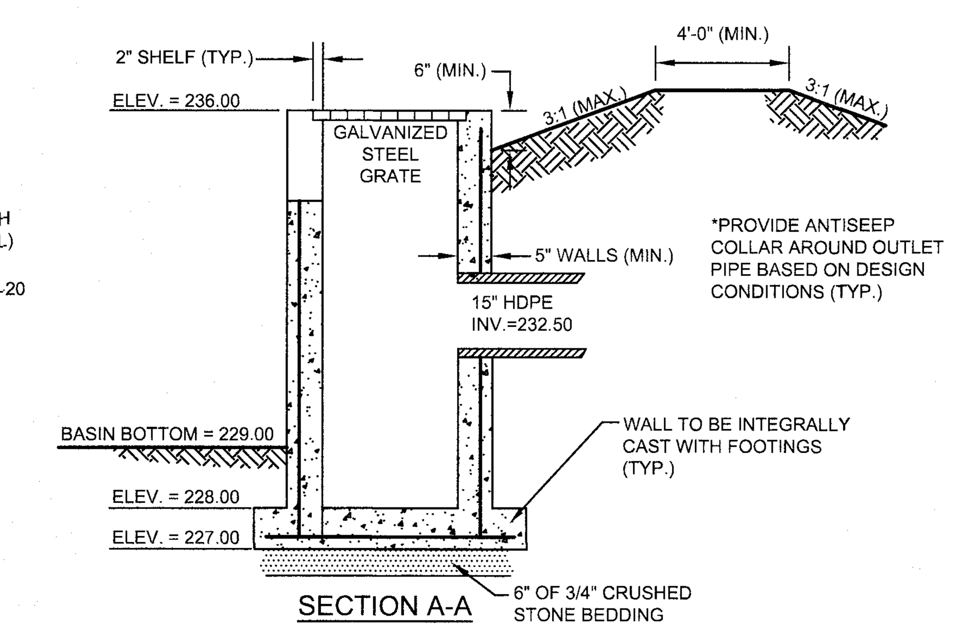
REVISIONS			
No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 10 OF 16



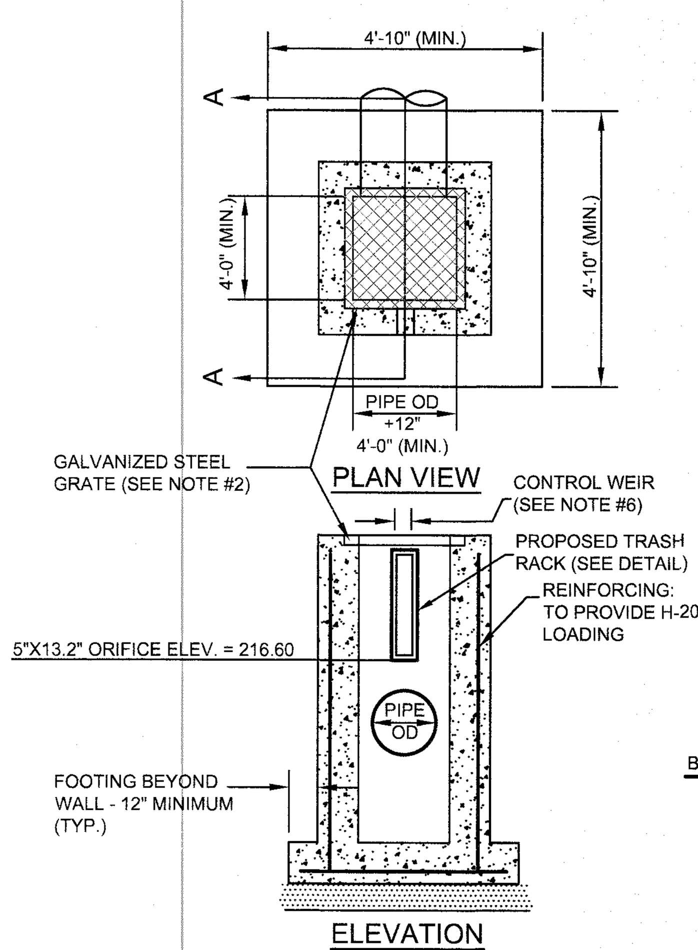
NOTES

1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" MINIMUM.
4. ALL OPENINGS CAST IN AS REQUIRED.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS.



OUTLET STRUCTURE #7 AT POCKET POND #1

NOT TO SCALE
(AUGUST 2011)



NOTES

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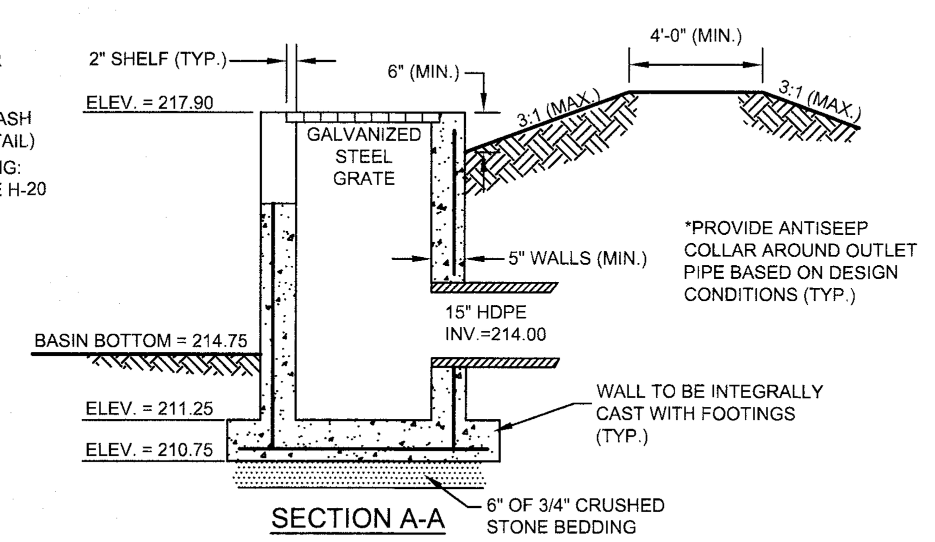
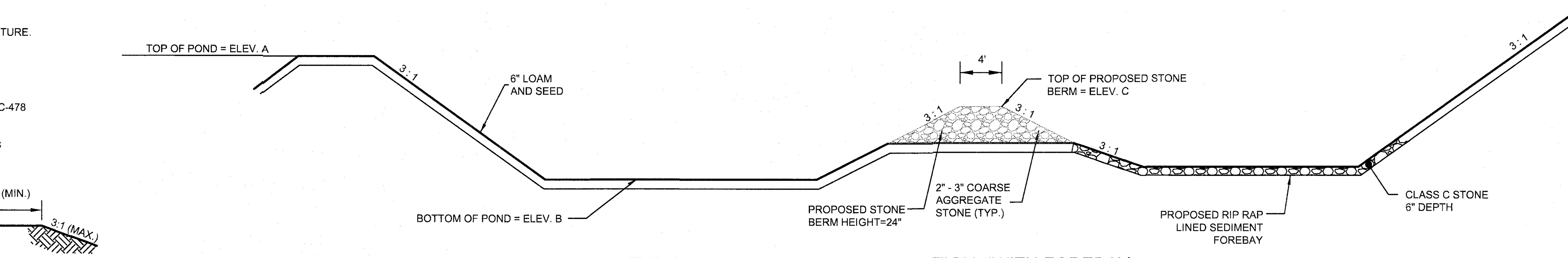
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS.



OUTLET STRUCTURE #5 AT INFILTRATION POND #1

NOT TO SCALE
(AUGUST 2011)



TYPICAL INFILTRATION POND SECTION - WITH FOREBAY

NOT TO SCALE

POND NUMBER	ELEV. A	ELEV. B	ELEV. C
1	218.00	214.75	217.00

CONSTRUCTION PRACTICE REQUIREMENTS:

1. STORMWATER PONDS, INFILTRATION BASINS, AND SWALES MUST BE INSTALLED BEFORE ROUGH GRADING TO SITE.
2. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED.
3. STORMWATER PONDS, INFILTRATION BASINS, AND SWALES MUST BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
4. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
5. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
6. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
7. INFILTRATION BASIN FLOOR PREPARATION WILL INCLUDE GRASS TURF THAT CAN BE INUNDATED FOR UP TO 72 HOURS.
8. INFILTRATION AREAS ARE TO BE PROTECTED FROM OVER–COMPACTION DURING CONSTRUCTION.

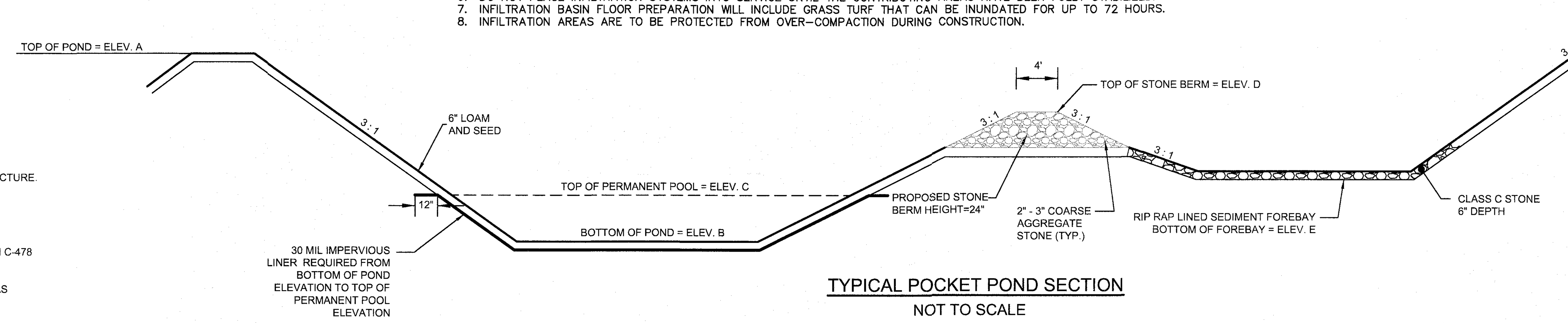
MAINTENANCE REQUIREMENTS:

SEDIMENT FOREBAYS:

- INSPECT AT LEAST ANNUALLY;
- CONDUCT PERIODIC MOWING OF EMBANKMENTS (GENERALLY TWO TIMES PER YEAR) TO CONTROL GROWTH OF WOODY VEGETATION ON EMBANKMENTS;
- REMOVE DEBRIS FROM OUTLET STRUCTURES AT LEAST ONCE ANNUALLY;
- REMOVE AND DISPOSE OF ACCUMULATED SEDIMENT BASED ON INSPECTION;
- INSTALL AND MAINTAIN A STAFF GAGE OR OTHER MEASURING DEVICE, TO INDICATE DEPTH OF SEDIMENT ACCUMULATION AND LEVEL AT WHICH CLEAN–OUT IS REQUIRED.

INFILTRATION:

- REMOVAL OF DEBRIS FROM INLET AND OUTLET STRUCTURES;
- REMOVAL OF ACCUMULATED SEDIMENT;
- INSPECTION AND REPAIR OF OUTLET STRUCTURES AND APPURTENANCES;
- INSPECTION OF INFILTRATION COMPONENTS 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;
- INSPECTION OF PRETREATMENT MEASURES AT LEAST TWICE ANNUALLY, AND REMOVAL OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY;
- PERIODIC MOWING OF EMBANKMENTS;
- REMOVAL OF WOODY VEGETATION FROM EMBANKMENTS;
- INSPECTION AND REPAIR OF EMBANKMENTS AND SPILLWAYS;
- IF AN INFILTRATION SYSTEM DOES NOT DRAIN WITHIN 72–HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE INFILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE INFILTRATION TRENCH.



TYPICAL POCKET POND SECTION

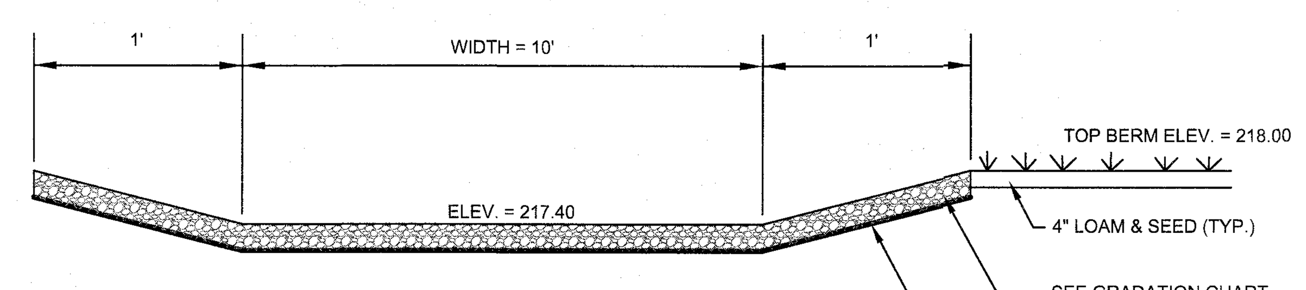
NOT TO SCALE

POND NUMBER	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E
WET POND #1	237.00	229.00	232.50	236.00	234.00

MAINTENANCE REQUIREMENTS:

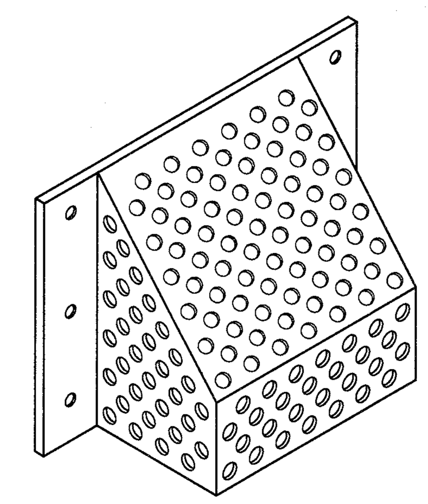
POCKET POND:

- THE BOTTOMS, INTERIOR AND EXTERIOR SIDE SLOPES AND CREST OF EARTHEN DETENTION BASINS SHOULD BE MOWED, AND THE VEGETATION MAINTAINED IN HEALTHY CONDITION, AS APPROPRIATE TO THE FUNCTION OF THE FACILITY AND TYPE OF VEGETATION.
- VEGETATED EMBANKMENTS THAT SERVE AS "BERMS" OR "DAMS" THAT IMPOUND WATER SHOULD BE MOWED AT LEAST ONCE ANNUALLY TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION;
- INLET AND OUTLET PIPES, INLET AND OUTLET STRUCTURES, ENERGY DISSIPATION STRUCTURES OR PRACTICES AND OTHER STRUCTURAL APPURTENANCES SHOULD BE INSPECTED AT LEAST ANNUALLY BY A QUALIFIED PROFESSIONAL AND CORRECTIVE ACTION IMPLEMENTED (EG. MAINTENANCE, REPAIRS OR REPLACEMENT) AS INDICATED BY SUCH INSPECTION;
- TRASH AND DEBRIS SHOULD BE REMOVED FROM THE BASIN AND ANY INLET OR OUTLET STRUCTURES WHENEVER OBSERVED BY INSPECTION;
- ACCUMULATED SEDIMENT SHOULD BE REMOVED WHEN IT SIGNIFICANTLY AFFECTS BASIN CAPACITY.

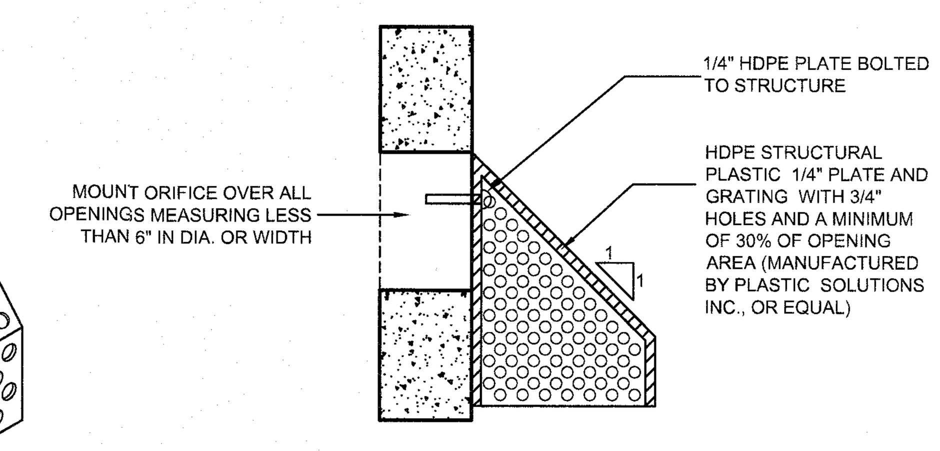


EMERGENCY SPILLWAY DETAIL INFILTRATION POND 1

NOT TO SCALE



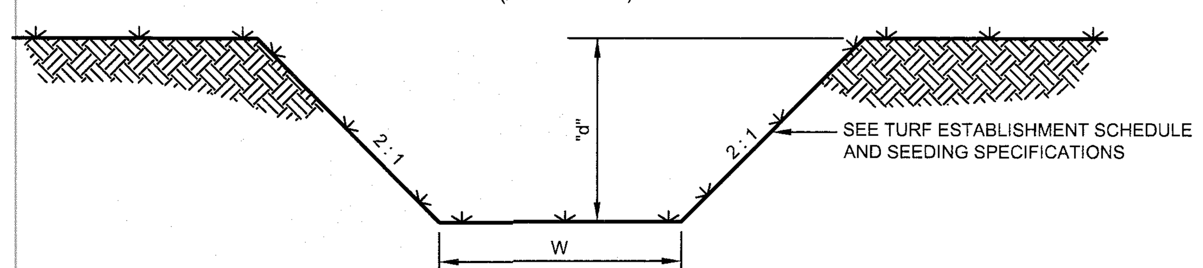
ISOMETRIC



SECTION

TRASH RACK DETAIL

NOT TO SCALE



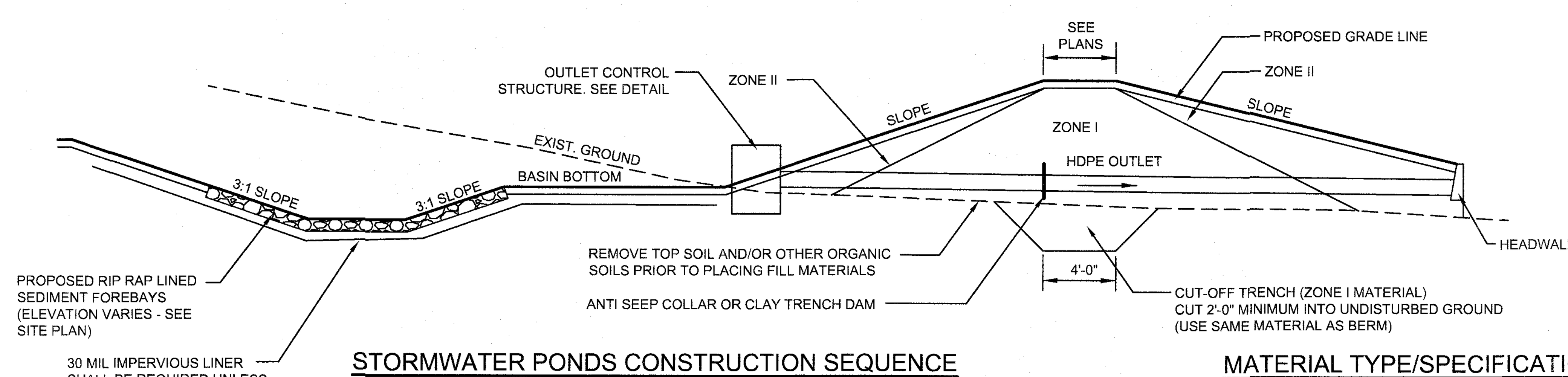
SWALE	SWALE WIDTH "W"	SWALE LENGTH	SWALE SLOPE	DEPTH "d"
1	2'	255'	0.0078FT/FT	2'
2	2'	100'	0.0100FT/FT	1'

MAINTENANCE

1. 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 SO AS TO REDUCE THE FILTERING EFFECT. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.
2. 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 RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

CONVEYANCE SWALE DETAIL

NOT TO SCALE
(MARCH 2008)



STORMWATER PONDS CONSTRUCTION SEQUENCE

1. CONTRACTOR TO NOTIFY DIG-SAFE 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR.
3. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SILTATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND, IF NECESSARY, SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY TO FACILITATE CONSTRUCTION ACTIVITIES. ALL SUCH CROSSINGS SHALL BE PROTECTED WITH HAY BALE BARRIERS TO LIMIT EROSION.
6. CONSTRUCT CUT-OFF TRENCH (PART OF ZONE I).
7. CONSTRUCT OUTLET AND OVERFLOW STRUCTURE, CULVERT, ANTI SEEP COLLARS, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR, AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
12. AFTER STABILIZATION, REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I

WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6-INCH
SIZE STONE AND GEADATION AS INDICATED BELOW. PLACE IN MAX. 12-INCH
THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557.
SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION, REMOVE ORGANIC SOILS.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
6-INCH	100
NO. 4	50 TO 100
NO. 40	30 TO 70
NO. 200	20 TO 40

ZONE II

DRAINAGE LAYER: PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX. DRY
DENSITY IN ACCORDANCE WITH ASTM D1557.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
1-INCH	100
NO. 4	70-100
NO. 200	0-12 (IN SAND PORTION ONLY)

STORMWATER POND EMBANKMENT DETAIL

NOT TO SCALE

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ______________ ______________ SIGNATURE DATE: ______________ ______________ SIGNATURE DATE: ______________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL

MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
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STATE OF NEW HAMPSHIRE
PAUL CHISHOLM
No. 15075
LICENSED
PROFESSIONAL ENGINEER
9/12/22

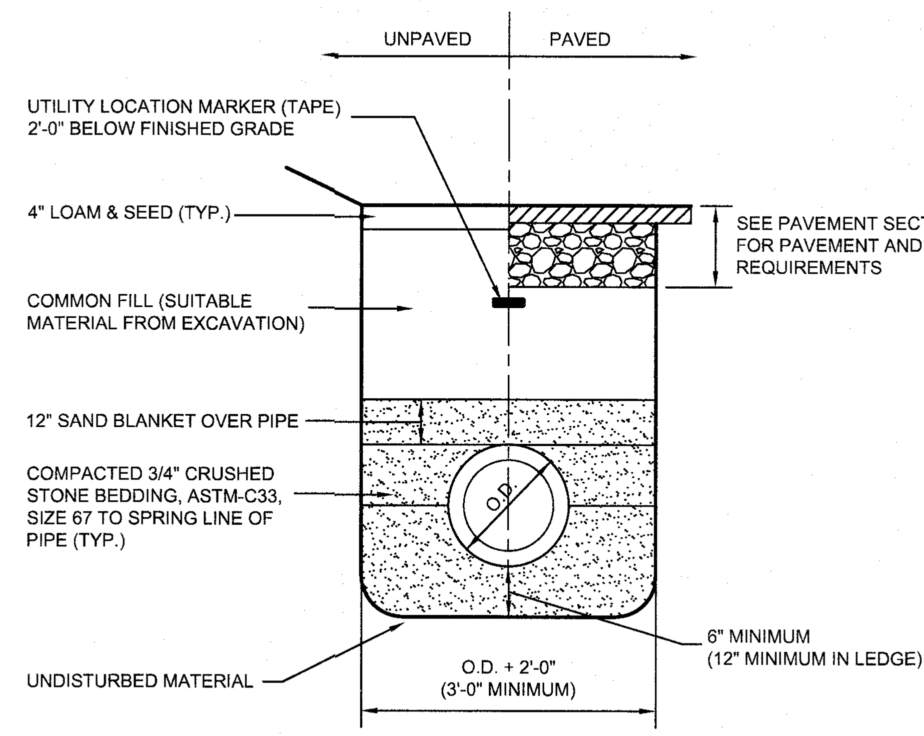
REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

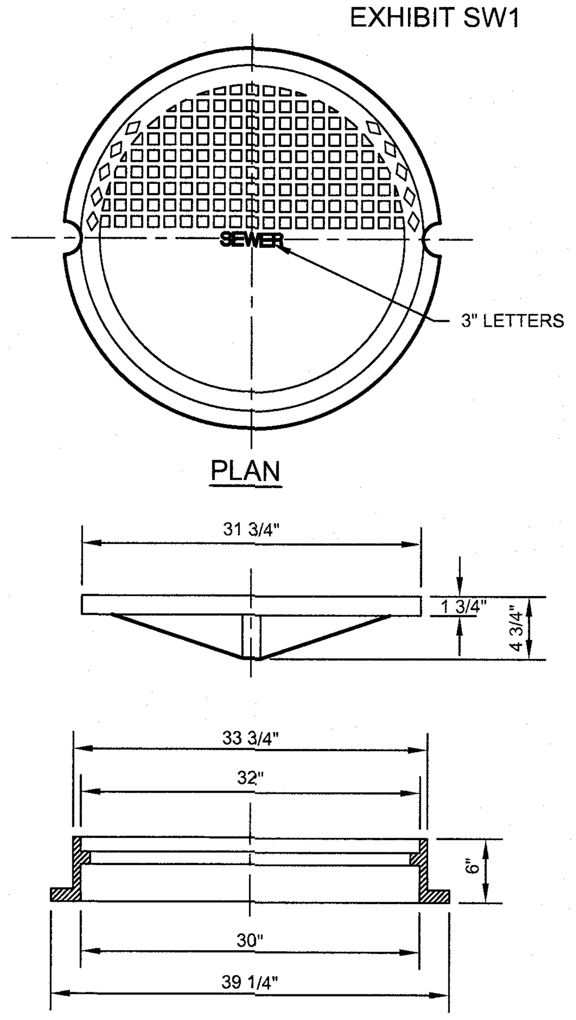
DATE: APRIL 6, 2021	**SCALE:** AS SHOWN
PROJECT NO: 20–0921–2	**SHEET** 11 OF 16

NOTES:

1. MINIMUM SIZE PIPE FOR HOUSE SERVICE SHALL BE 4 INCHES. MINIMUM SIZE FOR STREET SEWER LINES SHALL BE 8 INCHES.
2. PIPE AND JOINT MATERIALS:
   - A. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA):
     1. AWWA C151/A21.51-02 - FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND-LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
     2. AWWA C150/A21.50-02 - FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A536-84 (2004) DUCTILE IRON CASTINGS;
     3. JOINTS SHALL BE MECHANICAL, PUSH-ON OR BALL-AND-SOCKET TYPE.
   - B. PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
     1. ASTM D3034-04A - PVC, SOLID WALL;
     2. AT LEAST 46 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2414-02 DURING MANUFACTURING; AND
     3. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
4. JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
5. SERVICE CONNECTIONS SHALL USE SANITARY TEE OR WYE FITTINGS FOR ALL NEW CONSTRUCTION. THE CENTERLINE OF ALL BUILDING CONNECTIONS SHALL ENTER THE TOP HALF OF THE SEWER. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 4 FEET MAY HAVE THE SEWER FITTING SET VERTICALLY. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 12 FEET SHALL EMPLOY NON-ENCASED RISERS THAT PROTECT AGAINST PIPE PENETRATION OR FAILURE AT THE FITTING BY THE USE OF BELL-ON-BELL CONNECTIONS. FOR EXISTING SEWER WHERE FITTINGS CANNOT BE INSTALLED, SADDLE CONNECTIONS SHALL BE USED. PRESSURE SEWERAGE SHALL HAVE AN ISOLATION VALVE OR CURB STOP VALVE INSTALLED AT THE PROPERTY LINE. IF A CHECK VALVE IS USED AT THE PROPERTY LINE, THE VALVE SHALL BE INSTALLED WITHIN A VAULT TO FACILITATE MAINTENANCE. ROOF DOWNSPOUTS, EXTERIOR OR INTERIOR FOUNDATION DRAINS, SUMP PUMPS OR OTHER SOURCE OF SURFACE WATER RUN-OFF OR GROUND WATER SHALL NOT BE DIRECTLY OR INDIRECTLY CONNECTED TO A PUBLIC SEWER.
6. PIPE INSTALLATION:
   - A. THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
   - B. PIPES SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL.
   - C. BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
   - D. THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
   - E. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
7. TESTING: THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)
   - A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
   - B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEAN OUT WITH A FLASHLIGHT.
   - C. DRY FLUORESCENCE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.
   - D. LEAKAGE OBSERVED IN ANY OF THE ABOVE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP, IF NECESSARY, AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS.
8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.
9. WATER SERVICE SHALL NOT BE LAID IN THE SAME TRENCH AS THE SEWER SERVICE, UNLESS NECESSARY AND APPROVED BY THE AHJ. WHEN NECESSARY, THE WATER SERVICE SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE SEWER SERVICE, AS SHOWN.
10. LOCATION: THE LOCATION OF THE WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS MATERIAL, ROD OR PIPE SHALL BE PLACED OVER THE WYE TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.
11. CHIMNEY CONNECTIONS ARE ONLY PERMITTED IF ALLOWED BY THE AHJ. ANY VERTICAL RISE GREATER THAN 4 FEET SHALL BE PROVIDED WITH ADDED SUPPORT BY ENCASING THE FITTING AND RISER IN A PRECAST CONCRETE CHIMNEY. UP TO 12 FEET OF VERTICAL RISE CAN ALSO BE SECURED BY PROPER MEANS AS LONG AS IT CONSISTS OF A BELL-ON-BELL CONNECTION PROPERLY PROTECTED AGAINST PIPE PENETRATION AND IF IT IS ALLOWED BY THE AHJ.
12. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST DENSITY.



TYPICAL SEWER SERVICE PIPE TRENCH
NOT TO SCALE
EXHIBIT SW1

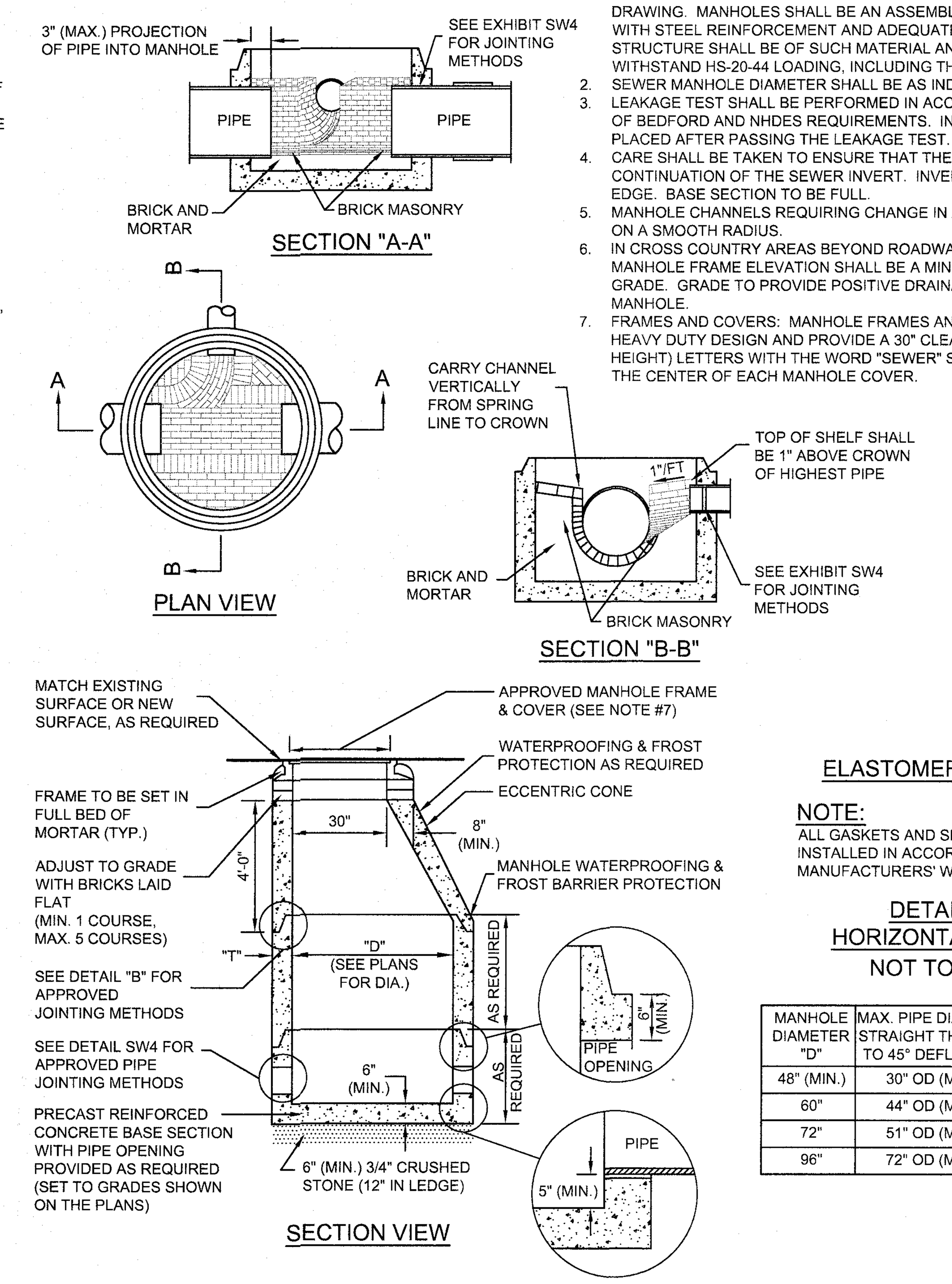


SEWER MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE
(MARCH 2008)

NOTES:
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED SEWER
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

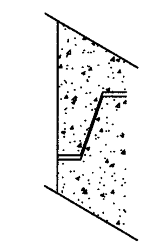
SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30



TYPICAL SEWER MANHOLE

NOTES:

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE FRAME AND COVER.
2. SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.
3. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF BEDFORD AND NHDES REQUIREMENTS. INVERT AND SHELF TO BE PLACED AFTER PASSING THE LEAKAGE TEST.
4. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. BASE SECTION TO BE FULL.
5. MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT ARE TO BE BUILT ON A SMOOTH RADIUS.
6. IN CROSS COUNTRY AREAS BEYOND ROADWAY RIGHT-OF-WAYS, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE.
7. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30" CLEAR OPENING. 3" (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER.



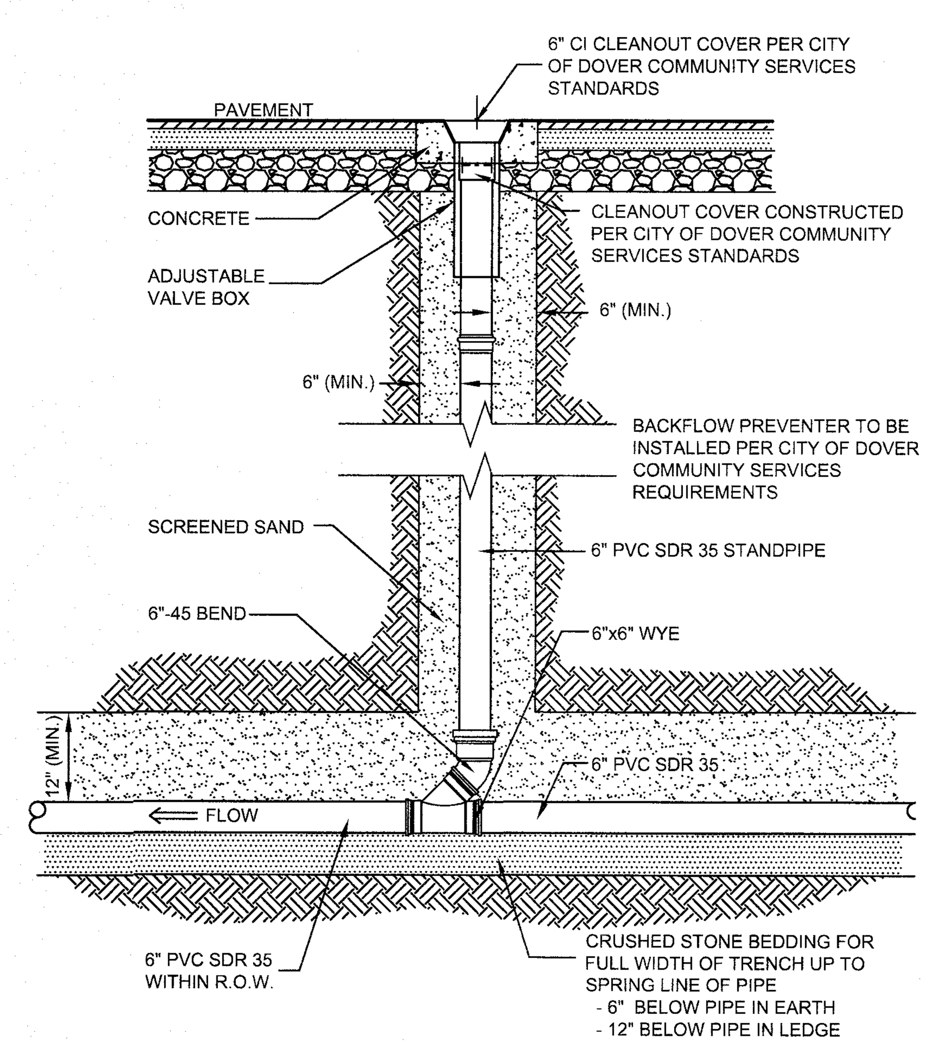
ELASTOMERIC SEALANT

NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

DETAIL "B"
HORIZONTAL JOINTS
NOT TO SCALE

MANHOLE DIAMETER "D"	MAX. PIPE DIAMETER STRAIGHT THROUGH TO 45° DEFLECTION	WALL THICKNESS "T"
48" (MIN.)	30" OD (MAX.)	
60"	44" OD (MAX.)	
72"	51" OD (MAX.)	
96"	72" OD (MAX.)	

1. ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND SPACE NECESSARY FOR THE INTENDED SERVICE.
2. MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
3. MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF ONE GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
4. BARRELS, CONCRETE GRADE RINGS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE AND SHALL CONFORM TO ASTM C478.
5. BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33
   100% PASSING 1 INCH SCREEN
   90% PASSING 3/4 INCH SCREEN
   20-55% PASSING 3/8 INCH SCREEN
   0-10% PASSING #4 SIEVE
   0-5% PASSING #8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.
6. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
7. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
8. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
   - A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
   - B. CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
   - C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
   - D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
9. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
10. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
11. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
12. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
13. MATERIALS OF CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS.
   - A. CONCRETE FOR PRECAST BASES OR GRADE RINGS SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   - B. REINFORCING FOR PRECAST CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   - C. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORM TO ASTM C478;
   - D. THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
   - E. THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE;
   - F. THE CASTINGS SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS;
   - G. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION;
   - H. CASTINGS SHALL BE EQUAL TO CLASS 30, BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM A48/48M;
   - I. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM C32, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
   - J. MORTAR SHALL BE COMPOSED OF TYPE II PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   - K. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
     1. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
     2. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PARTS HYDRATED LIME;
   - L. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150/C150M;
   - M. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
   - N. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
   - O. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   - P. SUBJECT TO (Q) BELOW, A FLEXIBLE PIPE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION:
     1. WITHIN 48-INCHES FOR REINFORCED CONCRETE (RC) PIPE; AND
     2. WITHIN 60-INCHES FOR PVC PIPE LARGER THAN 15-INCH DIAMETER;
   - Q. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR D.I. PIPE OR FOR PVC PIPE UP THROUGH 15-INCH DIAMETER; AND
   - R. WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND IS CAPABLE OF SUPPORTING H-20 LOADS.
14. MANHOLE TESTING:
   - A. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
   - B. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
     1. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg: AND
     2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCH Hg SHALL BE:
        - a. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;
        - b. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND
        - c. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
   - C. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (B) ABOVE.
   - D. INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETED.
   - E. FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENTS TO GRADE.



SEWER SERVICE CLEANOUT
NOT TO SCALE

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ____________ ____________ SIGNATURE DATE: ____________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

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PAUL CHISHOLM
No. 15073
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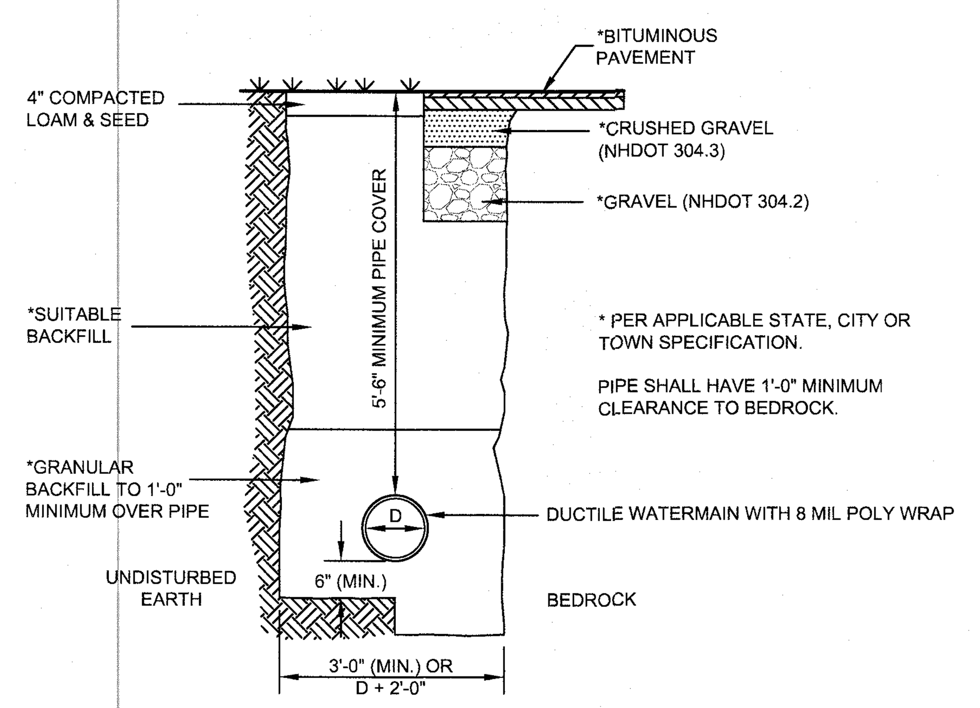
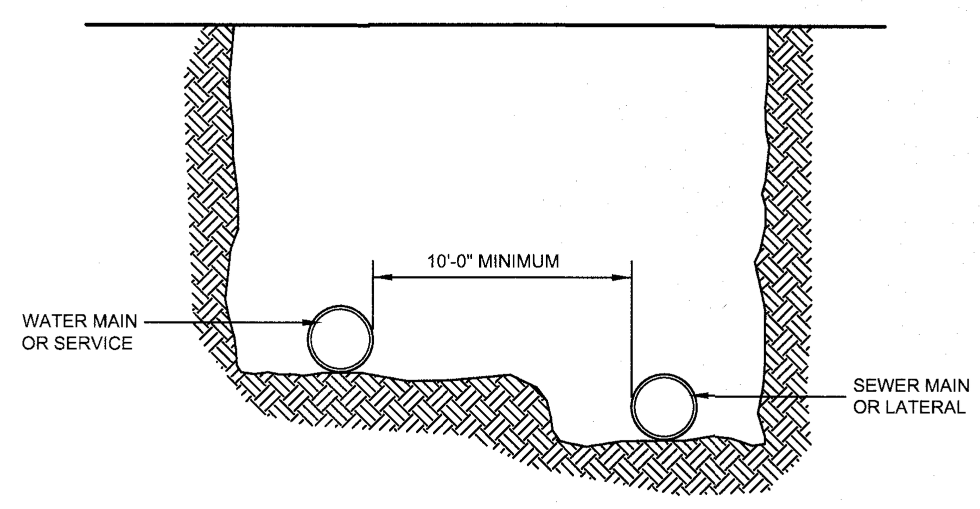
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

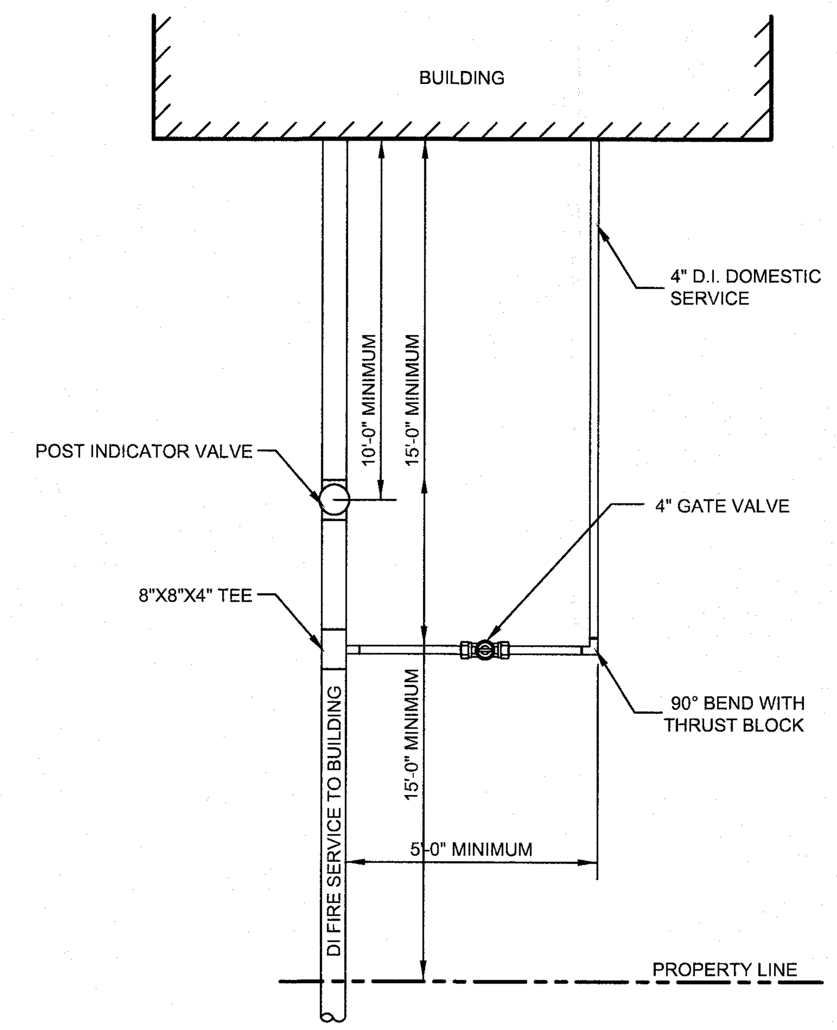
DATE: APRIL 6, 2021	SCALE:
PROJECT NO: 20–0921–2	SHEET 12 OF 16



WATER LINE TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)



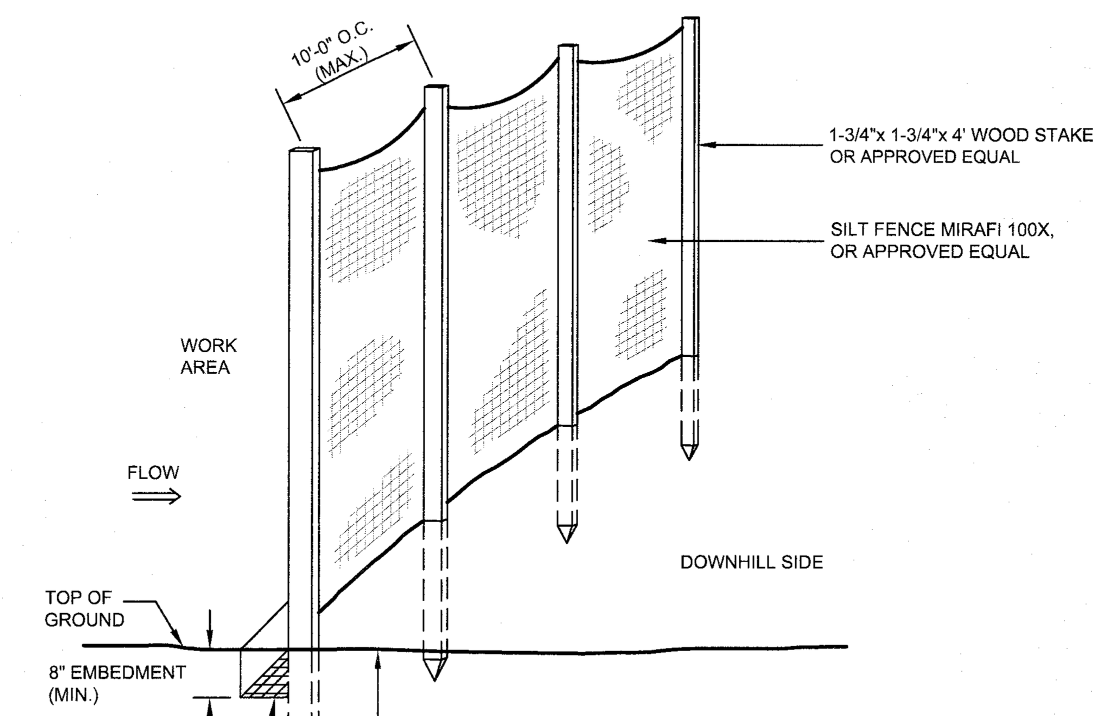
PARALLEL INSTALLATION



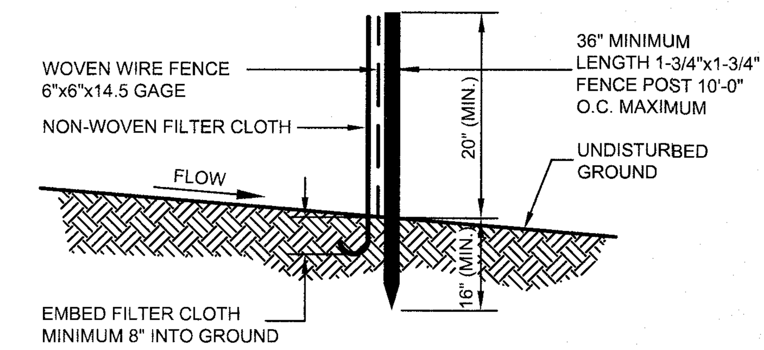
NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO MANCHESTER WATER WORKS, INC. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5'-6" FROM TOP OF PIPE TO FINISH GRADE.
3. SEE DETAIL FOR SERVICE AND VALVE BOX INSTALLATION DETAIL.
4. SEE DETAIL A-11 FOR OUTSIDE SERVICE ENTRANCE PLAN VIEW.

DOMESTIC SERVICE TAPPED OFF FIRE SERVICE
(A-24)
NOT TO SCALE
(MARCH 2008)



PERSPECTIVE VIEW



SECTION

SILT FENCE DETAIL
NOT TO SCALE
(MARCH 2008)

CONSTRUCTION SPECIFICATIONS:

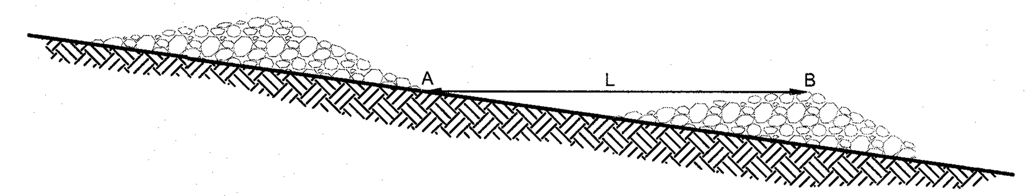
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.

1 05/12/21 TOWN COMMENTS SCV

3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

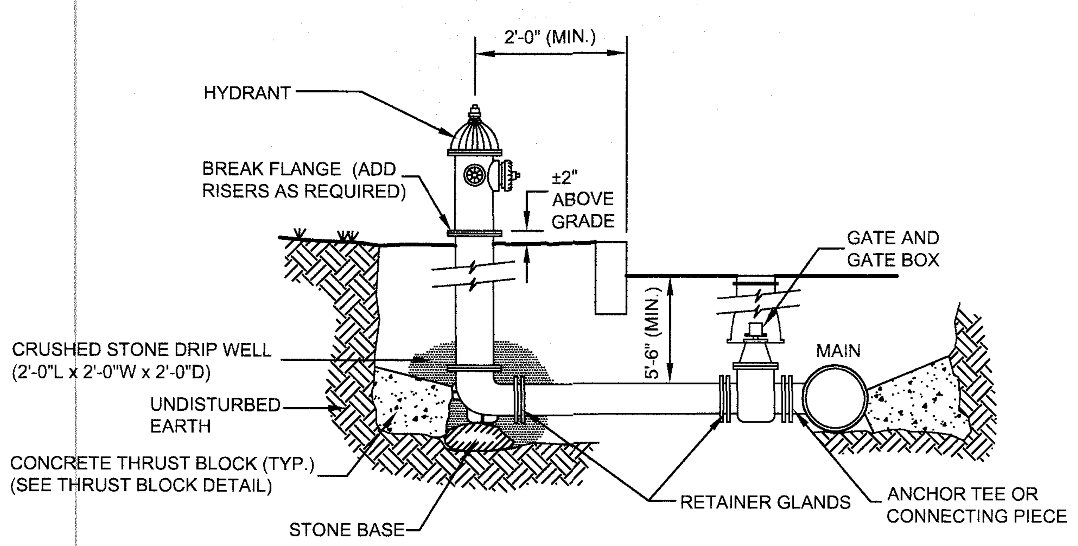
MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

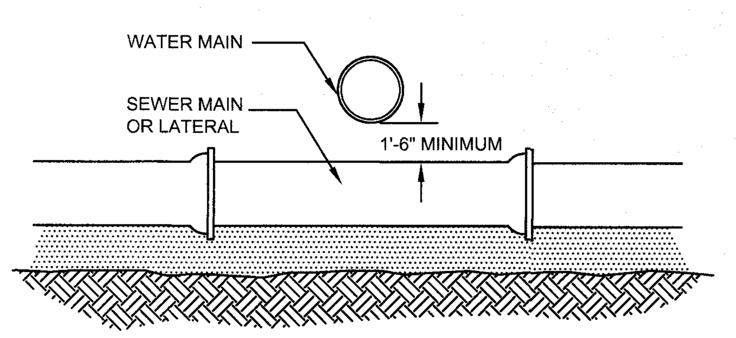


L = THE DISTANCE SUCH THAT POINTS A AND B ARE EQUAL ELEVATION, OR FOR FLAT SLOPES L = 75' MAXIMUM

STONE CHECK DAM SPACING DETAIL
NOT TO SCALE
(MARCH 2008)

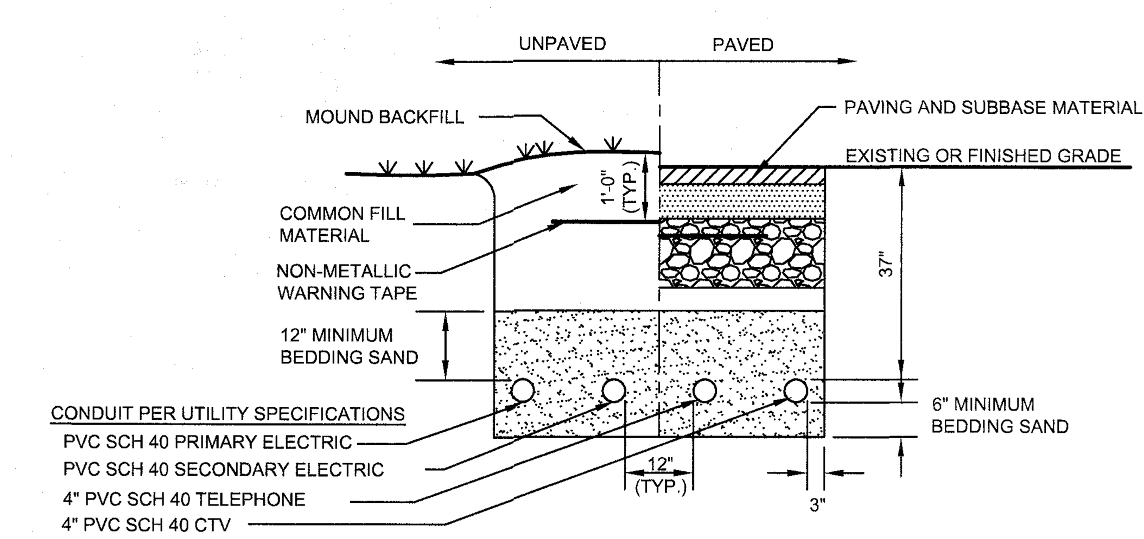


HYDRANT INSTALLATION
NOT TO SCALE
(MARCH 2008)



MAIN CROSSINGS

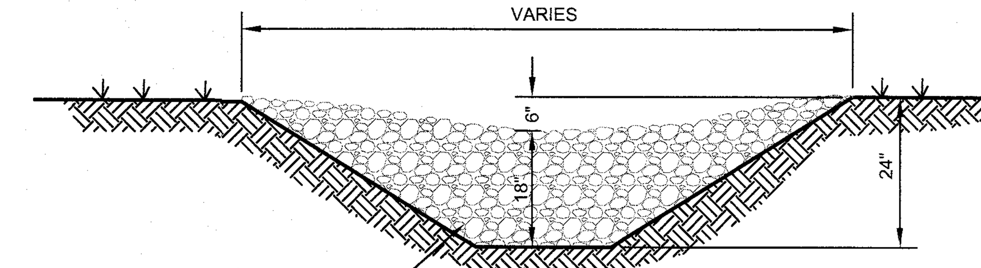
WATER MAIN/SEWER MAIN SEPARATION
NOT TO SCALE
(AUGUST 2011)



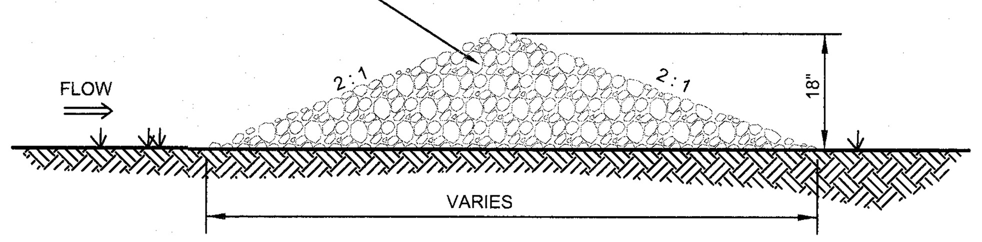
NOTES:

1. INSTALLATION AND MATERIALS OF UNDERGROUND UTILITIES SHALL CONFORM TO LOCAL UTILITY COMPANY SPECIFICATIONS.
2. COORDINATE WITH UTILITY COMPANIES PRIOR TO THE START OF CONSTRUCTION.

UTILITY TRENCH DETAIL
NOT TO SCALE

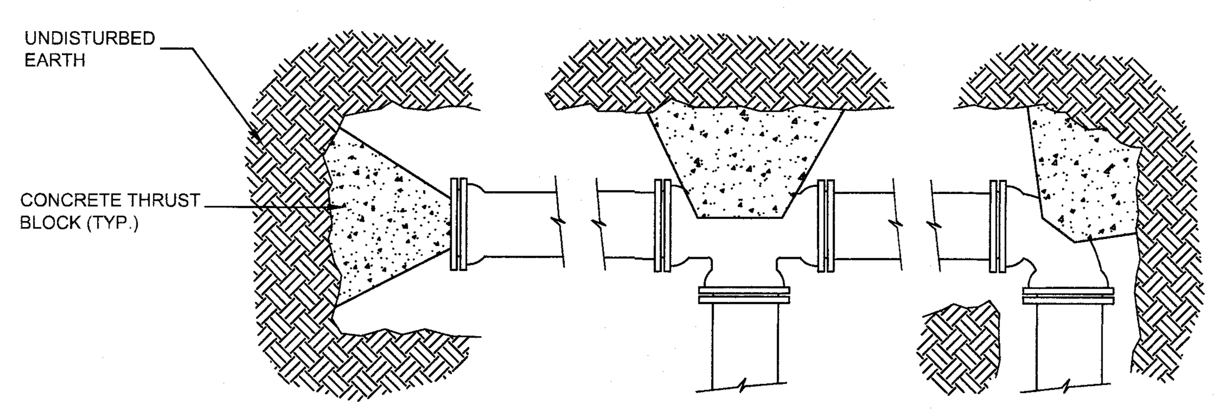


ELEVATION

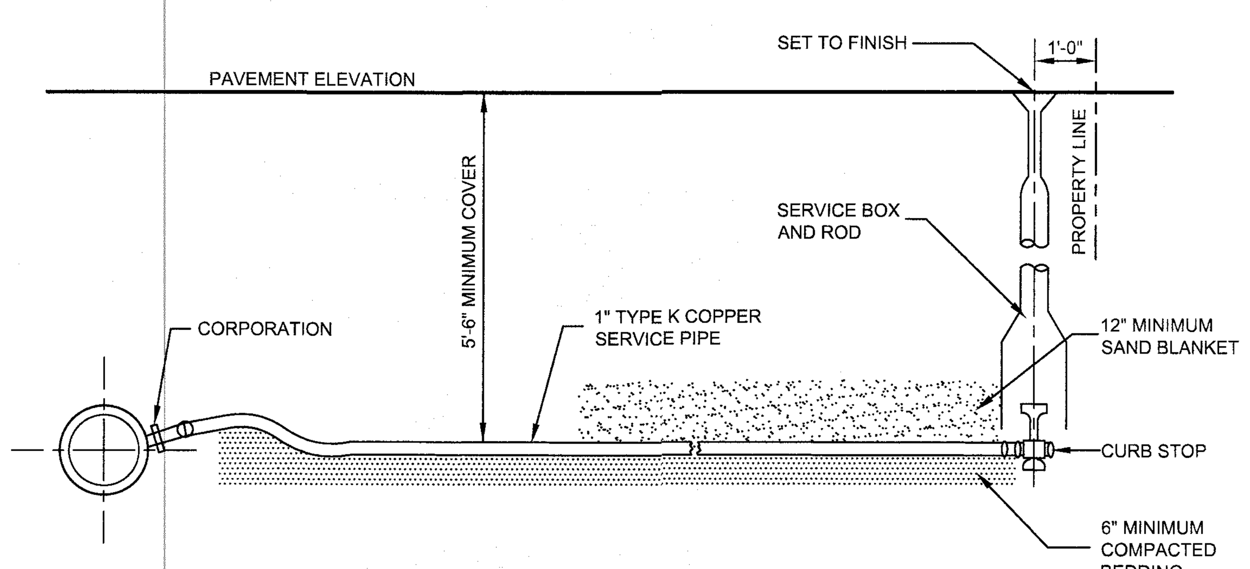


CROSS-SECTION

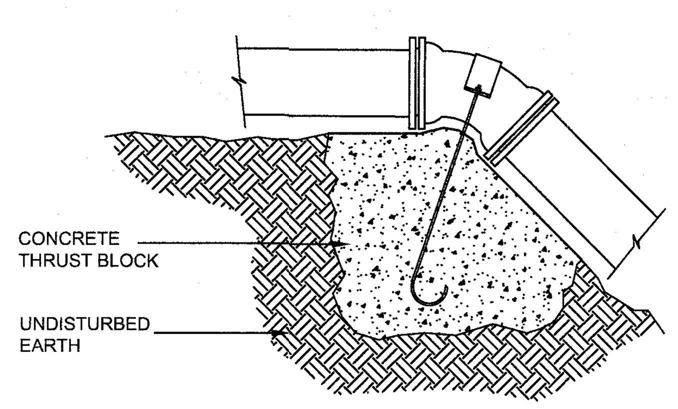
STONE CHECK DAM DETAIL
NOT TO SCALE
(MARCH 2008)



PLAN - HORIZONTAL BENDS, TEES AND PLUGS



WATER SERVICE CONNECTION
NOT TO SCALE
(MARCH 2008)

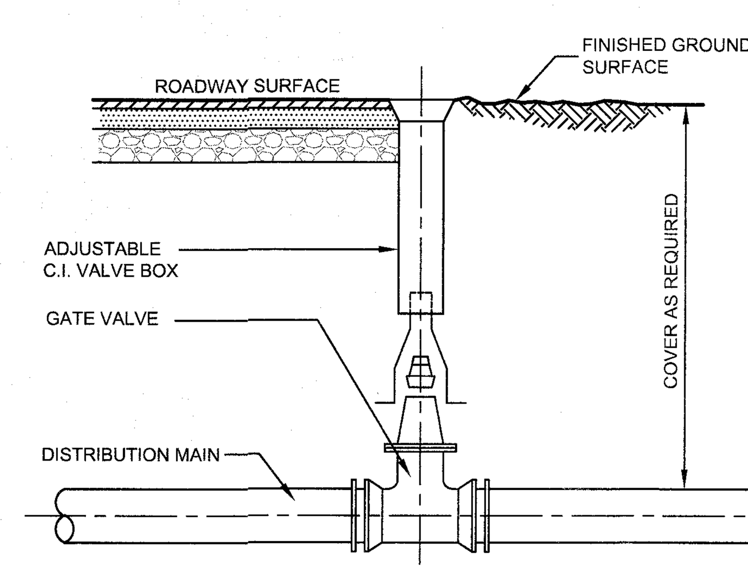


ELEVATION - VERTICAL BENDS

NOTES

1. THRUST BLOCK DIMENSIONS TO BE DETERMINED IN FIELD BY ENGINEER BASED ON PIPE SIZE, WATER PRESSURE AND SOIL TYPE.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED EARTH.
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).

THRUST BLOCKS
NOT TO SCALE
(MARCH 2008)



WATER AND GAS GATE VALVE
NOT TO SCALE
(MARCH 2008)

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ________ ____________ SIGNATURE DATE: ________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 13 OF 16

TURF ESTABLISHMENT SCHEDULE

PURPOSE:

TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

PREPARATION AND EXECUTION:

1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEEDED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED; TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY NO PHOSPHATE, SLOW RELEASE FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF, HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING FOR PERMANENT COVER SHALL OCCUR BETWEEN SEPTEMBER 15 AND OCTOBER 15 AND BETWEEN APRIL 15 AND JUNE 15. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER, WHEN THE GROUND IS FROZEN OR EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH STRAW. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3 : 1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 15, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

MAINTENANCE:

ALL SEEDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDED AREA. MAINTAIN SEEDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

APPLICATION RATES:

1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 4 INCHES.
2. LIME SHALL BE APPLIED AT A RATE OF 75 TO 100 POUNDS PER 1,000 S.F.
3. FERTILIZER SHALL BE APPLIED AT A RATE OF 30 POUNDS PER 1,000 S.F. IT IS RECOMMENDED THAT THE SOIL BE TESTED PRIOR TO APPLYING ANY FERTILIZERS TO DETERMINE WHAT LEVELS AND RATES ARE NECESSARY.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE APPLIED AT A RATE OF AT LEAST 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
5. TEMPORARY SEED MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 S.F.
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.6 POUNDS PER 1,000 S.F.
8. MULCH SHALL BE APPLIED AT A RATE OF 90 POUNDS PER 1,000 S.F.

MATERIALS:

1. LOAM USED FOR TOPSOIL SHALL BE FRIABLE, FERTILE, NATURAL FREE-DRAINING LOAM; FREE OF ROOTS, GRASS, STICKS, WEEDS, CLAY, SOD LUMPS, DEBRIS AND STONES LARGER THAN 1 INCH IN ANY DIMENSION. SOIL SHALL NOT BE EXCESSIVELY ACID OR ALKALINE AND CONTAIN NO TOXIC MATERIALS.
2. LIME SHALL BE GROUND LIMESTONE CONTAINING NO LESS THAN 95% CALCIUM AND MAGNESIUM CARBONATES.
3. FERTILIZER SHALL BE NO PHOSPHORUS, SLOW RELEASE.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE 99% PURE LIVE SEED AND CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   25% KENTUCKY BLUEGRASS
   25% REDTOP
   25% MANHATTAN PERENNIAL RYEGRASS

5. TEMPORARY SEEDING MIXTURE SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:

   15% BLACKWELL OR SHELTER SWITCHGRASS
   30% NIAGRA OR KAW BIG BLUESTEM
   30% CAMPER OR BLAZE LITTLESTEM
   15% NE-27 OR BLAZE SAND LOVEGRASS
   10% VIKING BIRDSFOOT TREFOIL

   INOCULUM SPECIFIC TO BIRDSFOOT TREFOIL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.

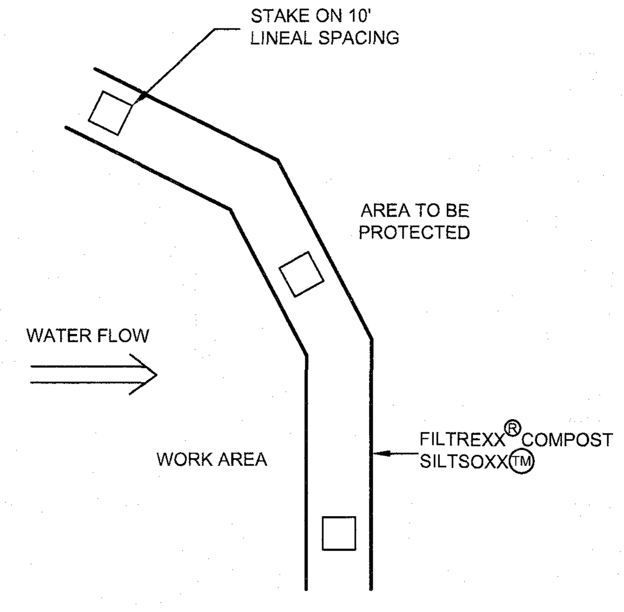
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE 99% PURE LIVE SEED AND SHALL CONSIST OF THE FOLLOWING:

   30% CREEPING RED FESCUE
   40% PERENNIAL RYE GRASS
   15% REDTOP
   15% BIRDSFOOT TREFOIL
   *IN ADDITION TO THE MIX SPECIFIED ABOVE, CROWN VETCH SHALL BE USED ON ALL SLOPES STEEPER THAN 3 : 1. CROWN VETCH SHALL BE APPLIED AT A RATE OF 10 POUNDS PER ACRE AND INOCULUM SPECIFIC TO CROWN VETCH MUST BE USED.

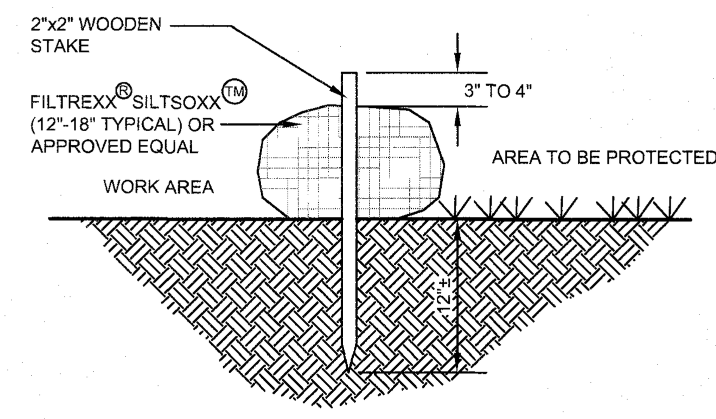
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES SHALL CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   15% SWITCH GRASS
   15% FOX SEDGE
   15% CREEPING BENTGRASS
   10% FLATPEA
   20% WILDFLOWER VARIETY

8. STRAW USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.
9. NATIVE PLANTINGS SHOULD BE USED FOR ALL NEW GREENSCAPES.
10. ALL WILDFLOWER SEEDING MIXES SHOULD BE FREE OF INVASIVE SPECIES.



PLAN VIEW



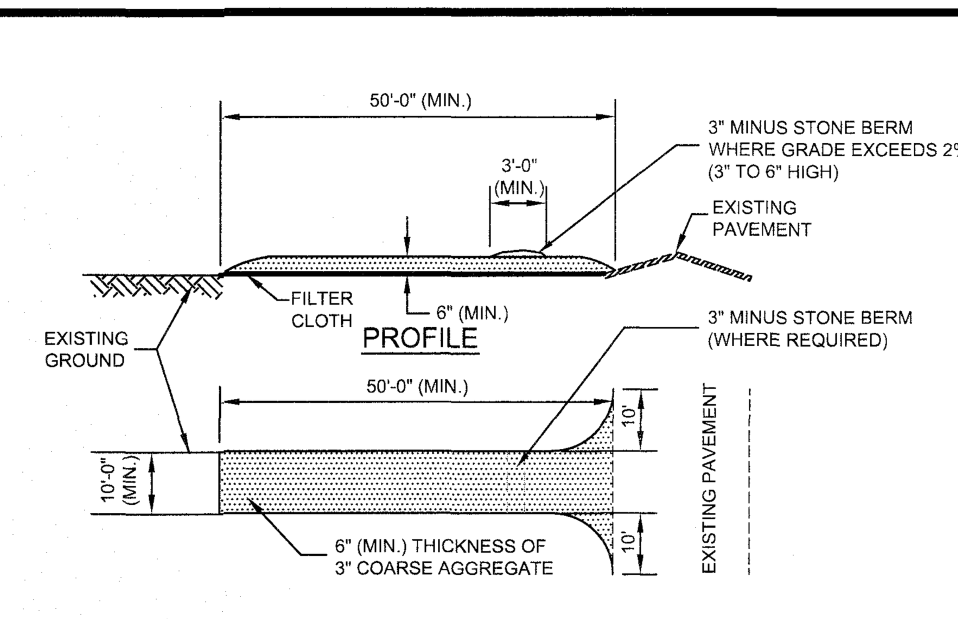
SECTION VIEW

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. GREAT SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® SILTSOXX™ DETAIL

NOT TO SCALE
(AUGUST 2011)



PLAN VIEW

STABILIZED CONSTRUCTION EXIT DETAIL

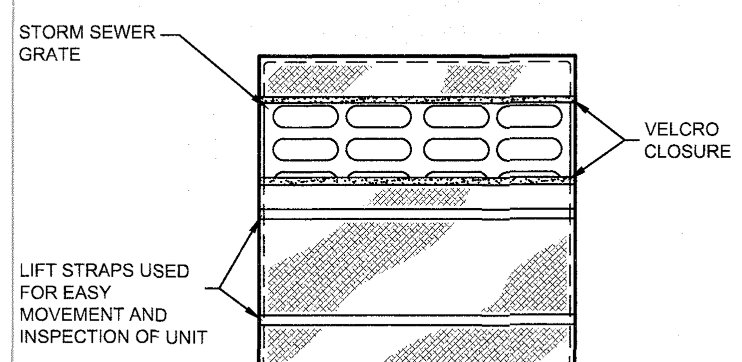
NOT TO SCALE

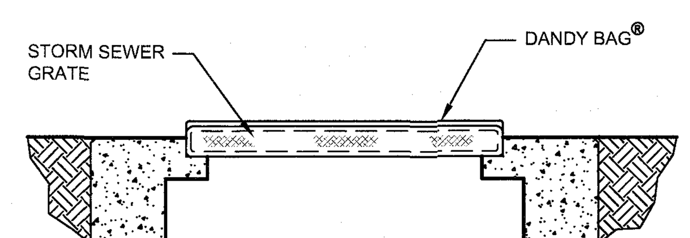
MAINTENANCE:

1. MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE CRUSHED STONE AND THE EFFECTIVENESS OF THE CRUSHED STONE PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOPDRESSED WITH NEW CRUSHED STONE OR COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2. IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH MINIMUM STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 3 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY . WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. THE MOUNTABLE BERM IS REQUIRED FOR 50' LONG EXITS.



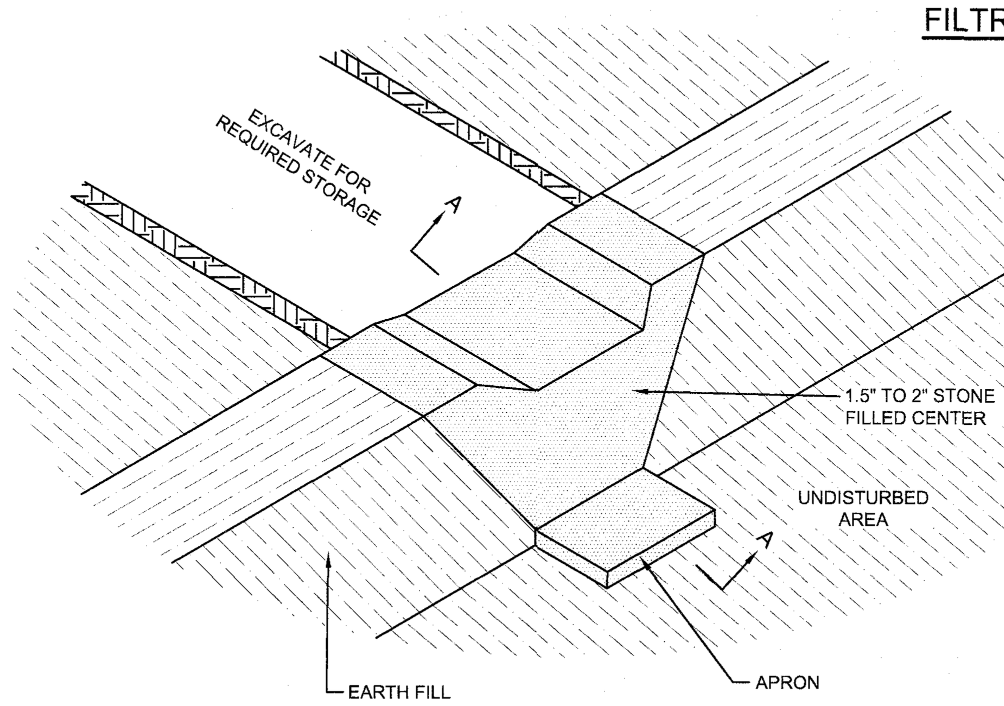


HI-FLOW DANDY BAG® (SAFETY ORANGE)

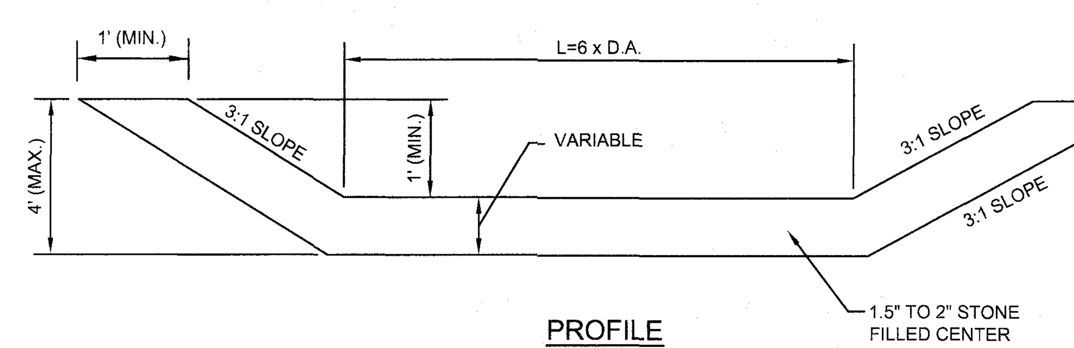
MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) x 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	$1/min/m^2$ ($gal/min/ft^2$)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec^{-1}	2.1

DANDY BAG®

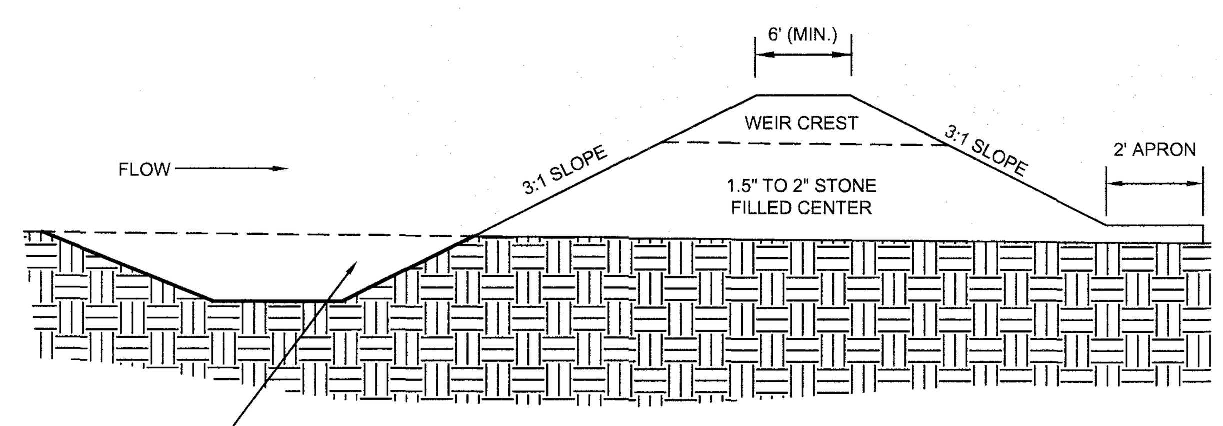
NOT TO SCALE
(APRIL 2010)



ISOMETRIC VIEW



PROFILE



SECTION A-A

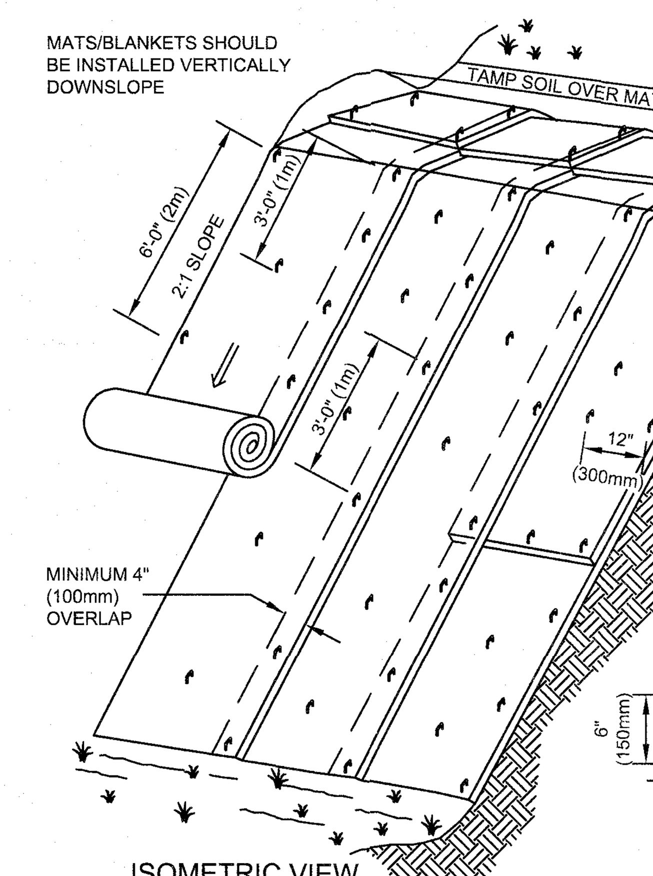
NOTES:

1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER, AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS AND/OR BASINS SHOULD BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL BASINS/PONDS ARE STABILIZED.

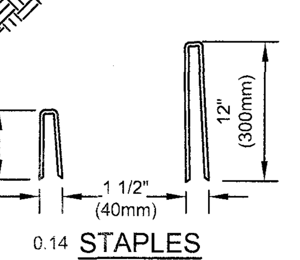
TEMPORARY SEDIMENT TRAP DETAIL

NOT TO SCALE

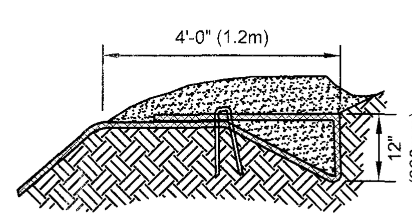
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES TWO YEARS FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: ____________ ____________ SIGNATURE DATE: ____________ ____________ SIGNATURE DATE: ____________ SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.



ISOMETRIC VIEW



0.14 STAPLES



BERM

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. EROSION BLANKETS TO BE A BCN150 OR AN APPROVED ALTERNATIVE WHICH MUST CONSIST OF ALL NATURAL FIBERS.

EROSION CONTROL BLANKETS - SLOPE INSTALLATION

NOT TO SCALE
(AUGUST 2011)

CONSTRUCTION SEQUENCE

1. THE CONTRACTOR WILL ENSURE THAT NO MORE THAN 5 ACRES IS DISTURBED AT ANY ONE TIME.
2. FIRST CUT AND CLEAR TREES AND BRUSH ONLY WITHIN DESIGNATED LIMITS OF CLEARING AS NECESSARY TO FACILITATE PROPOSED CONSTRUCTION. ALL TREES, BRANCHES AND OTHER VEGETATIVE MATERIALS SHALL BE PROPERLY DISPOSED OF OFF SITE BY THE CONTRACTOR. THIS PROJECT IS MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS, ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES, INCLUDING SPECIFIED PERIMETER SILTATION FENCING AND STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTIONS ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED WITH STRAW BALES AND/OR FABRIC SILTATION FENCE IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. BEGIN EARTHMOVING OPERATIONS, COMMENCING WITH WORK NEEDED TO BALANCE SITE AND FACILITATE BUILDING FOUNDATION AND RETAINING WALL CONSTRUCTION. PERMANENT DOWNSLOPE WORK SHALL BE PROTECTED FROM UPGRADIENT STORMWATER FLOW BY THE CONSTRUCTION OF TEMPORARY EARTHEN DIKES OR EXCAVATED SWALES.
6. ONCE BUILDING FOUNDATION WORK IS UNDERWAY, CONTINUE EARTHMOVING OPERATIONS UNTIL DESIGN SUBGRADE IS ACHIEVED.
7. DETENTION BASINS/SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
8. DITCHES/SWALES/BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL SOILS ARE STABILIZED.
10. INSTALL DRAINAGE SWALE SYSTEMS AND OTHER UTILITIES WORKING FROM LOW TO HIGH. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF SILTATION BARRIERS AROUND SWALES UNTIL THE SITE HAS BECOME FULLY STABILIZED.
11. DEEPLY TILL THE BASE OF THE INFILTRATION BASIN TO RESTORE INFILTRATION RATES FOLLOWED BY A PASS WITH A LEVELING DRAG. STORMWATER FLOWS ARE NOT TO BE DIRECTED TO THE INFILTRATION AREA UNTIL CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
12. PLACE GRAVEL AND CRUSHED GRAVEL OVER PROPOSED DRIVEWAY, WALKS AND PARKING AREAS AND COMPACT IN SPECIFIED LIFT THICKNESS.
13. COMPLETE EXCAVATION/STABILIZATION GRADING ACTIVITIES. WHEN COMPLETE, IMMEDIATELY BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE A THICKNESS OF 4 INCHES OF FRIABLE LOAM.
14. FINE GRADE ALL FUTURE TURF AREAS AND HYDROSEED WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
15. INSTALL THE BINDER COURSE OF PAVEMENT OVER ALL DESIGNATED AREAS.
16. CONTINUE TO MONITOR AND RECTIFY MINOR SITE AND SLOPE EROSION UNTIL ENTIRE SITE APPEARS TO BE COMPLETELY STABILIZED AND VEGETATED WITH A HEALTHY STAND OF TURF OR GROUND COVER. MAINTAIN SPECIFIED SILTATION/EROSION CONTROL MEASURES THROUGH ONE WINTER.
17. INSTALL THE SPECIFIED WEARING COURSE OF PAVEMENT OVER THE BINDER COURSE.
18. COMPLETE INSTALLATION OF LANDSCAPING, SIGNAGE AND OTHER SITE AMENITIES.

CERTIFICATE OF OCCUPANCY PHASING PLAN AGREEMENT:

1. THE FOLLOWING SITE IMPROVEMENTS ARE REQUIRED FOR INDIVIDUAL CERTIFICATES OF OCCUPANCY AS CONSTRUCTION PROGRESSES:
   A. ROAD BASE COAT;
   B. STOP SIGNS AND TEMPORARY STRIPING OF STOP BARS;
   C. GRADING AND DRAINAGE;
   D. LOAM AND SEED THAT SUPPORTS THE SUBJECT UNIT OF THE CERTIFICATE OF OCCUPANCY;
   E. TEMPORARY STRIPING OF VISITOR PARKING; AND
   F. UTILITIES.

EROSION CONTROL NOTES

1. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION UNLESS AN ENVIRONMENTAL MONITOR IS EMPLOYED THROUGH THE DURATION OF CONSTRUCTION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING FORTY-FIVE (45) CALENDAR DAYS.
2. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
3. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
4. EROSION CONTROL AND STABILIZATION SHALL BE IN ACCORDANCE WITH HILLSBOROUGH COUNTY CONSERVATION DISTRICT-VEGETATIVE STANDARD AND SPECIFICATIONS FOR SEEDING GRASSES AND LEGUMES FOR LONG-TERM COVER ON EXCAVATED AREAS.
5. ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.
6. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
7. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
8. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
9. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
10. THE TOWN RESERVES THE RIGHT TO REQUIRE ADDITIONAL EROSION CONTROL MEASURES DURING CONSTRUCTION.
11. AREAS HAVING FINISH GRADE SLOPES OF 3 : 1 OR STEEPER, SHALL BE STABILIZED WITH JUTE MATTING WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION."
12. DETENTION BASINS/SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
13. DITCHES/SWALES/BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
14. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL SOILS ARE STABILIZED.
15. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN $\frac{1}{8}$".
18. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

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 4:1, 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 EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR 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.
4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

CONSTRUCTION DETAILS

S.L. CHASSE STEEL

MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE
PAUL CHISHOLM
No. 15078
LICENSED
PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
1	05/12/21	TOWN COMMENTS	SCV
2	08/17/21	TOWN AND AOT COMMENTS	SCV
3	09/01/21	AoT COMMENTS	SCV
4	05/01/22	AMENDED SITE PLAN	SCV
5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: AS SHOWN
PROJECT NO: 20-0921-2	SHEET 14 OF 16

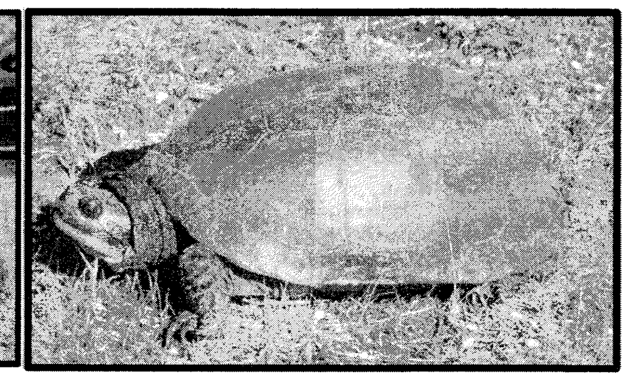
1	05/12/21	TOWN COMMENTS	SCV

PLEASE REPORT RARE TURTLES

The NH Fish & Game Department is requesting observations of three turtle species that could be encountered onsite.

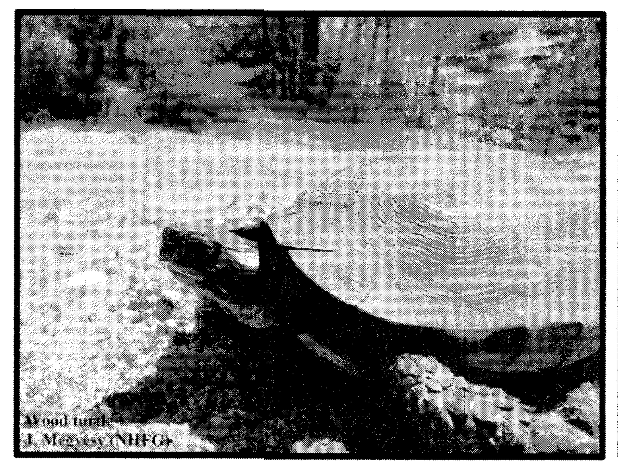
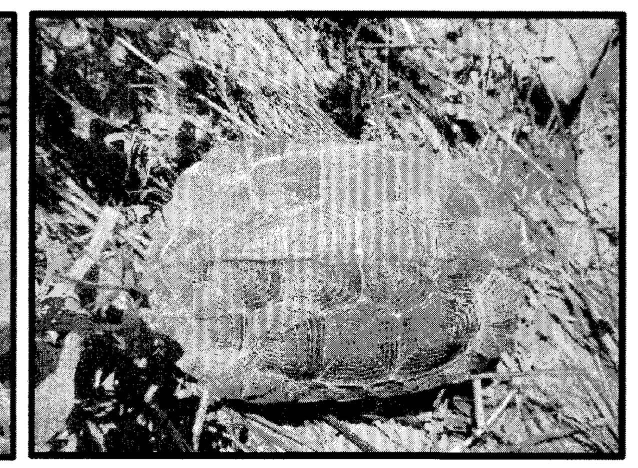
Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

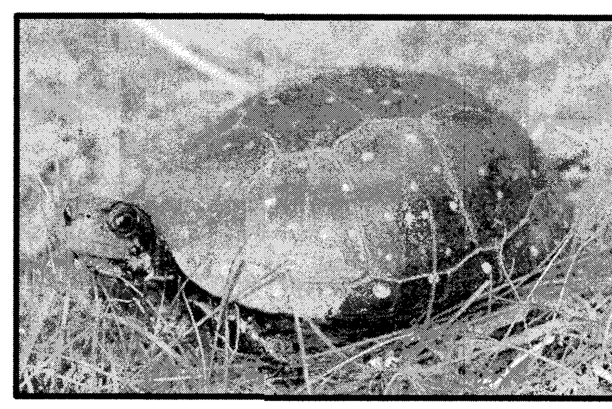
Blanding's turtle (state endangered)

- 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




Spotted turtle (state threatened)

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

CONSTRUCTION DETAILS
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

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STATE OF NEW HAMPSHIRE · PAUL CHISHOLM No. 15079 LICENSED · PROFESSIONAL ENGINEER
9/12/22

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5	05/25/22	GRADING & LAYOUT CHANGES	PCM
6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021 **SCALE:** AS SHOWN
PROJECT NO: 20-0921-2 **SHEET** 15 **OF** 16

TP #1
LOGGED BY GPC
PERC TEST @ 20"
DATE: 10-22-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – FOREST MAT
6" – 10YR 6/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
16" – 10YR 5/4, GRANULAR, FRIABLE, SAND COARSE, FEW ROOTS
48" E.S.H.W.T. – 10YR 6/3, FIRM, SAND, W/ REDOX FEATURES
60" BOTTOM OF HOLE

TP #2
LOGGED BY GPC
PERC TEST @ 20"
DATE: 10-22-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – FOREST MAT
10" – 10YR 6/4, GRANULAR, FRIABLE, SAND COARSE, FEW ROOTS
24" – 10YR 7/3, SAND
64" BOTTOM OF HOLE

TP #3
LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-16-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – TOP SOIL
8" – 5Y 5/4, GRANULAR, FRIABLE LOAMY SAND, ROOTS
18" – 10YR 5/6, GRANULAR, FRIABLE, LOAMY SAND, FEW ROOTS
28" – 10YR 6/6, SAND SINGLE GRAIN GRAVELLY
70" BOTTOM OF HOLE

TP #4
LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-16-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – TOP SOIL
8" – 5Y 5/4, GRANULAR, FRIABLE LOAMY SAND, ROOTS
18" – 10YR 5/6, GRANULAR, FRIABLE, LOAMY SAND, FEW ROOTS
28" – 10YR 6/6, SAND SINGLE GRAIN GRAVELLY
70" BOTTOM OF HOLE

TP #5
LOGGED BY GPC
PERC TEST @ 20"
DATE: 10-22-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – FOREST MAT
6" – 10YR 5/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
24" – 10YR 5/2, GRANULAR, FRIABLE, SAND COARSE, FEW ROOTS
44" E.S.H.W.T. – 10YR 4/2, FIRM, SAND, W/ REDOX FEATURES
60" BOTTOM OF HOLE

TP #6
LOGGED BY GPC
PERC TEST @ 20"
DATE: 4-1-2022
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – TOPSOIL
6" – 10YR 6/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
14" – 10YR 7/4, GRANULAR, FRIABLE, SAND COARSE, FEW ROOTS
30" – 10YR 7/1, SAND, STONES, MASSIVE
72" BOTTOM OF HOLE

TP #7
LOGGED BY GPC
PERC TEST @ 20"
DATE: 4-1-2022
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE

0" – 10YR 5/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
36" – 10YR 7/1, SAND, STONES, MASSIVE
66" BOTTOM OF HOLE

TP #8
LOGGED BY GPC
PERC TEST @ 20"
DATE: 4-1-2022
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: 48"
WATER ENCOUNTERED: NONE

0" – TOPSOIL
6" – 10YR 6/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
24" – 10YR 7/1, SAND, STONES, MASSIVE
48" BOTTOM OF HOLE
POSSIBLE LEDGE

TP #9
LOGGED BY GPC
PERC TEST @ 20"
DATE: 4-1-2022
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: 48"
WATER ENCOUNTERED: NONE

0" – TOPSOIL
6" – 10YR 5/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
30" – 10YR 7/1, SAND, STONES, MASSIVE
90" BOTTOM OF HOLE

TP #10
LOGGED BY GPC
PERC TEST @ 20"
DATE: 4-1-2022
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: 48"
WATER ENCOUNTERED: NONE

0" – TOPSOIL
6" – 10YR 5/6, GRANULAR, FRIABLE FINE LOAMY SAND, ROOTS
30" – 10YR 7/1, SAND, STONES, MASSIVE
90" BOTTOM OF HOLE

TEST PITS
S.L. CHASSE STEEL
MAP 105 LOT 17-3
199 ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
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STATE OF NEW HAMPSHIRE PAUL CHISHOLM No. 10073 LICENSED PROFESSIONAL ENGINEER
9/12/22

REVISIONS

No.	DATE	DESCRIPTION	BY
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6	08/15/22	AoT COMMENTS	SCV
7	09/07/22	TOWN COMMENTS	SCV

DATE: APRIL 6, 2021 | SCALE: AS SHOWN
PROJECT NO: 20-0921-2 | SHEET 16 OF 16

Alteration of Terrain Application

S.L. Chasse Steel

Map 105; Lot 17-2 & 17-3
Robinson Road
Hudson, New Hampshire

June 7, 2022

Amended: September 12, 2022

KNA Project No. 20-0921-2

Prepared For: Steel Properties, LLC
8 Christine Drive
Hudson, New Hampshire 03051

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

1. SIGNED OWNER AFFIDAVIT

Owner Affidavit

I, Steve Chasse, authorized representative of S.L. Chasse Steel and owner of the properties referenced on Tax Map 105 as Lots 17-2 & 17-3, located along Robinson Road, Hudson, New Hampshire, hereby verify that I have authorized Keach-Nordstrom Associates, Inc. to submit on my behalf, any and all applicable State and local permit applications as they pertain to improvements on said property.

Additionally, I authorize Keach-Nordstrom Associates, Inc. to aid in the representation of these applications throughout the approval process.

Signature of Owner: Stephen L. Chasse

Printed Name of Owner: STEPHEN L. CHASSE

Address of Owner: 8 Christine Drive

Hudson, NH 03051

Date: ____________________

2. AOT APPLICATION

ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop

RSA/ Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)		
Applicant Name: S.L. Chasse Steel	Contact Name: Steve Chasse	
Email: s.chasse@slchassesteelfab.com	Daytime Telephone: (603) 886-3436	
Mailing Address: 8 Christine Drive		
Town/City: Hudson	State: NH	Zip Code: 03051
2. APPLICANT'S AGENT INFORMATION If none, check here: ☒		
Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	Zip Code:
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)		
Applicant Name:	Contact Name:	
Email:	Daytime Telephone:	
Mailing Address:		
Town/City:	State:	Zip Code:
4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☒		
Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	Zip Code:
5. CONSULTANT INFORMATION If none, check here: ☐		
Engineering Firm: Keach-Nordstrom Associates, Inc.	Contact Name: Shaun Vando	
Email: svando@keachnordstrom.com	Daytime Telephone: (603) 627-2881	
Address: 3 Commerce Park North, Suite 3		
Town/City: Bedford	State: NH	Zip Code: 03110

6. PROJECT TYPE

☐ Excavation Only ☐ Residential ☐ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☒ Other: Industrial

7. PROJECT LOCATION INFORMATION

Project Name: S.L. Chasse Steel

Street/Road Address: Robinson Road

Town/City: Hudson		County: Hillsborough	
Tax Map: 105	Block:	Lot Number: 17-2&3	Unit:

Location Coordinates: 42.816781, -71.40948 ☒ Latitude/Longitude ☐ UTM ☐ State Plane

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge
2. Man-made pond created by impounding a stream or wetland Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge
3. Unlined pond dug into the water table Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge

Post-development, will the proposed project discharge to:

- A surface water impaired for phosphorus and/or nitrogen? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A Class A surface water or Outstanding Resource Water? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A lake or pond not covered previously? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond**

Is the project a High Load area? ☐ Yes ☒ No
If yes, specify the type of high load land use or activity: ______

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☒ No
Is the project within a Groundwater Protection Area (GPA)? ☐ Yes ☒ No
Will the well setbacks identified in Env-Wq 1508.02 be met? ☒ Yes ☐ No

Note: Guidance document titled "*Using NHDES's OneStop WebGIS to Locate Protection Areas*" is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☒ No
If yes: Cut volume: ______ cubic feet within the 100-year floodplain
Fill volume: ______ cubic feet within the 100-year floodplain

☐ Project **IS** within **¼ mile of a designated river** Name of River:
☒ Project is **NOT** within ¼ mile of a designated river

☐ Project **IS** within **a Coastal/Great Bay Region community - include info required by Env-Wq 1503.08(l) if applicable**
☒ Project is **NOT** within a Coastal/Great Bay Region community

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

The project proposes the construction of three industrial buildings (Buildings #1 & 2 = 18,400 sf and Building #3 = 13,600 sf). Parking lots for the three buildings as well as paved laydown areas are also proposed as part of the project on lot 17-3. The project for 17-2 proposes one industrial building, 22,500 SF, with associated parking and paved areas.

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT

N/A

10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality as required by Env-Wq 1503.05(e)[1]: / / .

(Attach proof of delivery)

B. Date a copy of the application was sent to the local river advisory committee if required by Env-Wq 1503.05(e)[2]: / / .

(Attach proof of delivery)

C. Type of plan required: ☐ Land Conversion ☒ Detailed Development ☐ Excavation, Grading & Reclamation ☐ Steep Slope

D. Additional plans required: ☒ Stormwater Drainage & Hydrologic Soil Groups ☐ Source Control ☐ Chloride Management

E. Total area of disturbance: 442250 square feet

F. Additional impervious cover as a result of the project: 262,847 square feet (use the "-" symbol to indicate a net reduction in impervious coverage).

Total final impervious cover: 262,847 square feet

G. Total undisturbed cover: 179,403 square feet

H. Number of lots proposed: 0

I. Total length of roadway: 0 linear feet

J. Name(s) of receiving water(s): h

K. Identify all other NHDES permits required for the project, and for each indicate whether an application has been filed and is pending, or if the required approval has been issued provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Status	
		Pending	If Issued:
1. Water Supply Approval	☐ Yes ☐ No ☒N/A	☐	Permit number:
2. Wetlands Permit	☐ Yes ☐ No ☒N/A	☐	Permit number:
3. Shoreland Permit	☐ Yes ☐ No ☒N/A	☐	Permit number:
4. UIC Registration	☐ Yes ☐ No ☒N/A	☐	Registration date:
5. Large/Small Community Well Approval	☐ Yes ☐ No ☒N/A	☐	Approval letter date:
6. Large Groundwater Withdrawal Permit	☐ Yes ☐ No ☒N/A	☐	Permit number:
7. Other:	☐ Yes ☐ No	☐	Permit number:

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern: N/A

M. Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."
N/A

N. Did the applicant/applicant's agent have a pre-application meeting with AOT staff? ☐ Yes ☒ No

If yes, name of staff member:

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock: _____ cubic yards
If yes, standard blasting BMP notes must be placed on the plans, available at:
http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact AOT staff for additional detail.

[1] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed.

[2] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)

LOOSE:

- ☒ Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- ☒ Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- ☒ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ If Applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BIND IN A REPORT IN THE FOLLOWING ORDER:

- ☒ Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- ☒ Copy of the check
- ☒ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- ☒ Web GIS printout with the "Surface Water Impairments" layer turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ Web GIS printouts with the AOT screening layers turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ NHB letter using DataCheck Tool – www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- ☒ The Web Soil Survey Map with project's watershed outlined – websoilsurvey.nrcs.usda.gov
- ☒ Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- ☐ Photographs representative of the site
- ☒ Groundwater Recharge Volume calculations (one worksheet for each permit application): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ BMP worksheets (one worksheet for each treatment system): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- ☐ Riprap apron or other energy dissipation or stability calculations
- ☒ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3*.
- ☒ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)]
- ☐ Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches): (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge)
- ☒ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)]
- ☒ Source control plan

PLANS:

- ☒ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- ☒ Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- ☒ Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

100-YEAR FLOODPLAIN REPORT:

- ☐ All information required in Env-Wq 1503.09, submitted as a separate report.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

- ☐ See Checklist for Details

☒ **REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

ridge.mauck@des.nh.gov or (603) 271-2147
NHDES Alteration of Terrain Bureau, PO Box 95, Concord, NH 03303-0095
www.des.nh.gov

12. REQUIRED SIGNATURES

_____ By initialing here, I acknowledge that I am required by Env-Wq 1503.20(e) to submit a copy of all approved documents to the department in PDF format on a CD within one week after permit approval.

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641.

☐ **APPLICANT** ☐ **APPLICANT'S AGENT:**

Signature: ______ Date: 6/7/22

Name (print or type): _____ Title: _____

☑ PROPERTY OWNER ☐ PROPERTY OWNER'S AGENT:

Signature: Stephen L. Chasse Date: 6-7-2022

Name (print or type): STEPHEN L. CHASSE Title: Memb.

3. AOT APPLICATION CHECKLIST

ATTACHMENT A:
ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

DESIGN PLANS

☒ Plans printed on 34 - 36” by 22 - 24” white paper

☒ PE stamp

☒ Wetland delineation

☒ Temporary erosion control measures

☒ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual.

☒ Pre-existing 2-foot contours

☒ Proposed 2-foot contours

☒ Drainage easements protecting the drainage/treatment structures

☐ Compliance with the Wetlands Bureau, RSA 482- A http://des.nh.gov/organization/divisions/water/wetlands/index.htm. Note that artificial detention in wetlands is not allowed.

☐ Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B. http://des.nh.gov/organization/divisions/water/wetlands/cspa

☐ Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.

☒ Check to see if any proposed ponds need state Dam permits. http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf

DETAILS

☐ Typical roadway x-section

☒ Detention basin with inverts noted on the outlet structure

☐ Stone berm level spreader

☒ Outlet protection – riprap aprons

☒ A general installation detail for an erosion control blanket

☒ Silt fences or mulch berm

☒ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.

☒ Hay bale barriers

☒ Stone check dams

☒ Gravel construction exit

☒ Temporary sediment trap

☒ The treatment BMP’s proposed

☒ Any innovative BMP’s proposed

CONSTRUCTION SEQUENCE/EROSION CONTROL

☒ Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.

☒ Note that perimeter controls shall be installed prior to earth moving operations.

☒ Note that temporary water diversion (swales, basins, etc) must be used as necessary until areas are stabilized.

☒ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).

☒ Note that all ditches and swales shall be stabilized prior to directing runoff to them.

☐ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.

☒ Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade

☒ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.

☒ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

☒ Note the definition of the word "stable"

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

☒ Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance.

☒ Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

☒ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
- After October 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

☒ Note at the end of the construction sequence that "Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable." – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

☒ PE stamp

☒ Rainfall amount obtained from the Northeast Regional Climate Center- http://precip.eas.cornell.edu/. Include extreme precipitation table as obtained from the above referenced website.

☒ Drainage analyses, in the following order:

- Pre-development analysis: Drainage diagram.
- Pre-development analysis: Area Listing and Soil Listing.
- Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
- Pre-development analysis: Full summary of the 10-year storm.
- Post-development analysis: Drainage diagram.
- Post-development analysis: Area Listing and Soil Listing.
- Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
- Post-development analysis: Full summary of the 10-year storm.

☒ Review the Area Listing and Soil Listing reports

- Hydrologic soil groups (HSG) match the HSGs on the soil maps provided.
- There is the same or less HSG A soil area after development (check for each HSG).
- There is the same or less "woods" cover in the post-development.
- Undeveloped land was assumed to be in "good" condition.
- The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

☒ Check the storage input used to model the ponds.

☒ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.

☒ Check the outlet structure proposed and make sure it matches that modeled.

☒ Check to see if the total areas in the pre and post analyses are same.

☒ Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III).

.

PRE- AND POST-DEVELOPMENT DRAINAGE AREA PLANS

☒ Plans printed on 34 - 36" by 22 - 24" on white paper.

☒ Submit these plans separate from the soil plans.

☒ A north arrow.

☒ A scale.

☒ Labeled subcatchments, reaches and ponds.

☒ Tc lines.

☒ A clear delineation of the subcatchment boundaries.

☒ Roadway station numbers.

☒ Culverts and other conveyance structures.

PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS

☒ 11” × 17”sheets suitable, as long as it is readable.

☒ Submit these plans separate from the drainage area plans.

☒ A north arrow.

☒ A scale.

☒ Name of the soil scientist who performed the survey and date the soil survey took place.

☒ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☒ Delineation of the soil boundaries and wetland boundaries.

☒ Delineation of the subcatchment boundaries.

☒ Soil series symbols (e.g., 26).

☒ A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor).

☒ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray).

Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:

☒ Drainage report is not needed if site does not have off-site flow.

☒ 5 foot contours allowed rather than 2 foot.

☒ No PE stamp needed on the plans.

☒ Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

☐ Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: http://des.nh.gov/organization/divisions/water/aot/categories/publications.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

☐ If project will discharge stormwater to a surface water impaired for phosphorus and/or nitrogen, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a Class A surface water or Outstanding Resource Water, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a lake or pond not covered previously, include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond.

☐ If project is within a Coastal/Great Bay Region community, include info required by Env-Wq 1503.08(l) if applicable.

4. COPY OF AOT APPLICATION CHECK

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED

51330

SL CHASSE STEEL FABRICATORS & ERECTORS

8 Christine Drive
Hudson, NH 03051
(603) 886-3436

Eastern Bank
Boston, MA 02110
easternbank.com
1-800-EASTERN

53-179/113

SECURED BY EZSHIELD

6/7/2022

PAY TO THE ORDER OF State of New Hampshire $ **6,875.00

Six Thousand Eight Hundred Seventy-Five and 00/100*** DOLLARS

Security features. Details on back.

MEMO

AUTHORIZED SIGNATURE

⑈051330⑈ ⑆011301798⑆ 10100739 58⑈

SL CHASSE STEEL 51330

State of New Hampshire 6/7/2022
Permits & Licenses AOT permit 6,875.00

Business Ckg Eastern 6,875.00

5. MUNICIPAL SUBMISSION: TOWN OF HUDSON

6. USGS MAP

KNA KEACH–NORDSTROM ASSOCIATES, INC.

Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627–2881

TITLE:

USGS EXHIBIT PREPARED FOR:

S.L. CHASSE STEEL

MAP 105; LOTS17-2 & 17-3 - ROBINSON ROAD - HUDSON, NEW HAMPSHIRE

DATE: 6/7/2022	JOB. NO.20-0921-2
SCALE: 1" = 2,000'	SHEET 1 OF 1

7. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

The subject project proposes multiple industrial buildings on two abutting properties. The lots in questions are located along Robinson Road in Hudson NH, tax map 105 lots 17-2 and 17-3. Lot 17-2 proposes one 22,500 SF industrial building with associated parking and drives. Lot 17-3 proposes three industrial buildings totaling 50,400 SF with associated parking for each building. Construction will include access drives, parking, buildings, and stormwater management systems.

B. Existing Site Conditions

The proposed parcels are located along Robinson Road, Hudson, NH. Lot 17-2 is approximately 7.11 acres and contains one existing residential home, with the remainder of the lot is woodland. Lot 17-3 is approximately 7 acres and is entirely woodland. These parcels do not contain any wetlands. Both parcels generally slope from north to south towards Chase Brook on the abutting property.

According to the Site-specific Soil Survey Report, performed on September 22 & 30, 2020 by certified soil scientist, Cynthia Balcius, the area of development consists of Canton, Charlton, Charlton-Chatfield, and Newfields soils of varying slopes ranging from 0-25%+. According to the National Resources Conservation Service (NRCS) soil mapping the sites consist of, Borohemists, Chatfield-Hollis-Canton complex, Deerfield Loamy Fine Sand, Hinkley Loamy Sand, and Pipestone Loamy Sand soil types of slopes ranging from 0-15%.

II. Storm Drainage Analysis & Design

A. Methodology

In accordance with the Hudson Stormwater Regulations, NHDES AoT requirements and generally accepted engineering practice, the 2-year, 10-year, 25-year, and 50-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater treatment provisions and all drainage facilities have been designed to be fully functional during a 50-year return frequency storm.

KNA utilizes HydroCAD version 10.00-22 to analyze both pre and post-development watershed characteristics. This computer software system is based largely on hydrology techniques (TR-20) developed by the Soil Conservation Service (now the Natural Resources Conservation Service). In addition, the software derives Time of Concentration values using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the “best management practice”, in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning’s “n” value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the “Pre/Post Development Drainage Area Plans” graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

The pre-development drainage model recognizes one (1) point of analysis (POA) as the appropriate points to compare pre vs. post-development peak rates of stormwater discharge.

The pre-development drainage model’s POA are further described as follows:

- A Chase Brook

For a more visual description of the information presented in this section, please refer to the attached “Pre-Development Drainage Areas Plan” attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA that was identified in the pre-development scenario has been analyzed in the post-development scenario.

Overall, the design has maintained the drainage patterns to mimic the pre-development conditions. Stormwater will discharge to the same eight points of analysis identified in the pre-development scenario. The improvements, however, also provide stormwater treatment and groundwater recharge for the new impervious areas created for the proposed development.

Subcatchment areas, times of concentration and analysis points have been provided showing how the pre-development and post-development areas best match to have a proper comparison.

Two detention ponds are being proposed on both parcels. The system has been designed to maintain the required permanent pool while providing treatment and has been sized to withstand a 50-year storm event.

Two Infiltration Basins are being proposed on both parcels. The ponds will collect runoff from the paved surfaces. The systems were sized to capture and infiltrate the required groundwater recharge volume and to not exceed capacity during the 50-year frequency storm.

One bioretention ponds is proposed on lot 17-2. The bioretention treats a portion of the paved area to the north of the proposed building. The system was sized to not exceed capacity during the 50-year storm.

One pocket pond is proposed on lot 17-3. The pocket pond treats paved area to the east and proposed roof runoff from buildings 2 and 3.

Swales are located along the northern and eastern sides of the parcels to direct off-site run-off around the proposed project and to Chase Brook.

The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate and total storm volume for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1 & 2).

D. Summary:

The subject site complies with the Town of Hudson Stormwater Management and Erosion Control Regulations and NHDES Regulations Env-Wq 1500 in regard to stormwater treatment and groundwater recharge volume. Proposed stormwater best management practices (BMP) are designed in accordance with the New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design and BMP worksheets provided by the New Hampshire Department of Environmental Services. In addition, stormwater discharges, in terms of peak rate of runoff and total volume, are consistent with the Town of Hudson Stormwater Regulations and NHDES Regulations Env-Wq 1500. The results are reported below in Table 1 and 2.

Table 1: Peak Runoff (Env-Wq 1507.06)

Site Pre-Development vs. Post Development (Peak Discharge Rate in cfs)								
Description	**2-Year**		**10-Year**		**25-Year**		**50-Year**	
24-hr Rainfall	2.93 in/hr		4.44 in/hr		5.61 in/hr		6.72 in/hr	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	**1.40**	1.33	**10.36**	8.99	**21.29**	20.47	**33.46**	33.13

Table 2: Peak Runoff (2-Year Frozen Conditions)

Site Pre-Development vs. Post Development – Frozen (Peak Discharge Rate in cfs)		
Description	**2-Year - Frozen**	
24-hr Rainfall	2.93 in/hr	
	Pre	Post
A	**43.28**	24.25

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

As an integral part of the engineering design of this site, an erosion and sedimentation control plan has been developed with the intent of limiting the potential for soil loss and associated receiving water quality degradation, both during and after the construction period. As the project plans indicate, traditional temporary erosion and sedimentation control devices and practices, such as siltation fencing, block and gravel sediment filters, and seeding have been specified for use during the construction period. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

In the design of this site, consideration was given to limiting the potential for long-term erosion of completed improvements. As a result, several permanent erosion control measures were incorporated into the site design. These provisions include:

1) Specification of a turf establishment schedule and seed mixture, utilizing materials and workmanship recognized as appropriate for the site conditions at hand;

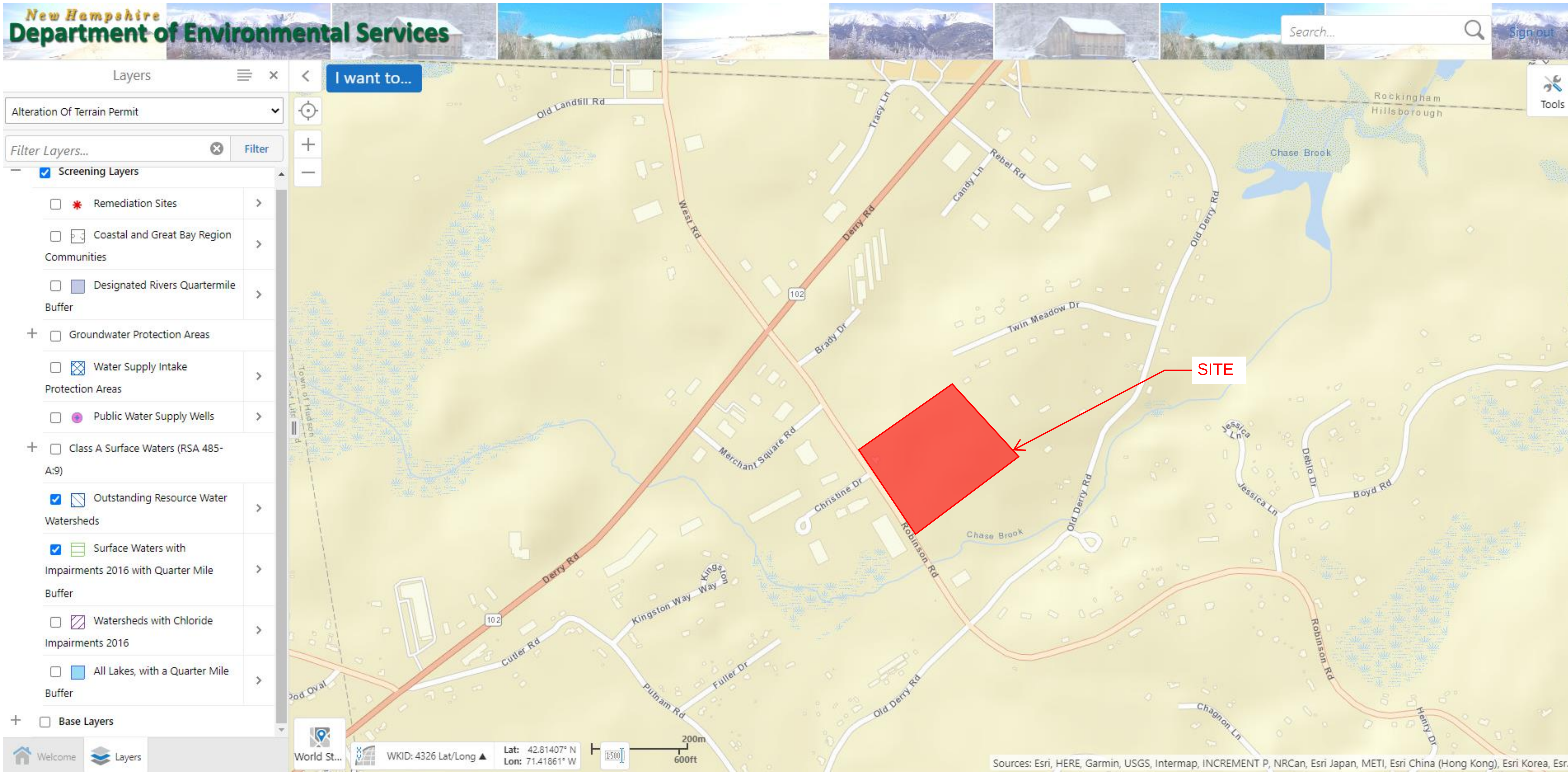
2) The design has provided catch basins with sumps to capture runoff and reduce the overland flow, thereby reducing erosion;

3) Construction of rip-rap at the outlet of the stormwater management areas;

4) An Infiltration Basins, detention ponds, bioretention pond, and swales were designed to reduce runoff and volume.

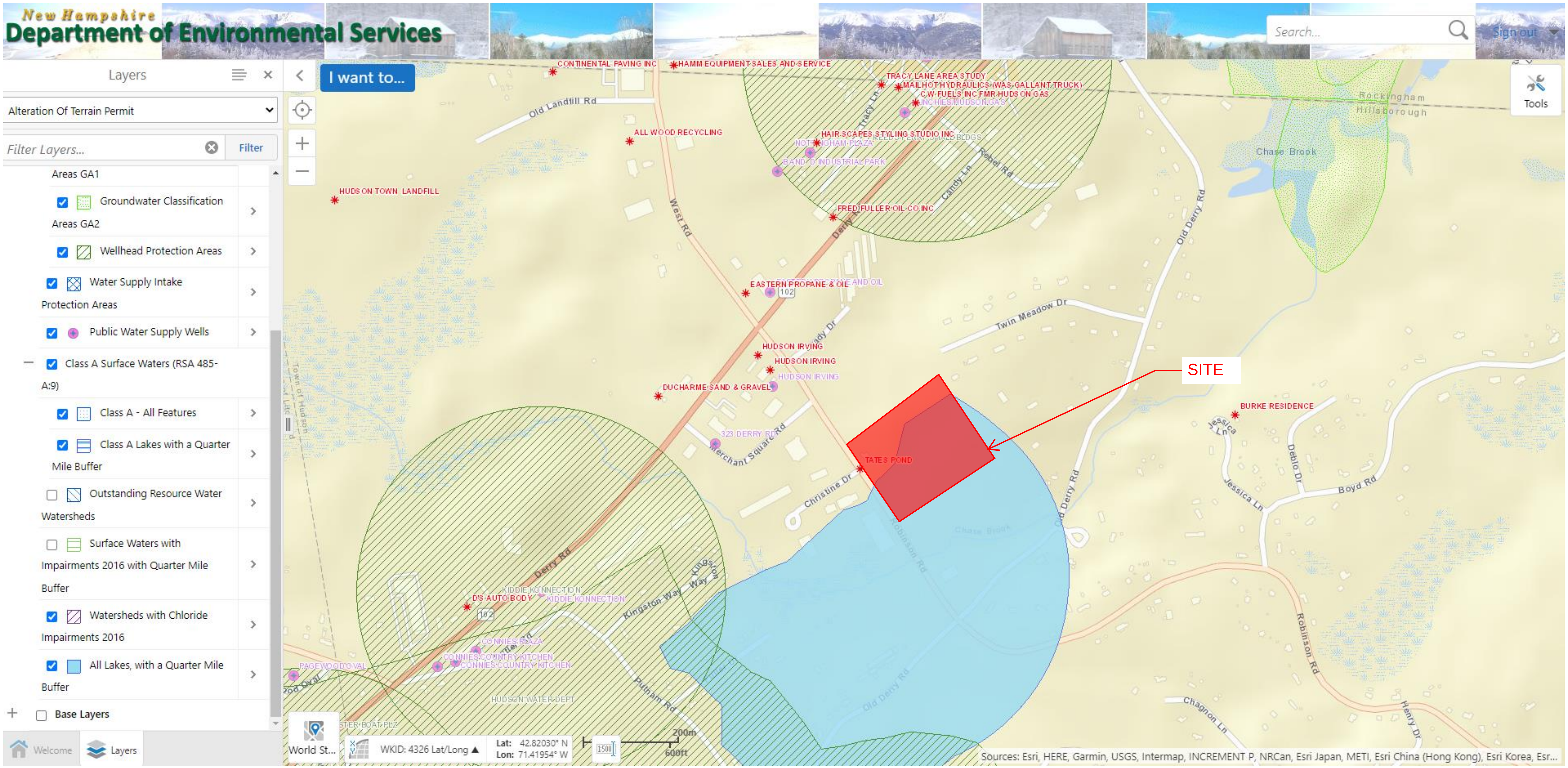
8. SURFACE WATER IMPAIRMENTS

Surface Water Impairments



9. SCREENING LAYERS

AOT Screening Layers



10. NEW HAMPSHIRE NATURAL HERITAGE INVENTORY LETTER

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
HB Datacheck Results Letter

To: Peter Madsen, Keach & Nordstrom Associates
10 Commerce Park North Suite 3
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 10/26/2020 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB20-3096 Town: Hudson Location: Tax Maps: Map 105 Lot 17-3
Description: The project proposes the construction of three industrial buildings and accompanying parking lots and paved areas.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: Contact the NH Fish & Game Department to address wildlife concerns.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Jefferson/Blue-spotted Salamander Complex (*Ambystoma pop. 3*)	--	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

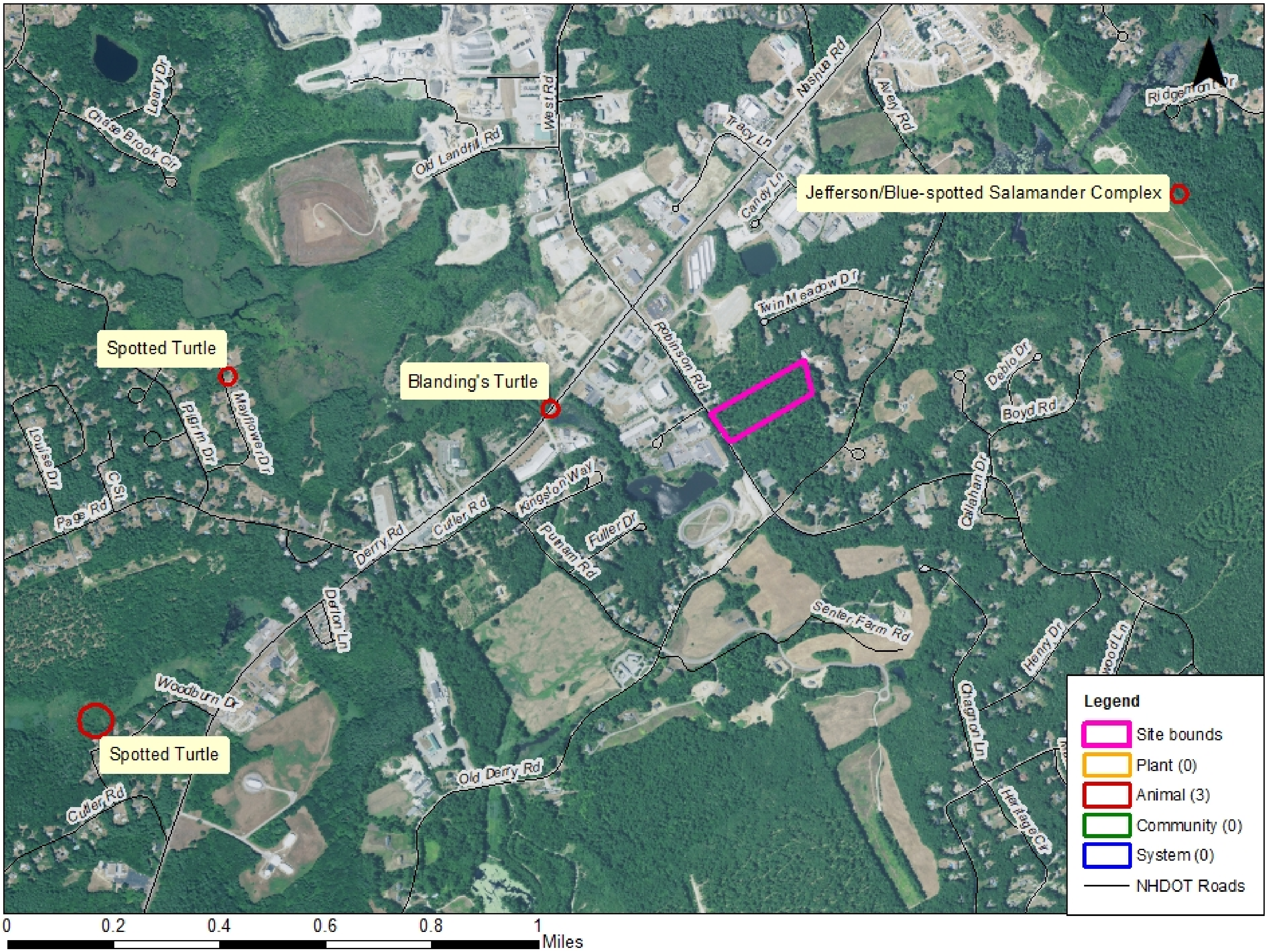
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB20-3096



New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2018: Area 14520: 1 adult observed, sex unknown.
General Area: 2018: Area 14520: Road crossing between forested wetland and shrub wetland.
General Comments: --
Management Comments: --

Location

Survey Site Name: Nesenkeag Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2018: Area 14520: Derry Road, Hudson, at the crossing of Chase Brook.

Dates documented

First reported: 2018-05-08 Last reported: 2018-05-08

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Jefferson/Blue-spotted Salamander Complex (*Ambystoma pop. 3*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2015: WA 88: Approximately 50 egg masses observed.
General Area: 2015: WA 88:Vernal pool adjacent to power line right-of-way.
General Comments: --
Management Comments: --

Location

Survey Site Name: Chase Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: --

Dates documented

First reported: 2015-04-28
Last reported: 2015-04-28

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: --

Detailed Description: 2015: Area 14083: 1 adult observed, sex unknown.2005: Area 9306: 1 adult male turtle observed.1992: Four adult turtles observed: one 12-14 year old with carapace 114 cm and plastron 92 cm, sex undetermined; one ca. 12 year old very active female with carapace 125 cm and plastron 100 cm; one 11 or 12 year old very inactive female with carapace 127 cm and plastron 100 cm; and one 14-15 year old female with carapace 115 cm and plastron 92 cm.
General Area: 2015: Area 14083: Residential yard [property backs up to wetlands associated with Chase Brook].2005: Area 9306: Residential lot surrounded by some agriculture.1992: Adjacent to a large wetland.
General Comments: 1992: Drawings of each turtle's most distinctive spots and other markings included.
Management Comments: --

Location

Survey Site Name: Cutler Road, north of
Managed By:

County: Hillsborough
Town(s): Litchfield
Size: 2.6 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

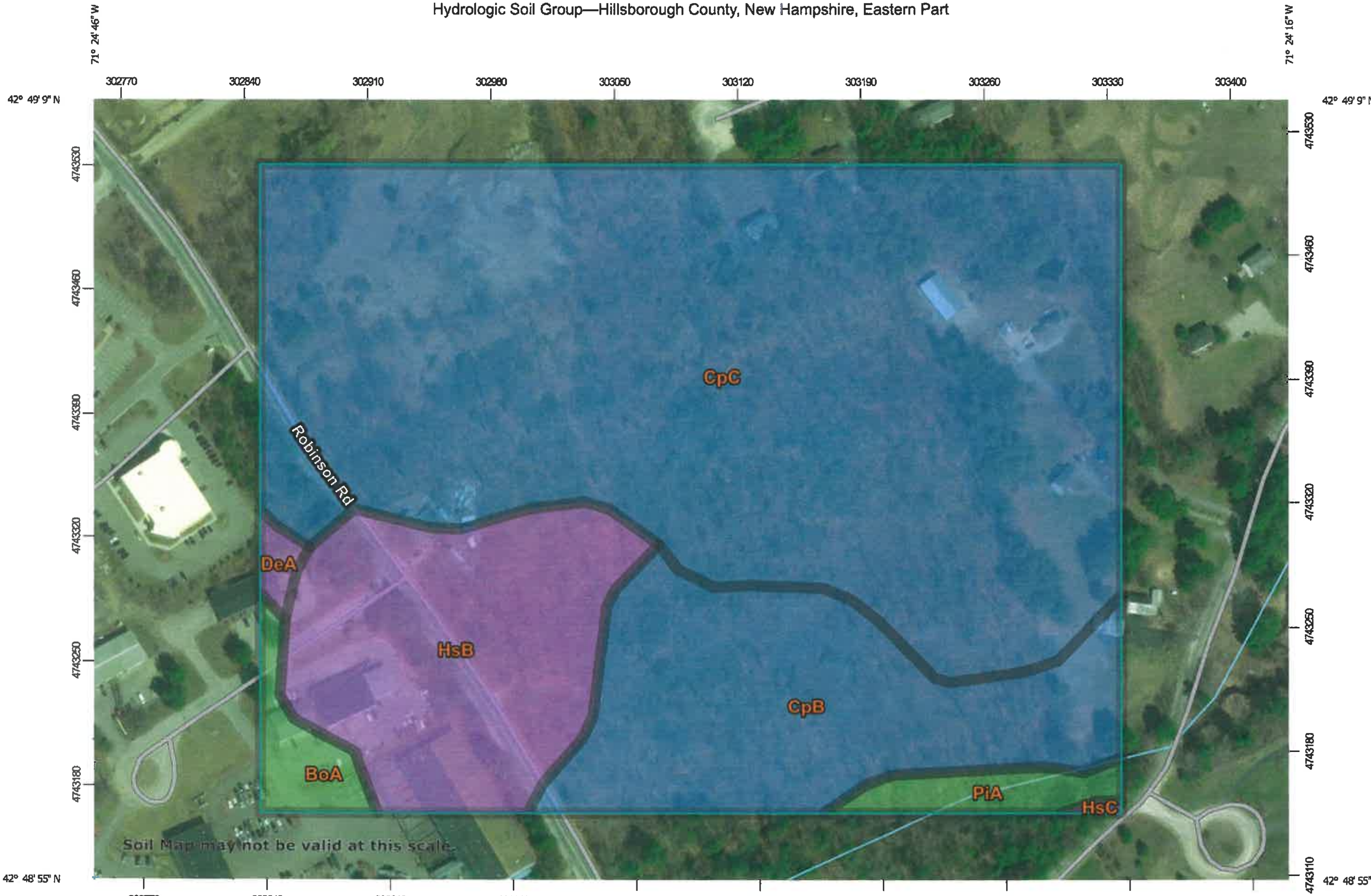
Directions: 2015: Area 14083: In yard at 21 Mayflower Drive, Litchfield.2005: Area 9306: [Rte 3A ca. 2.8 miles north of the junction with Rte. 111 in Nashua.]1992: Adjacent to a large wetland at 19 Woodburn Drive, near Cutler Road, [west of Rte. 102, in the southeast corner of Litchfield.]

Dates documented

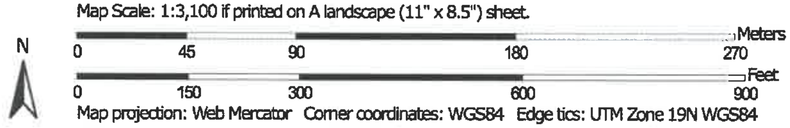
First reported: 1992-06-08 Last reported: 2015-06-15

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

11. WEB SOIL SURVEY



Map Scale: 1:3,100 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Hillsborough County, New Hampshire, Eastern Part
Survey Area Data: Version 22, May 29, 2020

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

Date(s) aerial images were photographed: Jun 1, 2014—Jun 26, 2016

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BoA	Borohemists, nearly level	A/D	0.9	2.0%
CpB	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes	B	7.5	16.8%
CpC	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	B	28.2	63.5%
DeA	Deerfield loamy fine sand, 0 to 3 percent slopes	A	0.2	0.5%
HsB	Hinckley loamy sand, 3 to 8 percent slopes	A	6.7	15.1%
HsC	Hinckley loamy sand, 8 to 15 percent slopes	A	0.0	0.1%
PiA	Pipestone loamy sand, 0 to 3 percent slopes	A/D	0.9	2.0%
Totals for Area of Interest			**44.4**	**100.0%**

Description

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

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

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

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

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

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

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

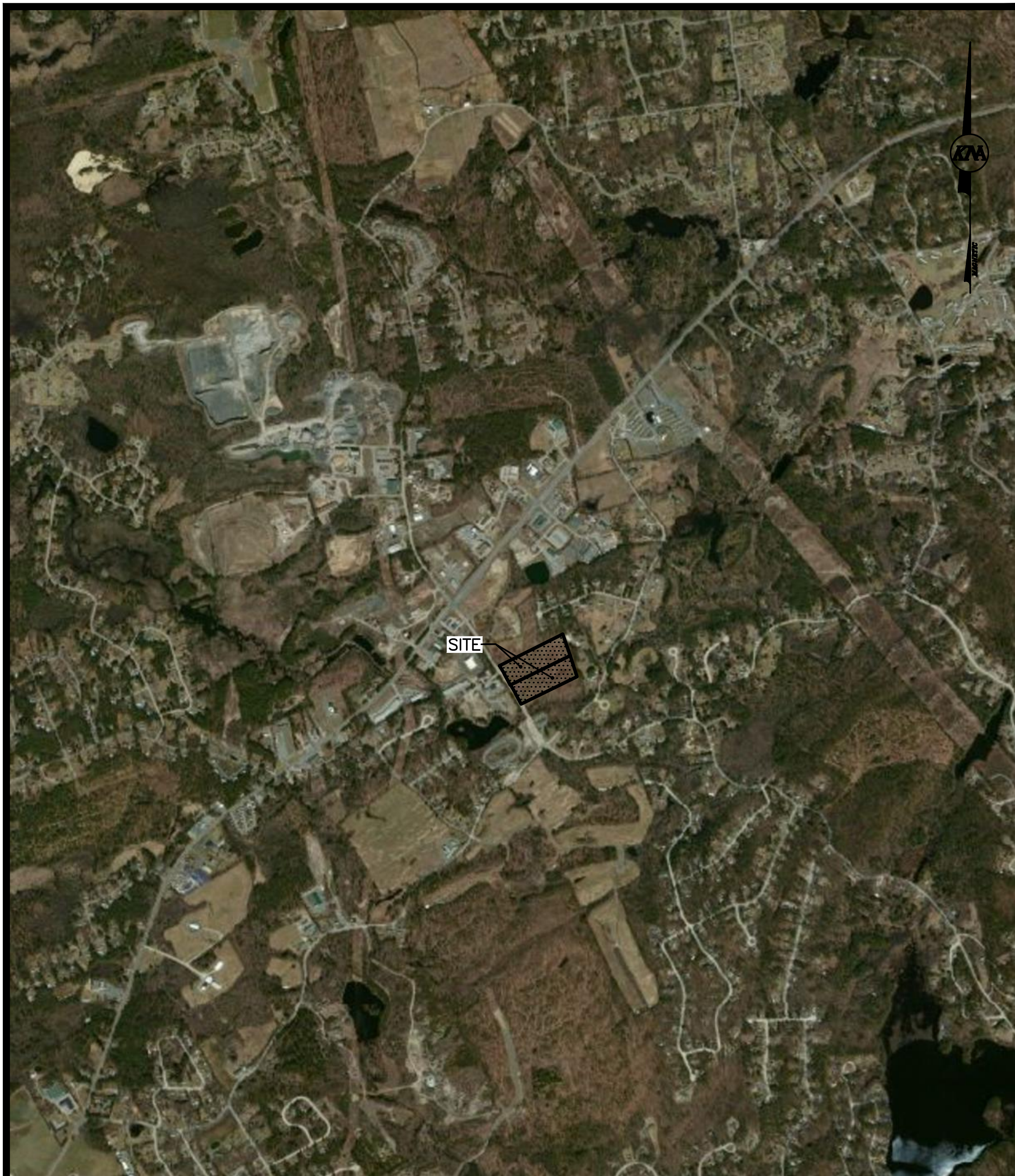
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

12. AERIAL PHOTOGRAPH



KNA KEACH-NORDSTROM ASSOCIATES, INC.

Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

TITLE:

AERIAL EXHIBIT PREPARED FOR:

S.L. CHASSE STEEL

MAP 105; LOTS 17-2 & 17-3 - ROBINSON ROAD - HUDSON, NEW HAMPSHIRE

DATE: 6/7/2022	JOB. NO. 20-0921-2
SCALE: 1" = 2,000'	SHEET 1 OF 1

13. SITE PHOTOGRAPHS

Photo No. 1: Looking northeast onto lot 17-3

Photo No. 2: Looking northwest along Robinson Road

Photo No. 3: Looking north northwest at the existing house on lot 17-2

Photo No. 4: Looking northwest onto lot 17-2

14. GRV CALCULATION

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION
(Env-Wq 1507.04)

	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
5.93	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.25	inches	Rd = Weighted groundwater recharge depth	
1.4825	ac-in	GRV = AI * Rd	
5,381	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

Total area for Lots 17-2 & 17-3 replaced by impervious cover is 5.93 acres.

Infiltration Basin 1 = 7,205 cf

Infiltration Basin 2 = 14,273 cf

Total = 21,478 cf - exceeds the required 5,381 cf.

15. BMP WORKSHEETS

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond 1**

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

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	**← yes**
2.61	ac	A = Area draining to the practice	
1.98	ac	A_I = Impervious area draining to the practice	
0.76	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.73	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.91	ac-in	WQV= 1" x Rv x A	
6,942	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,736	cf	25% x WQV (check calc for sediment forebay volume)	
Forebay		Method of pretreatment? (not required for clean or roof runoff)	
1,798	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
7,205	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
2,279	sf	A_{SA} = Surface area of the bottom of the pond	
1.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
36.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
214.75	feet	E_{BTM} = Elevation of the bottom of the basin	
211.70	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
211.70	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.05	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
3.1	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	**← yes**
Yes	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
3.0	:1	If a basin is proposed, pond side slopes.	**≥3:1**
217.59	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
217.92	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
218.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

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

Designer's Notes:

Stage-Area-Storage for Pond B1: INFILTRATION POND 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
214.75	2,279	0
214.80	2,368	116
214.85	2,457	237
214.90	2,545	362
214.95	2,634	491
215.00	2,723	625
215.05	2,812	764
215.10	2,901	906
215.15	2,989	1,054
215.20	3,078	1,205
215.25	3,167	1,362
215.30	3,256	1,522
215.35	3,345	1,687
215.40	3,433	1,857
215.45	3,522	2,030
215.50	3,611	2,209
215.55	3,700	2,392
215.60	3,789	2,579
215.65	3,877	2,770
215.70	3,966	2,966
215.75	4,055	3,167
215.80	4,144	3,372
215.85	4,233	3,581
215.90	4,321	3,795
215.95	4,410	4,014
216.00	4,499	4,236
216.05	4,574	4,463
216.10	4,649	4,694
216.15	4,724	4,928
216.20	4,799	5,166
216.25	4,874	5,408
216.30	4,948	5,653
216.35	5,023	5,903
216.40	5,098	6,156
216.45	5,173	6,412
216.50	5,248	6,673
216.55	5,323	6,937
216.60	5,398	7,205
216.65	5,473	7,477
216.70	5,548	7,753
216.75	5,623	8,032
216.80	5,697	8,315
216.85	5,772	8,602
216.90	5,847	8,892
216.95	5,922	9,186
217.00	5,997	9,484
217.05	6,166	9,788
217.10	6,335	10,101
217.15	6,505	10,422
217.20	6,674	10,751
217.25	6,843	11,089
217.30	7,013	11,436
217.35	7,182	11,791
217.40	7,351	12,154
217.45	7,520	12,526
217.50	7,690	12,906
217.55	7,859	13,295
217.60	8,028	13,692
217.65	8,197	14,097
217.70	8,366	14,511
217.75	8,536	14,934
217.80	8,705	15,365
217.85	8,874	15,805
217.90	9,044	16,252
217.95	9,213	16,709
218.00	**9,382**	**17,174**

NEW HAMPSHIRE DEPARTMENT OF **Environmental Services**

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond 1**

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

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
4.69	ac	A = Area draining to the practice	
1.86	ac	A_I = Impervious area draining to the practice	
0.40	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.41	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.91	ac-in	WQV= 1" x Rv x A	
6,928	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,732	cf	25% x WQV (check calc for sediment forebay volume)	
Forebay		Method of pretreatment? (not required for clean or roof runoff)	
1,800	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
14,273	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
2,693	sf	A_{SA} = Surface area of the bottom of the pond	
1.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
30.9	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
217.00	feet	E_{BTM} = Elevation of the bottom of the basin	
212.66	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
212.66	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
4.34	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
4.3	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	**← yes**
Yes	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
3.0	:1	If a basin is proposed, pond side slopes.	**≥3:1**
220.42	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
221.36	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
222.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

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

Designer's Notes:

Stage-Area-Storage for Pond B4: INFILTRATION POND 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
217.00	2,693	0
217.05	2,771	137
217.10	2,848	277
217.15	2,926	421
217.20	3,004	570
217.25	3,082	722
217.30	3,159	878
217.35	3,237	1,038
217.40	3,315	1,202
217.45	3,392	1,369
217.50	3,470	1,541
217.55	3,548	1,716
217.60	3,625	1,896
217.65	3,703	2,079
217.70	3,781	2,266
217.75	3,859	2,457
217.80	3,936	2,652
217.85	4,014	2,850
217.90	4,092	3,053
217.95	4,169	3,260
218.00	4,247	3,470
218.05	4,305	3,684
218.10	4,362	3,900
218.15	4,420	4,120
218.20	4,478	4,342
218.25	4,536	4,568
218.30	4,593	4,796
218.35	4,651	5,027
218.40	4,709	5,261
218.45	4,767	5,498
218.50	4,824	5,738
218.55	4,882	5,980
218.60	4,940	6,226
218.65	4,997	6,474
218.70	5,055	6,726
218.75	5,113	6,980
218.80	5,171	7,237
218.85	5,228	7,497
218.90	5,286	7,760
218.95	5,344	8,026
219.00	5,402	8,294
219.05	5,459	8,566
219.10	5,517	8,840
219.15	5,575	9,117
219.20	5,632	9,398
219.25	5,690	9,681
219.30	5,748	9,967
219.35	5,806	10,255
219.40	5,863	10,547
219.45	5,921	10,842
219.50	5,979	11,139
219.55	6,036	11,440
219.60	6,094	11,743
219.65	6,152	12,049
219.70	6,210	12,358
219.75	6,267	12,670
219.80	6,325	12,985
219.85	6,383	13,303
219.90	6,441	13,623
219.95	6,498	13,947
220.00	6,556	14,273
220.05	6,631	14,603
220.10	6,705	14,936
220.15	6,780	15,273
220.20	6,854	15,614
220.25	6,929	15,959
220.30	7,003	16,307
220.35	7,077	16,659
220.40	7,152	17,015
220.45	7,226	17,374
220.50	7,301	17,737
220.55	7,376	18,104
220.60	7,450	18,475
220.65	7,525	18,849
220.70	7,599	19,227
220.75	7,674	19,609
220.80	7,748	19,995
220.85	7,822	20,384
220.90	7,897	20,777
220.95	7,971	21,174
221.00	8,046	21,574
221.05	8,121	21,978
221.10	8,195	22,386
221.15	8,270	22,798
221.20	8,344	23,213
221.25	8,419	23,632
221.30	8,493	24,055
221.35	8,567	24,481
221.40	8,642	24,912
221.45	8,716	25,346
221.50	8,791	25,783
221.55	8,866	26,225
221.60	8,940	26,670
221.65	9,015	27,119
221.70	9,089	27,571
221.75	9,164	28,028
221.80	9,238	28,488
221.85	9,312	28,951
221.90	9,387	29,419
221.95	9,461	29,890
222.00	**9,536**	**30,365**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Bioretention Pond 2**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.71	ac	A = Area draining to the practice	
0.43	ac	A_I = Impervious area draining to the practice	
0.61	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.60	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.42	ac-in	WQV= 1" x Rv x A	
1,534	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
383	cf	25% x WQV (check calc for sediment forebay volume)	
1,150	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
385	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
222.90	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.28	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
3.04	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
219.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
218.84	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
216.67	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
216.67	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
0.66	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
2.83	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
2.83	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
223.16	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
224.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**
If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
1,659	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	12	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	12	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: The system will be lined and underdrained

Stage-Area-Storage for Pond B5: BIORETENTION POND 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
221.00	424	0
221.05	443	22
221.10	463	44
221.15	482	68
221.20	501	93
221.25	521	118
221.30	540	145
221.35	559	172
221.40	578	200
221.45	598	230
221.50	617	260
221.55	636	292
221.60	656	324
221.65	675	357
221.70	694	391
221.75	714	427
221.80	733	463
221.85	752	500
221.90	771	538
221.95	791	577
222.00	810	617
222.05	833	658
222.10	856	700
222.15	880	744
222.20	903	788
222.25	926	834
222.30	949	881
222.35	972	929
222.40	996	978
222.45	1,019	1,028
222.50	1,042	1,080
222.55	1,065	1,133
222.60	1,088	1,187
222.65	1,112	1,242
222.70	1,135	1,298
222.75	1,158	1,355
222.80	1,181	1,413
222.85	1,204	1,473
222.90	1,228	1,534
222.95	1,251	1,596
223.00	1,274	1,659
223.05	1,297	1,723
223.10	1,320	1,789
223.15	1,344	1,855
223.20	1,367	1,923
223.25	1,390	1,992
223.30	1,413	2,062
223.35	1,436	2,133
223.40	1,460	2,206
223.45	1,483	2,279
223.50	1,506	2,354
223.55	1,529	2,430
223.60	1,552	2,507
223.65	1,576	2,585
223.70	1,599	2,664
223.75	1,622	2,745
223.80	1,645	2,827
223.85	1,668	2,910
223.90	1,692	2,994
223.95	1,715	3,079
224.00	**1,738**	**3,165**

STORMWATER POND DESIGN CRITERIA

Env-Wq 1508.03

Type/Node Name: **Pocket Pond 1**

Enter the type of stormwater pond (e.g., Wet Pond) and the node name in the drainage analysis, if applicable.

2.24	ac	A = Area draining to the practice	
1.58	ac	A_I = Impervious area draining to the practice	
0.71	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.68	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.53	ac-in	WQV= 1" x Rv x A	
5,568	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
557	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
2,784	cf	50% x WQV (check calc for extended detention volume)	
600	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
6,096	cf	V_{PP} = Permanent pool volume (volume below the lowest invert of the outlet structure) Attach stage-storage table.	
no	cf	Extended Detention?[1]	**≤ 50% WQV**
-		V_{ED} = Volume of extended detention (if "yes" is given in box above)	
		E_{ED} = Elevation of WQV if "yes" is given in box above[2]	
-	cfs	$2Q_{avg}$ = 2* V_{ED} / 24 hrs * (1hr / 3600 sec) (used to check against Q_{EDmax} below)	
	cfs	Q_{EDmax} = Discharge at the E_{ED} (attach stage-discharge table)	**< $2Q_{avg}$**
-	hours	T_{ED} = Drawdown time of extended detention = $2V_{ED}/Q_{EDmax}$	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥3:1**
231.50	ft	Elevation of seasonal high water table	
232.50	ft	Elevation of lowest pond outlet	
226.50	ft	Max floor = Maximum elevation of pond bottom (ft)	
223.50	ft	Minimum floor (to maintain depth at less than 8')	**≤ 8 ft**
229.00	ft	Elevation of pond floor[3]	**≤ Max floor and > Min floor**
211.00	ft	Length of the flow path between the inlet and outlet at mid-depth	
34.00	ft	Average width ([average of the top width + average bottom width]/2)	
6.21	:1	Length to average width ratio	**≥ 3:1**
Yes	Yes/No	Is the perimeter curvilinear.	**← Yes**
Yes	Yes/No	Are the inlet and outlet located as far apart as possible.	**← Yes**
No	Yes/No	Is there a manually-controlled drain to dewater the pond over a 24hr period?	
	If no state why:	Pond will be pumped if maintainence is required	
Trash Rack		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of <6")?	
236.13	ft	Peak elevation of the 50-year storm event	
237.00	ft	Berm elevation of the pond	
YES		50 peak elevation ≤ the berm elevation?	**←yes**

1. If the entire WQV is stored in the perm. pool, there is no extended det., and the following five lines do not apply.

2. This is the elevation of WQV **if** the hydrologic analysis is set up to include the permanent pool storage in the node description.

3. If the pond floor elevation is above the max floor elev., a hydrologic budget must be submitted to demonstrate that a minimum depth of 3 feet can be maintained. (First check whether a revised "lowest pond outlet" elev. will resolve the issue.)

Designer's Notes:

Pocket Pond is lined and no seasonal high water found.

Stage-Area-Storage for Pond B2: POCKET POND 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
229.00	550	0	234.20	6,789	15,747
229.10	600	57	234.30	6,929	16,433
229.20	650	120	234.40	7,068	17,133
229.30	700	188	234.50	7,208	17,847
229.40	750	260	234.60	7,347	18,575
229.50	800	338	234.70	7,486	19,316
229.60	850	420	234.80	7,626	20,072
229.70	900	507	234.90	7,766	20,841
229.80	950	600	235.00	7,905	21,625
229.90	1,000	698	235.10	8,044	22,422
230.00	1,050	800	235.20	8,184	23,234
230.10	1,121	909	235.30	8,324	24,059
230.20	1,193	1,024	235.40	8,463	24,899
230.30	1,265	1,147	235.50	8,603	25,752
230.40	1,336	1,277	235.60	8,742	26,619
230.50	1,408	1,414	235.70	8,881	27,500
230.60	1,479	1,559	235.80	9,021	28,395
230.70	1,550	1,710	235.90	9,161	29,304
230.80	1,622	1,869	236.00	9,300	30,228
230.90	1,694	2,035	236.10	9,456	31,165
231.00	1,765	2,208	236.20	9,613	32,119
231.10	1,836	2,388	236.30	9,770	33,088
231.20	1,908	2,575	236.40	9,926	34,073
231.30	1,980	2,769	236.50	10,083	35,073
231.40	2,051	2,971	236.60	10,239	36,089
231.50	2,123	3,179	236.70	10,395	37,121
231.60	2,194	3,395	236.80	10,552	38,168
231.70	2,265	3,618	236.90	10,709	39,231
231.80	2,337	3,848	237.00	**10,865**	**40,310**
231.90	2,409	4,086			
232.00	2,480	4,330			
232.10	2,901	4,599			
232.20	3,322	4,910			
232.30	3,743	5,263			
232.40	4,164	5,659			
232.50	4,585	6,096			
232.60	4,713	6,561			
232.70	4,842	7,039			
232.80	4,970	7,530			
232.90	5,098	8,033			
233.00	5,227	8,549			
233.10	5,355	9,078			
233.20	5,483	9,620			
233.30	5,612	10,175			
233.40	5,740	10,743			
233.50	5,868	11,323			
233.60	5,997	11,916			
233.70	6,125	12,522			
233.80	6,253	13,141			
233.90	6,382	13,773			
234.00	6,510	14,418			
234.10	6,649	15,075			

16. EXTREME PRECIPITATION TABLES

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.409 degrees West
Latitude	42.816 degrees North
Elevation	0 feet
Date/Time	Mon, 05 Oct 2020 10:08:16 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.42	0.52	0.68	0.85	1.06	**1yr**	0.73	1.01	1.23	1.55	1.95	2.46	2.69	**1yr**	2.18	2.59	3.01	3.69	4.30	**1yr**
2yr	0.33	0.51	0.63	0.83	1.05	1.31	**2yr**	0.90	1.21	1.52	1.89	2.36	2.93	3.26	**2yr**	2.60	3.13	3.64	4.35	4.94	**2yr**
5yr	0.39	0.61	0.76	1.02	1.31	1.66	**5yr**	1.13	1.51	1.92	2.40	2.99	3.71	4.15	**5yr**	3.28	3.99	4.61	5.46	6.17	**5yr**
10yr	0.44	0.69	0.87	1.19	1.54	1.98	**10yr**	1.33	1.78	2.30	2.88	3.58	4.44	4.98	**10yr**	3.93	4.79	5.52	6.49	7.31	**10yr**
25yr	0.52	0.83	1.05	1.45	1.93	2.49	**25yr**	1.66	2.23	2.91	3.66	4.55	5.61	6.35	**25yr**	4.97	6.11	7.02	8.15	9.14	**25yr**
50yr	0.58	0.94	1.21	1.69	2.29	2.99	**50yr**	1.97	2.65	3.50	4.40	5.46	6.72	7.64	**50yr**	5.94	7.35	8.41	9.69	10.83	**50yr**
100yr	0.67	1.09	1.41	1.99	2.71	3.56	**100yr**	2.34	3.14	4.18	5.27	6.54	8.04	9.19	**100yr**	7.11	8.84	10.09	11.53	12.84	**100yr**
200yr	0.77	1.25	1.62	2.33	3.22	4.25	**200yr**	2.78	3.72	5.01	6.32	7.85	9.62	11.06	**200yr**	8.52	10.64	12.11	13.72	15.22	**200yr**
500yr	0.92	1.52	1.98	2.88	4.04	5.38	**500yr**	3.48	4.67	6.35	8.03	9.97	12.21	14.15	**500yr**	10.81	13.60	15.42	17.28	19.07	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.42	0.57	0.70	0.81	**1yr**	0.61	0.79	1.07	1.30	1.66	2.27	2.54	**1yr**	2.01	2.44	2.74	3.27	3.94	**1yr**
2yr	0.31	0.48	0.59	0.81	0.99	1.19	**2yr**	0.86	1.17	1.36	1.78	2.29	2.83	3.16	**2yr**	2.51	3.04	3.53	4.21	4.80	**2yr**
5yr	0.36	0.55	0.68	0.94	1.19	1.41	**5yr**	1.03	1.38	1.61	2.09	2.67	3.47	3.82	**5yr**	3.07	3.67	4.27	5.06	5.72	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.60	**10yr**	1.16	1.57	1.82	2.37	3.02	4.00	4.39	**10yr**	3.54	4.22	4.92	5.82	6.51	**10yr**
25yr	0.44	0.68	0.84	1.20	1.58	1.88	**25yr**	1.36	1.83	2.15	2.78	3.50	4.83	5.25	**25yr**	4.28	5.05	5.97	7.01	7.63	**25yr**
50yr	0.48	0.73	0.92	1.32	1.77	2.13	**50yr**	1.53	2.09	2.44	3.16	3.94	5.58	6.02	**50yr**	4.94	5.79	6.92	8.07	8.61	**50yr**
100yr	0.53	0.80	1.00	1.45	1.99	2.41	**100yr**	1.71	2.36	2.77	3.58	4.43	5.97	6.91	**100yr**	5.28	6.64	8.04	9.30	9.70	**100yr**
200yr	0.58	0.88	1.11	1.61	2.25	2.74	**200yr**	1.94	2.68	3.12	4.08	5.01	6.78	7.92	**200yr**	6.00	7.62	9.36	10.75	10.91	**200yr**
500yr	0.66	0.99	1.27	1.85	2.63	3.26	**500yr**	2.27	3.18	3.70	4.86	5.92	8.00	9.54	**500yr**	7.08	9.17	11.46	13.05	12.72	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.47	0.58	0.78	0.95	1.11	**1yr**	0.82	1.09	1.26	1.64	2.08	2.66	2.85	**1yr**	2.36	2.74	3.30	4.05	4.67	**1yr**
2yr	0.35	0.54	0.66	0.90	1.11	1.30	**2yr**	0.96	1.27	1.48	1.91	2.45	3.06	3.41	**2yr**	2.71	3.28	3.77	4.49	5.17	**2yr**
5yr	0.43	0.67	0.83	1.14	1.45	1.65	**5yr**	1.25	1.61	1.88	2.41	3.02	4.01	4.50	**5yr**	3.55	4.33	4.96	5.85	6.60	**5yr**
10yr	0.53	0.81	1.00	1.40	1.81	2.01	**10yr**	1.56	1.97	2.26	2.88	3.59	4.97	5.59	**10yr**	4.40	5.38	6.13	7.17	8.03	**10yr**
25yr	0.68	1.03	1.29	1.84	2.42	2.60	**25yr**	2.09	2.54	2.91	3.64	4.46	6.61	7.45	**25yr**	5.85	7.17	8.10	9.36	10.44	**25yr**
50yr	0.83	1.26	1.56	2.25	3.03	3.17	**50yr**	2.61	3.10	3.53	4.35	5.27	8.21	9.28	**50yr**	7.27	8.93	9.99	11.43	12.76	**50yr**
100yr	1.01	1.53	1.91	2.76	3.79	3.86	**100yr**	3.27	3.77	4.28	5.22	6.23	10.53	11.55	**100yr**	9.32	11.11	12.31	13.97	15.59	**100yr**
200yr	1.23	1.85	2.35	3.40	4.74	4.69	**200yr**	4.09	4.59	5.17	6.24	7.37	13.16	14.37	**200yr**	11.65	13.82	15.17	17.08	19.08	**200yr**
500yr	1.61	2.40	3.09	4.49	6.39	6.08	**500yr**	5.51	5.94	6.67	7.90	9.19	17.69	19.20	**500yr**	15.65	18.46	19.99	22.27	24.93	**500yr**

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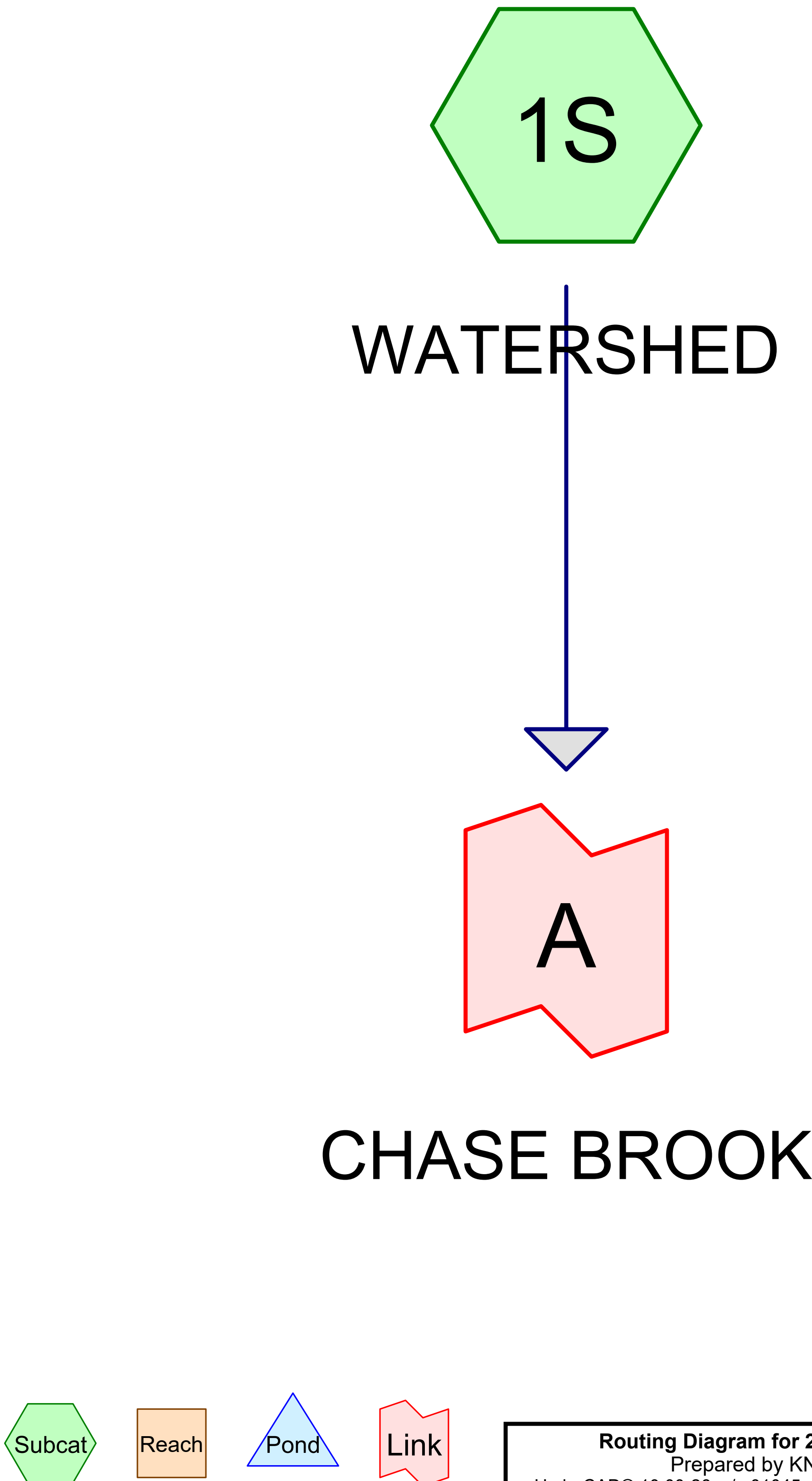
Northeast Regional Climate Center

17. HYDROCAD DRAINAGE ANALYSIS



Routing Diagram for 2009212-PRE DEVELOPMENT
Prepared by KNA, Printed 9/12/2022
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
41,780	61.0	>75% Grass cover, Good, HSG B (1S)
15,690	98.0	Paved parking, HSG B (1S)
5,258	98.0	Roofs, HSG B (1S)
1,134,136	55.0	Woods, Good, HSG B (1S)

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,196,864	HSG B	1S
0	HSG C	
0	HSG D	
0	Other	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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

Subcatchment1S: WATERSHED Runoff Area=1,196,864 sf 1.75% Impervious Runoff Depth>0.20"
Flow Length=1,822' Tc=32.1 min CN=56.0 Runoff=1.40 cfs 19,540 cf

Link A: CHASE BROOK Inflow=1.40 cfs 19,540 cf
Primary=1.40 cfs 19,540 cf

Summary for Subcatchment 1S: WATERSHED

Runoff = 1.40 cfs @ 12.74 hrs, Volume= 19,540 cf, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,258	98.0	Roofs, HSG B
15,690	98.0	Paved parking, HSG B
41,780	61.0	>75% Grass cover, Good, HSG B
1,134,136	55.0	Woods, Good, HSG B
1,196,864	56.0	Weighted Average
1,175,916	55.2	98.25% Pervious Area
20,948	98.0	1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
16.8	1,340	0.0710	1.33		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.3	432	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	1,822	Total			

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 1.75% Impervious, Inflow Depth > 0.20" for 2-YEAR event
Inflow = 1.40 cfs @ 12.74 hrs, Volume= 19,540 cf
Primary = 1.40 cfs @ 12.74 hrs, Volume= 19,540 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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

Subcatchment1S: WATERSHED Runoff Area=1,196,864 sf 1.75% Impervious Runoff Depth>0.76"
Flow Length=1,822' Tc=32.1 min CN=56.0 Runoff=10.36 cfs 75,434 cf

Link A: CHASE BROOK Inflow=10.36 cfs 75,434 cf
Primary=10.36 cfs 75,434 cf

Summary for Subcatchment 1S: WATERSHED

Runoff = 10.36 cfs @ 12.56 hrs, Volume= 75,434 cf, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,258	98.0	Roofs, HSG B
15,690	98.0	Paved parking, HSG B
41,780	61.0	>75% Grass cover, Good, HSG B
1,134,136	55.0	Woods, Good, HSG B
1,196,864	56.0	Weighted Average
1,175,916	55.2	98.25% Pervious Area
20,948	98.0	1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
16.8	1,340	0.0710	1.33		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.3	432	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	1,822	Total			

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 1.75% Impervious, Inflow Depth > 0.76" for 10-YEAR event
Inflow = 10.36 cfs @ 12.56 hrs, Volume= 75,434 cf
Primary = 10.36 cfs @ 12.56 hrs, Volume= 75,434 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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

Subcatchment1S: WATERSHED Runoff Area=1,196,864 sf 1.75% Impervious Runoff Depth>1.35"
Flow Length=1,822' Tc=32.1 min CN=56.0 Runoff=21.29 cfs 135,110 cf

Link A: CHASE BROOK Inflow=21.29 cfs 135,110 cf
Primary=21.29 cfs 135,110 cf

Summary for Subcatchment 1S: WATERSHED

Runoff = 21.29 cfs @ 12.52 hrs, Volume= 135,110 cf, Depth> 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,258	98.0	Roofs, HSG B
15,690	98.0	Paved parking, HSG B
41,780	61.0	>75% Grass cover, Good, HSG B
1,134,136	55.0	Woods, Good, HSG B
1,196,864	56.0	Weighted Average
1,175,916	55.2	98.25% Pervious Area
20,948	98.0	1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
16.8	1,340	0.0710	1.33		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.3	432	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	1,822	Total			

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 1.75% Impervious, Inflow Depth > 1.35" for 25-YEAR event
Inflow = 21.29 cfs @ 12.52 hrs, Volume= 135,110 cf
Primary = 21.29 cfs @ 12.52 hrs, Volume= 135,110 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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

Subcatchment1S: WATERSHED Runoff Area=1,196,864 sf 1.75% Impervious Runoff Depth>2.02"
Flow Length=1,822' Tc=32.1 min CN=56.0 Runoff=33.46 cfs 201,098 cf

Link A: CHASE BROOK Inflow=33.46 cfs 201,098 cf
Primary=33.46 cfs 201,098 cf

Summary for Subcatchment 1S: WATERSHED

Runoff = 33.46 cfs @ 12.49 hrs, Volume= 201,098 cf, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

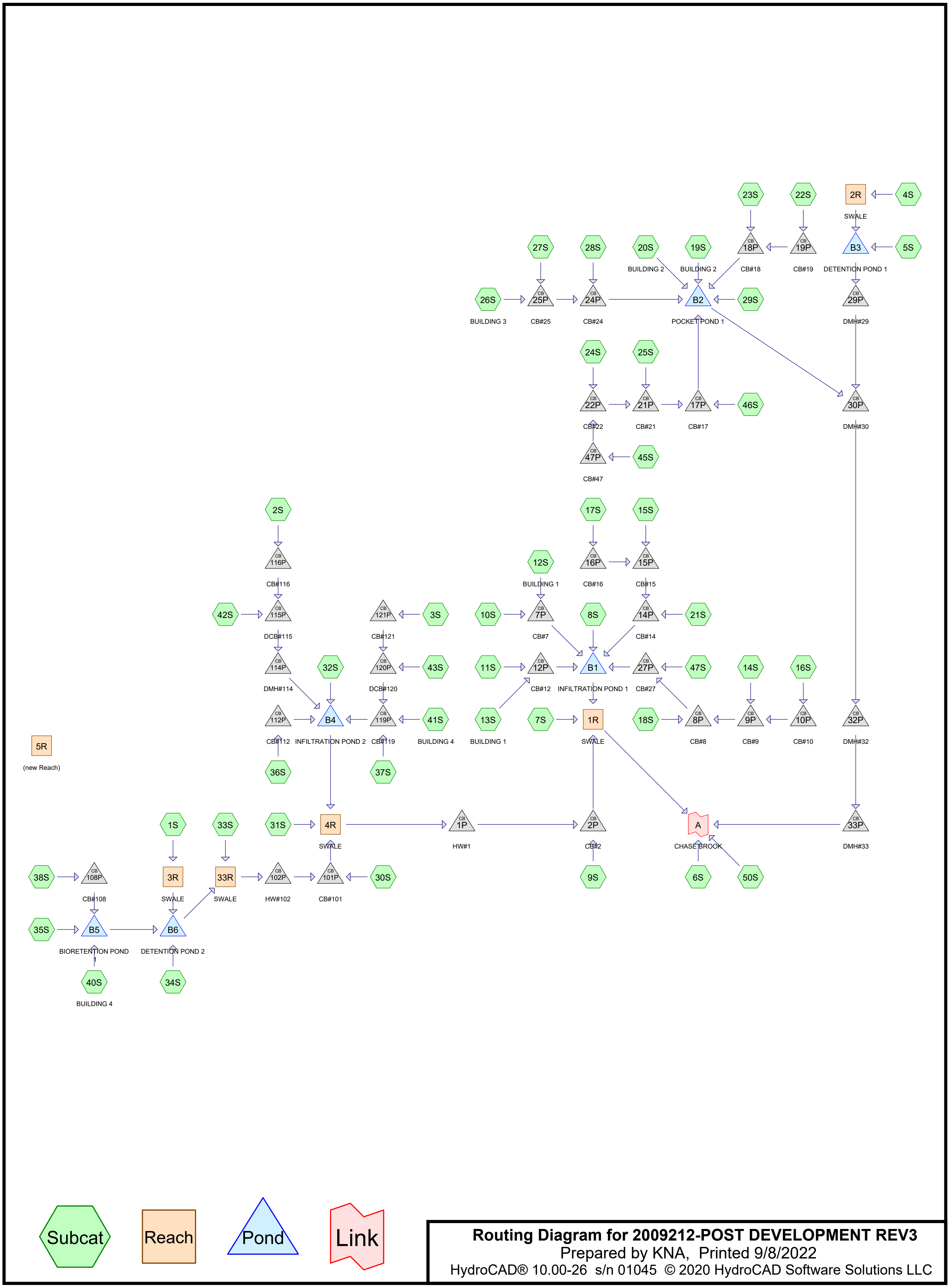
Area (sf)	CN	Description
5,258	98.0	Roofs, HSG B
15,690	98.0	Paved parking, HSG B
41,780	61.0	>75% Grass cover, Good, HSG B
1,134,136	55.0	Woods, Good, HSG B
1,196,864	56.0	Weighted Average
1,175,916	55.2	98.25% Pervious Area
20,948	98.0	1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
16.8	1,340	0.0710	1.33		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.3	432	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	1,822	Total			

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 1.75% Impervious, Inflow Depth > 2.02" for 50-YEAR event
Inflow = 33.46 cfs @ 12.49 hrs, Volume= 201,098 cf
Primary = 33.46 cfs @ 12.49 hrs, Volume= 201,098 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



Routing Diagram for 2009212-POST DEVELOPMENT REV3
Prepared by KNA, Printed 9/8/2022
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
195,643	61.0	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 14S, 15S, 18S, 22S, 23S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S, 42S, 43S, 47S, 50S)
203,061	98.0	Paved parking, HSG B (1S, 2S, 3S, 6S, 7S, 9S, 10S, 11S, 14S, 15S, 16S, 17S, 18S, 21S, 22S, 23S, 24S, 25S, 27S, 28S, 30S, 36S, 37S, 38S, 42S, 43S, 45S, 46S, 47S)
76,160	98.0	Roofs, HSG B (4S, 12S, 13S, 19S, 20S, 26S, 40S, 41S)
3,677	60.0	Woods, Fair, HSG B (43S)
718,323	55.0	Woods, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 33S, 42S, 50S)

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,196,864	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S, 40S, 41S, 42S, 43S, 45S, 46S, 47S, 50S
0	HSG C	
0	HSG D	
0	Other	

Time span=0.00-24.00 hrs, dt=0.010 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Runoff Area=194,527 sf 0.14% Impervious Runoff Depth>0.18"
Flow Length=716' Tc=16.8 min CN=55.4 Runoff=0.25 cfs 2,998 cf

Subcatchment2S: Runoff Area=60,922 sf 4.24% Impervious Runoff Depth>0.24"
Flow Length=809' Tc=13.6 min CN=57.6 Runoff=0.13 cfs 1,214 cf

Subcatchment3S: Runoff Area=36,429 sf 14.50% Impervious Runoff Depth>0.41"
Flow Length=674' Tc=14.5 min CN=63.2 Runoff=0.19 cfs 1,235 cf

Subcatchment4S: Runoff Area=48,409 sf 6.73% Impervious Runoff Depth>0.27"
Flow Length=779' Tc=17.6 min CN=58.6 Runoff=0.12 cfs 1,073 cf

Subcatchment5S: Runoff Area=136,374 sf 0.00% Impervious Runoff Depth>0.18"
Flow Length=903' Tc=18.3 min CN=55.4 Runoff=0.17 cfs 2,087 cf

Subcatchment6S: Runoff Area=299,000 sf 0.73% Impervious Runoff Depth>0.19"
Flow Length=520' Tc=13.3 min CN=55.4 Runoff=0.41 cfs 4,628 cf

Subcatchment7S: Runoff Area=14,561 sf 25.68% Impervious Runoff Depth>0.70"
Tc=6.0 min CN=70.5 Runoff=0.24 cfs 845 cf

Subcatchment8S: Runoff Area=13,429 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.06 cfs 378 cf

Subcatchment9S: Runoff Area=5,750 sf 82.97% Impervious Runoff Depth>2.07"
Tc=6.0 min CN=91.7 Runoff=0.31 cfs 990 cf

Subcatchment10S: Runoff Area=8,237 sf 91.84% Impervious Runoff Depth>2.38"
Tc=6.0 min CN=95.0 Runoff=0.50 cfs 1,632 cf

Subcatchment11S: Runoff Area=14,549 sf 92.08% Impervious Runoff Depth>2.39"
Tc=6.0 min CN=95.1 Runoff=0.89 cfs 2,893 cf

Subcatchment12S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.60 cfs 2,067 cf

Subcatchment13S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.60 cfs 2,067 cf

Subcatchment14S: Runoff Area=8,778 sf 73.24% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=88.1 Runoff=0.42 cfs 1,289 cf

Subcatchment15S: Runoff Area=8,055 sf 70.37% Impervious Runoff Depth>1.68"
Tc=6.0 min CN=87.0 Runoff=0.36 cfs 1,127 cf

Subcatchment16S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.35 cfs 1,209 cf

Subcatchment17S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.35 cfs 1,209 cf

Subcatchment18S: Runoff Area=12,630 sf 75.22% Impervious Runoff Depth>1.82"
Tc=6.0 min CN=88.8 Runoff=0.62 cfs 1,916 cf

Subcatchment19S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.60 cfs 2,067 cf

Subcatchment20S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.60 cfs 2,067 cf

Subcatchment21S: Runoff Area=8,126 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.53 cfs 1,826 cf

Subcatchment22S: Runoff Area=9,491 sf 64.25% Impervious Runoff Depth>1.51"
Tc=6.0 min CN=84.8 Runoff=0.39 cfs 1,195 cf

Subcatchment23S: Runoff Area=9,913 sf 73.27% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=88.1 Runoff=0.47 cfs 1,456 cf

Subcatchment24S: Runoff Area=4,358 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.28 cfs 979 cf

Subcatchment25S: Runoff Area=3,949 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.26 cfs 887 cf

Subcatchment26S: BUILDING 3 Runoff Area=13,600 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.89 cfs 3,056 cf

Subcatchment27S: Runoff Area=6,195 sf 85.04% Impervious Runoff Depth>2.14"
Tc=6.0 min CN=92.5 Runoff=0.35 cfs 1,102 cf

Subcatchment28S: Runoff Area=6,476 sf 82.72% Impervious Runoff Depth>2.06"
Tc=6.0 min CN=91.6 Runoff=0.35 cfs 1,110 cf

Subcatchment29S: Runoff Area=20,450 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.10 cfs 576 cf

Subcatchment30S: Runoff Area=12,852 sf 79.69% Impervious Runoff Depth>1.96"
Tc=6.0 min CN=90.5 Runoff=0.67 cfs 2,099 cf

Subcatchment31S: Runoff Area=8,139 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.04 cfs 229 cf

Subcatchment32S: Runoff Area=15,017 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.07 cfs 423 cf

Subcatchment33S: Runoff Area=11,297 sf 0.00% Impervious Runoff Depth>0.26"
Tc=6.0 min CN=58.4 Runoff=0.03 cfs 248 cf

Subcatchment34S: Runoff Area=7,007 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.03 cfs 197 cf

Subcatchment35S: Runoff Area=4,258 sf 0.00% Impervious Runoff Depth>0.34"
Tc=6.0 min CN=61.0 Runoff=0.02 cfs 120 cf

Subcatchment36S: Runoff Area=7,976 sf 90.47% Impervious Runoff Depth>2.33"
Tc=6.0 min CN=94.5 Runoff=0.48 cfs 1,546 cf

Subcatchment37S: Runoff Area=11,004 sf 97.16% Impervious Runoff Depth>2.58"
Tc=6.0 min CN=97.0 Runoff=0.70 cfs 2,367 cf

Subcatchment38S: Runoff Area=15,217 sf 47.87% Impervious Runoff Depth>1.12"
Tc=6.0 min CN=78.7 Runoff=0.45 cfs 1,419 cf

Subcatchment40S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.73 cfs 2,528 cf

Subcatchment41S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.73 cfs 2,528 cf

Subcatchment42S: Runoff Area=31,496 sf 67.44% Impervious Runoff Depth>1.58"
Flow Length=469' Tc=7.4 min CN=85.7 Runoff=1.28 cfs 4,146 cf

Subcatchment43S: Runoff Area=30,367 sf 75.63% Impervious Runoff Depth>1.82"
Flow Length=454' Tc=7.3 min CN=88.9 Runoff=1.42 cfs 4,613 cf

Subcatchment45S: Runoff Area=2,272 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.15 cfs 511 cf

Subcatchment46S: Runoff Area=2,255 sf 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98.0 Runoff=0.15 cfs 507 cf

Subcatchment47S: Runoff Area=10,949 sf 57.68% Impervious Runoff Depth>1.34"
Tc=6.0 min CN=82.3 Runoff=0.39 cfs 1,227 cf

Subcatchment50S: Runoff Area=12,488 sf 0.00% Impervious Runoff Depth>0.30"
Tc=6.0 min CN=59.7 Runoff=0.04 cfs 311 cf

Reach 1R: SWALE Avg. Flow Depth=0.41' Max Vel=0.86 fps Inflow=1.13 cfs 9,396 cf
n=0.069 L=255.0' S=0.0078 '/' Capacity=24.34 cfs Outflow=1.00 cfs 9,374 cf

Reach 2R: SWALE Avg. Flow Depth=0.05' Max Vel=1.02 fps Inflow=0.12 cfs 1,073 cf
n=0.025 L=126.0' S=0.0159 '/' Capacity=26.66 cfs Outflow=0.12 cfs 1,070 cf

Reach 3R: SWALE Avg. Flow Depth=0.06' Max Vel=1.97 fps Inflow=0.25 cfs 2,998 cf
n=0.025 L=550.0' S=0.0527 '/' Capacity=174.16 cfs Outflow=0.24 cfs 2,981 cf

Reach 4R: SWALE Avg. Flow Depth=0.36' Max Vel=0.63 fps Inflow=0.71 cfs 2,575 cf
n=0.069 L=177.0' S=0.0050 '/' Capacity=19.38 cfs Outflow=0.62 cfs 2,563 cf

Reach 5R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps
24.0" Round Pipe n=0.013 L=37.9' S=0.0150 '/' Capacity=27.74 cfs Outflow=0.00 cfs 0 cf

Reach 33R: SWALE Avg. Flow Depth=0.02' Max Vel=0.77 fps Inflow=0.03 cfs 248 cf
n=0.025 L=182.0' S=0.0330 '/' Capacity=31.32 cfs Outflow=0.03 cfs 247 cf

Pond 1P: HW#1 Peak Elev=211.16' Inflow=0.62 cfs 2,563 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=0.62 cfs 2,563 cf

Pond 2P: CB#2 Peak Elev=210.74' Inflow=0.90 cfs 3,552 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=0.90 cfs 3,552 cf

Pond 7P: CB#7 Peak Elev=217.12' Inflow=1.10 cfs 3,699 cf
12.0" Round Culvert n=0.013 L=12.7' S=0.0102 '/' Outflow=1.10 cfs 3,699 cf

Pond 8P: CB#8 Peak Elev=217.73' Inflow=1.38 cfs 4,414 cf
15.0" Round Culvert n=0.013 L=204.0' S=0.0050 '/' Outflow=1.38 cfs 4,414 cf

Pond 9P: CB#9 Peak Elev=218.12' Inflow=0.77 cfs 2,498 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0050 '/' Outflow=0.77 cfs 2,498 cf

Pond 10P: CB#10 Peak Elev=219.88' Inflow=0.35 cfs 1,209 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0700 '/' Outflow=0.35 cfs 1,209 cf

Pond 12P: CB#12 Peak Elev=217.26' Inflow=1.49 cfs 4,960 cf
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=1.49 cfs 4,960 cf

Pond 14P: CB#14 Peak Elev=217.68' Inflow=1.24 cfs 4,162 cf
18.0" Round Culvert n=0.013 L=152.5' S=0.0050 '/' Outflow=1.24 cfs 4,162 cf

Pond 15P: CB#15 Peak Elev=218.09' Inflow=0.71 cfs 2,336 cf
15.0" Round Culvert n=0.013 L=78.0' S=0.0050 '/' Outflow=0.71 cfs 2,336 cf

Pond 16P: CB#16 Peak Elev=220.01' Inflow=0.35 cfs 1,209 cf
12.0" Round Culvert n=0.013 L=28.8' S=0.0701 '/' Outflow=0.35 cfs 1,209 cf

Pond 17P: CB#17 Peak Elev=234.66' Inflow=0.84 cfs 2,884 cf
15.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=0.84 cfs 2,884 cf

Pond 18P: CB#18 Peak Elev=234.51' Inflow=0.86 cfs 2,651 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0050 '/' Outflow=0.86 cfs 2,651 cf

Pond 19P: CB#19 Peak Elev=234.51' Inflow=0.39 cfs 1,195 cf
15.0" Round Culvert n=0.013 L=123.0' S=0.0050 '/' Outflow=0.39 cfs 1,195 cf

Pond 21P: CB#21 Peak Elev=235.23' Inflow=0.69 cfs 2,377 cf
15.0" Round Culvert n=0.013 L=74.0' S=0.0074 '/' Outflow=0.69 cfs 2,377 cf

Pond 22P: CB#22 Peak Elev=235.57' Inflow=0.43 cfs 1,490 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.43 cfs 1,490 cf

Pond 24P: CB#24 Peak Elev=241.18' Inflow=1.59 cfs 5,269 cf
12.0" Round Culvert n=0.013 L=104.0' S=0.0625 '/' Outflow=1.59 cfs 5,269 cf

Pond 25P: CB#25 Peak Elev=244.08' Inflow=1.23 cfs 4,158 cf
12.0" Round Culvert n=0.013 L=128.0' S=0.0227 '/' Outflow=1.23 cfs 4,158 cf

Pond 27P: CB#27 Peak Elev=217.06' Inflow=1.78 cfs 5,641 cf
15.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=1.78 cfs 5,641 cf

Pond 29P: DMH#29 Peak Elev=238.08' Inflow=0.16 cfs 2,997 cf
15.0" Round Culvert n=0.013 L=156.0' S=0.0365 '/' Outflow=0.16 cfs 2,997 cf

Pond 30P: DMH#30 Peak Elev=232.32' Inflow=0.24 cfs 6,971 cf
15.0" Round Culvert n=0.013 L=273.0' S=0.0411 '/' Outflow=0.24 cfs 6,971 cf

Pond 32P: DMH#32 Peak Elev=221.00' Inflow=0.24 cfs 6,971 cf
15.0" Round Culvert n=0.013 L=253.0' S=0.0334 '/' Outflow=0.24 cfs 6,971 cf

Pond 33P: DMH#33 Peak Elev=212.45' Inflow=0.24 cfs 6,971 cf
15.0" Round Culvert n=0.013 L=17.0' S=0.0129 '/' Outflow=0.24 cfs 6,971 cf

Pond 47P: CB#47 Peak Elev=236.67' Inflow=0.15 cfs 511 cf
15.0" Round Culvert n=0.013 L=99.0' S=0.0111 '/' Outflow=0.15 cfs 511 cf

Pond 101P: CB#101 Peak Elev=212.70' Inflow=0.68 cfs 2,345 cf
12.0" Round Culvert n=0.013 L=23.0' S=0.0052 '/' Outflow=0.68 cfs 2,345 cf

Pond 102P: HW#102 Peak Elev=213.20' Inflow=0.03 cfs 247 cf
12.0" Round Culvert n=0.013 L=41.0' S=0.0200 '/' Outflow=0.03 cfs 247 cf

Pond 108P: CB#108 Peak Elev=222.55' Inflow=0.45 cfs 1,419 cf
15.0" Round Culvert n=0.013 L=30.5' S=0.0449 '/' Outflow=0.45 cfs 1,419 cf

Pond 112P: CB#112 Peak Elev=219.61' Inflow=0.48 cfs 1,546 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.48 cfs 1,545 cf

Pond 114P: DMH#114 Peak Elev=219.65' Inflow=1.29 cfs 5,360 cf
24.0" Round Culvert n=0.013 L=79.0' S=0.0151 '/' Outflow=1.29 cfs 5,360 cf

Pond 115P: DCB#115 Peak Elev=223.32' Inflow=1.29 cfs 5,360 cf
18.0" Round Culvert n=0.013 L=235.0' S=0.0150 '/' Outflow=1.29 cfs 5,360 cf

Pond 116P: CB#116 Peak Elev=228.11' Inflow=0.13 cfs 1,214 cf
15.0" Round Culvert n=0.013 L=125.7' S=0.0400 '/' Outflow=0.13 cfs 1,214 cf

Pond 119P: CB#119 Peak Elev=219.61' Inflow=2.90 cfs 10,743 cf
24.0" Round Culvert n=0.013 L=37.9' S=0.0150 '/' Outflow=2.90 cfs 10,743 cf

Pond 120P: DCB#120 Peak Elev=223.26' Inflow=1.50 cfs 5,848 cf
18.0" Round Culvert n=0.013 L=269.0' S=0.0150 '/' Outflow=1.50 cfs 5,848 cf

Pond 121P: CB#121 Peak Elev=226.26' Inflow=0.19 cfs 1,235 cf
15.0" Round Culvert n=0.013 L=54.2' S=0.0600 '/' Outflow=0.19 cfs 1,235 cf

Pond B1: INFILTRATIONPOND 1 Peak Elev=217.06' Storage=9,829 cf Inflow=5.66 cfs 18,841 cf
Discarded=0.14 cfs 7,166 cf Primary=0.41 cfs 4,999 cf Outflow=0.56 cfs 12,164 cf

Pond B2: POCKET POND 1 Peak Elev=234.52' Storage=17,997 cf Inflow=4.55 cfs 15,515 cf
Outflow=0.08 cfs 3,974 cf

Pond B3: DETENTION POND 1 Peak Elev=244.19' Storage=376 cf Inflow=0.29 cfs 3,158 cf
12.0" Round Culvert n=0.013 L=103.0' S=0.0583 '/' Outflow=0.16 cfs 2,997 cf

Pond B4: INFILTRATIONPOND 2 Peak Elev=219.61' Storage=11,775 cf Inflow=4.71 cfs 18,070 cf
Discarded=0.14 cfs 7,174 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 7,174 cf

Pond B5: BIORETENTIONPOND 1 Peak Elev=222.55' Storage=1,128 cf Inflow=1.19 cfs 4,067 cf
Outflow=0.25 cfs 4,067 cf

Pond B6: DETENTION POND 2 Peak Elev=218.00' Storage=7,245 cf Inflow=0.50 cfs 7,245 cf
Outflow=0.00 cfs 0 cf

Link A: CHASE BROOK Inflow=1.33 cfs 21,284 cf
Primary=1.33 cfs 21,284 cf

Summary for Subcatchment 1S:

Runoff = 0.25 cfs @ 12.53 hrs, Volume= 2,998 cf, Depth> 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
270	98.0	Paved parking, HSG B
12,010	61.0	>75% Grass cover, Good, HSG B
182,247	55.0	Woods, Good, HSG B
194,527	55.4	Weighted Average
194,257	55.4	99.86% Pervious Area
270	98.0	0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0550	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.0	325	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	281	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	716	Total			

Summary for Subcatchment 2S:

Runoff = 0.13 cfs @ 12.44 hrs, Volume= 1,214 cf, Depth> 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
2,582	98.0	Paved parking, HSG B
7,802	61.0	>75% Grass cover, Good, HSG B
50,538	55.0	Woods, Good, HSG B
60,922	57.6	Weighted Average
58,340	55.8	95.76% Pervious Area
2,582	98.0	4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
5.5	470	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	84	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	205	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.6	809	Total			

Summary for Subcatchment 3S:

Runoff = 0.19 cfs @ 12.28 hrs, Volume= 1,235 cf, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,283	98.0	Paved parking, HSG B
11,639	61.0	>75% Grass cover, Good, HSG B
19,507	55.0	Woods, Good, HSG B
36,429	63.2	Weighted Average
31,146	57.2	85.50% Pervious Area
5,283	98.0	14.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.6	600	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.4000	4.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	674	Total			

Summary for Subcatchment 4S:

Runoff = 0.12 cfs @ 12.47 hrs, Volume= 1,073 cf, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
3,260	98.0	Roofs, HSG B
5,695	61.0	>75% Grass cover, Good, HSG B
39,454	55.0	Woods, Good, HSG B
48,409	58.6	Weighted Average
45,149	55.8	93.27% Pervious Area
3,260	98.0	6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
9.2	729	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	779	Total			

Summary for Subcatchment 5S:

Runoff = 0.17 cfs @ 12.56 hrs, Volume= 2,087 cf, Depth> 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
8,709	61.0	>75% Grass cover, Good, HSG B
127,665	55.0	Woods, Good, HSG B
136,374	55.4	Weighted Average
136,374	55.4	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	50	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.8	567	0.0580	1.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	286	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	903	Total			

Summary for Subcatchment 6S:

Runoff = 0.41 cfs @ 12.48 hrs, Volume= 4,628 cf, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
2,193	98.0	Paved parking, HSG B
6,633	61.0	>75% Grass cover, Good, HSG B
290,174	55.0	Woods, Good, HSG B
299,000	55.4	Weighted Average
296,807	55.1	99.27% Pervious Area
2,193	98.0	0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
2.0	210	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	210	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.2400	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	520	Total			

Summary for Subcatchment 7S:

Runoff = 0.24 cfs @ 12.10 hrs, Volume= 845 cf, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
3,739	98.0	Paved parking, HSG B
10,822	61.0	>75% Grass cover, Good, HSG B
14,561	70.5	Weighted Average
10,822	61.0	74.32% Pervious Area
3,739	98.0	25.68% Impervious Area

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

Summary for Subcatchment 8S:

Runoff = 0.06 cfs @ 12.14 hrs, Volume= 378 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
13,429	61.0	>75% Grass cover, Good, HSG B
13,429	61.0	100.00% Pervious Area

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

Summary for Subcatchment 9S:

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 990 cf, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
4,771	98.0	Paved parking, HSG B
979	61.0	>75% Grass cover, Good, HSG B
5,750	91.7	Weighted Average
979	61.0	17.03% Pervious Area
4,771	98.0	82.97% Impervious Area

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

Summary for Subcatchment 10S:

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 1,632 cf, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
7,565	98.0	Paved parking, HSG B
672	61.0	>75% Grass cover, Good, HSG B
8,237	95.0	Weighted Average
672	61.0	8.16% Pervious Area
7,565	98.0	91.84% Impervious Area

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

Summary for Subcatchment 11S:

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 2,893 cf, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
13,397	98.0	Paved parking, HSG B
1,152	61.0	>75% Grass cover, Good, HSG B
14,549	95.1	Weighted Average
1,152	61.0	7.92% Pervious Area
13,397	98.0	92.08% Impervious Area

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

Summary for Subcatchment 12S: BUILDING 1

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,067 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 13S: BUILDING 1

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,067 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 14S:

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 1,289 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
6,429	98.0	Paved parking, HSG B
2,349	61.0	>75% Grass cover, Good, HSG B
8,778	88.1	Weighted Average
2,349	61.0	26.76% Pervious Area
6,429	98.0	73.24% Impervious Area

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

Summary for Subcatchment 15S:

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,127 cf, Depth> 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,668	98.0	Paved parking, HSG B
2,387	61.0	>75% Grass cover, Good, HSG B
8,055	87.0	Weighted Average
2,387	61.0	29.63% Pervious Area
5,668	98.0	70.37% Impervious Area

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

Summary for Subcatchment 16S:

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,209 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 17S:

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,209 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 18S:

Runoff = 0.62 cfs @ 12.09 hrs, Volume= 1,916 cf, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,500	98.0	Paved parking, HSG B
3,130	61.0	>75% Grass cover, Good, HSG B
12,630	88.8	Weighted Average
3,130	61.0	24.78% Pervious Area
9,500	98.0	75.22% Impervious Area

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

Summary for Subcatchment 19S: BUILDING 2

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,067 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 20S: BUILDING 2

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,067 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 21S:

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 1,826 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
8,126	98.0	Paved parking, HSG B
8,126	98.0	100.00% Impervious Area

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

Summary for Subcatchment 22S:

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 1,195 cf, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
6,098	98.0	Paved parking, HSG B
3,393	61.0	>75% Grass cover, Good, HSG B
9,491	84.8	Weighted Average
3,393	61.0	35.75% Pervious Area
6,098	98.0	64.25% Impervious Area

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

Summary for Subcatchment 23S:

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 1,456 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
7,263	98.0	Paved parking, HSG B
2,650	61.0	>75% Grass cover, Good, HSG B
9,913	88.1	Weighted Average
2,650	61.0	26.73% Pervious Area
7,263	98.0	73.27% Impervious Area

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

Summary for Subcatchment 24S:

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 979 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
4,358	98.0	Paved parking, HSG B
4,358	98.0	100.00% Impervious Area

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

Summary for Subcatchment 25S:

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 887 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
3,949	98.0	Paved parking, HSG B
3,949	98.0	100.00% Impervious Area

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

Summary for Subcatchment 26S: BUILDING 3

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 3,056 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
13,600	98.0	Roofs, HSG B
13,600	98.0	100.00% Impervious Area

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

Summary for Subcatchment 27S:

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,102 cf, Depth> 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,268	98.0	Paved parking, HSG B
927	61.0	>75% Grass cover, Good, HSG B
6,195	92.5	Weighted Average
927	61.0	14.96% Pervious Area
5,268	98.0	85.04% Impervious Area

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

Summary for Subcatchment 28S:

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,110 cf, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
5,357	98.0	Paved parking, HSG B
1,119	61.0	>75% Grass cover, Good, HSG B
6,476	91.6	Weighted Average
1,119	61.0	17.28% Pervious Area
5,357	98.0	82.72% Impervious Area

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

Summary for Subcatchment 29S:

Runoff = 0.10 cfs @ 12.14 hrs, Volume= 576 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
20,450	61.0	>75% Grass cover, Good, HSG B
20,450	61.0	100.00% Pervious Area

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

Summary for Subcatchment 30S:

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 2,099 cf, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
10,242	98.0	Paved parking, HSG B
2,610	61.0	>75% Grass cover, Good, HSG B
12,852	90.5	Weighted Average
2,610	61.0	20.31% Pervious Area
10,242	98.0	79.69% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 0.04 cfs @ 12.14 hrs, Volume= 229 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
8,139	61.0	>75% Grass cover, Good, HSG B
8,139	61.0	100.00% Pervious Area

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

Summary for Subcatchment 32S:

Runoff = 0.07 cfs @ 12.14 hrs, Volume= 423 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
15,017	61.0	>75% Grass cover, Good, HSG B
15,017	61.0	100.00% Pervious Area

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

Summary for Subcatchment 33S:

Runoff = 0.03 cfs @ 12.30 hrs, Volume= 248 cf, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
6,480	61.0	>75% Grass cover, Good, HSG B
4,817	55.0	Woods, Good, HSG B
11,297	58.4	Weighted Average
11,297	58.4	100.00% Pervious Area

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

Summary for Subcatchment 34S:

Runoff = 0.03 cfs @ 12.14 hrs, Volume= 197 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
7,007	61.0	>75% Grass cover, Good, HSG B
7,007	61.0	100.00% Pervious Area

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

Summary for Subcatchment 35S:

Runoff = 0.02 cfs @ 12.14 hrs, Volume= 120 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
4,258	61.0	>75% Grass cover, Good, HSG B
4,258	61.0	100.00% Pervious Area

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

Summary for Subcatchment 36S:

Runoff = 0.48 cfs @ 12.08 hrs, Volume= 1,546 cf, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
7,216	98.0	Paved parking, HSG B
760	61.0	>75% Grass cover, Good, HSG B
7,976	94.5	Weighted Average
760	61.0	9.53% Pervious Area
7,216	98.0	90.47% Impervious Area

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

Summary for Subcatchment 37S:

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 2,367 cf, Depth> 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
10,692	98.0	Paved parking, HSG B
312	61.0	>75% Grass cover, Good, HSG B
11,004	97.0	Weighted Average
312	61.0	2.84% Pervious Area
10,692	98.0	97.16% Impervious Area

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

Summary for Subcatchment 38S:

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,419 cf, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
7,285	98.0	Paved parking, HSG B
7,932	61.0	>75% Grass cover, Good, HSG B
15,217	78.7	Weighted Average
7,932	61.0	52.13% Pervious Area
7,285	98.0	47.87% Impervious Area

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

Summary for Subcatchment 40S: BUILDING 4

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 2,528 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 41S: BUILDING 4

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 2,528 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 42S:

Runoff = 1.28 cfs @ 12.11 hrs, Volume= 4,146 cf, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
21,240	98.0	Paved parking, HSG B
9,027	61.0	>75% Grass cover, Good, HSG B
1,229	55.0	Woods, Good, HSG B
31,496	85.7	Weighted Average
10,256	60.3	32.56% Pervious Area
21,240	98.0	67.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.2200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	80	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	295	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	469	Total			

Summary for Subcatchment 43S:

Runoff = 1.42 cfs @ 12.10 hrs, Volume= 4,613 cf, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
22,966	98.0	Paved parking, HSG B
3,724	61.0	>75% Grass cover, Good, HSG B
3,677	60.0	Woods, Fair, HSG B
30,367	88.9	Weighted Average
7,401	60.5	24.37% Pervious Area
22,966	98.0	75.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.2400	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.2	80	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	280	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.3	454	Total			

Summary for Subcatchment 45S:

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 511 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
2,272	98.0	Paved parking, HSG B
2,272	98.0	100.00% Impervious Area

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

Summary for Subcatchment 46S:

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 507 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
2,255	98.0	Paved parking, HSG B
2,255	98.0	100.00% Impervious Area

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

Summary for Subcatchment 47S:

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 1,227 cf, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
6,315	98.0	Paved parking, HSG B
4,634	61.0	>75% Grass cover, Good, HSG B
10,949	82.3	Weighted Average
4,634	61.0	42.32% Pervious Area
6,315	98.0	57.68% Impervious Area

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

Summary for Subcatchment 50S:

Runoff = 0.04 cfs @ 12.15 hrs, Volume= 311 cf, Depth> 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-YEAR Rainfall=2.93"

Area (sf)	CN	Description
9,796	61.0	>75% Grass cover, Good, HSG B
2,692	55.0	Woods, Good, HSG B
12,488	59.7	Weighted Average
12,488	59.7	100.00% Pervious Area

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

Summary for Reach 1R: SWALE

Inflow Area = 603,234 sf, 33.97% Impervious, Inflow Depth > 0.19" for 2-YEAR event
Inflow = 1.13 cfs @ 12.11 hrs, Volume= 9,396 cf
Outflow = 1.00 cfs @ 12.17 hrs, Volume= 9,374 cf, Atten= 12%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 0.86 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 11.7 min

Peak Storage= 297 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 24.34 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 255.0' Slope= 0.0078 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'

Summary for Reach 2R: SWALE

Inflow Area = 48,409 sf, 6.73% Impervious, Inflow Depth > 0.27" for 2-YEAR event
Inflow = 0.12 cfs @ 12.47 hrs, Volume= 1,073 cf
Outflow = 0.12 cfs @ 12.50 hrs, Volume= 1,070 cf, Atten= 0%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.02 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 3.9 min

Peak Storage= 15 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 26.66 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 126.0' Slope= 0.0159 '/'
Inlet Invert= 248.00', Outlet Invert= 246.00'

‡

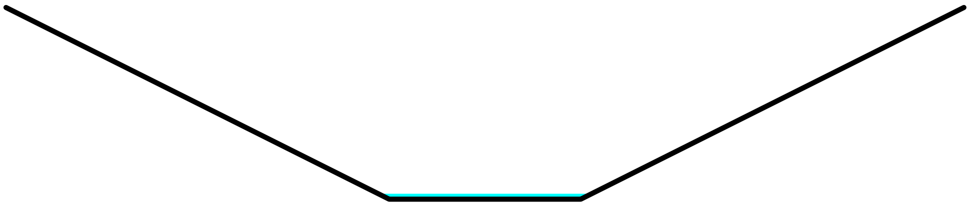
Summary for Reach 3R: SWALE

Inflow Area = 194,527 sf, 0.14% Impervious, Inflow Depth > 0.18" for 2-YEAR event
Inflow = 0.25 cfs @ 12.53 hrs, Volume= 2,998 cf
Outflow = 0.24 cfs @ 12.60 hrs, Volume= 2,981 cf, Atten= 3%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.97 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 7.6 min

Peak Storage= 68 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 174.16 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 550.0' Slope= 0.0527 '/'
Inlet Invert= 252.00', Outlet Invert= 223.00'



Summary for Reach 4R: SWALE

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 0.07" for 2-YEAR event
Inflow = 0.71 cfs @ 12.09 hrs, Volume= 2,575 cf
Outflow = 0.62 cfs @ 12.14 hrs, Volume= 2,563 cf, Atten= 13%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 0.63 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 13.8 min

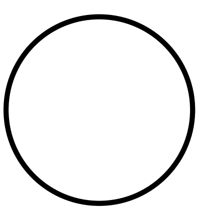
Peak Storage= 172 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 19.38 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 177.0' Slope= 0.0050 '/'
Inlet Invert= 212.08', Outlet Invert= 211.20'

Summary for Reach 5R: (new Reach)

Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.74 cfs

24.0" Round Pipe
n= 0.013
Length= 37.9' Slope= 0.0150 '/'
Inlet Invert= 218.57', Outlet Invert= 218.00'



Summary for Reach 33R: SWALE

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 0.01" for 2-YEAR event
Inflow = 0.03 cfs @ 12.30 hrs, Volume= 248 cf
Outflow = 0.03 cfs @ 12.35 hrs, Volume= 247 cf, Atten= 2%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 0.77 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 6.0 min

Peak Storage= 7 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 31.32 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 182.0' Slope= 0.0330 '/'
Inlet Invert= 220.00', Outlet Invert= 214.00'

Summary for Pond 1P: HW#1

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 0.07" for 2-YEAR event
Inflow = 0.62 cfs @ 12.14 hrs, Volume= 2,563 cf
Outflow = 0.62 cfs @ 12.14 hrs, Volume= 2,563 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.14 hrs, Volume= 2,563 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 211.16' @ 12.14 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.73'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.73' / 210.31' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.62 cfs @ 12.14 hrs HW=211.16' TW=210.74' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.62 cfs @ 2.79 fps)

Summary for Pond 2P: CB#2

Inflow Area =	474,758 sf, 24.23% Impervious,	Inflow Depth > 0.09"	for 2-YEAR event
Inflow =	0.90 cfs @ 12.12 hrs, Volume=	3,552 cf	
Outflow =	0.90 cfs @ 12.12 hrs, Volume=	3,552 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.90 cfs @ 12.12 hrs, Volume=	3,552 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 210.74' @ 12.12 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.21'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.21' / 210.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.90 cfs @ 12.12 hrs HW=210.74' TW=210.39' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.90 cfs @ 2.69 fps)

Summary for Pond 7P: CB#7

Inflow Area =	17,437 sf, 96.15% Impervious,	Inflow Depth > 2.55"	for 2-YEAR event
Inflow =	1.10 cfs @ 12.08 hrs, Volume=	3,699 cf	
Outflow =	1.10 cfs @ 12.08 hrs, Volume=	3,699 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.10 cfs @ 12.08 hrs, Volume=	3,699 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.12' @ 12.08 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 12.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.37' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.08 hrs HW=217.12' TW=216.32' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.10 cfs @ 3.08 fps)

Summary for Pond 8P: CB#8

Inflow Area =	26,789 sf, 79.55% Impervious,	Inflow Depth > 1.98"	for 2-YEAR event
Inflow =	1.38 cfs @ 12.09 hrs, Volume=	4,414 cf	
Outflow =	1.38 cfs @ 12.09 hrs, Volume=	4,414 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.38 cfs @ 12.09 hrs, Volume=	4,414 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.73' @ 12.09 hrs
Flood Elev= 223.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.05'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.05' / 216.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.38 cfs @ 12.09 hrs HW=217.72' TW=216.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.38 cfs @ 2.97 fps)

Summary for Pond 9P: CB#9

Inflow Area =	14,159 sf, 83.41% Impervious,	Inflow Depth > 2.12"	for 2-YEAR event
Inflow =	0.77 cfs @ 12.09 hrs, Volume=	2,498 cf	
Outflow =	0.77 cfs @ 12.09 hrs, Volume=	2,498 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.77 cfs @ 12.09 hrs, Volume=	2,498 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.12' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.15' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.77 cfs @ 12.09 hrs HW=218.12' TW=217.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.77 cfs @ 2.31 fps)

Summary for Pond 10P: CB#10

Inflow Area =	5,381 sf,100.00% Impervious,	Inflow Depth > 2.70"	for 2-YEAR event
Inflow =	0.35 cfs @ 12.08 hrs, Volume=	1,209 cf	
Outflow =	0.35 cfs @ 12.08 hrs, Volume=	1,209 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.35 cfs @ 12.08 hrs, Volume=	1,209 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.88' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.59'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.59' / 217.70' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.08 hrs HW=219.88' TW=218.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.35 cfs @ 1.84 fps)

Summary for Pond 12P: CB#12

Inflow Area =	23,749 sf,	95.15% Impervious,	Inflow Depth > 2.51"	for 2-YEAR event
Inflow =	1.49 cfs @	12.08 hrs, Volume=	4,960 cf	
Outflow =	1.49 cfs @	12.08 hrs, Volume=	4,960 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.49 cfs @	12.08 hrs, Volume=	4,960 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.26' @ 12.08 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.49 cfs @ 12.08 hrs HW=217.26' TW=216.32' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.49 cfs @ 3.23 fps)

Summary for Pond 14P: CB#14

Inflow Area =	21,562 sf,	88.93% Impervious,	Inflow Depth > 2.32"	for 2-YEAR event
Inflow =	1.24 cfs @	12.08 hrs, Volume=	4,162 cf	
Outflow =	1.24 cfs @	12.08 hrs, Volume=	4,162 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.24 cfs @	12.08 hrs, Volume=	4,162 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.68' @ 12.08 hrs
Flood Elev= 223.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.11'	**18.0" Round Culvert** L= 152.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.11' / 216.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.24 cfs @ 12.08 hrs HW=217.68' TW=216.32' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.24 cfs @ 3.01 fps)

Summary for Pond 15P: CB#15

Inflow Area =	13,436 sf,	82.23% Impervious,	Inflow Depth > 2.09"	for 2-YEAR event
Inflow =	0.71 cfs @	12.09 hrs, Volume=	2,336 cf	
Outflow =	0.71 cfs @	12.09 hrs, Volume=	2,336 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.71 cfs @	12.09 hrs, Volume=	2,336 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.09' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.21' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.71 cfs @ 12.09 hrs HW=218.09' TW=217.68' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.71 cfs @ 2.39 fps)

Summary for Pond 16P: CB#16

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 2.70" for 2-YEAR event
Inflow = 0.35 cfs @ 12.08 hrs, Volume= 1,209 cf
Outflow = 0.35 cfs @ 12.08 hrs, Volume= 1,209 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.08 hrs, Volume= 1,209 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.01' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.72'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.72' / 217.70' S= 0.0701 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.08 hrs HW=220.01' TW=218.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.35 cfs @ 1.84 fps)

Summary for Pond 17P: CB#17

Inflow Area = 12,834 sf,100.00% Impervious, Inflow Depth > 2.70" for 2-YEAR event
Inflow = 0.84 cfs @ 12.08 hrs, Volume= 2,884 cf
Outflow = 0.84 cfs @ 12.08 hrs, Volume= 2,884 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.08 hrs, Volume= 2,884 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 234.66' @ 12.08 hrs
Flood Elev= 236.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.15'	**15.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.15' / 234.00' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=234.66' TW=233.57' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.83 cfs @ 2.64 fps)

Summary for Pond 18P: CB#18

Inflow Area =	19,404 sf,	68.86% Impervious,	Inflow Depth > 1.64"	for 2-YEAR event	
Inflow =	0.86 cfs @	12.09 hrs,	Volume=	2,651 cf	
Outflow =	0.86 cfs @	12.09 hrs,	Volume=	2,651 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.86 cfs @	12.09 hrs,	Volume=	2,652 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 234.51' @ 17.25 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.98'	**18.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.98' / 232.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.86 cfs @ 12.09 hrs HW=233.71' TW=233.59' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.86 cfs @ 1.45 fps)

Summary for Pond 19P: CB#19

Inflow Area =	9,491 sf,	64.25% Impervious,	Inflow Depth > 1.51"	for 2-YEAR event	
Inflow =	0.39 cfs @	12.09 hrs,	Volume=	1,195 cf	
Outflow =	0.39 cfs @	12.09 hrs,	Volume=	1,195 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.39 cfs @	12.09 hrs,	Volume=	1,195 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 234.51' @ 17.25 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	233.70'	**15.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 233.70' / 233.08' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.39 cfs @ 12.09 hrs HW=234.09' TW=233.72' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.39 cfs @ 1.76 fps)

Summary for Pond 21P: CB#21

Inflow Area =	10,579 sf,	100.00% Impervious,	Inflow Depth > 2.70"	for 2-YEAR event	
Inflow =	0.69 cfs @	12.08 hrs,	Volume=	2,377 cf	
Outflow =	0.69 cfs @	12.08 hrs,	Volume=	2,377 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.69 cfs @	12.08 hrs,	Volume=	2,377 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.23' @ 12.08 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.80'	**15.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.80' / 234.25' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.69 cfs @ 12.08 hrs HW=235.23' TW=234.66' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.69 cfs @ 2.74 fps)

Summary for Pond 22P: CB#22

Inflow Area = 6,630 sf,100.00% Impervious, Inflow Depth > 2.70" for 2-YEAR event
Inflow = 0.43 cfs @ 12.08 hrs, Volume= 1,490 cf
Outflow = 0.43 cfs @ 12.08 hrs, Volume= 1,490 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 12.08 hrs, Volume= 1,490 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.57' @ 12.08 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	235.20'	**15.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 235.20' / 234.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.43 cfs @ 12.08 hrs HW=235.57' TW=235.23' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.43 cfs @ 2.14 fps)

Summary for Pond 24P: CB#24

Inflow Area = 26,271 sf, 92.21% Impervious, Inflow Depth > 2.41" for 2-YEAR event
Inflow = 1.59 cfs @ 12.08 hrs, Volume= 5,269 cf
Outflow = 1.59 cfs @ 12.08 hrs, Volume= 5,269 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.59 cfs @ 12.08 hrs, Volume= 5,269 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 241.18' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	240.50'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.50' / 234.00' S= 0.0625 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.58 cfs @ 12.08 hrs HW=241.18' TW=233.58' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.58 cfs @ 2.80 fps)

Summary for Pond 25P: CB#25

Inflow Area = 19,795 sf, 95.32% Impervious, Inflow Depth > 2.52" for 2-YEAR event
Inflow = 1.23 cfs @ 12.08 hrs, Volume= 4,158 cf
Outflow = 1.23 cfs @ 12.08 hrs, Volume= 4,158 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.08 hrs, Volume= 4,158 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.08' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	243.50'	**12.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 243.50' / 240.60' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.08 hrs HW=244.08' TW=241.18' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.23 cfs @ 2.60 fps)

Summary for Pond 27P: CB#27

Inflow Area = 37,738 sf, 73.20% Impervious, Inflow Depth > 1.79" for 2-YEAR event
Inflow = 1.78 cfs @ 12.09 hrs, Volume= 5,641 cf
Outflow = 1.78 cfs @ 12.09 hrs, Volume= 5,641 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.09 hrs, Volume= 5,641 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.06' @ 12.93 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.93'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.93' / 215.88' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.78 cfs @ 12.09 hrs HW=216.73' TW=216.33' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.78 cfs @ 3.04 fps)

Summary for Pond 29P: DMH#29

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 0.19" for 2-YEAR event
Inflow = 0.16 cfs @ 13.07 hrs, Volume= 2,997 cf
Outflow = 0.16 cfs @ 13.07 hrs, Volume= 2,997 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 13.07 hrs, Volume= 2,997 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 238.08' @ 13.07 hrs
Flood Elev= 242.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	237.90'	**15.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.90' / 232.20' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 13.07 hrs HW=238.08' TW=232.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.16 cfs @ 1.45 fps)

Summary for Pond 30P: DMH#30

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 0.30" for 2-YEAR event
Inflow = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf
Outflow = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 232.32' @ 13.08 hrs
Flood Elev= 235.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.10'	**15.0" Round Culvert** L= 273.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.10' / 220.88' S= 0.0411 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.24 cfs @ 13.08 hrs HW=232.32' TW=221.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.24 cfs @ 1.60 fps)

Summary for Pond 32P: DMH#32

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 0.30" for 2-YEAR event
Inflow = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf
Outflow = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 13.08 hrs, Volume= 6,971 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.00' @ 13.08 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	220.78'	**15.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.78' / 212.32' S= 0.0334 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.24 cfs @ 13.08 hrs HW=221.00' TW=212.45' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.24 cfs @ 1.60 fps)

Summary for Pond 33P: DMH#33

Inflow Area =	282,142 sf,	25.55% Impervious,	Inflow Depth > 0.30"	for 2-YEAR event	
Inflow =	0.24 cfs @	13.08 hrs, Volume=	6,971 cf		
Outflow =	0.24 cfs @	13.08 hrs, Volume=	6,971 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.24 cfs @	13.08 hrs, Volume=	6,971 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 212.45' @ 13.08 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.22'	**15.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.22' / 212.00' S= 0.0129 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.24 cfs @ 13.08 hrs HW=212.45' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.24 cfs @ 2.37 fps)

Summary for Pond 47P: CB#47

Inflow Area =	2,272 sf,	100.00% Impervious,	Inflow Depth > 2.70"	for 2-YEAR event	
Inflow =	0.15 cfs @	12.08 hrs, Volume=	511 cf		
Outflow =	0.15 cfs @	12.08 hrs, Volume=	511 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.15 cfs @	12.08 hrs, Volume=	511 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.67' @ 12.08 hrs
Flood Elev= 236.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	236.50'	**15.0" Round Culvert** L= 99.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 236.50' / 235.40' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.15 cfs @ 12.08 hrs HW=236.67' TW=235.57' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.15 cfs @ 1.42 fps)

Summary for Pond 101P: CB#101

Inflow Area =	256,408 sf,	11.33% Impervious,	Inflow Depth > 0.11"	for 2-YEAR event	
Inflow =	0.68 cfs @	12.09 hrs, Volume=	2,345 cf		
Outflow =	0.68 cfs @	12.09 hrs, Volume=	2,345 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	0.68 cfs @	12.09 hrs, Volume=	2,345 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 212.70' @ 12.09 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.20'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.20' / 212.08' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.09 hrs HW=212.70' TW=212.41' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.67 cfs @ 2.53 fps)

Summary for Pond 102P: HW#102

Inflow Area =	243,556 sf, 7.72% Impervious,	Inflow Depth > 0.01"	for 2-YEAR event
Inflow =	0.03 cfs @ 12.35 hrs, Volume=	247 cf	
Outflow =	0.03 cfs @ 12.35 hrs, Volume=	247 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.03 cfs @ 12.35 hrs, Volume=	247 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.20' @ 12.35 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.12'	**12.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.12' / 212.30' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.03 cfs @ 12.35 hrs HW=213.20' TW=212.52' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.03 cfs @ 0.98 fps)

Summary for Pond 108P: CB#108

Inflow Area =	15,217 sf, 47.87% Impervious,	Inflow Depth > 1.12"	for 2-YEAR event
Inflow =	0.45 cfs @ 12.09 hrs, Volume=	1,419 cf	
Outflow =	0.45 cfs @ 12.09 hrs, Volume=	1,419 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.45 cfs @ 12.09 hrs, Volume=	1,419 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 222.55' @ 12.53 hrs
Flood Elev= 225.98'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.37'	**15.0" Round Culvert** L= 30.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.37' / 220.00' S= 0.0449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.45 cfs @ 12.09 hrs HW=222.00' TW=221.96' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.45 cfs @ 1.05 fps)

Summary for Pond 112P: CB#112

Inflow Area = 7,976 sf, 90.47% Impervious, Inflow Depth > 2.33" for 2-YEAR event
Inflow = 0.48 cfs @ 12.08 hrs, Volume= 1,546 cf
Outflow = 0.48 cfs @ 12.08 hrs, Volume= 1,545 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.08 hrs, Volume= 1,545 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.61' @ 17.78 hrs
Flood Elev= 222.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.20'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.20' / 217.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.08 hrs HW=218.15' TW=218.13' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.48 cfs @ 0.80 fps)

Summary for Pond 114P: DMH#114

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 0.70" for 2-YEAR event
Inflow = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf
Outflow = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.65' @ 12.11 hrs
Flood Elev= 226.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.19'	**24.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.19' / 218.00' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.28 cfs @ 12.11 hrs HW=219.65' TW=218.22' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.28 cfs @ 2.32 fps)

Summary for Pond 115P: DCB#115

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 0.70" for 2-YEAR event
Inflow = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf
Outflow = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.11 hrs, Volume= 5,360 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.32' @ 12.11 hrs
Flood Elev= 227.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	**18.0" Round Culvert** L= 235.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 219.29' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.28 cfs @ 12.11 hrs HW=223.32' TW=219.65' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.28 cfs @ 2.43 fps)

Summary for Pond 116P: CB#116

Inflow Area = 60,922 sf, 4.24% Impervious, Inflow Depth > 0.24" for 2-YEAR event
Inflow = 0.13 cfs @ 12.44 hrs, Volume= 1,214 cf
Outflow = 0.13 cfs @ 12.44 hrs, Volume= 1,214 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.44 hrs, Volume= 1,214 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 228.11' @ 12.44 hrs
Flood Elev= 233.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	227.94'	**15.0" Round Culvert** L= 125.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 227.94' / 222.91' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.13 cfs @ 12.44 hrs HW=228.11' TW=223.14' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.13 cfs @ 1.38 fps)

Summary for Pond 119P: CB#119

Inflow Area = 89,050 sf, 56.36% Impervious, Inflow Depth > 1.45" for 2-YEAR event
Inflow = 2.90 cfs @ 12.10 hrs, Volume= 10,743 cf
Outflow = 2.90 cfs @ 12.10 hrs, Volume= 10,743 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.90 cfs @ 12.10 hrs, Volume= 10,743 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.61' @ 17.79 hrs
Flood Elev= 226.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	218.57'	**24.0" Round Culvert** L= 37.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 218.57' / 218.00' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.89 cfs @ 12.10 hrs HW=219.28' TW=218.17' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.89 cfs @ 2.88 fps)

Summary for Pond 120P: DCB#120

Inflow Area =	66,796 sf,	42.29% Impervious,	Inflow Depth > 1.05"	for 2-YEAR event
Inflow =	1.50 cfs @	12.11 hrs, Volume=	5,848 cf	
Outflow =	1.50 cfs @	12.11 hrs, Volume=	5,848 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.50 cfs @	12.11 hrs, Volume=	5,848 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.26' @ 12.11 hrs
Flood Elev= 227.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.71'	**18.0" Round Culvert** L= 269.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.71' / 218.67' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.50 cfs @ 12.11 hrs HW=223.26' TW=219.28' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.50 cfs @ 2.53 fps)

Summary for Pond 121P: CB#121

Inflow Area =	36,429 sf,	14.50% Impervious,	Inflow Depth > 0.41"	for 2-YEAR event
Inflow =	0.19 cfs @	12.28 hrs, Volume=	1,235 cf	
Outflow =	0.19 cfs @	12.28 hrs, Volume=	1,235 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.19 cfs @	12.28 hrs, Volume=	1,235 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 226.26' @ 12.28 hrs
Flood Elev= 230.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	226.06'	**15.0" Round Culvert** L= 54.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.06' / 222.81' S= 0.0600 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.19 cfs @ 12.28 hrs HW=226.26' TW=223.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.19 cfs @ 1.53 fps)

Summary for Pond B1: INFILTRATION POND 1

Inflow Area =	113,915 sf,	75.64% Impervious,	Inflow Depth > 1.98"	for 2-YEAR event
Inflow =	5.66 cfs @	12.09 hrs, Volume=	18,841 cf	
Outflow =	0.56 cfs @	12.94 hrs, Volume=	12,164 cf,	Atten= 90%, Lag= 51.1 min
Discarded =	0.14 cfs @	12.94 hrs, Volume=	7,166 cf	
Primary =	0.41 cfs @	12.94 hrs, Volume=	4,999 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3

Peak Elev= 217.06' @ 12.94 hrs Surf.Area= 6,188 sf Storage= 9,829 cf
Flood Elev= 218.00' Surf.Area= 9,382 sf Storage= 17,174 cf

Plug-Flow detention time= 237.1 min calculated for 12,159 cf (65% of inflow)
Center-of-Mass det. time= 134.5 min (920.6 - 786.1)

Volume	Invert	Avail.Storage	Storage Description
#1	214.75'	17,174 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.75	2,279	0	0
216.00	4,499	4,236	4,236
217.00	5,997	5,248	9,484
218.00	9,382	7,690	17,174

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.75' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	214.75'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#3	Device 1	216.60'	**5.0" W x 13.2" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	217.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	217.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.14 cfs @ 12.94 hrs HW=217.06' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.41 cfs @ 12.94 hrs HW=217.06' TW=210.31' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.41 cfs of 9.21 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 0.41 cfs @ 2.17 fps)
│ └─**4=Orifice/Grate** (Controls 0.00 cfs)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond B2: POCKET POND 1

Inflow Area =	97,359 sf, 70.69% Impervious,	Inflow Depth > 1.91"	for 2-YEAR event
Inflow =	4.55 cfs @ 12.09 hrs, Volume=	15,515 cf	
Outflow =	0.08 cfs @ 18.57 hrs, Volume=	3,974 cf,	Atten= 98%, Lag= 389.3 min
Primary =	0.08 cfs @ 18.57 hrs, Volume=	3,974 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Starting Elev= 232.50' Surf.Area= 4,585 sf Storage= 6,096 cf
Peak Elev= 234.52' @ 18.57 hrs Surf.Area= 7,236 sf Storage= 17,997 cf (11,900 cf above start)
Flood Elev= 237.00' Surf.Area= 10,865 sf Storage= 40,310 cf (34,214 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 243.9 min (1,025.2 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1	229.00'	40,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
229.00	550	0	0
230.00	1,050	800	800
232.00	2,480	3,530	4,330
232.50	4,585	1,766	6,096
234.00	6,510	8,321	14,418
236.00	9,300	15,810	30,228
237.00	10,865	10,083	40,310

Device	Routing	Invert	Outlet Devices
#1	Primary	232.50'	**15.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.50' / 232.20' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	232.50'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	236.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 18.57 hrs HW=234.52' TW=232.27' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.08 cfs of 6.98 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 6.74 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond B3: DETENTION POND 1

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 0.21" for 2-YEAR event
Inflow = 0.29 cfs @ 12.54 hrs, Volume= 3,158 cf
Outflow = 0.16 cfs @ 13.07 hrs, Volume= 2,997 cf, Atten= 45%, Lag= 31.9 min
Primary = 0.16 cfs @ 13.07 hrs, Volume= 2,997 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.19' @ 13.07 hrs Surf.Area= 2,078 sf Storage= 376 cf
Flood Elev= 248.00' Surf.Area= 8,476 sf Storage= 19,484 cf

Plug-Flow detention time= 52.8 min calculated for 2,997 cf (95% of inflow)
Center-of-Mass det. time= 29.8 min (999.6 - 969.9)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	19,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	904	0	0
246.00	2,300	3,204	3,204
248.00	4,238	6,538	9,742

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**12.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 244.00' / 238.00' S= 0.0583 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.16 cfs @ 13.07 hrs HW=244.19' TW=238.08' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.16 cfs @ 1.50 fps)

Summary for Pond B4: INFILTRATION POND 2

Inflow Area = 204,461 sf, 39.73% Impervious, Inflow Depth > 1.06" for 2-YEAR event
Inflow = 4.71 cfs @ 12.10 hrs, Volume= 18,070 cf
Outflow = 0.14 cfs @ 17.79 hrs, Volume= 7,174 cf, Atten= 97%, Lag= 341.4 min
Discarded = 0.14 cfs @ 17.79 hrs, Volume= 7,174 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.61' @ 17.79 hrs Surf.Area= 6,100 sf Storage= 11,775 cf
Flood Elev= 222.00' Surf.Area= 9,536 sf Storage= 30,365 cf

Plug-Flow detention time= 314.6 min calculated for 7,174 cf (40% of inflow)
Center-of-Mass det. time= 172.9 min (993.5 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	30,365 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	2,693	0	0
218.00	4,247	3,470	3,470
220.00	6,556	10,803	14,273
222.00	9,536	16,092	30,365

Device	Routing	Invert	Outlet Devices
#1	Primary	214.44'	**12.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.44' / 214.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	220.00'	**10.0" Vert. Orifice X 2.00** C= 0.600
#3	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	217.00'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.14 cfs @ 17.79 hrs HW=219.61' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=217.00' TW=212.08' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.00 cfs of 5.43 cfs potential flow)
  ├─**2=Orifice** (Controls 0.00 cfs)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond B5: BIORETENTION POND 1

Inflow Area =	30,725 sf, 60.33% Impervious,	Inflow Depth > 1.59"	for 2-YEAR event
Inflow =	1.19 cfs @ 12.09 hrs, Volume=	4,067 cf	
Outflow =	0.25 cfs @ 12.53 hrs, Volume=	4,067 cf, Atten= 79%, Lag= 26.5 min	
Primary =	0.25 cfs @ 12.53 hrs, Volume=	4,067 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 222.55' @ 12.53 hrs Surf.Area= 1,063 sf Storage= 1,128 cf
Flood Elev= 224.00' Surf.Area= 1,738 sf Storage= 3,165 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 33.9 min (829.1 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1	221.00'	3,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
221.00	424	0	0
222.00	810	617	617
224.00	1,738	2,548	3,165

Device	Routing	Invert	Outlet Devices
#1	Primary	217.55'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.55' / 217.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	223.00'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	221.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.25 cfs @ 12.53 hrs HW=222.55' TW=217.21' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.25 cfs of 8.02 cfs potential flow)
  ├─**2=Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.25 cfs)

Summary for Pond B6: DETENTION POND 2

Inflow Area = 232,259 sf, 8.10% Impervious, Inflow Depth > 0.37" for 2-YEAR event
Inflow = 0.50 cfs @ 12.58 hrs, Volume= 7,245 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.00' @ 24.00 hrs Surf.Area= 7,695 sf Storage= 7,245 cf
Flood Elev= 222.00' Surf.Area= 11,980 sf Storage= 46,271 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	46,271 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	3,390	0	0
218.00	3,847	3,619	3,619
220.00	4,840	8,687	12,306
222.00	5,990	10,830	23,136

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.50' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.00'	**2.0" Vert. Orifice** C= 0.600
#3	Device 1	220.00'	**6.0" Vert. Orifice** C= 0.600
#4	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=217.00' TW=220.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice** (Controls 0.00 cfs)
  ├─**3=Orifice** (Controls 0.00 cfs)
  └─**4=Grate** (Controls 0.00 cfs)

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 23.33% Impervious, Inflow Depth > 0.21" for 2-YEAR event
Inflow = 1.33 cfs @ 12.47 hrs, Volume= 21,284 cf
Primary = 1.33 cfs @ 12.47 hrs, Volume= 21,284 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs

Time span=0.00-24.00 hrs, dt=0.010 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Runoff Area=194,527 sf 0.14% Impervious Runoff Depth>0.73"
Flow Length=716' Tc=16.8 min CN=55.4 Runoff=2.02 cfs 11,885 cf

Subcatchment2S: Runoff Area=60,922 sf 4.24% Impervious Runoff Depth>0.85"
Flow Length=809' Tc=13.6 min CN=57.6 Runoff=0.85 cfs 4,307 cf

Subcatchment3S: Runoff Area=36,429 sf 14.50% Impervious Runoff Depth>1.17"
Flow Length=674' Tc=14.5 min CN=63.2 Runoff=0.79 cfs 3,556 cf

Subcatchment4S: Runoff Area=48,409 sf 6.73% Impervious Runoff Depth>0.90"
Flow Length=779' Tc=17.6 min CN=58.6 Runoff=0.68 cfs 3,642 cf

Subcatchment5S: Runoff Area=136,374 sf 0.00% Impervious Runoff Depth>0.73"
Flow Length=903' Tc=18.3 min CN=55.4 Runoff=1.37 cfs 8,300 cf

Subcatchment6S: Runoff Area=299,000 sf 0.73% Impervious Runoff Depth>0.74"
Flow Length=520' Tc=13.3 min CN=55.4 Runoff=3.36 cfs 18,315 cf

Subcatchment7S: Runoff Area=14,561 sf 25.68% Impervious Runoff Depth>1.66"
Tc=6.0 min CN=70.5 Runoff=0.64 cfs 2,020 cf

Subcatchment8S: Runoff Area=13,429 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.33 cfs 1,168 cf

Subcatchment9S: Runoff Area=5,750 sf 82.97% Impervious Runoff Depth>3.51"
Tc=6.0 min CN=91.7 Runoff=0.52 cfs 1,682 cf

Subcatchment10S: Runoff Area=8,237 sf 91.84% Impervious Runoff Depth>3.86"
Tc=6.0 min CN=95.0 Runoff=0.79 cfs 2,650 cf

Subcatchment11S: Runoff Area=14,549 sf 92.08% Impervious Runoff Depth>3.87"
Tc=6.0 min CN=95.1 Runoff=1.40 cfs 4,692 cf

Subcatchment12S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.92 cfs 3,221 cf

Subcatchment13S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.92 cfs 3,221 cf

Subcatchment14S: Runoff Area=8,778 sf 73.24% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=88.1 Runoff=0.73 cfs 2,302 cf

Subcatchment15S: Runoff Area=8,055 sf 70.37% Impervious Runoff Depth>3.04"
Tc=6.0 min CN=87.0 Runoff=0.65 cfs 2,043 cf

Subcatchment16S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.54 cfs 1,884 cf

Subcatchment17S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.54 cfs 1,884 cf

Subcatchment18S: Runoff Area=12,630 sf 75.22% Impervious Runoff Depth>3.22"
Tc=6.0 min CN=88.8 Runoff=1.07 cfs 3,387 cf

Subcatchment19S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.92 cfs 3,221 cf

Subcatchment20S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.92 cfs 3,221 cf

Subcatchment21S: Runoff Area=8,126 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.81 cfs 2,845 cf

Subcatchment22S: Runoff Area=9,491 sf 64.25% Impervious Runoff Depth>2.83"
Tc=6.0 min CN=84.8 Runoff=0.72 cfs 2,239 cf

Subcatchment23S: Runoff Area=9,913 sf 73.27% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=88.1 Runoff=0.83 cfs 2,600 cf

Subcatchment24S: Runoff Area=4,358 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.43 cfs 1,526 cf

Subcatchment25S: Runoff Area=3,949 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.39 cfs 1,382 cf

Subcatchment26S: BUILDING 3 Runoff Area=13,600 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=1.35 cfs 4,761 cf

Subcatchment27S: Runoff Area=6,195 sf 85.04% Impervious Runoff Depth>3.59"
Tc=6.0 min CN=92.5 Runoff=0.57 cfs 1,853 cf

Subcatchment28S: Runoff Area=6,476 sf 82.72% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=91.6 Runoff=0.59 cfs 1,889 cf

Subcatchment29S: Runoff Area=20,450 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.50 cfs 1,779 cf

Subcatchment30S: Runoff Area=12,852 sf 79.69% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=90.5 Runoff=1.14 cfs 3,625 cf

Subcatchment31S: Runoff Area=8,139 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.20 cfs 708 cf

Subcatchment32S: Runoff Area=15,017 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.37 cfs 1,307 cf

Subcatchment33S: Runoff Area=11,297 sf 0.00% Impervious Runoff Depth>0.90"
Tc=6.0 min CN=58.4 Runoff=0.22 cfs 845 cf

Subcatchment34S: Runoff Area=7,007 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.17 cfs 610 cf

Subcatchment35S: Runoff Area=4,258 sf 0.00% Impervious Runoff Depth>1.04"
Tc=6.0 min CN=61.0 Runoff=0.10 cfs 370 cf

Subcatchment36S: Runoff Area=7,976 sf 90.47% Impervious Runoff Depth>3.80"
Tc=6.0 min CN=94.5 Runoff=0.76 cfs 2,529 cf

Subcatchment37S: Runoff Area=11,004 sf 97.16% Impervious Runoff Depth>4.08"
Tc=6.0 min CN=97.0 Runoff=1.09 cfs 3,742 cf

Subcatchment38S: Runoff Area=15,217 sf 47.87% Impervious Runoff Depth>2.30"
Tc=6.0 min CN=78.7 Runoff=0.94 cfs 2,916 cf

Subcatchment40S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=1.12 cfs 3,938 cf

Subcatchment41S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=1.12 cfs 3,938 cf

Subcatchment42S: Runoff Area=31,496 sf 67.44% Impervious Runoff Depth>2.92"
Flow Length=469' Tc=7.4 min CN=85.7 Runoff=2.34 cfs 7,658 cf

Subcatchment43S: Runoff Area=30,367 sf 75.63% Impervious Runoff Depth>3.22"
Flow Length=454' Tc=7.3 min CN=88.9 Runoff=2.47 cfs 8,150 cf

Subcatchment45S: Runoff Area=2,272 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.23 cfs 795 cf

Subcatchment46S: Runoff Area=2,255 sf 100.00% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=98.0 Runoff=0.22 cfs 789 cf

Subcatchment47S: Runoff Area=10,949 sf 57.68% Impervious Runoff Depth>2.61"
Tc=6.0 min CN=82.3 Runoff=0.77 cfs 2,382 cf

Subcatchment50S: Runoff Area=12,488 sf 0.00% Impervious Runoff Depth>0.97"
Tc=6.0 min CN=59.7 Runoff=0.27 cfs 1,008 cf

Reach 1R: SWALE Avg. Flow Depth=0.92' Max Vel=1.32 fps Inflow=4.79 cfs 37,150 cf
n=0.069 L=255.0' S=0.0078 '/' Capacity=24.34 cfs Outflow=4.70 cfs 37,107 cf

Reach 2R: SWALE Avg. Flow Depth=0.15' Max Vel=1.86 fps Inflow=0.68 cfs 3,642 cf
n=0.025 L=126.0' S=0.0159 '/' Capacity=26.66 cfs Outflow=0.68 cfs 3,637 cf

Reach 3R: SWALE Avg. Flow Depth=0.20' Max Vel=4.14 fps Inflow=2.02 cfs 11,885 cf
n=0.025 L=550.0' S=0.0527 '/' Capacity=174.16 cfs Outflow=2.00 cfs 11,852 cf

Reach 4R: SWALE Avg. Flow Depth=0.57' Max Vel=0.81 fps Inflow=1.52 cfs 17,300 cf
n=0.069 L=177.0' S=0.0050 '/' Capacity=19.38 cfs Outflow=1.45 cfs 17,276 cf

Reach 5R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps
24.0" Round Pipe n=0.013 L=37.9' S=0.0150 '/' Capacity=27.74 cfs Outflow=0.00 cfs 0 cf

Reach 33R: SWALE Avg. Flow Depth=0.06' Max Vel=1.62 fps Inflow=0.22 cfs 845 cf
n=0.025 L=182.0' S=0.0330 '/' Capacity=31.32 cfs Outflow=0.22 cfs 843 cf

Pond 1P: HW#1 Peak Elev=211.46' Inflow=1.45 cfs 17,276 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=1.45 cfs 17,276 cf

Pond 2P: CB#2 Peak Elev=211.05' Inflow=1.84 cfs 18,957 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=1.84 cfs 18,957 cf

Pond 7P: CB#7 Peak Elev=217.63' Inflow=1.71 cfs 5,870 cf
12.0" Round Culvert n=0.013 L=12.7' S=0.0102 '/' Outflow=1.71 cfs 5,870 cf

Pond 8P: CB#8 Peak Elev=218.14' Inflow=2.34 cfs 7,573 cf
15.0" Round Culvert n=0.013 L=204.0' S=0.0050 '/' Outflow=2.34 cfs 7,573 cf

Pond 9P: CB#9 Peak Elev=218.39' Inflow=1.27 cfs 4,185 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0050 '/' Outflow=1.27 cfs 4,185 cf

Pond 10P: CB#10 Peak Elev=219.96' Inflow=0.54 cfs 1,884 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0700 '/' Outflow=0.54 cfs 1,884 cf

Pond 12P: CB#12 Peak Elev=217.66' Inflow=2.32 cfs 7,912 cf
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=2.32 cfs 7,912 cf

Pond 14P: CB#14 Peak Elev=217.92' Inflow=2.00 cfs 6,771 cf
18.0" Round Culvert n=0.013 L=152.5' S=0.0050 '/' Outflow=2.00 cfs 6,771 cf

Pond 15P: CB#15 Peak Elev=218.28' Inflow=1.19 cfs 3,927 cf
15.0" Round Culvert n=0.013 L=78.0' S=0.0050 '/' Outflow=1.19 cfs 3,927 cf

Pond 16P: CB#16 Peak Elev=220.09' Inflow=0.54 cfs 1,884 cf
12.0" Round Culvert n=0.013 L=28.8' S=0.0701 '/' Outflow=0.54 cfs 1,884 cf

Pond 17P: CB#17 Peak Elev=235.66' Inflow=1.28 cfs 4,492 cf
15.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=1.28 cfs 4,492 cf

Pond 18P: CB#18 Peak Elev=235.66' Inflow=1.55 cfs 4,838 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0050 '/' Outflow=1.55 cfs 4,839 cf

Pond 19P: CB#19 Peak Elev=235.66' Inflow=0.72 cfs 2,239 cf
15.0" Round Culvert n=0.013 L=123.0' S=0.0050 '/' Outflow=0.72 cfs 2,238 cf

Pond 21P: CB#21 Peak Elev=235.66' Inflow=1.05 cfs 3,703 cf
15.0" Round Culvert n=0.013 L=74.0' S=0.0074 '/' Outflow=1.05 cfs 3,703 cf

Pond 22P: CB#22 Peak Elev=235.67' Inflow=0.66 cfs 2,321 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.66 cfs 2,321 cf

Pond 24P: CB#24 Peak Elev=241.43' Inflow=2.51 cfs 8,502 cf
12.0" Round Culvert n=0.013 L=104.0' S=0.0625 '/' Outflow=2.51 cfs 8,502 cf

Pond 25P: CB#25 Peak Elev=244.27' Inflow=1.92 cfs 6,614 cf
12.0" Round Culvert n=0.013 L=128.0' S=0.0227 '/' Outflow=1.92 cfs 6,614 cf

Pond 27P: CB#27 Peak Elev=217.64' Inflow=3.11 cfs 9,955 cf
15.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=3.11 cfs 9,955 cf

Pond 29P: DMH#29 Peak Elev=238.50' Inflow=1.53 cfs 11,674 cf
15.0" Round Culvert n=0.013 L=156.0' S=0.0365 '/' Outflow=1.53 cfs 11,674 cf

Pond 30P: DMH#30 Peak Elev=232.72' Inflow=1.62 cfs 16,832 cf
15.0" Round Culvert n=0.013 L=273.0' S=0.0411 '/' Outflow=1.62 cfs 16,832 cf

Pond 32P: DMH#32 Peak Elev=221.40' Inflow=1.62 cfs 16,832 cf
15.0" Round Culvert n=0.013 L=253.0' S=0.0334 '/' Outflow=1.62 cfs 16,832 cf

Pond 33P: DMH#33 Peak Elev=212.89' Inflow=1.62 cfs 16,832 cf
15.0" Round Culvert n=0.013 L=17.0' S=0.0129 '/' Outflow=1.62 cfs 16,832 cf

Pond 47P: CB#47 Peak Elev=236.72' Inflow=0.23 cfs 795 cf
15.0" Round Culvert n=0.013 L=99.0' S=0.0111 '/' Outflow=0.23 cfs 795 cf

Pond 101P: CB#101 Peak Elev=212.93' Inflow=1.33 cfs 4,468 cf
12.0" Round Culvert n=0.013 L=23.0' S=0.0052 '/' Outflow=1.33 cfs 4,468 cf

Pond 102P: HW#102 Peak Elev=213.36' Inflow=0.22 cfs 843 cf
12.0" Round Culvert n=0.013 L=41.0' S=0.0200 '/' Outflow=0.22 cfs 843 cf

Pond 108P: CB#108 Peak Elev=223.08' Inflow=0.94 cfs 2,916 cf
15.0" Round Culvert n=0.013 L=30.5' S=0.0449 '/' Outflow=0.94 cfs 2,916 cf

Pond 112P: CB#112 Peak Elev=220.43' Inflow=0.76 cfs 2,529 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.76 cfs 2,528 cf

Pond 114P: DMH#114 Peak Elev=220.43' Inflow=2.90 cfs 11,965 cf
24.0" Round Culvert n=0.013 L=79.0' S=0.0151 '/' Outflow=2.90 cfs 11,965 cf

Pond 115P: DCB#115 Peak Elev=223.61' Inflow=2.90 cfs 11,965 cf
18.0" Round Culvert n=0.013 L=235.0' S=0.0150 '/' Outflow=2.90 cfs 11,965 cf

Pond 116P: CB#116 Peak Elev=228.38' Inflow=0.85 cfs 4,307 cf
15.0" Round Culvert n=0.013 L=125.7' S=0.0400 '/' Outflow=0.85 cfs 4,307 cf

Pond 119P: CB#119 Peak Elev=220.43' Inflow=5.12 cfs 19,386 cf
24.0" Round Culvert n=0.013 L=37.9' S=0.0150 '/' Outflow=5.12 cfs 19,385 cf

Pond 120P: DCB#120 Peak Elev=223.52' Inflow=3.00 cfs 11,706 cf
18.0" Round Culvert n=0.013 L=269.0' S=0.0150 '/' Outflow=3.00 cfs 11,706 cf

Pond 121P: CB#121 Peak Elev=226.48' Inflow=0.79 cfs 3,556 cf
15.0" Round Culvert n=0.013 L=54.2' S=0.0600 '/' Outflow=0.79 cfs 3,556 cf

Pond B1: INFILTRATIONPOND 1 Peak Elev=217.59' Storage=13,645 cf Inflow=9.45 cfs 31,677 cf
Discarded=0.19 cfs 8,162 cf Primary=3.46 cfs 16,172 cf Outflow=3.64 cfs 24,334 cf

Pond B2: POCKET POND 1 Peak Elev=235.66' Storage=27,133 cf Inflow=7.65 cfs 26,054 cf
Outflow=0.10 cfs 5,157 cf

Pond B3: DETENTION POND 1 Peak Elev=244.66' Storage=1,506 cf Inflow=2.04 cfs 11,937 cf
12.0" Round Culvert n=0.013 L=103.0' S=0.0583 '/' Outflow=1.53 cfs 11,674 cf

Pond B4: INFILTRATIONPOND 2 Peak Elev=220.43' Storage=17,213 cf Inflow=9.07 cfs 35,185 cf
Discarded=0.17 cfs 8,554 cf Primary=1.26 cfs 12,124 cf Outflow=1.42 cfs 20,678 cf

Pond B5: BIORETENTIONPOND 1 Peak Elev=223.07' Storage=1,748 cf Inflow=2.16 cfs 7,225 cf
Outflow=1.25 cfs 7,225 cf

Pond B6: DETENTION POND 2 Peak Elev=219.48' Storage=19,685 cf Inflow=3.05 cfs 19,687 cf
Outflow=0.00 cfs 0 cf

Link A: CHASE BROOK Inflow=8.99 cfs 73,262 cf
Primary=8.99 cfs 73,262 cf

Summary for Subcatchment 1S:

Runoff = 2.02 cfs @ 12.30 hrs, Volume= 11,885 cf, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
270	98.0	Paved parking, HSG B
12,010	61.0	>75% Grass cover, Good, HSG B
182,247	55.0	Woods, Good, HSG B
194,527	55.4	Weighted Average
194,257	55.4	99.86% Pervious Area
270	98.0	0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0550	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.0	325	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	281	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	716	Total			

Summary for Subcatchment 2S:

Runoff = 0.85 cfs @ 12.23 hrs, Volume= 4,307 cf, Depth> 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
2,582	98.0	Paved parking, HSG B
7,802	61.0	>75% Grass cover, Good, HSG B
50,538	55.0	Woods, Good, HSG B
60,922	57.6	Weighted Average
58,340	55.8	95.76% Pervious Area
2,582	98.0	4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
5.5	470	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	84	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	205	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.6	809	Total			

Summary for Subcatchment 3S:

Runoff = 0.79 cfs @ 12.22 hrs, Volume= 3,556 cf, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,283	98.0	Paved parking, HSG B
11,639	61.0	>75% Grass cover, Good, HSG B
19,507	55.0	Woods, Good, HSG B
36,429	63.2	Weighted Average
31,146	57.2	85.50% Pervious Area
5,283	98.0	14.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.6	600	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.4000	4.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	674	Total			

Summary for Subcatchment 4S:

Runoff = 0.68 cfs @ 12.29 hrs, Volume= 3,642 cf, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
3,260	98.0	Roofs, HSG B
5,695	61.0	>75% Grass cover, Good, HSG B
39,454	55.0	Woods, Good, HSG B
48,409	58.6	Weighted Average
45,149	55.8	93.27% Pervious Area
3,260	98.0	6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
9.2	729	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	779	Total			

Summary for Subcatchment 5S:

Runoff = 1.37 cfs @ 12.32 hrs, Volume= 8,300 cf, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
8,709	61.0	>75% Grass cover, Good, HSG B
127,665	55.0	Woods, Good, HSG B
136,374	55.4	Weighted Average
136,374	55.4	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	50	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.8	567	0.0580	1.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	286	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	903	Total			

Summary for Subcatchment 6S:

Runoff = 3.36 cfs @ 12.24 hrs, Volume= 18,315 cf, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
2,193	98.0	Paved parking, HSG B
6,633	61.0	>75% Grass cover, Good, HSG B
290,174	55.0	Woods, Good, HSG B
299,000	55.4	Weighted Average
296,807	55.1	99.27% Pervious Area
2,193	98.0	0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
2.0	210	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	210	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.2400	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	520	Total			

Summary for Subcatchment 7S:

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,020 cf, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
3,739	98.0	Paved parking, HSG B
10,822	61.0	>75% Grass cover, Good, HSG B
14,561	70.5	Weighted Average
10,822	61.0	74.32% Pervious Area
3,739	98.0	25.68% Impervious Area

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

Summary for Subcatchment 8S:

Runoff = 0.33 cfs @ 12.10 hrs, Volume= 1,168 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
13,429	61.0	>75% Grass cover, Good, HSG B
13,429	61.0	100.00% Pervious Area

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

Summary for Subcatchment 9S:

Runoff = 0.52 cfs @ 12.08 hrs, Volume= 1,682 cf, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
4,771	98.0	Paved parking, HSG B
979	61.0	>75% Grass cover, Good, HSG B
5,750	91.7	Weighted Average
979	61.0	17.03% Pervious Area
4,771	98.0	82.97% Impervious Area

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

Summary for Subcatchment 10S:

Runoff = 0.79 cfs @ 12.08 hrs, Volume= 2,650 cf, Depth> 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
7,565	98.0	Paved parking, HSG B
672	61.0	>75% Grass cover, Good, HSG B
8,237	95.0	Weighted Average
672	61.0	8.16% Pervious Area
7,565	98.0	91.84% Impervious Area

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

Summary for Subcatchment 11S:

Runoff = 1.40 cfs @ 12.08 hrs, Volume= 4,692 cf, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
13,397	98.0	Paved parking, HSG B
1,152	61.0	>75% Grass cover, Good, HSG B
14,549	95.1	Weighted Average
1,152	61.0	7.92% Pervious Area
13,397	98.0	92.08% Impervious Area

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

Summary for Subcatchment 12S: BUILDING 1

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,221 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 13S: BUILDING 1

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,221 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 14S:

Runoff = 0.73 cfs @ 12.09 hrs, Volume= 2,302 cf, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
6,429	98.0	Paved parking, HSG B
2,349	61.0	>75% Grass cover, Good, HSG B
8,778	88.1	Weighted Average
2,349	61.0	26.76% Pervious Area
6,429	98.0	73.24% Impervious Area

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

Summary for Subcatchment 15S:

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 2,043 cf, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,668	98.0	Paved parking, HSG B
2,387	61.0	>75% Grass cover, Good, HSG B
8,055	87.0	Weighted Average
2,387	61.0	29.63% Pervious Area
5,668	98.0	70.37% Impervious Area

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

Summary for Subcatchment 16S:

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 17S:

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 18S:

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 3,387 cf, Depth> 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,500	98.0	Paved parking, HSG B
3,130	61.0	>75% Grass cover, Good, HSG B
12,630	88.8	Weighted Average
3,130	61.0	24.78% Pervious Area
9,500	98.0	75.22% Impervious Area

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

Summary for Subcatchment 19S: BUILDING 2

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,221 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 20S: BUILDING 2

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,221 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 21S:

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,845 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
8,126	98.0	Paved parking, HSG B
8,126	98.0	100.00% Impervious Area

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

Summary for Subcatchment 22S:

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 2,239 cf, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
6,098	98.0	Paved parking, HSG B
3,393	61.0	>75% Grass cover, Good, HSG B
9,491	84.8	Weighted Average
3,393	61.0	35.75% Pervious Area
6,098	98.0	64.25% Impervious Area

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

Summary for Subcatchment 23S:

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 2,600 cf, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
7,263	98.0	Paved parking, HSG B
2,650	61.0	>75% Grass cover, Good, HSG B
9,913	88.1	Weighted Average
2,650	61.0	26.73% Pervious Area
7,263	98.0	73.27% Impervious Area

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

Summary for Subcatchment 24S:

Runoff = 0.43 cfs @ 12.08 hrs, Volume= 1,526 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
4,358	98.0	Paved parking, HSG B
4,358	98.0	100.00% Impervious Area

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

Summary for Subcatchment 25S:

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 1,382 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
3,949	98.0	Paved parking, HSG B
3,949	98.0	100.00% Impervious Area

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

Summary for Subcatchment 26S: BUILDING 3

Runoff = 1.35 cfs @ 12.08 hrs, Volume= 4,761 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
13,600	98.0	Roofs, HSG B
13,600	98.0	100.00% Impervious Area

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

Summary for Subcatchment 27S:

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,853 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,268	98.0	Paved parking, HSG B
927	61.0	>75% Grass cover, Good, HSG B
6,195	92.5	Weighted Average
927	61.0	14.96% Pervious Area
5,268	98.0	85.04% Impervious Area

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

Summary for Subcatchment 28S:

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,889 cf, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
5,357	98.0	Paved parking, HSG B
1,119	61.0	>75% Grass cover, Good, HSG B
6,476	91.6	Weighted Average
1,119	61.0	17.28% Pervious Area
5,357	98.0	82.72% Impervious Area

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

Summary for Subcatchment 29S:

Runoff = 0.50 cfs @ 12.10 hrs, Volume= 1,779 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
20,450	61.0	>75% Grass cover, Good, HSG B
20,450	61.0	100.00% Pervious Area

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

Summary for Subcatchment 30S:

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 3,625 cf, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
10,242	98.0	Paved parking, HSG B
2,610	61.0	>75% Grass cover, Good, HSG B
12,852	90.5	Weighted Average
2,610	61.0	20.31% Pervious Area
10,242	98.0	79.69% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 0.20 cfs @ 12.10 hrs, Volume= 708 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
8,139	61.0	>75% Grass cover, Good, HSG B
8,139	61.0	100.00% Pervious Area

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

Summary for Subcatchment 32S:

Runoff = 0.37 cfs @ 12.10 hrs, Volume= 1,307 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
15,017	61.0	>75% Grass cover, Good, HSG B
15,017	61.0	100.00% Pervious Area

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

Summary for Subcatchment 33S:

Runoff = 0.22 cfs @ 12.11 hrs, Volume= 845 cf, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
6,480	61.0	>75% Grass cover, Good, HSG B
4,817	55.0	Woods, Good, HSG B
11,297	58.4	Weighted Average
11,297	58.4	100.00% Pervious Area

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

Summary for Subcatchment 34S:

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 610 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
7,007	61.0	>75% Grass cover, Good, HSG B
7,007	61.0	100.00% Pervious Area

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

Summary for Subcatchment 35S:

Runoff = 0.10 cfs @ 12.10 hrs, Volume= 370 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
4,258	61.0	>75% Grass cover, Good, HSG B
4,258	61.0	100.00% Pervious Area

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

Summary for Subcatchment 36S:

Runoff = 0.76 cfs @ 12.08 hrs, Volume= 2,529 cf, Depth> 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
7,216	98.0	Paved parking, HSG B
760	61.0	>75% Grass cover, Good, HSG B
7,976	94.5	Weighted Average
760	61.0	9.53% Pervious Area
7,216	98.0	90.47% Impervious Area

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

Summary for Subcatchment 37S:

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 3,742 cf, Depth> 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
10,692	98.0	Paved parking, HSG B
312	61.0	>75% Grass cover, Good, HSG B
11,004	97.0	Weighted Average
312	61.0	2.84% Pervious Area
10,692	98.0	97.16% Impervious Area

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

Summary for Subcatchment 38S:

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 2,916 cf, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
7,285	98.0	Paved parking, HSG B
7,932	61.0	>75% Grass cover, Good, HSG B
15,217	78.7	Weighted Average
7,932	61.0	52.13% Pervious Area
7,285	98.0	47.87% Impervious Area

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

Summary for Subcatchment 40S: BUILDING 4

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 3,938 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 41S: BUILDING 4

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 3,938 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 42S:

Runoff = 2.34 cfs @ 12.10 hrs, Volume= 7,658 cf, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
21,240	98.0	Paved parking, HSG B
9,027	61.0	>75% Grass cover, Good, HSG B
1,229	55.0	Woods, Good, HSG B
31,496	85.7	Weighted Average
10,256	60.3	32.56% Pervious Area
21,240	98.0	67.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.2200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	80	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	295	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	469	Total			

Summary for Subcatchment 43S:

Runoff = 2.47 cfs @ 12.10 hrs, Volume= 8,150 cf, Depth> 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
22,966	98.0	Paved parking, HSG B
3,724	61.0	>75% Grass cover, Good, HSG B
3,677	60.0	Woods, Fair, HSG B
30,367	88.9	Weighted Average
7,401	60.5	24.37% Pervious Area
22,966	98.0	75.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.2400	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.2	80	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	280	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.3	454	Total			

Summary for Subcatchment 45S:

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 795 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
2,272	98.0	Paved parking, HSG B
2,272	98.0	100.00% Impervious Area

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

Summary for Subcatchment 46S:

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 789 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
2,255	98.0	Paved parking, HSG B
2,255	98.0	100.00% Impervious Area

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

Summary for Subcatchment 47S:

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 2,382 cf, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
6,315	98.0	Paved parking, HSG B
4,634	61.0	>75% Grass cover, Good, HSG B
10,949	82.3	Weighted Average
4,634	61.0	42.32% Pervious Area
6,315	98.0	57.68% Impervious Area

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

Summary for Subcatchment 50S:

Runoff = 0.27 cfs @ 12.10 hrs, Volume= 1,008 cf, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-YEAR Rainfall=4.44"

Area (sf)	CN	Description
9,796	61.0	>75% Grass cover, Good, HSG B
2,692	55.0	Woods, Good, HSG B
12,488	59.7	Weighted Average
12,488	59.7	100.00% Pervious Area

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

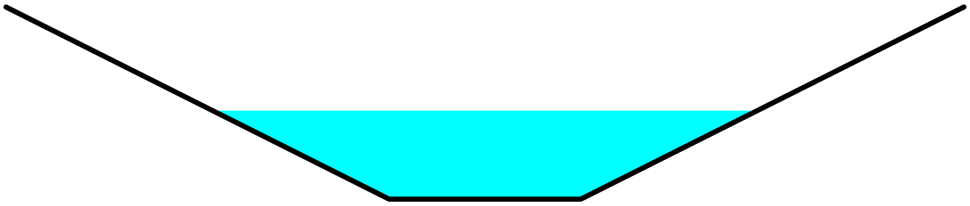
Summary for Reach 1R: SWALE

Inflow Area = 603,234 sf, 33.97% Impervious, Inflow Depth > 0.74" for 10-YEAR event
Inflow = 4.79 cfs @ 12.28 hrs, Volume= 37,150 cf
Outflow = 4.70 cfs @ 12.33 hrs, Volume= 37,107 cf, Atten= 2%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.32 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 8.2 min

Peak Storage= 904 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 24.34 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 255.0' Slope= 0.0078 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'



Summary for Reach 2R: SWALE

Inflow Area = 48,409 sf, 6.73% Impervious, Inflow Depth > 0.90" for 10-YEAR event
Inflow = 0.68 cfs @ 12.29 hrs, Volume= 3,642 cf
Outflow = 0.68 cfs @ 12.30 hrs, Volume= 3,637 cf, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.86 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 2.7 min

Peak Storage= 46 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 26.66 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 126.0' Slope= 0.0159 '/'
Inlet Invert= 248.00', Outlet Invert= 246.00'

‡

Summary for Reach 3R: SWALE

Inflow Area = 194,527 sf, 0.14% Impervious, Inflow Depth > 0.73" for 10-YEAR event
Inflow = 2.02 cfs @ 12.30 hrs, Volume= 11,885 cf
Outflow = 2.00 cfs @ 12.33 hrs, Volume= 11,852 cf, Atten= 1%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 4.14 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 4.9 min

Peak Storage= 266 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 174.16 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 550.0' Slope= 0.0527 '/'
Inlet Invert= 252.00', Outlet Invert= 223.00'

Summary for Reach 4R: SWALE

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 0.44" for 10-YEAR event
Inflow = 1.52 cfs @ 12.09 hrs, Volume= 17,300 cf
Outflow = 1.45 cfs @ 12.81 hrs, Volume= 17,276 cf, Atten= 4%, Lag= 42.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 0.81 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 8.0 min

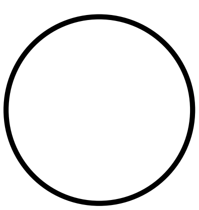
Peak Storage= 316 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 19.38 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 177.0' Slope= 0.0050 '/'
Inlet Invert= 212.08', Outlet Invert= 211.20'

Summary for Reach 5R: (new Reach)

Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.74 cfs

24.0" Round Pipe
n= 0.013
Length= 37.9' Slope= 0.0150 '/'
Inlet Invert= 218.57', Outlet Invert= 218.00'



Summary for Reach 33R: SWALE

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 0.04" for 10-YEAR event
Inflow = 0.22 cfs @ 12.11 hrs, Volume= 845 cf
Outflow = 0.22 cfs @ 12.13 hrs, Volume= 843 cf, Atten= 3%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.62 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 5.0 min

Peak Storage= 24 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 31.32 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 182.0' Slope= 0.0330 '/'
Inlet Invert= 220.00', Outlet Invert= 214.00'

Summary for Pond 1P: HW#1

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 0.44" for 10-YEAR event
Inflow = 1.45 cfs @ 12.81 hrs, Volume= 17,276 cf
Outflow = 1.45 cfs @ 12.81 hrs, Volume= 17,276 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.81 hrs, Volume= 17,276 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 211.46' @ 12.77 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.73'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.73' / 210.31' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.45 cfs @ 12.81 hrs HW=211.46' TW=211.00' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.45 cfs @ 3.29 fps)

Summary for Pond 2P: CB#2

Inflow Area = 474,758 sf, 24.23% Impervious, Inflow Depth > 0.48" for 10-YEAR event
Inflow = 1.84 cfs @ 12.12 hrs, Volume= 18,957 cf
Outflow = 1.84 cfs @ 12.12 hrs, Volume= 18,957 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.12 hrs, Volume= 18,957 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 211.05' @ 12.14 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.21'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.21' / 210.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.84 cfs @ 12.12 hrs HW=211.04' TW=210.69' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.84 cfs @ 3.01 fps)

Summary for Pond 7P: CB#7

Inflow Area = 17,437 sf, 96.15% Impervious, Inflow Depth > 4.04" for 10-YEAR event
Inflow = 1.71 cfs @ 12.08 hrs, Volume= 5,870 cf
Outflow = 1.71 cfs @ 12.08 hrs, Volume= 5,870 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.71 cfs @ 12.08 hrs, Volume= 5,870 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.63' @ 12.29 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 12.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.37' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.71 cfs @ 12.08 hrs HW=217.42' TW=217.18' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.71 cfs @ 2.94 fps)

Summary for Pond 8P: CB#8

Inflow Area = 26,789 sf, 79.55% Impervious, Inflow Depth > 3.39" for 10-YEAR event
Inflow = 2.34 cfs @ 12.09 hrs, Volume= 7,573 cf
Outflow = 2.34 cfs @ 12.09 hrs, Volume= 7,573 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.34 cfs @ 12.09 hrs, Volume= 7,573 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.14' @ 12.10 hrs
Flood Elev= 223.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.05'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.05' / 216.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.34 cfs @ 12.09 hrs HW=218.12' TW=217.46' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.34 cfs @ 2.79 fps)

Summary for Pond 9P: CB#9

Inflow Area = 14,159 sf, 83.41% Impervious, Inflow Depth > 3.55" for 10-YEAR event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 4,185 cf
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 4,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 4,185 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.39' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.15' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.23 cfs @ 12.08 hrs HW=218.39' TW=218.12' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.23 cfs @ 2.14 fps)

Summary for Pond 10P: CB#10

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf
Outflow = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.96' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.59'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.59' / 217.70' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.08 hrs HW=219.96' TW=218.39' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.53 cfs @ 2.06 fps)

Summary for Pond 12P: CB#12

Inflow Area = 23,749 sf, 95.15% Impervious, Inflow Depth > 4.00" for 10-YEAR event
Inflow = 2.32 cfs @ 12.08 hrs, Volume= 7,912 cf
Outflow = 2.32 cfs @ 12.08 hrs, Volume= 7,912 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.08 hrs, Volume= 7,912 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.66' @ 12.14 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.31 cfs @ 12.08 hrs HW=217.55' TW=217.18' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.31 cfs @ 2.95 fps)

Summary for Pond 14P: CB#14

Inflow Area = 21,562 sf, 88.93% Impervious, Inflow Depth > 3.77" for 10-YEAR event
Inflow = 2.00 cfs @ 12.08 hrs, Volume= 6,771 cf
Outflow = 2.00 cfs @ 12.08 hrs, Volume= 6,771 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.08 hrs, Volume= 6,771 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.92' @ 12.11 hrs
Flood Elev= 223.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.11'	**18.0" Round Culvert** L= 152.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.11' / 216.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.99 cfs @ 12.08 hrs HW=217.90' TW=217.18' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.99 cfs @ 3.06 fps)

Summary for Pond 15P: CB#15

Inflow Area = 13,436 sf, 82.23% Impervious, Inflow Depth > 3.51" for 10-YEAR event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 3,927 cf
Outflow = 1.19 cfs @ 12.09 hrs, Volume= 3,927 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.09 hrs, Volume= 3,927 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.28' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.21' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.19 cfs @ 12.09 hrs HW=218.28' TW=217.90' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.19 cfs @ 2.54 fps)

Summary for Pond 16P: CB#16

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf
Outflow = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.08 hrs, Volume= 1,884 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.09' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.72'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.72' / 217.70' S= 0.0701 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.08 hrs HW=220.09' TW=218.27' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.53 cfs @ 2.06 fps)

Summary for Pond 17P: CB#17

Inflow Area = 12,834 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 1.28 cfs @ 12.08 hrs, Volume= 4,492 cf
Outflow = 1.28 cfs @ 12.08 hrs, Volume= 4,492 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.28 cfs @ 12.08 hrs, Volume= 4,492 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.66' @ 21.18 hrs
Flood Elev= 236.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.15'	**15.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.15' / 234.00' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.28 cfs @ 12.08 hrs HW=234.79' TW=234.23' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.28 cfs @ 2.93 fps)

Summary for Pond 18P: CB#18

Inflow Area = 19,404 sf, 68.86% Impervious, Inflow Depth > 2.99" for 10-YEAR event
Inflow = 1.55 cfs @ 12.09 hrs, Volume= 4,838 cf
Outflow = 1.55 cfs @ 12.09 hrs, Volume= 4,839 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 12.09 hrs, Volume= 4,839 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.66' @ 21.19 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.98'	**18.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.98' / 232.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.54 cfs @ 12.09 hrs HW=234.32' TW=234.25' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.54 cfs @ 1.23 fps)

Summary for Pond 19P: CB#19

Inflow Area = 9,491 sf, 64.25% Impervious, Inflow Depth > 2.83" for 10-YEAR event
Inflow = 0.72 cfs @ 12.09 hrs, Volume= 2,239 cf
Outflow = 0.72 cfs @ 12.09 hrs, Volume= 2,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.09 hrs, Volume= 2,238 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.66' @ 21.19 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	233.70'	**15.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 233.70' / 233.08' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.09 hrs HW=234.45' TW=234.32' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.72 cfs @ 1.35 fps)

Summary for Pond 21P: CB#21

Inflow Area = 10,579 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 1.05 cfs @ 12.08 hrs, Volume= 3,703 cf
Outflow = 1.05 cfs @ 12.08 hrs, Volume= 3,703 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.08 hrs, Volume= 3,703 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.66' @ 21.31 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.80'	**15.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.80' / 234.25' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.05 cfs @ 12.08 hrs HW=235.35' TW=234.79' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 1.05 cfs @ 2.97 fps)

Summary for Pond 22P: CB#22

Inflow Area = 6,630 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 0.66 cfs @ 12.08 hrs, Volume= 2,321 cf
Outflow = 0.66 cfs @ 12.08 hrs, Volume= 2,321 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.08 hrs, Volume= 2,321 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 235.67' @ 12.08 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	235.20'	**15.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 235.20' / 234.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.66 cfs @ 12.08 hrs HW=235.67' TW=235.35' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 0.66 cfs @ 2.29 fps)

Summary for Pond 24P: CB#24

Inflow Area = 26,271 sf, 92.21% Impervious, Inflow Depth > 3.88" for 10-YEAR event
Inflow = 2.51 cfs @ 12.08 hrs, Volume= 8,502 cf
Outflow = 2.51 cfs @ 12.08 hrs, Volume= 8,502 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.08 hrs, Volume= 8,502 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 241.43' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	240.50'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.50' / 234.00' S= 0.0625 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.51 cfs @ 12.08 hrs HW=241.43' TW=234.24' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 2.51 cfs @ 3.29 fps)

Summary for Pond 25P: CB#25

Inflow Area = 19,795 sf, 95.32% Impervious, Inflow Depth > 4.01" for 10-YEAR event
Inflow = 1.92 cfs @ 12.08 hrs, Volume= 6,614 cf
Outflow = 1.92 cfs @ 12.08 hrs, Volume= 6,614 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 12.08 hrs, Volume= 6,614 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.27' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	243.50'	**12.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 243.50' / 240.60' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.92 cfs @ 12.08 hrs HW=244.27' TW=241.43' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.92 cfs @ 2.98 fps)

Summary for Pond 27P: CB#27

Inflow Area = 37,738 sf, 73.20% Impervious, Inflow Depth > 3.17" for 10-YEAR event
Inflow = 3.11 cfs @ 12.09 hrs, Volume= 9,955 cf
Outflow = 3.11 cfs @ 12.09 hrs, Volume= 9,955 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.11 cfs @ 12.09 hrs, Volume= 9,955 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 217.64' @ 12.27 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.93'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.93' / 215.88' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.10 cfs @ 12.09 hrs HW=217.47' TW=217.19' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.10 cfs @ 2.53 fps)

Summary for Pond 29P: DMH#29

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 0.76" for 10-YEAR event
Inflow = 1.53 cfs @ 12.57 hrs, Volume= 11,674 cf
Outflow = 1.53 cfs @ 12.57 hrs, Volume= 11,674 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.57 hrs, Volume= 11,674 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 238.50' @ 12.57 hrs
Flood Elev= 242.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	237.90'	**15.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.90' / 232.20' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.53 cfs @ 12.57 hrs HW=238.50' TW=232.72' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.53 cfs @ 2.64 fps)

Summary for Pond 30P: DMH#30

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 0.72" for 10-YEAR event
Inflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf
Outflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 232.72' @ 12.57 hrs
Flood Elev= 235.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.10'	**15.0" Round Culvert** L= 273.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.10' / 220.88' S= 0.0411 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.62 cfs @ 12.57 hrs HW=232.72' TW=221.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.62 cfs @ 2.68 fps)

Summary for Pond 32P: DMH#32

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 0.72" for 10-YEAR event
Inflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf
Outflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.40' @ 12.57 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	220.78'	**15.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.78' / 212.32' S= 0.0334 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.62 cfs @ 12.57 hrs HW=221.40' TW=212.89' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.62 cfs @ 2.68 fps)

Summary for Pond 33P: DMH#33

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 0.72" for 10-YEAR event
Inflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf
Outflow = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.57 hrs, Volume= 16,832 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 212.89' @ 12.57 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.22'	**15.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.22' / 212.00' S= 0.0129 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.62 cfs @ 12.57 hrs HW=212.89' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.62 cfs @ 3.54 fps)

Summary for Pond 47P: CB#47

Inflow Area = 2,272 sf,100.00% Impervious, Inflow Depth > 4.20" for 10-YEAR event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 795 cf
Outflow = 0.23 cfs @ 12.08 hrs, Volume= 795 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.08 hrs, Volume= 795 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.72' @ 12.08 hrs
Flood Elev= 236.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	236.50'	**15.0" Round Culvert** L= 99.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 236.50' / 235.40' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.23 cfs @ 12.08 hrs HW=236.72' TW=235.67' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.23 cfs @ 2.39 fps)

Summary for Pond 101P: CB#101

Inflow Area = 256,408 sf, 11.33% Impervious, Inflow Depth > 0.21" for 10-YEAR event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 4,468 cf
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 4,468 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 4,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 212.93' @ 12.09 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.20'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.20' / 212.08' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.32 cfs @ 12.09 hrs HW=212.93' TW=212.60' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.32 cfs @ 3.00 fps)

Summary for Pond 102P: HW#102

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 0.04" for 10-YEAR event
Inflow = 0.22 cfs @ 12.13 hrs, Volume= 843 cf
Outflow = 0.22 cfs @ 12.13 hrs, Volume= 843 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.13 hrs, Volume= 843 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.36' @ 12.12 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.12'	**12.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.12' / 212.30' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.13 hrs HW=213.36' TW=212.91' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.22 cfs @ 2.30 fps)

Summary for Pond 108P: CB#108

Inflow Area = 15,217 sf, 47.87% Impervious, Inflow Depth > 2.30" for 10-YEAR event
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 2,916 cf
Outflow = 0.94 cfs @ 12.09 hrs, Volume= 2,916 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 12.09 hrs, Volume= 2,916 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.08' @ 12.20 hrs
Flood Elev= 225.98'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.37'	**15.0" Round Culvert** L= 30.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.37' / 220.00' S= 0.0449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.94 cfs @ 12.09 hrs HW=222.71' TW=222.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.94 cfs @ 0.77 fps)

Summary for Pond 112P: CB#112

Inflow Area = 7,976 sf, 90.47% Impervious, Inflow Depth > 3.80" for 10-YEAR event
Inflow = 0.76 cfs @ 12.08 hrs, Volume= 2,529 cf
Outflow = 0.76 cfs @ 12.08 hrs, Volume= 2,528 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.08 hrs, Volume= 2,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.43' @ 12.79 hrs
Flood Elev= 222.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.20'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.20' / 217.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.76 cfs @ 12.08 hrs HW=219.08' TW=219.04' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.76 cfs @ 0.97 fps)

Summary for Pond 114P: DMH#114

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 1.55" for 10-YEAR event
Inflow = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf
Outflow = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.43' @ 12.77 hrs
Flood Elev= 226.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.19'	**24.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.19' / 218.00' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.89 cfs @ 12.12 hrs HW=219.97' TW=219.26' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.89 cfs @ 3.79 fps)

Summary for Pond 115P: DCB#115

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 1.55" for 10-YEAR event
Inflow = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf
Outflow = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.90 cfs @ 12.12 hrs, Volume= 11,965 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.61' @ 12.12 hrs
Flood Elev= 227.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	**18.0" Round Culvert** L= 235.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 219.29' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.89 cfs @ 12.12 hrs HW=223.61' TW=219.97' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.89 cfs @ 3.04 fps)

Summary for Pond 116P: CB#116

Inflow Area = 60,922 sf, 4.24% Impervious, Inflow Depth > 0.85" for 10-YEAR event
Inflow = 0.85 cfs @ 12.23 hrs, Volume= 4,307 cf
Outflow = 0.85 cfs @ 12.23 hrs, Volume= 4,307 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.23 hrs, Volume= 4,307 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 228.38' @ 12.23 hrs
Flood Elev= 233.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	227.94'	**15.0" Round Culvert** L= 125.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 227.94' / 222.91' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.85 cfs @ 12.23 hrs HW=228.38' TW=223.50' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.85 cfs @ 2.25 fps)

Summary for Pond 119P: CB#119

Inflow Area = 89,050 sf, 56.36% Impervious, Inflow Depth > 2.61" for 10-YEAR event
Inflow = 5.12 cfs @ 12.10 hrs, Volume= 19,386 cf
Outflow = 5.12 cfs @ 12.10 hrs, Volume= 19,385 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.12 cfs @ 12.10 hrs, Volume= 19,385 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.43' @ 12.78 hrs
Flood Elev= 226.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	218.57'	**24.0" Round Culvert** L= 37.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 218.57' / 218.00' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.12 cfs @ 12.10 hrs HW=219.68' TW=219.13' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 5.12 cfs @ 4.15 fps)

Summary for Pond 120P: DCB#120

Inflow Area = 66,796 sf, 42.29% Impervious, Inflow Depth > 2.10" for 10-YEAR event
Inflow = 3.00 cfs @ 12.11 hrs, Volume= 11,706 cf
Outflow = 3.00 cfs @ 12.11 hrs, Volume= 11,706 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.00 cfs @ 12.11 hrs, Volume= 11,706 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.52' @ 12.11 hrs
Flood Elev= 227.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.71'	**18.0" Round Culvert** L= 269.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.71' / 218.67' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.99 cfs @ 12.11 hrs HW=223.52' TW=219.71' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.99 cfs @ 3.07 fps)

Summary for Pond 121P: CB#121

Inflow Area = 36,429 sf, 14.50% Impervious, Inflow Depth > 1.17" for 10-YEAR event
Inflow = 0.79 cfs @ 12.22 hrs, Volume= 3,556 cf
Outflow = 0.79 cfs @ 12.22 hrs, Volume= 3,556 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.22 hrs, Volume= 3,556 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 226.48' @ 12.22 hrs
Flood Elev= 230.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	226.06'	**15.0" Round Culvert** L= 54.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.06' / 222.81' S= 0.0600 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.79 cfs @ 12.22 hrs HW=226.48' TW=223.41' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.79 cfs @ 2.20 fps)

Summary for Pond B1: INFILTRATION POND 1

Inflow Area = 113,915 sf, 75.64% Impervious, Inflow Depth > 3.34" for 10-YEAR event
Inflow = 9.45 cfs @ 12.09 hrs, Volume= 31,677 cf
Outflow = 3.64 cfs @ 12.32 hrs, Volume= 24,334 cf, Atten= 61%, Lag= 14.3 min
Discarded = 0.19 cfs @ 12.32 hrs, Volume= 8,162 cf
Primary = 3.46 cfs @ 12.32 hrs, Volume= 16,172 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3

Peak Elev= 217.59' @ 12.32 hrs Surf.Area= 8,008 sf Storage= 13,645 cf
Flood Elev= 218.00' Surf.Area= 9,382 sf Storage= 17,174 cf

Plug-Flow detention time= 175.7 min calculated for 24,334 cf (77% of inflow)
Center-of-Mass det. time= 92.1 min (869.2 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1	214.75'	17,174 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.75	2,279	0	0
216.00	4,499	4,236	4,236
217.00	5,997	5,248	9,484
218.00	9,382	7,690	17,174

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.75' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	214.75'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#3	Device 1	216.60'	**5.0" W x 13.2" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	217.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	217.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.19 cfs @ 12.32 hrs HW=217.59' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=3.45 cfs @ 12.32 hrs HW=217.59' TW=210.92' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.33 cfs of 10.18 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 1.33 cfs @ 3.20 fps)
│ └─**4=Orifice/Grate** (Controls 0.00 cfs)
└─**5=Broad-Crested Rectangular Weir** (Weir Controls 2.13 cfs @ 1.10 fps)

Summary for Pond B2: POCKET POND 1

Inflow Area =	97,359 sf, 70.69% Impervious,	Inflow Depth > 3.21"	for 10-YEAR event
Inflow =	7.65 cfs @ 12.09 hrs, Volume=	26,054 cf	
Outflow =	0.10 cfs @ 21.18 hrs, Volume=	5,157 cf,	Atten= 99%, Lag= 545.9 min
Primary =	0.10 cfs @ 21.18 hrs, Volume=	5,157 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Starting Elev= 232.50' Surf.Area= 4,585 sf Storage= 6,096 cf
Peak Elev= 235.66' @ 21.18 hrs Surf.Area= 8,824 sf Storage= 27,133 cf (21,037 cf above start)
Flood Elev= 237.00' Surf.Area= 10,865 sf Storage= 40,310 cf (34,214 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 233.3 min (1,007.5 - 774.2)

Volume	Invert	Avail.Storage	Storage Description
#1	229.00'	40,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
229.00	550	0	0
230.00	1,050	800	800
232.00	2,480	3,530	4,330
232.50	4,585	1,766	6,096
234.00	6,510	8,321	14,418
236.00	9,300	15,810	30,228
237.00	10,865	10,083	40,310

Device	Routing	Invert	Outlet Devices
#1	Primary	232.50'	**15.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.50' / 232.20' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	232.50'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	236.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 21.18 hrs HW=235.66' TW=232.31' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.10 cfs of 9.41 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.10 cfs @ 8.47 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond B3: DETENTION POND 1

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 0.78" for 10-YEAR event
Inflow = 2.04 cfs @ 12.32 hrs, Volume= 11,937 cf
Outflow = 1.53 cfs @ 12.57 hrs, Volume= 11,674 cf, Atten= 25%, Lag= 14.7 min
Primary = 1.53 cfs @ 12.57 hrs, Volume= 11,674 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.66' @ 12.57 hrs Surf.Area= 2,734 sf Storage= 1,506 cf
Flood Elev= 248.00' Surf.Area= 8,476 sf Storage= 19,484 cf

Plug-Flow detention time= 28.3 min calculated for 11,670 cf (98% of inflow)
Center-of-Mass det. time= 17.0 min (924.3 - 907.4)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	19,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	904	0	0
246.00	2,300	3,204	3,204
248.00	4,238	6,538	9,742

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**12.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 244.00' / 238.00' S= 0.0583 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.53 cfs @ 12.57 hrs HW=244.66' TW=238.50' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.53 cfs @ 2.77 fps)

Summary for Pond B4: INFILTRATION POND 2

Inflow Area = 204,461 sf, 39.73% Impervious, Inflow Depth > 2.07" for 10-YEAR event
Inflow = 9.07 cfs @ 12.10 hrs, Volume= 35,185 cf
Outflow = 1.42 cfs @ 12.79 hrs, Volume= 20,678 cf, Atten= 84%, Lag= 41.3 min
Discarded = 0.17 cfs @ 12.79 hrs, Volume= 8,554 cf
Primary = 1.26 cfs @ 12.79 hrs, Volume= 12,124 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.43' @ 12.79 hrs Surf.Area= 7,193 sf Storage= 17,213 cf
Flood Elev= 222.00' Surf.Area= 9,536 sf Storage= 30,365 cf

Plug-Flow detention time= 224.0 min calculated for 20,670 cf (59% of inflow)
Center-of-Mass det. time= 107.6 min (920.9 - 813.3)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	30,365 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	2,693	0	0
218.00	4,247	3,470	3,470
220.00	6,556	10,803	14,273
222.00	9,536	16,092	30,365

Device	Routing	Invert	Outlet Devices
#1	Primary	214.44'	**12.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.44' / 214.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	220.00'	**10.0" Vert. Orifice X 2.00** C= 0.600
#3	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	217.00'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.17 cfs @ 12.79 hrs HW=220.43' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=1.26 cfs @ 12.79 hrs HW=220.43' TW=212.65' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.26 cfs of 8.86 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.26 cfs @ 2.23 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond B5: BIORETENTION POND 1

Inflow Area =	30,725 sf, 60.33% Impervious,	Inflow Depth > 2.82"	for 10-YEAR event
Inflow =	2.16 cfs @ 12.09 hrs, Volume=	7,225 cf	
Outflow =	1.25 cfs @ 12.20 hrs, Volume=	7,225 cf,	Atten= 42%, Lag= 7.0 min
Primary =	1.25 cfs @ 12.20 hrs, Volume=	7,225 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.07' @ 12.20 hrs Surf.Area= 1,306 sf Storage= 1,748 cf
Flood Elev= 224.00' Surf.Area= 1,738 sf Storage= 3,165 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 42.3 min (830.9 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	221.00'	3,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
221.00	424	0	0
222.00	810	617	617
224.00	1,738	2,548	3,165

Device	Routing	Invert	Outlet Devices
#1	Primary	217.55'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.55' / 217.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	223.00'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	221.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.24 cfs @ 12.20 hrs HW=223.07' TW=217.32' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.24 cfs of 8.47 cfs potential flow)
  ├─**2=Grate** (Weir Controls 0.94 cfs @ 0.86 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.30 cfs)

Summary for Pond B6: DETENTION POND 2

Inflow Area = 232,259 sf, 8.10% Impervious, Inflow Depth > 1.02" for 10-YEAR event
Inflow = 3.05 cfs @ 12.28 hrs, Volume= 19,687 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.48' @ 24.00 hrs Surf.Area= 9,161 sf Storage= 19,685 cf
Flood Elev= 222.00' Surf.Area= 11,980 sf Storage= 46,271 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	46,271 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	3,390	0	0
218.00	3,847	3,619	3,619
220.00	4,840	8,687	12,306
222.00	5,990	10,830	23,136

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.50' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.00'	**2.0" Vert. Orifice** C= 0.600
#3	Device 1	220.00'	**6.0" Vert. Orifice** C= 0.600
#4	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=217.00' TW=220.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice** (Controls 0.00 cfs)
  ├─**3=Orifice** (Controls 0.00 cfs)
  └─**4=Grate** (Controls 0.00 cfs)

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 23.33% Impervious, Inflow Depth > 0.73" for 10-YEAR event
Inflow = 8.99 cfs @ 12.34 hrs, Volume= 73,262 cf
Primary = 8.99 cfs @ 12.34 hrs, Volume= 73,262 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs

Time span=0.00-24.00 hrs, dt=0.010 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Runoff Area=194,527 sf 0.14% Impervious Runoff Depth>1.32"
Flow Length=716' Tc=16.8 min CN=55.4 Runoff=4.33 cfs 21,447 cf

Subcatchment2S: Runoff Area=60,922 sf 4.24% Impervious Runoff Depth>1.48"
Flow Length=809' Tc=13.6 min CN=57.6 Runoff=1.71 cfs 7,526 cf

Subcatchment3S: Runoff Area=36,429 sf 14.50% Impervious Runoff Depth>1.91"
Flow Length=674' Tc=14.5 min CN=63.2 Runoff=1.37 cfs 5,809 cf

Subcatchment4S: Runoff Area=48,409 sf 6.73% Impervious Runoff Depth>1.56"
Flow Length=779' Tc=17.6 min CN=58.6 Runoff=1.31 cfs 6,278 cf

Subcatchment5S: Runoff Area=136,374 sf 0.00% Impervious Runoff Depth>1.32"
Flow Length=903' Tc=18.3 min CN=55.4 Runoff=2.93 cfs 14,990 cf

Subcatchment6S: Runoff Area=299,000 sf 0.73% Impervious Runoff Depth>1.33"
Flow Length=520' Tc=13.3 min CN=55.4 Runoff=7.27 cfs 33,034 cf

Subcatchment7S: Runoff Area=14,561 sf 25.68% Impervious Runoff Depth>2.54"
Tc=6.0 min CN=70.5 Runoff=0.99 cfs 3,082 cf

Subcatchment8S: Runoff Area=13,429 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.59 cfs 1,955 cf

Subcatchment9S: Runoff Area=5,750 sf 82.97% Impervious Runoff Depth>4.65"
Tc=6.0 min CN=91.7 Runoff=0.68 cfs 2,228 cf

Subcatchment10S: Runoff Area=8,237 sf 91.84% Impervious Runoff Depth>5.02"
Tc=6.0 min CN=95.0 Runoff=1.02 cfs 3,444 cf

Subcatchment11S: Runoff Area=14,549 sf 92.08% Impervious Runoff Depth>5.03"
Tc=6.0 min CN=95.1 Runoff=1.80 cfs 6,096 cf

Subcatchment12S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.16 cfs 4,116 cf

Subcatchment13S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.16 cfs 4,116 cf

Subcatchment14S: Runoff Area=8,778 sf 73.24% Impervious Runoff Depth>4.26"
Tc=6.0 min CN=88.1 Runoff=0.98 cfs 3,114 cf

Subcatchment15S: Runoff Area=8,055 sf 70.37% Impervious Runoff Depth>4.14"
Tc=6.0 min CN=87.0 Runoff=0.88 cfs 2,782 cf

Subcatchment16S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.68 cfs 2,407 cf

Subcatchment17S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.68 cfs 2,407 cf

Subcatchment18S: Runoff Area=12,630 sf 75.22% Impervious Runoff Depth>4.34"
Tc=6.0 min CN=88.8 Runoff=1.42 cfs 4,564 cf

Subcatchment19S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.16 cfs 4,116 cf

Subcatchment20S: BUILDING 2 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.16 cfs 4,116 cf

Subcatchment21S: Runoff Area=8,126 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.03 cfs 3,635 cf

Subcatchment22S: Runoff Area=9,491 sf 64.25% Impervious Runoff Depth>3.91"
Tc=6.0 min CN=84.8 Runoff=0.98 cfs 3,091 cf

Subcatchment23S: Runoff Area=9,913 sf 73.27% Impervious Runoff Depth>4.26"
Tc=6.0 min CN=88.1 Runoff=1.10 cfs 3,518 cf

Subcatchment24S: Runoff Area=4,358 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.55 cfs 1,950 cf

Subcatchment25S: Runoff Area=3,949 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.50 cfs 1,767 cf

Subcatchment26S: BUILDING 3 Runoff Area=13,600 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.72 cfs 6,084 cf

Subcatchment27S: Runoff Area=6,195 sf 85.04% Impervious Runoff Depth>4.73"
Tc=6.0 min CN=92.5 Runoff=0.74 cfs 2,444 cf

Subcatchment28S: Runoff Area=6,476 sf 82.72% Impervious Runoff Depth>4.64"
Tc=6.0 min CN=91.6 Runoff=0.76 cfs 2,503 cf

Subcatchment29S: Runoff Area=20,450 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.91 cfs 2,976 cf

Subcatchment30S: Runoff Area=12,852 sf 79.69% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=90.5 Runoff=1.49 cfs 4,836 cf

Subcatchment31S: Runoff Area=8,139 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.36 cfs 1,185 cf

Subcatchment32S: Runoff Area=15,017 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.66 cfs 2,186 cf

Subcatchment33S: Runoff Area=11,297 sf 0.00% Impervious Runoff Depth>1.55"
Tc=6.0 min CN=58.4 Runoff=0.43 cfs 1,459 cf

Subcatchment34S: Runoff Area=7,007 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.31 cfs 1,020 cf

Subcatchment35S: Runoff Area=4,258 sf 0.00% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=61.0 Runoff=0.19 cfs 620 cf

Subcatchment36S: Runoff Area=7,976 sf 90.47% Impervious Runoff Depth>4.96"
Tc=6.0 min CN=94.5 Runoff=0.98 cfs 3,297 cf

Subcatchment37S: Runoff Area=11,004 sf 97.16% Impervious Runoff Depth>5.25"
Tc=6.0 min CN=97.0 Runoff=1.38 cfs 4,810 cf

Subcatchment38S: Runoff Area=15,217 sf 47.87% Impervious Runoff Depth>3.30"
Tc=6.0 min CN=78.7 Runoff=1.35 cfs 4,187 cf

Subcatchment40S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.42 cfs 5,033 cf

Subcatchment41S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=1.42 cfs 5,033 cf

Subcatchment42S: Runoff Area=31,496 sf 67.44% Impervious Runoff Depth>4.01"
Flow Length=469' Tc=7.4 min CN=85.7 Runoff=3.18 cfs 10,513 cf

Subcatchment43S: Runoff Area=30,367 sf 75.63% Impervious Runoff Depth>4.34"
Flow Length=454' Tc=7.3 min CN=88.9 Runoff=3.28 cfs 10,979 cf

Subcatchment45S: Runoff Area=2,272 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.29 cfs 1,016 cf

Subcatchment46S: Runoff Area=2,255 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98.0 Runoff=0.28 cfs 1,009 cf

Subcatchment47S: Runoff Area=10,949 sf 57.68% Impervious Runoff Depth>3.66"
Tc=6.0 min CN=82.3 Runoff=1.07 cfs 3,340 cf

Subcatchment50S: Runoff Area=12,488 sf 0.00% Impervious Runoff Depth>1.65"
Tc=6.0 min CN=59.7 Runoff=0.51 cfs 1,713 cf

Reach 1R: SWALE Avg. Flow Depth=1.40' Max Vel=1.66 fps Inflow=11.28 cfs 69,944 cf
n=0.069 L=255.0' S=0.0078 '/' Capacity=24.34 cfs Outflow=11.09 cfs 69,807 cf

Reach 2R: SWALE Avg. Flow Depth=0.22' Max Vel=2.29 fps Inflow=1.31 cfs 6,278 cf
n=0.025 L=126.0' S=0.0159 '/' Capacity=26.66 cfs Outflow=1.31 cfs 6,272 cf

Reach 3R: SWALE Avg. Flow Depth=0.31' Max Vel=5.28 fps Inflow=4.33 cfs 21,447 cf
n=0.025 L=550.0' S=0.0527 '/' Capacity=174.16 cfs Outflow=4.30 cfs 21,402 cf

Reach 4R: SWALE Avg. Flow Depth=1.01' Max Vel=1.11 fps Inflow=4.49 cfs 39,083 cf
n=0.069 L=177.0' S=0.0050 '/' Capacity=19.38 cfs Outflow=4.47 cfs 38,984 cf

Reach 5R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps
24.0" Round Pipe n=0.013 L=37.9' S=0.0150 '/' Capacity=27.74 cfs Outflow=0.00 cfs 0 cf

Reach 33R: SWALE Avg. Flow Depth=0.09' Max Vel=2.07 fps Inflow=0.43 cfs 6,801 cf
n=0.025 L=182.0' S=0.0330 '/' Capacity=31.32 cfs Outflow=0.42 cfs 6,778 cf

Pond 1P: HW#1 Peak Elev=213.34' Inflow=4.47 cfs 38,984 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=4.47 cfs 38,984 cf

Pond 2P: CB#2 Peak Elev=211.94' Inflow=4.64 cfs 41,212 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=4.64 cfs 41,212 cf

Pond 7P: CB#7 Peak Elev=218.02' Inflow=2.18 cfs 7,560 cf
12.0" Round Culvert n=0.013 L=12.7' S=0.0102 '/' Outflow=2.18 cfs 7,560 cf

Pond 8P: CB#8 Peak Elev=218.77' Inflow=3.08 cfs 10,085 cf
15.0" Round Culvert n=0.013 L=204.0' S=0.0050 '/' Outflow=3.08 cfs 10,085 cf

Pond 9P: CB#9 Peak Elev=218.87' Inflow=1.65 cfs 5,522 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0050 '/' Outflow=1.65 cfs 5,522 cf

Pond 10P: CB#10 Peak Elev=220.01' Inflow=0.68 cfs 2,407 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0700 '/' Outflow=0.68 cfs 2,407 cf

Pond 12P: CB#12 Peak Elev=218.28' Inflow=2.96 cfs 10,212 cf
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=2.96 cfs 10,212 cf

Pond 14P: CB#14 Peak Elev=218.16' Inflow=2.58 cfs 8,824 cf
18.0" Round Culvert n=0.013 L=152.5' S=0.0050 '/' Outflow=2.58 cfs 8,824 cf

Pond 15P: CB#15 Peak Elev=218.46' Inflow=1.56 cfs 5,189 cf
15.0" Round Culvert n=0.013 L=78.0' S=0.0050 '/' Outflow=1.56 cfs 5,189 cf

Pond 16P: CB#16 Peak Elev=220.14' Inflow=0.68 cfs 2,407 cf
12.0" Round Culvert n=0.013 L=28.8' S=0.0701 '/' Outflow=0.68 cfs 2,407 cf

Pond 17P: CB#17 Peak Elev=236.04' Inflow=1.62 cfs 5,741 cf
15.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=1.62 cfs 5,741 cf

Pond 18P: CB#18 Peak Elev=236.04' Inflow=2.09 cfs 6,609 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0050 '/' Outflow=2.09 cfs 6,609 cf

Pond 19P: CB#19 Peak Elev=236.04' Inflow=0.98 cfs 3,091 cf
15.0" Round Culvert n=0.013 L=123.0' S=0.0050 '/' Outflow=0.98 cfs 3,091 cf

Pond 21P: CB#21 Peak Elev=236.04' Inflow=1.33 cfs 4,732 cf
15.0" Round Culvert n=0.013 L=74.0' S=0.0074 '/' Outflow=1.33 cfs 4,732 cf

Pond 22P: CB#22 Peak Elev=236.04' Inflow=0.84 cfs 2,966 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.84 cfs 2,966 cf

Pond 24P: CB#24 Peak Elev=241.73' Inflow=3.22 cfs 11,031 cf
12.0" Round Culvert n=0.013 L=104.0' S=0.0625 '/' Outflow=3.22 cfs 11,031 cf

Pond 25P: CB#25 Peak Elev=244.42' Inflow=2.46 cfs 8,528 cf
12.0" Round Culvert n=0.013 L=128.0' S=0.0227 '/' Outflow=2.46 cfs 8,528 cf

Pond 27P: CB#27 Peak Elev=218.17' Inflow=4.15 cfs 13,425 cf
15.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=4.15 cfs 13,425 cf

Pond 29P: DMH#29 Peak Elev=238.79' Inflow=2.98 cfs 20,932 cf
15.0" Round Culvert n=0.013 L=156.0' S=0.0365 '/' Outflow=2.98 cfs 20,932 cf

Pond 30P: DMH#30 Peak Elev=233.00' Inflow=3.08 cfs 31,390 cf
15.0" Round Culvert n=0.013 L=273.0' S=0.0411 '/' Outflow=3.08 cfs 31,390 cf

Pond 32P: DMH#32 Peak Elev=221.68' Inflow=3.08 cfs 31,390 cf
15.0" Round Culvert n=0.013 L=253.0' S=0.0334 '/' Outflow=3.08 cfs 31,390 cf

Pond 33P: DMH#33 Peak Elev=213.21' Inflow=3.08 cfs 31,390 cf
15.0" Round Culvert n=0.013 L=17.0' S=0.0129 '/' Outflow=3.08 cfs 31,390 cf

Pond 47P: CB#47 Peak Elev=236.75' Inflow=0.29 cfs 1,016 cf
15.0" Round Culvert n=0.013 L=99.0' S=0.0111 '/' Outflow=0.29 cfs 1,016 cf

Pond 101P: CB#101 Peak Elev=213.12' Inflow=1.89 cfs 11,614 cf
12.0" Round Culvert n=0.013 L=23.0' S=0.0052 '/' Outflow=1.89 cfs 11,614 cf

Pond 102P: HW#102 Peak Elev=213.48' Inflow=0.42 cfs 6,778 cf
12.0" Round Culvert n=0.013 L=41.0' S=0.0200 '/' Outflow=0.42 cfs 6,778 cf

Pond 108P: CB#108 Peak Elev=223.18' Inflow=1.35 cfs 4,187 cf
15.0" Round Culvert n=0.013 L=30.5' S=0.0449 '/' Outflow=1.35 cfs 4,187 cf

Pond 112P: CB#112 Peak Elev=220.96' Inflow=0.98 cfs 3,297 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.98 cfs 3,297 cf

Pond 114P: DMH#114 Peak Elev=220.98' Inflow=4.45 cfs 18,039 cf
24.0" Round Culvert n=0.013 L=79.0' S=0.0151 '/' Outflow=4.45 cfs 18,039 cf

Pond 115P: DCB#115 Peak Elev=223.84' Inflow=4.45 cfs 18,039 cf
18.0" Round Culvert n=0.013 L=235.0' S=0.0150 '/' Outflow=4.45 cfs 18,039 cf

Pond 116P: CB#116 Peak Elev=228.58' Inflow=1.71 cfs 7,526 cf
15.0" Round Culvert n=0.013 L=125.7' S=0.0400 '/' Outflow=1.71 cfs 7,526 cf

Pond 119P: CB#119 Peak Elev=220.98' Inflow=6.95 cfs 26,630 cf
24.0" Round Culvert n=0.013 L=37.9' S=0.0150 '/' Outflow=6.95 cfs 26,630 cf

Pond 120P: DCB#120 Peak Elev=223.71' Inflow=4.27 cfs 16,788 cf
18.0" Round Culvert n=0.013 L=269.0' S=0.0150 '/' Outflow=4.27 cfs 16,788 cf

Pond 121P: CB#121 Peak Elev=226.62' Inflow=1.37 cfs 5,809 cf
15.0" Round Culvert n=0.013 L=54.2' S=0.0600 '/' Outflow=1.37 cfs 5,809 cf

Pond B1: INFILTRATIONPOND 1 Peak Elev=217.79' Storage=15,269 cf Inflow=12.45 cfs 41,976 cf
Discarded=0.20 cfs 8,695 cf Primary=7.90 cfs 25,650 cf Outflow=8.10 cfs 34,345 cf

Pond B2: POCKET POND 1 Peak Elev=236.04' Storage=30,619 cf Inflow=10.14 cfs 34,588 cf
Outflow=0.56 cfs 10,457 cf

Pond B3: DETENTION POND 1 Peak Elev=245.12' Storage=2,908 cf Inflow=4.24 cfs 21,262 cf
12.0" Round Culvert n=0.013 L=103.0' S=0.0583 '/' Outflow=2.98 cfs 20,932 cf

Pond B4: INFILTRATIONPOND 2 Peak Elev=220.96' Storage=21,237 cf Inflow=12.92 cfs 50,151 cf
Discarded=0.18 cfs 9,060 cf Primary=3.86 cfs 26,285 cf Outflow=4.05 cfs 35,345 cf

Pond B5: BIORETENTIONPOND 1 Peak Elev=223.13' Storage=1,831 cf Inflow=2.96 cfs 9,839 cf
Outflow=2.82 cfs 9,839 cf

Pond B6: DETENTION POND 2 Peak Elev=220.27' Storage=27,229 cf Inflow=5.87 cfs 32,261 cf
Outflow=0.23 cfs 5,342 cf

Link A: CHASE BROOK Inflow=20.47 cfs 135,943 cf
Primary=20.47 cfs 135,943 cf

Summary for Subcatchment 1S:

Runoff = 4.33 cfs @ 12.27 hrs, Volume= 21,447 cf, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
270	98.0	Paved parking, HSG B
12,010	61.0	>75% Grass cover, Good, HSG B
182,247	55.0	Woods, Good, HSG B
194,527	55.4	Weighted Average
194,257	55.4	99.86% Pervious Area
270	98.0	0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0550	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.0	325	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	281	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	716	Total			

Summary for Subcatchment 2S:

Runoff = 1.71 cfs @ 12.20 hrs, Volume= 7,526 cf, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
2,582	98.0	Paved parking, HSG B
7,802	61.0	>75% Grass cover, Good, HSG B
50,538	55.0	Woods, Good, HSG B
60,922	57.6	Weighted Average
58,340	55.8	95.76% Pervious Area
2,582	98.0	4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
5.5	470	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	84	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	205	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.6	809	Total			

Summary for Subcatchment 3S:

Runoff = 1.37 cfs @ 12.22 hrs, Volume= 5,809 cf, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,283	98.0	Paved parking, HSG B
11,639	61.0	>75% Grass cover, Good, HSG B
19,507	55.0	Woods, Good, HSG B
36,429	63.2	Weighted Average
31,146	57.2	85.50% Pervious Area
5,283	98.0	14.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.6	600	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.4000	4.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	674	Total			

Summary for Subcatchment 4S:

Runoff = 1.31 cfs @ 12.27 hrs, Volume= 6,278 cf, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
3,260	98.0	Roofs, HSG B
5,695	61.0	>75% Grass cover, Good, HSG B
39,454	55.0	Woods, Good, HSG B
48,409	58.6	Weighted Average
45,149	55.8	93.27% Pervious Area
3,260	98.0	6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
9.2	729	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	779	Total			

Summary for Subcatchment 5S:

Runoff = 2.93 cfs @ 12.28 hrs, Volume= 14,990 cf, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
8,709	61.0	>75% Grass cover, Good, HSG B
127,665	55.0	Woods, Good, HSG B
136,374	55.4	Weighted Average
136,374	55.4	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	50	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.8	567	0.0580	1.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	286	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	903	Total			

Summary for Subcatchment 6S:

Runoff = 7.27 cfs @ 12.21 hrs, Volume= 33,034 cf, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
2,193	98.0	Paved parking, HSG B
6,633	61.0	>75% Grass cover, Good, HSG B
290,174	55.0	Woods, Good, HSG B
299,000	55.4	Weighted Average
296,807	55.1	99.27% Pervious Area
2,193	98.0	0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
2.0	210	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	210	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.2400	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	520	Total			

Summary for Subcatchment 7S:

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 3,082 cf, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
3,739	98.0	Paved parking, HSG B
10,822	61.0	>75% Grass cover, Good, HSG B
14,561	70.5	Weighted Average
10,822	61.0	74.32% Pervious Area
3,739	98.0	25.68% Impervious Area

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

Summary for Subcatchment 8S:

Runoff = 0.59 cfs @ 12.10 hrs, Volume= 1,955 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
13,429	61.0	>75% Grass cover, Good, HSG B
13,429	61.0	100.00% Pervious Area

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

Summary for Subcatchment 9S:

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 2,228 cf, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
4,771	98.0	Paved parking, HSG B
979	61.0	>75% Grass cover, Good, HSG B
5,750	91.7	Weighted Average
979	61.0	17.03% Pervious Area
4,771	98.0	82.97% Impervious Area

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

Summary for Subcatchment 10S:

Runoff = 1.02 cfs @ 12.08 hrs, Volume= 3,444 cf, Depth> 5.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
7,565	98.0	Paved parking, HSG B
672	61.0	>75% Grass cover, Good, HSG B
8,237	95.0	Weighted Average
672	61.0	8.16% Pervious Area
7,565	98.0	91.84% Impervious Area

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

Summary for Subcatchment 11S:

Runoff = 1.80 cfs @ 12.08 hrs, Volume= 6,096 cf, Depth> 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
13,397	98.0	Paved parking, HSG B
1,152	61.0	>75% Grass cover, Good, HSG B
14,549	95.1	Weighted Average
1,152	61.0	7.92% Pervious Area
13,397	98.0	92.08% Impervious Area

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

Summary for Subcatchment 12S: BUILDING 1

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 4,116 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 13S: BUILDING 1

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 4,116 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 14S:

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,114 cf, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
6,429	98.0	Paved parking, HSG B
2,349	61.0	>75% Grass cover, Good, HSG B
8,778	88.1	Weighted Average
2,349	61.0	26.76% Pervious Area
6,429	98.0	73.24% Impervious Area

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

Summary for Subcatchment 15S:

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 2,782 cf, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,668	98.0	Paved parking, HSG B
2,387	61.0	>75% Grass cover, Good, HSG B
8,055	87.0	Weighted Average
2,387	61.0	29.63% Pervious Area
5,668	98.0	70.37% Impervious Area

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

Summary for Subcatchment 16S:

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 17S:

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 18S:

Runoff = 1.42 cfs @ 12.09 hrs, Volume= 4,564 cf, Depth> 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,500	98.0	Paved parking, HSG B
3,130	61.0	>75% Grass cover, Good, HSG B
12,630	88.8	Weighted Average
3,130	61.0	24.78% Pervious Area
9,500	98.0	75.22% Impervious Area

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

Summary for Subcatchment 19S: BUILDING 2

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 4,116 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 20S: BUILDING 2

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 4,116 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 21S:

Runoff = 1.03 cfs @ 12.08 hrs, Volume= 3,635 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
8,126	98.0	Paved parking, HSG B
8,126	98.0	100.00% Impervious Area

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

Summary for Subcatchment 22S:

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,091 cf, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
6,098	98.0	Paved parking, HSG B
3,393	61.0	>75% Grass cover, Good, HSG B
9,491	84.8	Weighted Average
3,393	61.0	35.75% Pervious Area
6,098	98.0	64.25% Impervious Area

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

Summary for Subcatchment 23S:

Runoff = 1.10 cfs @ 12.09 hrs, Volume= 3,518 cf, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
7,263	98.0	Paved parking, HSG B
2,650	61.0	>75% Grass cover, Good, HSG B
9,913	88.1	Weighted Average
2,650	61.0	26.73% Pervious Area
7,263	98.0	73.27% Impervious Area

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

Summary for Subcatchment 24S:

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 1,950 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
4,358	98.0	Paved parking, HSG B
4,358	98.0	100.00% Impervious Area

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

Summary for Subcatchment 25S:

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 1,767 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
3,949	98.0	Paved parking, HSG B
3,949	98.0	100.00% Impervious Area

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

Summary for Subcatchment 26S: BUILDING 3

Runoff = 1.72 cfs @ 12.08 hrs, Volume= 6,084 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
13,600	98.0	Roofs, HSG B
13,600	98.0	100.00% Impervious Area

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

Summary for Subcatchment 27S:

Runoff = 0.74 cfs @ 12.08 hrs, Volume= 2,444 cf, Depth> 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,268	98.0	Paved parking, HSG B
927	61.0	>75% Grass cover, Good, HSG B
6,195	92.5	Weighted Average
927	61.0	14.96% Pervious Area
5,268	98.0	85.04% Impervious Area

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

Summary for Subcatchment 28S:

Runoff = 0.76 cfs @ 12.08 hrs, Volume= 2,503 cf, Depth> 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
5,357	98.0	Paved parking, HSG B
1,119	61.0	>75% Grass cover, Good, HSG B
6,476	91.6	Weighted Average
1,119	61.0	17.28% Pervious Area
5,357	98.0	82.72% Impervious Area

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

Summary for Subcatchment 29S:

Runoff = 0.91 cfs @ 12.10 hrs, Volume= 2,976 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
20,450	61.0	>75% Grass cover, Good, HSG B
20,450	61.0	100.00% Pervious Area

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

Summary for Subcatchment 30S:

Runoff = 1.49 cfs @ 12.08 hrs, Volume= 4,836 cf, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
10,242	98.0	Paved parking, HSG B
2,610	61.0	>75% Grass cover, Good, HSG B
12,852	90.5	Weighted Average
2,610	61.0	20.31% Pervious Area
10,242	98.0	79.69% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 0.36 cfs @ 12.10 hrs, Volume= 1,185 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
8,139	61.0	>75% Grass cover, Good, HSG B
8,139	61.0	100.00% Pervious Area

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

Summary for Subcatchment 32S:

Runoff = 0.66 cfs @ 12.10 hrs, Volume= 2,186 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
15,017	61.0	>75% Grass cover, Good, HSG B
15,017	61.0	100.00% Pervious Area

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

Summary for Subcatchment 33S:

Runoff = 0.43 cfs @ 12.10 hrs, Volume= 1,459 cf, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
6,480	61.0	>75% Grass cover, Good, HSG B
4,817	55.0	Woods, Good, HSG B
11,297	58.4	Weighted Average
11,297	58.4	100.00% Pervious Area

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

Summary for Subcatchment 34S:

Runoff = 0.31 cfs @ 12.10 hrs, Volume= 1,020 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
7,007	61.0	>75% Grass cover, Good, HSG B
7,007	61.0	100.00% Pervious Area

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

Summary for Subcatchment 35S:

Runoff = 0.19 cfs @ 12.10 hrs, Volume= 620 cf, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
4,258	61.0	>75% Grass cover, Good, HSG B
4,258	61.0	100.00% Pervious Area

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

Summary for Subcatchment 36S:

Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,297 cf, Depth> 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
7,216	98.0	Paved parking, HSG B
760	61.0	>75% Grass cover, Good, HSG B
7,976	94.5	Weighted Average
760	61.0	9.53% Pervious Area
7,216	98.0	90.47% Impervious Area

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

Summary for Subcatchment 37S:

Runoff = 1.38 cfs @ 12.08 hrs, Volume= 4,810 cf, Depth> 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
10,692	98.0	Paved parking, HSG B
312	61.0	>75% Grass cover, Good, HSG B
11,004	97.0	Weighted Average
312	61.0	2.84% Pervious Area
10,692	98.0	97.16% Impervious Area

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

Summary for Subcatchment 38S:

Runoff = 1.35 cfs @ 12.09 hrs, Volume= 4,187 cf, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
7,285	98.0	Paved parking, HSG B
7,932	61.0	>75% Grass cover, Good, HSG B
15,217	78.7	Weighted Average
7,932	61.0	52.13% Pervious Area
7,285	98.0	47.87% Impervious Area

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

Summary for Subcatchment 40S: BUILDING 4

Runoff = 1.42 cfs @ 12.08 hrs, Volume= 5,033 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 41S: BUILDING 4

Runoff = 1.42 cfs @ 12.08 hrs, Volume= 5,033 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 42S:

Runoff = 3.18 cfs @ 12.10 hrs, Volume= 10,513 cf, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
21,240	98.0	Paved parking, HSG B
9,027	61.0	>75% Grass cover, Good, HSG B
1,229	55.0	Woods, Good, HSG B
31,496	85.7	Weighted Average
10,256	60.3	32.56% Pervious Area
21,240	98.0	67.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.2200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	80	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	295	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	469	Total			

Summary for Subcatchment 43S:

Runoff = 3.28 cfs @ 12.10 hrs, Volume= 10,979 cf, Depth> 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
22,966	98.0	Paved parking, HSG B
3,724	61.0	>75% Grass cover, Good, HSG B
3,677	60.0	Woods, Fair, HSG B
30,367	88.9	Weighted Average
7,401	60.5	24.37% Pervious Area
22,966	98.0	75.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.2400	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.2	80	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	280	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.3	454	Total			

Summary for Subcatchment 45S:

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 1,016 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
2,272	98.0	Paved parking, HSG B
2,272	98.0	100.00% Impervious Area

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

Summary for Subcatchment 46S:

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 1,009 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
2,255	98.0	Paved parking, HSG B
2,255	98.0	100.00% Impervious Area

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

Summary for Subcatchment 47S:

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 3,340 cf, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
6,315	98.0	Paved parking, HSG B
4,634	61.0	>75% Grass cover, Good, HSG B
10,949	82.3	Weighted Average
4,634	61.0	42.32% Pervious Area
6,315	98.0	57.68% Impervious Area

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

Summary for Subcatchment 50S:

Runoff = 0.51 cfs @ 12.10 hrs, Volume= 1,713 cf, Depth> 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-YEAR Rainfall=5.61"

Area (sf)	CN	Description
9,796	61.0	>75% Grass cover, Good, HSG B
2,692	55.0	Woods, Good, HSG B
12,488	59.7	Weighted Average
12,488	59.7	100.00% Pervious Area

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

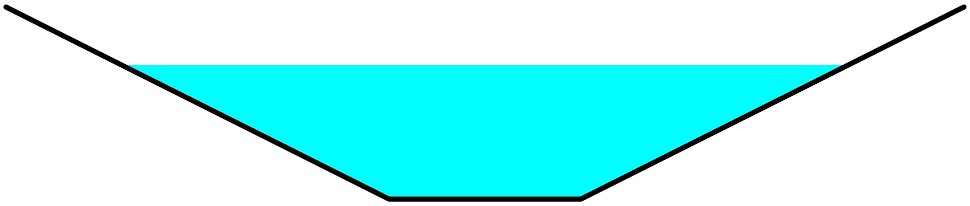
Summary for Reach 1R: SWALE

Inflow Area = 603,234 sf, 33.97% Impervious, Inflow Depth > 1.39" for 25-YEAR event
Inflow = 11.28 cfs @ 12.18 hrs, Volume= 69,944 cf
Outflow = 11.09 cfs @ 12.24 hrs, Volume= 69,807 cf, Atten= 2%, Lag= 3.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.66 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 6.8 min

Peak Storage= 1,705 cf @ 12.24 hrs
Average Depth at Peak Storage= 1.40'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 24.34 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 255.0' Slope= 0.0078 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'



Summary for Reach 2R: SWALE

Inflow Area = 48,409 sf, 6.73% Impervious, Inflow Depth > 1.56" for 25-YEAR event
Inflow = 1.31 cfs @ 12.27 hrs, Volume= 6,278 cf
Outflow = 1.31 cfs @ 12.28 hrs, Volume= 6,272 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 2.29 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 2.3 min

Peak Storage= 72 cf @ 12.28 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 26.66 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 126.0' Slope= 0.0159 '/'
Inlet Invert= 248.00', Outlet Invert= 246.00'

‡

Summary for Reach 3R: SWALE

Inflow Area = 194,527 sf, 0.14% Impervious, Inflow Depth > 1.32" for 25-YEAR event
Inflow = 4.33 cfs @ 12.27 hrs, Volume= 21,447 cf
Outflow = 4.30 cfs @ 12.29 hrs, Volume= 21,402 cf, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 5.28 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 2.22 fps, Avg. Travel Time= 4.1 min

Peak Storage= 448 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 174.16 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 550.0' Slope= 0.0527 '/'
Inlet Invert= 252.00', Outlet Invert= 223.00'

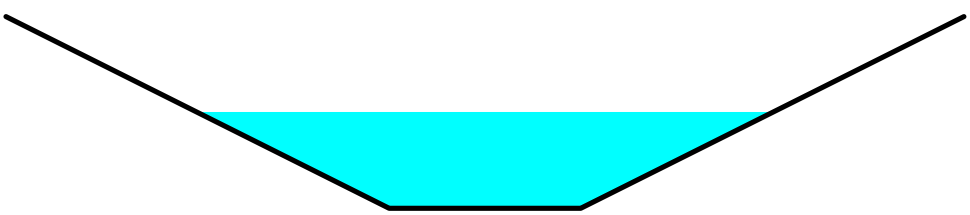
Summary for Reach 4R: SWALE

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 1.00" for 25-YEAR event
Inflow = 4.49 cfs @ 12.43 hrs, Volume= 39,083 cf
Outflow = 4.47 cfs @ 12.47 hrs, Volume= 38,984 cf, Atten= 0%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.11 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 6.2 min

Peak Storage= 715 cf @ 12.47 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 19.38 cfs

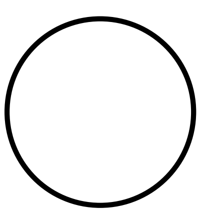
2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 177.0' Slope= 0.0050 '/'
Inlet Invert= 212.08', Outlet Invert= 211.20'



Summary for Reach 5R: (new Reach)

Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.74 cfs

24.0" Round Pipe
n= 0.013
Length= 37.9' Slope= 0.0150 '/'
Inlet Invert= 218.57', Outlet Invert= 218.00'



Summary for Reach 33R: SWALE

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 0.34" for 25-YEAR event
Inflow = 0.43 cfs @ 12.10 hrs, Volume= 6,801 cf
Outflow = 0.42 cfs @ 12.11 hrs, Volume= 6,778 cf, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 2.07 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 2.3 min

Peak Storage= 37 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 31.32 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 182.0' Slope= 0.0330 '/'
Inlet Invert= 220.00', Outlet Invert= 214.00'

Summary for Pond 1P: HW#1

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 1.00" for 25-YEAR event
Inflow = 4.47 cfs @ 12.47 hrs, Volume= 38,984 cf
Outflow = 4.47 cfs @ 12.47 hrs, Volume= 38,984 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.47 cfs @ 12.47 hrs, Volume= 38,984 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.34' @ 12.44 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.73'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.73' / 210.31' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.47 cfs @ 12.47 hrs HW=213.32' TW=211.91' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.47 cfs @ 5.69 fps)

Summary for Pond 2P: CB#2

Inflow Area = 474,758 sf, 24.23% Impervious, Inflow Depth > 1.04" for 25-YEAR event
Inflow = 4.64 cfs @ 12.45 hrs, Volume= 41,212 cf
Outflow = 4.64 cfs @ 12.45 hrs, Volume= 41,212 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.64 cfs @ 12.45 hrs, Volume= 41,212 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 211.94' @ 12.39 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.21'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.21' / 210.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.64 cfs @ 12.45 hrs HW=211.92' TW=211.31' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.64 cfs @ 3.78 fps)

Summary for Pond 7P: CB#7

Inflow Area = 17,437 sf, 96.15% Impervious, Inflow Depth > 5.20" for 25-YEAR event
Inflow = 2.18 cfs @ 12.08 hrs, Volume= 7,560 cf
Outflow = 2.18 cfs @ 12.08 hrs, Volume= 7,560 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.18 cfs @ 12.08 hrs, Volume= 7,560 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.02' @ 12.11 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 12.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.37' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.17 cfs @ 12.08 hrs HW=217.97' TW=217.64' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.17 cfs @ 2.77 fps)

Summary for Pond 8P: CB#8

Inflow Area = 26,789 sf, 79.55% Impervious, Inflow Depth > 4.52" for 25-YEAR event
Inflow = 3.08 cfs @ 12.08 hrs, Volume= 10,085 cf
Outflow = 3.08 cfs @ 12.08 hrs, Volume= 10,085 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.08 hrs, Volume= 10,085 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.77' @ 12.09 hrs
Flood Elev= 223.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.05'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.05' / 216.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.07 cfs @ 12.08 hrs HW=218.75' TW=218.14' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.07 cfs @ 2.50 fps)

Summary for Pond 9P: CB#9

Inflow Area = 14,159 sf, 83.41% Impervious, Inflow Depth > 4.68" for 25-YEAR event
Inflow = 1.65 cfs @ 12.08 hrs, Volume= 5,522 cf
Outflow = 1.65 cfs @ 12.08 hrs, Volume= 5,522 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.65 cfs @ 12.08 hrs, Volume= 5,522 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.87' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.15' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.21 cfs @ 12.08 hrs HW=218.82' TW=218.75' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.21 cfs @ 1.25 fps)

Summary for Pond 10P: CB#10

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 5.37" for 25-YEAR event
Inflow = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf
Outflow = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.01' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.59'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.59' / 217.70' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 12.08 hrs HW=220.01' TW=218.81' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.68 cfs @ 2.19 fps)

Summary for Pond 12P: CB#12

Inflow Area =	23,749 sf,	95.15% Impervious,	Inflow Depth > 5.16"	for 25-YEAR event	
Inflow =	2.96 cfs @	12.08 hrs, Volume=	10,212 cf		
Outflow =	2.96 cfs @	12.08 hrs, Volume=	10,212 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.96 cfs @	12.08 hrs, Volume=	10,212 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.28' @ 12.10 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.95 cfs @ 12.08 hrs HW=218.25' TW=217.64' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.95 cfs @ 3.76 fps)

Summary for Pond 14P: CB#14

Inflow Area =	21,562 sf,	88.93% Impervious,	Inflow Depth > 4.91"	for 25-YEAR event	
Inflow =	2.58 cfs @	12.08 hrs, Volume=	8,824 cf		
Outflow =	2.58 cfs @	12.08 hrs, Volume=	8,824 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.58 cfs @	12.08 hrs, Volume=	8,824 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.16' @ 12.10 hrs
Flood Elev= 223.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.11'	**18.0" Round Culvert** L= 152.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.11' / 216.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.58 cfs @ 12.08 hrs HW=218.15' TW=217.64' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.58 cfs @ 2.78 fps)

Summary for Pond 15P: CB#15

Inflow Area =	13,436 sf,	82.23% Impervious,	Inflow Depth > 4.63"	for 25-YEAR event	
Inflow =	1.56 cfs @	12.08 hrs, Volume=	5,189 cf		
Outflow =	1.56 cfs @	12.08 hrs, Volume=	5,189 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	1.56 cfs @	12.08 hrs, Volume=	5,189 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.46' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.21' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.55 cfs @ 12.08 hrs HW=218.46' TW=218.15' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.55 cfs @ 2.45 fps)

Summary for Pond 16P: CB#16

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 5.37" for 25-YEAR event
Inflow = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf
Outflow = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 12.08 hrs, Volume= 2,407 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.14' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.72'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.72' / 217.70' S= 0.0701 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 12.08 hrs HW=220.14' TW=218.45' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.68 cfs @ 2.19 fps)

Summary for Pond 17P: CB#17

Inflow Area = 12,834 sf,100.00% Impervious, Inflow Depth > 5.37" for 25-YEAR event
Inflow = 1.62 cfs @ 12.08 hrs, Volume= 5,741 cf
Outflow = 1.62 cfs @ 12.08 hrs, Volume= 5,741 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.08 hrs, Volume= 5,741 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.04' @ 14.07 hrs
Flood Elev= 236.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.15'	**15.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.15' / 234.00' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.62 cfs @ 12.08 hrs HW=234.97' TW=234.73' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.62 cfs @ 2.69 fps)

Summary for Pond 18P: CB#18

Inflow Area =	19,404 sf,	68.86% Impervious,	Inflow Depth > 4.09"	for 25-YEAR event	
Inflow =	2.09 cfs @	12.09 hrs,	Volume=	6,609 cf	
Outflow =	2.09 cfs @	12.09 hrs,	Volume=	6,609 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.09 cfs @	12.09 hrs,	Volume=	6,609 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.04' @ 14.07 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.98'	**18.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.98' / 232.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.08 cfs @ 12.09 hrs HW=234.81' TW=234.74' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.08 cfs @ 1.23 fps)

Summary for Pond 19P: CB#19

Inflow Area =	9,491 sf,	64.25% Impervious,	Inflow Depth > 3.91"	for 25-YEAR event	
Inflow =	0.98 cfs @	12.09 hrs,	Volume=	3,091 cf	
Outflow =	0.98 cfs @	12.09 hrs,	Volume=	3,091 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.98 cfs @	12.09 hrs,	Volume=	3,091 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.04' @ 14.06 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	233.70'	**15.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 233.70' / 233.08' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.98 cfs @ 12.09 hrs HW=234.88' TW=234.81' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.98 cfs @ 1.06 fps)

Summary for Pond 21P: CB#21

Inflow Area =	10,579 sf,	100.00% Impervious,	Inflow Depth > 5.37"	for 25-YEAR event	
Inflow =	1.33 cfs @	12.08 hrs,	Volume=	4,732 cf	
Outflow =	1.33 cfs @	12.08 hrs,	Volume=	4,732 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.33 cfs @	12.08 hrs,	Volume=	4,732 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.04' @ 14.06 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.80'	**15.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.80' / 234.25' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.33 cfs @ 12.08 hrs HW=235.46' TW=234.97' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.33 cfs @ 2.94 fps)

Summary for Pond 22P: CB#22

Inflow Area = 6,630 sf,100.00% Impervious, Inflow Depth > 5.37" for 25-YEAR event
Inflow = 0.84 cfs @ 12.08 hrs, Volume= 2,966 cf
Outflow = 0.84 cfs @ 12.08 hrs, Volume= 2,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.08 hrs, Volume= 2,966 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.04' @ 14.07 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	235.20'	**15.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 235.20' / 234.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.08 hrs HW=235.76' TW=235.46' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.82 cfs @ 2.31 fps)

Summary for Pond 24P: CB#24

Inflow Area = 26,271 sf, 92.21% Impervious, Inflow Depth > 5.04" for 25-YEAR event
Inflow = 3.22 cfs @ 12.08 hrs, Volume= 11,031 cf
Outflow = 3.22 cfs @ 12.08 hrs, Volume= 11,031 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.22 cfs @ 12.08 hrs, Volume= 11,031 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 241.73' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	240.50'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.50' / 234.00' S= 0.0625 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.22 cfs @ 12.08 hrs HW=241.72' TW=234.73' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.22 cfs @ 4.09 fps)

Summary for Pond 25P: CB#25

Inflow Area = 19,795 sf, 95.32% Impervious, Inflow Depth > 5.17" for 25-YEAR event
Inflow = 2.46 cfs @ 12.08 hrs, Volume= 8,528 cf
Outflow = 2.46 cfs @ 12.08 hrs, Volume= 8,528 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.46 cfs @ 12.08 hrs, Volume= 8,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.42' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	243.50'	**12.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 243.50' / 240.60' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.08 hrs HW=244.41' TW=241.72' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.45 cfs @ 3.26 fps)

Summary for Pond 27P: CB#27

Inflow Area = 37,738 sf, 73.20% Impervious, Inflow Depth > 4.27" for 25-YEAR event
Inflow = 4.15 cfs @ 12.09 hrs, Volume= 13,425 cf
Outflow = 4.15 cfs @ 12.09 hrs, Volume= 13,425 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.15 cfs @ 12.09 hrs, Volume= 13,425 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.17' @ 12.10 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.93'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.93' / 215.88' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.14 cfs @ 12.09 hrs HW=218.14' TW=217.65' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.14 cfs @ 3.38 fps)

Summary for Pond 29P: DMH#29

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 1.36" for 25-YEAR event
Inflow = 2.98 cfs @ 12.53 hrs, Volume= 20,932 cf
Outflow = 2.98 cfs @ 12.53 hrs, Volume= 20,932 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.53 hrs, Volume= 20,932 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 238.79' @ 12.53 hrs
Flood Elev= 242.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	237.90'	**15.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.90' / 232.20' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.98 cfs @ 12.53 hrs HW=238.79' TW=233.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.98 cfs @ 3.21 fps)

Summary for Pond 30P: DMH#30

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 1.34" for 25-YEAR event
Inflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf
Outflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 233.00' @ 12.53 hrs
Flood Elev= 235.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.10'	**15.0" Round Culvert** L= 273.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.10' / 220.88' S= 0.0411 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.08 cfs @ 12.53 hrs HW=233.00' TW=221.68' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.08 cfs @ 3.24 fps)

Summary for Pond 32P: DMH#32

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 1.34" for 25-YEAR event
Inflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf
Outflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.68' @ 12.53 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	220.78'	**15.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.78' / 212.32' S= 0.0334 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.08 cfs @ 12.53 hrs HW=221.68' TW=213.21' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.08 cfs @ 3.24 fps)

Summary for Pond 33P: DMH#33

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 1.34" for 25-YEAR event
Inflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf
Outflow = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.53 hrs, Volume= 31,390 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.21' @ 12.53 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.22'	**15.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.22' / 212.00' S= 0.0129 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.08 cfs @ 12.53 hrs HW=213.21' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.08 cfs @ 4.04 fps)

Summary for Pond 47P: CB#47

Inflow Area = 2,272 sf,100.00% Impervious, Inflow Depth > 5.37" for 25-YEAR event
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 1,016 cf
Outflow = 0.29 cfs @ 12.08 hrs, Volume= 1,016 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.08 hrs, Volume= 1,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.75' @ 12.08 hrs
Flood Elev= 236.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	236.50'	**15.0" Round Culvert** L= 99.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 236.50' / 235.40' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.29 cfs @ 12.08 hrs HW=236.75' TW=235.76' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.29 cfs @ 2.50 fps)

Summary for Pond 101P: CB#101

Inflow Area = 256,408 sf, 11.33% Impervious, Inflow Depth > 0.54" for 25-YEAR event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 11,614 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 11,614 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 11,614 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.12' @ 12.42 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.20'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.20' / 212.08' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.89 cfs @ 12.09 hrs HW=213.12' TW=212.73' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.89 cfs @ 3.29 fps)

Summary for Pond 102P: HW#102

Inflow Area =	243,556 sf,	7.72% Impervious,	Inflow Depth > 0.33"	for 25-YEAR event
Inflow =	0.42 cfs @	12.11 hrs, Volume=	6,778 cf	
Outflow =	0.42 cfs @	12.11 hrs, Volume=	6,778 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.42 cfs @	12.11 hrs, Volume=	6,778 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.48' @ 12.10 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.12'	**12.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.12' / 212.30' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.42 cfs @ 12.11 hrs HW=213.48' TW=213.10' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.42 cfs @ 2.50 fps)

Summary for Pond 108P: CB#108

Inflow Area =	15,217 sf,	47.87% Impervious,	Inflow Depth > 3.30"	for 25-YEAR event
Inflow =	1.35 cfs @	12.09 hrs, Volume=	4,187 cf	
Outflow =	1.35 cfs @	12.09 hrs, Volume=	4,187 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.35 cfs @	12.09 hrs, Volume=	4,187 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.18' @ 12.11 hrs
Flood Elev= 225.98'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.37'	**15.0" Round Culvert** L= 30.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.37' / 220.00' S= 0.0449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.35 cfs @ 12.09 hrs HW=223.17' TW=223.12' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.35 cfs @ 1.10 fps)

Summary for Pond 112P: CB#112

Inflow Area =		7,976 sf,	90.47% Impervious,	Inflow Depth > 4.96"	for 25-YEAR event
Inflow	=	0.98 cfs @	12.08 hrs, Volume=	3,297 cf	
Outflow	=	0.98 cfs @	12.08 hrs, Volume=	3,297 cf,	Atten= 0%, Lag= 0.0 min
Primary	=	0.98 cfs @	12.08 hrs, Volume=	3,297 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.96' @ 12.52 hrs
Flood Elev= 222.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.20'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.20' / 217.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.98 cfs @ 12.08 hrs HW=219.85' TW=219.78' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.98 cfs @ 1.24 fps)

Summary for Pond 114P: DMH#114

Inflow Area =		92,418 sf,	25.78% Impervious,	Inflow Depth > 2.34"	for 25-YEAR event
Inflow	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf	
Outflow	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf,	Atten= 0%, Lag= 0.0 min
Primary	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.98' @ 12.50 hrs
Flood Elev= 226.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.19'	**24.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.19' / 218.00' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.45 cfs @ 12.13 hrs HW=220.45' TW=220.08' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.45 cfs @ 3.06 fps)

Summary for Pond 115P: DCB#115

Inflow Area =		92,418 sf,	25.78% Impervious,	Inflow Depth > 2.34"	for 25-YEAR event
Inflow	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf	
Outflow	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf,	Atten= 0%, Lag= 0.0 min
Primary	=	4.45 cfs @	12.13 hrs, Volume=	18,039 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.84' @ 12.13 hrs
Flood Elev= 227.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	**18.0" Round Culvert** L= 235.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 219.29' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.45 cfs @ 12.13 hrs HW=223.84' TW=220.45' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.45 cfs @ 3.45 fps)

Summary for Pond 116P: CB#116

Inflow Area = 60,922 sf, 4.24% Impervious, Inflow Depth > 1.48" for 25-YEAR event
Inflow = 1.71 cfs @ 12.20 hrs, Volume= 7,526 cf
Outflow = 1.71 cfs @ 12.20 hrs, Volume= 7,526 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.71 cfs @ 12.20 hrs, Volume= 7,526 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 228.58' @ 12.20 hrs
Flood Elev= 233.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	227.94'	**15.0" Round Culvert** L= 125.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 227.94' / 222.91' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.71 cfs @ 12.20 hrs HW=228.58' TW=223.74' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.71 cfs @ 2.72 fps)

Summary for Pond 119P: CB#119

Inflow Area = 89,050 sf, 56.36% Impervious, Inflow Depth > 3.59" for 25-YEAR event
Inflow = 6.95 cfs @ 12.10 hrs, Volume= 26,630 cf
Outflow = 6.95 cfs @ 12.10 hrs, Volume= 26,630 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.95 cfs @ 12.10 hrs, Volume= 26,630 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.98' @ 12.50 hrs
Flood Elev= 226.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	218.57'	**24.0" Round Culvert** L= 37.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 218.57' / 218.00' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.95 cfs @ 12.10 hrs HW=220.24' TW=219.90' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 6.95 cfs @ 3.36 fps)

Summary for Pond 120P: DCB#120

Inflow Area = 66,796 sf, 42.29% Impervious, Inflow Depth > 3.02" for 25-YEAR event
Inflow = 4.27 cfs @ 12.12 hrs, Volume= 16,788 cf
Outflow = 4.27 cfs @ 12.12 hrs, Volume= 16,788 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.27 cfs @ 12.12 hrs, Volume= 16,788 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.71' @ 12.12 hrs
Flood Elev= 227.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.71'	**18.0" Round Culvert** L= 269.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.71' / 218.67' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.27 cfs @ 12.12 hrs HW=223.71' TW=220.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.27 cfs @ 3.41 fps)

Summary for Pond 121P: CB#121

Inflow Area = 36,429 sf, 14.50% Impervious, Inflow Depth > 1.91" for 25-YEAR event
Inflow = 1.37 cfs @ 12.22 hrs, Volume= 5,809 cf
Outflow = 1.37 cfs @ 12.22 hrs, Volume= 5,809 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.22 hrs, Volume= 5,809 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 226.62' @ 12.22 hrs
Flood Elev= 230.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	226.06'	**15.0" Round Culvert** L= 54.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.06' / 222.81' S= 0.0600 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.37 cfs @ 12.22 hrs HW=226.62' TW=223.58' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.37 cfs @ 2.55 fps)

Summary for Pond B1: INFILTRATION POND 1

Inflow Area = 113,915 sf, 75.64% Impervious, Inflow Depth > 4.42" for 25-YEAR event
Inflow = 12.45 cfs @ 12.08 hrs, Volume= 41,976 cf
Outflow = 8.10 cfs @ 12.18 hrs, Volume= 34,345 cf, Atten= 35%, Lag= 5.5 min
Discarded = 0.20 cfs @ 12.18 hrs, Volume= 8,695 cf
Primary = 7.90 cfs @ 12.18 hrs, Volume= 25,650 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3

Peak Elev= 217.79' @ 12.18 hrs Surf.Area= 8,667 sf Storage= 15,269 cf
Flood Elev= 218.00' Surf.Area= 9,382 sf Storage= 17,174 cf

Plug-Flow detention time= 150.3 min calculated for 34,331 cf (82% of inflow)
Center-of-Mass det. time= 77.6 min (849.8 - 772.3)

Volume	Invert	Avail.Storage	Storage Description
#1	214.75'	17,174 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.75	2,279	0	0
216.00	4,499	4,236	4,236
217.00	5,997	5,248	9,484
218.00	9,382	7,690	17,174

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.75' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	214.75'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#3	Device 1	216.60'	**5.0" W x 13.2" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	217.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	217.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.20 cfs @ 12.18 hrs HW=217.79' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=7.89 cfs @ 12.18 hrs HW=217.79' TW=211.36' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.70 cfs of 10.51 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 1.70 cfs @ 3.70 fps)
│ └─**4=Orifice/Grate** (Controls 0.00 cfs)
└─**5=Broad-Crested Rectangular Weir** (Weir Controls 6.19 cfs @ 1.59 fps)

Summary for Pond B2: POCKET POND 1

Inflow Area = 97,359 sf, 70.69% Impervious, Inflow Depth > 4.26" for 25-YEAR event
Inflow = 10.14 cfs @ 12.09 hrs, Volume= 34,588 cf
Outflow = 0.56 cfs @ 14.07 hrs, Volume= 10,457 cf, Atten= 94%, Lag= 119.0 min
Primary = 0.56 cfs @ 14.07 hrs, Volume= 10,457 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Starting Elev= 232.50' Surf.Area= 4,585 sf Storage= 6,096 cf
Peak Elev= 236.04' @ 14.07 hrs Surf.Area= 9,366 sf Storage= 30,619 cf (24,522 cf above start)
Flood Elev= 237.00' Surf.Area= 10,865 sf Storage= 40,310 cf (34,214 cf above start)

Plug-Flow detention time= 719.0 min calculated for 4,361 cf (13% of inflow)

Center-of-Mass det. time= 207.1 min (977.5 - 770.4)

Volume	Invert	Avail.Storage	Storage Description
#1	229.00'	40,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
229.00	550	0	0
230.00	1,050	800	800
232.00	2,480	3,530	4,330
232.50	4,585	1,766	6,096
234.00	6,510	8,321	14,418
236.00	9,300	15,810	30,228
237.00	10,865	10,083	40,310

Device	Routing	Invert	Outlet Devices
#1	Primary	232.50'	**15.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.50' / 232.20' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	232.50'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	236.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.56 cfs @ 14.07 hrs HW=236.04' TW=232.63' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.56 cfs of 10.09 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.89 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.45 cfs @ 0.67 fps)

Summary for Pond B3: DETENTION POND 1

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 1.38" for 25-YEAR event
Inflow = 4.24 cfs @ 12.28 hrs, Volume= 21,262 cf
Outflow = 2.98 cfs @ 12.53 hrs, Volume= 20,932 cf, Atten= 30%, Lag= 15.0 min
Primary = 2.98 cfs @ 12.53 hrs, Volume= 20,932 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 245.12' @ 12.53 hrs Surf.Area= 3,374 sf Storage= 2,908 cf
Flood Elev= 248.00' Surf.Area= 8,476 sf Storage= 19,484 cf

Plug-Flow detention time= 22.9 min calculated for 20,924 cf (98% of inflow)
Center-of-Mass det. time= 14.5 min (901.2 - 886.7)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	19,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	904	0	0
246.00	2,300	3,204	3,204
248.00	4,238	6,538	9,742

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**12.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 244.00' / 238.00' S= 0.0583 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.98 cfs @ 12.53 hrs HW=245.12' TW=238.79' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.98 cfs @ 3.80 fps)

Summary for Pond B4: INFILTRATION POND 2

Inflow Area = 204,461 sf, 39.73% Impervious, Inflow Depth > 2.94" for 25-YEAR event
Inflow = 12.92 cfs @ 12.11 hrs, Volume= 50,151 cf
Outflow = 4.05 cfs @ 12.52 hrs, Volume= 35,345 cf, Atten= 69%, Lag= 24.8 min
Discarded = 0.18 cfs @ 12.52 hrs, Volume= 9,060 cf
Primary = 3.86 cfs @ 12.52 hrs, Volume= 26,285 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.96' @ 12.52 hrs Surf.Area= 7,983 sf Storage= 21,237 cf
Flood Elev= 222.00' Surf.Area= 9,536 sf Storage= 30,365 cf

Plug-Flow detention time= 175.0 min calculated for 35,330 cf (70% of inflow)
Center-of-Mass det. time= 76.6 min (885.0 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	30,365 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	2,693	0	0
218.00	4,247	3,470	3,470
220.00	6,556	10,803	14,273
222.00	9,536	16,092	30,365

Device	Routing	Invert	Outlet Devices
#1	Primary	214.44'	**12.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.44' / 214.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	220.00'	**10.0" Vert. Orifice X 2.00** C= 0.600
#3	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	217.00'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.18 cfs @ 12.52 hrs HW=220.96' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=3.86 cfs @ 12.52 hrs HW=220.96' TW=213.08' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.86 cfs of 9.28 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.86 cfs @ 3.54 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond B5: BIORETENTION POND 1

Inflow Area = 30,725 sf, 60.33% Impervious, Inflow Depth > 3.84" for 25-YEAR event
Inflow = 2.96 cfs @ 12.09 hrs, Volume= 9,839 cf
Outflow = 2.82 cfs @ 12.11 hrs, Volume= 9,839 cf, Atten= 5%, Lag= 1.6 min
Primary = 2.82 cfs @ 12.11 hrs, Volume= 9,839 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.13' @ 12.11 hrs Surf.Area= 1,335 sf Storage= 1,831 cf
Flood Elev= 224.00' Surf.Area= 1,738 sf Storage= 3,165 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 39.3 min (823.8 - 784.5)

Volume	Invert	Avail.Storage	Storage Description
#1	221.00'	3,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
221.00	424	0	0
222.00	810	617	617
224.00	1,738	2,548	3,165

Device	Routing	Invert	Outlet Devices
#1	Primary	217.55'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.55' / 217.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	223.00'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	221.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=2.81 cfs @ 12.11 hrs HW=223.13' TW=217.46' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.81 cfs of 8.52 cfs potential flow)
  ├─**2=Grate** (Weir Controls 2.50 cfs @ 1.19 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.31 cfs)

Summary for Pond B6: DETENTION POND 2

Inflow Area = 232,259 sf, 8.10% Impervious, Inflow Depth > 1.67" for 25-YEAR event
Inflow = 5.87 cfs @ 12.25 hrs, Volume= 32,261 cf
Outflow = 0.23 cfs @ 20.08 hrs, Volume= 5,342 cf, Atten= 96%, Lag= 469.7 min
Primary = 0.23 cfs @ 20.08 hrs, Volume= 5,342 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.27' @ 20.08 hrs Surf.Area= 9,986 sf Storage= 27,229 cf
Flood Elev= 222.00' Surf.Area= 11,980 sf Storage= 46,271 cf

Plug-Flow detention time= 562.5 min calculated for 5,342 cf (17% of inflow)
Center-of-Mass det. time= 364.9 min (1,234.0 - 869.1)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	46,271 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	3,390	0	0
218.00	3,847	3,619	3,619
220.00	4,840	8,687	12,306
222.00	5,990	10,830	23,136

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.50' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.00'	**2.0" Vert. Orifice** C= 0.600
#3	Device 1	220.00'	**6.0" Vert. Orifice** C= 0.600
#4	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 20.08 hrs HW=220.27' TW=220.07' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.23 cfs of 1.69 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.05 cfs @ 2.15 fps)
  ├─**3=Orifice** (Orifice Controls 0.19 cfs @ 1.76 fps)
  └─**4=Grate** (Controls 0.00 cfs)

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 23.33% Impervious, Inflow Depth > 1.36" for 25-YEAR event
Inflow = 20.47 cfs @ 12.24 hrs, Volume= 135,943 cf
Primary = 20.47 cfs @ 12.24 hrs, Volume= 135,943 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs

Time span=0.00-24.00 hrs, dt=0.010 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Runoff Area=194,527 sf 0.14% Impervious Runoff Depth>1.98"
Flow Length=716' Tc=16.8 min CN=55.4 Runoff=6.93 cfs 32,056 cf

Subcatchment2S: Runoff Area=60,922 sf 4.24% Impervious Runoff Depth>2.18"
Flow Length=809' Tc=13.6 min CN=57.6 Runoff=2.65 cfs 11,044 cf

Subcatchment3S: Runoff Area=36,429 sf 14.50% Impervious Runoff Depth>2.70"
Flow Length=674' Tc=14.5 min CN=63.2 Runoff=1.98 cfs 8,192 cf

Subcatchment4S: Runoff Area=48,409 sf 6.73% Impervious Runoff Depth>2.27"
Flow Length=779' Tc=17.6 min CN=58.6 Runoff=2.00 cfs 9,142 cf

Subcatchment5S: Runoff Area=136,374 sf 0.00% Impervious Runoff Depth>1.97"
Flow Length=903' Tc=18.3 min CN=55.4 Runoff=4.69 cfs 22,416 cf

Subcatchment6S: Runoff Area=299,000 sf 0.73% Impervious Runoff Depth>1.98"
Flow Length=520' Tc=13.3 min CN=55.4 Runoff=11.64 cfs 49,363 cf

Subcatchment7S: Runoff Area=14,561 sf 25.68% Impervious Runoff Depth>3.43"
Tc=6.0 min CN=70.5 Runoff=1.35 cfs 4,167 cf

Subcatchment8S: Runoff Area=13,429 sf 0.00% Impervious Runoff Depth>2.50"
Tc=6.0 min CN=61.0 Runoff=0.88 cfs 2,796 cf

Subcatchment9S: Runoff Area=5,750 sf 82.97% Impervious Runoff Depth>5.74"
Tc=6.0 min CN=91.7 Runoff=0.83 cfs 2,750 cf

Subcatchment10S: Runoff Area=8,237 sf 91.84% Impervious Runoff Depth>6.12"
Tc=6.0 min CN=95.0 Runoff=1.23 cfs 4,201 cf

Subcatchment11S: Runoff Area=14,549 sf 92.08% Impervious Runoff Depth>6.13"
Tc=6.0 min CN=95.1 Runoff=2.17 cfs 7,433 cf

Subcatchment12S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=1.39 cfs 4,965 cf

Subcatchment13S: BUILDING 1 Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=1.39 cfs 4,965 cf

Subcatchment14S: Runoff Area=8,778 sf 73.24% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=88.1 Runoff=1.21 cfs 3,897 cf

Subcatchment15S: Runoff Area=8,055 sf 70.37% Impervious Runoff Depth>5.21"
Tc=6.0 min CN=87.0 Runoff=1.09 cfs 3,496 cf

Subcatchment16S: Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=0.81 cfs 2,904 cf

Subcatchment17S:	Runoff Area=5,381 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=0.81 cfs 2,904 cf
Subcatchment18S:	Runoff Area=12,630 sf 75.22% Impervious Runoff Depth>5.41" Tc=6.0 min CN=88.8 Runoff=1.76 cfs 5,695 cf
Subcatchment19S: BUILDING 2	Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=1.39 cfs 4,965 cf
Subcatchment20S: BUILDING 2	Runoff Area=9,200 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=1.39 cfs 4,965 cf
Subcatchment21S:	Runoff Area=8,126 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=1.23 cfs 4,385 cf
Subcatchment22S:	Runoff Area=9,491 sf 64.25% Impervious Runoff Depth>4.96" Tc=6.0 min CN=84.8 Runoff=1.24 cfs 3,919 cf
Subcatchment23S:	Runoff Area=9,913 sf 73.27% Impervious Runoff Depth>5.33" Tc=6.0 min CN=88.1 Runoff=1.36 cfs 4,402 cf
Subcatchment24S:	Runoff Area=4,358 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=0.66 cfs 2,352 cf
Subcatchment25S:	Runoff Area=3,949 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=0.60 cfs 2,131 cf
Subcatchment26S: BUILDING 3	Runoff Area=13,600 sf 100.00% Impervious Runoff Depth>6.48" Tc=6.0 min CN=98.0 Runoff=2.06 cfs 7,340 cf
Subcatchment27S:	Runoff Area=6,195 sf 85.04% Impervious Runoff Depth>5.83" Tc=6.0 min CN=92.5 Runoff=0.90 cfs 3,008 cf
Subcatchment28S:	Runoff Area=6,476 sf 82.72% Impervious Runoff Depth>5.73" Tc=6.0 min CN=91.6 Runoff=0.93 cfs 3,091 cf
Subcatchment29S:	Runoff Area=20,450 sf 0.00% Impervious Runoff Depth>2.50" Tc=6.0 min CN=61.0 Runoff=1.34 cfs 4,257 cf
Subcatchment30S:	Runoff Area=12,852 sf 79.69% Impervious Runoff Depth>5.60" Tc=6.0 min CN=90.5 Runoff=1.83 cfs 5,997 cf
Subcatchment31S:	Runoff Area=8,139 sf 0.00% Impervious Runoff Depth>2.50" Tc=6.0 min CN=61.0 Runoff=0.53 cfs 1,694 cf
Subcatchment32S:	Runoff Area=15,017 sf 0.00% Impervious Runoff Depth>2.50" Tc=6.0 min CN=61.0 Runoff=0.98 cfs 3,126 cf
Subcatchment33S:	Runoff Area=11,297 sf 0.00% Impervious Runoff Depth>2.26" Tc=6.0 min CN=58.4 Runoff=0.66 cfs 2,126 cf

Subcatchment34S: Runoff Area=7,007 sf 0.00% Impervious Runoff Depth>2.50"
Tc=6.0 min CN=61.0 Runoff=0.46 cfs 1,459 cf

Subcatchment35S: Runoff Area=4,258 sf 0.00% Impervious Runoff Depth>2.50"
Tc=6.0 min CN=61.0 Runoff=0.28 cfs 886 cf

Subcatchment36S: Runoff Area=7,976 sf 90.47% Impervious Runoff Depth>6.06"
Tc=6.0 min CN=94.5 Runoff=1.18 cfs 4,028 cf

Subcatchment37S: Runoff Area=11,004 sf 97.16% Impervious Runoff Depth>6.35"
Tc=6.0 min CN=97.0 Runoff=1.66 cfs 5,825 cf

Subcatchment38S: Runoff Area=15,217 sf 47.87% Impervious Runoff Depth>4.29"
Tc=6.0 min CN=78.7 Runoff=1.75 cfs 5,445 cf

Subcatchment40S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=1.70 cfs 6,071 cf

Subcatchment41S: BUILDING 4 Runoff Area=11,250 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=1.70 cfs 6,071 cf

Subcatchment42S: Runoff Area=31,496 sf 67.44% Impervious Runoff Depth>5.06"
Flow Length=469' Tc=7.4 min CN=85.7 Runoff=3.98 cfs 13,279 cf

Subcatchment43S: Runoff Area=30,367 sf 75.63% Impervious Runoff Depth>5.41"
Flow Length=454' Tc=7.3 min CN=88.9 Runoff=4.04 cfs 13,699 cf

Subcatchment45S: Runoff Area=2,272 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=0.34 cfs 1,226 cf

Subcatchment46S: Runoff Area=2,255 sf 100.00% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=98.0 Runoff=0.34 cfs 1,217 cf

Subcatchment47S: Runoff Area=10,949 sf 57.68% Impervious Runoff Depth>4.69"
Tc=6.0 min CN=82.3 Runoff=1.36 cfs 4,276 cf

Subcatchment50S: Runoff Area=12,488 sf 0.00% Impervious Runoff Depth>2.38"
Tc=6.0 min CN=59.7 Runoff=0.77 cfs 2,473 cf

Reach 1R: SWALE Avg. Flow Depth=1.76' Max Vel=1.89 fps Inflow=18.92 cfs 110,525 cf
n=0.069 L=255.0' S=0.0078 '/' Capacity=24.34 cfs Outflow=18.32 cfs 110,342 cf

Reach 2R: SWALE Avg. Flow Depth=0.27' Max Vel=2.61 fps Inflow=2.00 cfs 9,142 cf
n=0.025 L=126.0' S=0.0159 '/' Capacity=26.66 cfs Outflow=1.99 cfs 9,134 cf

Reach 3R: SWALE Avg. Flow Depth=0.40' Max Vel=6.09 fps Inflow=6.93 cfs 32,056 cf
n=0.025 L=550.0' S=0.0527 '/' Capacity=174.16 cfs Outflow=6.89 cfs 32,003 cf

Reach 4R: SWALE Avg. Flow Depth=1.22' Max Vel=1.23 fps Inflow=6.68 cfs 68,819 cf
n=0.069 L=177.0' S=0.0050 '/' Capacity=19.38 cfs Outflow=6.66 cfs 68,688 cf

Reach 5R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps
24.0" Round Pipe n=0.013 L=37.9' S=0.0150 '/' Capacity=27.74 cfs Outflow=0.00 cfs 0 cf

Reach 33R: SWALE Avg. Flow Depth=0.12' Max Vel=2.46 fps Inflow=0.68 cfs 20,410 cf
n=0.025 L=182.0' S=0.0330 '/' Capacity=31.32 cfs Outflow=0.68 cfs 20,380 cf

Pond 1P: HW#1 Peak Elev=215.98' Inflow=6.66 cfs 68,688 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=6.66 cfs 68,688 cf

Pond 2P: CB#2 Peak Elev=212.98' Inflow=6.86 cfs 71,438 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=6.86 cfs 71,438 cf

Pond 7P: CB#7 Peak Elev=218.34' Inflow=2.62 cfs 9,166 cf
12.0" Round Culvert n=0.013 L=12.7' S=0.0102 '/' Outflow=2.62 cfs 9,166 cf

Pond 8P: CB#8 Peak Elev=219.53' Inflow=3.78 cfs 12,496 cf
15.0" Round Culvert n=0.013 L=204.0' S=0.0050 '/' Outflow=3.78 cfs 12,496 cf

Pond 9P: CB#9 Peak Elev=219.66' Inflow=2.02 cfs 6,801 cf
15.0" Round Culvert n=0.013 L=90.0' S=0.0050 '/' Outflow=2.02 cfs 6,801 cf

Pond 10P: CB#10 Peak Elev=220.07' Inflow=0.81 cfs 2,904 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0700 '/' Outflow=0.81 cfs 2,904 cf

Pond 12P: CB#12 Peak Elev=218.74' Inflow=3.56 cfs 12,398 cf
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=3.56 cfs 12,398 cf

Pond 14P: CB#14 Peak Elev=218.33' Inflow=3.13 cfs 10,785 cf
18.0" Round Culvert n=0.013 L=152.5' S=0.0050 '/' Outflow=3.13 cfs 10,785 cf

Pond 15P: CB#15 Peak Elev=218.61' Inflow=1.90 cfs 6,400 cf
15.0" Round Culvert n=0.013 L=78.0' S=0.0050 '/' Outflow=1.90 cfs 6,400 cf

Pond 16P: CB#16 Peak Elev=220.18' Inflow=0.81 cfs 2,904 cf
12.0" Round Culvert n=0.013 L=28.8' S=0.0701 '/' Outflow=0.81 cfs 2,904 cf

Pond 17P: CB#17 Peak Elev=236.13' Inflow=1.94 cfs 6,926 cf
15.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=1.94 cfs 6,926 cf

Pond 18P: CB#18 Peak Elev=236.13' Inflow=2.60 cfs 8,321 cf
18.0" Round Culvert n=0.013 L=96.0' S=0.0050 '/' Outflow=2.60 cfs 8,321 cf

Pond 19P: CB#19 Peak Elev=236.13' Inflow=1.24 cfs 3,919 cf
15.0" Round Culvert n=0.013 L=123.0' S=0.0050 '/' Outflow=1.24 cfs 3,919 cf

Pond 21P: CB#21 Peak Elev=236.13' Inflow=1.60 cfs 5,709 cf
15.0" Round Culvert n=0.013 L=74.0' S=0.0074 '/' Outflow=1.60 cfs 5,709 cf

Pond 22P: CB#22 Peak Elev=236.13' Inflow=1.00 cfs 3,578 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=1.00 cfs 3,578 cf

Pond 24P: CB#24 Peak Elev=242.06' Inflow=3.89 cfs 13,439 cf
12.0" Round Culvert n=0.013 L=104.0' S=0.0625 '/' Outflow=3.89 cfs 13,439 cf

Pond 25P: CB#25 Peak Elev=244.61' Inflow=2.96 cfs 10,348 cf
12.0" Round Culvert n=0.013 L=128.0' S=0.0227 '/' Outflow=2.96 cfs 10,348 cf

Pond 27P: CB#27 Peak Elev=218.61' Inflow=5.14 cfs 16,773 cf
15.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=5.14 cfs 16,773 cf

Pond 29P: DMH#29 Peak Elev=239.01' Inflow=4.14 cfs 31,162 cf
15.0" Round Culvert n=0.013 L=156.0' S=0.0365 '/' Outflow=4.14 cfs 31,162 cf

Pond 30P: DMH#30 Peak Elev=233.94' Inflow=6.52 cfs 49,858 cf
15.0" Round Culvert n=0.013 L=273.0' S=0.0411 '/' Outflow=6.52 cfs 49,858 cf

Pond 32P: DMH#32 Peak Elev=222.62' Inflow=6.52 cfs 49,858 cf
15.0" Round Culvert n=0.013 L=253.0' S=0.0334 '/' Outflow=6.52 cfs 49,858 cf

Pond 33P: DMH#33 Peak Elev=214.08' Inflow=6.52 cfs 49,858 cf
15.0" Round Culvert n=0.013 L=17.0' S=0.0129 '/' Outflow=6.52 cfs 49,858 cf

Pond 47P: CB#47 Peak Elev=236.78' Inflow=0.34 cfs 1,226 cf
15.0" Round Culvert n=0.013 L=99.0' S=0.0111 '/' Outflow=0.34 cfs 1,226 cf

Pond 101P: CB#101 Peak Elev=213.47' Inflow=2.45 cfs 26,377 cf
12.0" Round Culvert n=0.013 L=23.0' S=0.0052 '/' Outflow=2.45 cfs 26,377 cf

Pond 102P: HW#102 Peak Elev=213.67' Inflow=0.68 cfs 20,380 cf
12.0" Round Culvert n=0.013 L=41.0' S=0.0200 '/' Outflow=0.68 cfs 20,380 cf

Pond 108P: CB#108 Peak Elev=223.25' Inflow=1.75 cfs 5,445 cf
15.0" Round Culvert n=0.013 L=30.5' S=0.0449 '/' Outflow=1.75 cfs 5,445 cf

Pond 112P: CB#112 Peak Elev=221.55' Inflow=1.18 cfs 4,028 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=1.18 cfs 4,028 cf

Pond 114P: DMH#114 Peak Elev=221.58' Inflow=6.05 cfs 24,323 cf
24.0" Round Culvert n=0.013 L=79.0' S=0.0151 '/' Outflow=6.05 cfs 24,323 cf

Pond 115P: DCB#115 Peak Elev=224.07' Inflow=6.05 cfs 24,323 cf
18.0" Round Culvert n=0.013 L=235.0' S=0.0150 '/' Outflow=6.05 cfs 24,323 cf

Pond 116P: CB#116 Peak Elev=228.76' Inflow=2.65 cfs 11,044 cf
15.0" Round Culvert n=0.013 L=125.7' S=0.0400 '/' Outflow=2.65 cfs 11,044 cf

Pond 119P: CB#119 Peak Elev=221.59' Inflow=8.73 cfs 33,786 cf
24.0" Round Culvert n=0.013 L=37.9' S=0.0150 '/' Outflow=8.73 cfs 33,786 cf

Pond 120P: DCB#120 Peak Elev=223.89' Inflow=5.53 cfs 21,891 cf
18.0" Round Culvert n=0.013 L=269.0' S=0.0150 '/' Outflow=5.53 cfs 21,891 cf

Pond 121P: CB#121 Peak Elev=226.75' Inflow=1.98 cfs 8,192 cf
15.0" Round Culvert n=0.013 L=54.2' S=0.0600 '/' Outflow=1.98 cfs 8,192 cf

Pond B1: INFILTRATIONPOND 1 Peak Elev=217.92' Storage=16,409 cf Inflow=15.32 cfs 51,917 cf
Discarded=0.21 cfs 9,140 cf Primary=11.83 cfs 34,921 cf Outflow=12.04 cfs 44,060 cf

Pond B2: POCKET POND 1 Peak Elev=236.12' Storage=31,401 cf Inflow=12.55 cfs 42,873 cf
Outflow=2.40 cfs 18,696 cf

Pond B3: DETENTION POND 1 Peak Elev=245.70' Storage=5,075 cf Inflow=6.68 cfs 31,549 cf
12.0" Round Culvert n=0.013 L=103.0' S=0.0583 '/' Outflow=4.14 cfs 31,162 cf

Pond B4: INFILTRATIONPOND 2 Peak Elev=221.55' Storage=26,191 cf Inflow=16.76 cfs 65,264 cf
Discarded=0.21 cfs 9,507 cf Primary=5.84 cfs 40,747 cf Outflow=6.05 cfs 50,255 cf

Pond B5: BIORETENTIONPOND 1 Peak Elev=223.16' Storage=1,870 cf Inflow=3.73 cfs 12,402 cf
Outflow=3.69 cfs 12,403 cf

Pond B6: DETENTION POND 2 Peak Elev=220.63' Storage=30,893 cf Inflow=8.95 cfs 45,865 cf
Outflow=0.65 cfs 18,283 cf

Link A: CHASE BROOK Inflow=33.13 cfs 212,035 cf
Primary=33.13 cfs 212,035 cf

Summary for Subcatchment 1S:

Runoff = 6.93 cfs @ 12.25 hrs, Volume= 32,056 cf, Depth> 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
270	98.0	Paved parking, HSG B
12,010	61.0	>75% Grass cover, Good, HSG B
182,247	55.0	Woods, Good, HSG B
194,527	55.4	Weighted Average
194,257	55.4	99.86% Pervious Area
270	98.0	0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0550	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.0	325	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	281	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	716	Total			

Summary for Subcatchment 2S:

Runoff = 2.65 cfs @ 12.20 hrs, Volume= 11,044 cf, Depth> 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
2,582	98.0	Paved parking, HSG B
7,802	61.0	>75% Grass cover, Good, HSG B
50,538	55.0	Woods, Good, HSG B
60,922	57.6	Weighted Average
58,340	55.8	95.76% Pervious Area
2,582	98.0	4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
5.5	470	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	84	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	205	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.6	809	Total			

Summary for Subcatchment 3S:

Runoff = 1.98 cfs @ 12.21 hrs, Volume= 8,192 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,283	98.0	Paved parking, HSG B
11,639	61.0	>75% Grass cover, Good, HSG B
19,507	55.0	Woods, Good, HSG B
36,429	63.2	Weighted Average
31,146	57.2	85.50% Pervious Area
5,283	98.0	14.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.6	600	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.4000	4.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	674	Total			

Summary for Subcatchment 4S:

Runoff = 2.00 cfs @ 12.26 hrs, Volume= 9,142 cf, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
3,260	98.0	Roofs, HSG B
5,695	61.0	>75% Grass cover, Good, HSG B
39,454	55.0	Woods, Good, HSG B
48,409	58.6	Weighted Average
45,149	55.8	93.27% Pervious Area
3,260	98.0	6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
9.2	729	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	779	Total			

Summary for Subcatchment 5S:

Runoff = 4.69 cfs @ 12.28 hrs, Volume= 22,416 cf, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
8,709	61.0	>75% Grass cover, Good, HSG B
127,665	55.0	Woods, Good, HSG B
136,374	55.4	Weighted Average
136,374	55.4	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	50	0.1100	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
7.8	567	0.0580	1.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	286	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	903	Total			

Summary for Subcatchment 6S:

Runoff = 11.64 cfs @ 12.20 hrs, Volume= 49,363 cf, Depth> 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
2,193	98.0	Paved parking, HSG B
6,633	61.0	>75% Grass cover, Good, HSG B
290,174	55.0	Woods, Good, HSG B
299,000	55.4	Weighted Average
296,807	55.1	99.27% Pervious Area
2,193	98.0	0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
2.0	210	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	210	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.2400	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	520	Total			

Summary for Subcatchment 7S:

Runoff = 1.35 cfs @ 12.09 hrs, Volume= 4,167 cf, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
3,739	98.0	Paved parking, HSG B
10,822	61.0	>75% Grass cover, Good, HSG B
14,561	70.5	Weighted Average
10,822	61.0	74.32% Pervious Area
3,739	98.0	25.68% Impervious Area

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

Summary for Subcatchment 8S:

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 2,796 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
13,429	61.0	>75% Grass cover, Good, HSG B
13,429	61.0	100.00% Pervious Area

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

Summary for Subcatchment 9S:

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 2,750 cf, Depth> 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
4,771	98.0	Paved parking, HSG B
979	61.0	>75% Grass cover, Good, HSG B
5,750	91.7	Weighted Average
979	61.0	17.03% Pervious Area
4,771	98.0	82.97% Impervious Area

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

Summary for Subcatchment 10S:

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 4,201 cf, Depth> 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
7,565	98.0	Paved parking, HSG B
672	61.0	>75% Grass cover, Good, HSG B
8,237	95.0	Weighted Average
672	61.0	8.16% Pervious Area
7,565	98.0	91.84% Impervious Area

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

Summary for Subcatchment 11S:

Runoff = 2.17 cfs @ 12.08 hrs, Volume= 7,433 cf, Depth> 6.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
13,397	98.0	Paved parking, HSG B
1,152	61.0	>75% Grass cover, Good, HSG B
14,549	95.1	Weighted Average
1,152	61.0	7.92% Pervious Area
13,397	98.0	92.08% Impervious Area

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

Summary for Subcatchment 12S: BUILDING 1

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,965 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 13S: BUILDING 1

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,965 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 14S:

Runoff = 1.21 cfs @ 12.08 hrs, Volume= 3,897 cf, Depth> 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
6,429	98.0	Paved parking, HSG B
2,349	61.0	>75% Grass cover, Good, HSG B
8,778	88.1	Weighted Average
2,349	61.0	26.76% Pervious Area
6,429	98.0	73.24% Impervious Area

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

Summary for Subcatchment 15S:

Runoff = 1.09 cfs @ 12.09 hrs, Volume= 3,496 cf, Depth> 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,668	98.0	Paved parking, HSG B
2,387	61.0	>75% Grass cover, Good, HSG B
8,055	87.0	Weighted Average
2,387	61.0	29.63% Pervious Area
5,668	98.0	70.37% Impervious Area

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

Summary for Subcatchment 16S:

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,904 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 17S:

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,904 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,381	98.0	Paved parking, HSG B
5,381	98.0	100.00% Impervious Area

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

Summary for Subcatchment 18S:

Runoff = 1.76 cfs @ 12.08 hrs, Volume= 5,695 cf, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,500	98.0	Paved parking, HSG B
3,130	61.0	>75% Grass cover, Good, HSG B
12,630	88.8	Weighted Average
3,130	61.0	24.78% Pervious Area
9,500	98.0	75.22% Impervious Area

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

Summary for Subcatchment 19S: BUILDING 2

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,965 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 20S: BUILDING 2

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,965 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,200	98.0	Roofs, HSG B
9,200	98.0	100.00% Impervious Area

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

Summary for Subcatchment 21S:

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 4,385 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
8,126	98.0	Paved parking, HSG B
8,126	98.0	100.00% Impervious Area

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

Summary for Subcatchment 22S:

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 3,919 cf, Depth> 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
6,098	98.0	Paved parking, HSG B
3,393	61.0	>75% Grass cover, Good, HSG B
9,491	84.8	Weighted Average
3,393	61.0	35.75% Pervious Area
6,098	98.0	64.25% Impervious Area

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

Summary for Subcatchment 23S:

Runoff = 1.36 cfs @ 12.08 hrs, Volume= 4,402 cf, Depth> 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
7,263	98.0	Paved parking, HSG B
2,650	61.0	>75% Grass cover, Good, HSG B
9,913	88.1	Weighted Average
2,650	61.0	26.73% Pervious Area
7,263	98.0	73.27% Impervious Area

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

Summary for Subcatchment 24S:

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 2,352 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
4,358	98.0	Paved parking, HSG B
4,358	98.0	100.00% Impervious Area

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

Summary for Subcatchment 25S:

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 2,131 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
3,949	98.0	Paved parking, HSG B
3,949	98.0	100.00% Impervious Area

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

Summary for Subcatchment 26S: BUILDING 3

Runoff = 2.06 cfs @ 12.08 hrs, Volume= 7,340 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
13,600	98.0	Roofs, HSG B
13,600	98.0	100.00% Impervious Area

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

Summary for Subcatchment 27S:

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 3,008 cf, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,268	98.0	Paved parking, HSG B
927	61.0	>75% Grass cover, Good, HSG B
6,195	92.5	Weighted Average
927	61.0	14.96% Pervious Area
5,268	98.0	85.04% Impervious Area

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

Summary for Subcatchment 28S:

Runoff = 0.93 cfs @ 12.08 hrs, Volume= 3,091 cf, Depth> 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
5,357	98.0	Paved parking, HSG B
1,119	61.0	>75% Grass cover, Good, HSG B
6,476	91.6	Weighted Average
1,119	61.0	17.28% Pervious Area
5,357	98.0	82.72% Impervious Area

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

Summary for Subcatchment 29S:

Runoff = 1.34 cfs @ 12.09 hrs, Volume= 4,257 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
20,450	61.0	>75% Grass cover, Good, HSG B
20,450	61.0	100.00% Pervious Area

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

Summary for Subcatchment 30S:

Runoff = 1.83 cfs @ 12.08 hrs, Volume= 5,997 cf, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
10,242	98.0	Paved parking, HSG B
2,610	61.0	>75% Grass cover, Good, HSG B
12,852	90.5	Weighted Average
2,610	61.0	20.31% Pervious Area
10,242	98.0	79.69% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 1,694 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
8,139	61.0	>75% Grass cover, Good, HSG B
8,139	61.0	100.00% Pervious Area

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

Summary for Subcatchment 32S:

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,126 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
15,017	61.0	>75% Grass cover, Good, HSG B
15,017	61.0	100.00% Pervious Area

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

Summary for Subcatchment 33S:

Runoff = 0.66 cfs @ 12.10 hrs, Volume= 2,126 cf, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
6,480	61.0	>75% Grass cover, Good, HSG B
4,817	55.0	Woods, Good, HSG B
11,297	58.4	Weighted Average
11,297	58.4	100.00% Pervious Area

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

Summary for Subcatchment 34S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,459 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
7,007	61.0	>75% Grass cover, Good, HSG B
7,007	61.0	100.00% Pervious Area

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

Summary for Subcatchment 35S:

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 886 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
4,258	61.0	>75% Grass cover, Good, HSG B
4,258	61.0	100.00% Pervious Area

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

Summary for Subcatchment 36S:

Runoff = 1.18 cfs @ 12.08 hrs, Volume= 4,028 cf, Depth> 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
7,216	98.0	Paved parking, HSG B
760	61.0	>75% Grass cover, Good, HSG B
7,976	94.5	Weighted Average
760	61.0	9.53% Pervious Area
7,216	98.0	90.47% Impervious Area

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

Summary for Subcatchment 37S:

Runoff = 1.66 cfs @ 12.08 hrs, Volume= 5,825 cf, Depth> 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
10,692	98.0	Paved parking, HSG B
312	61.0	>75% Grass cover, Good, HSG B
11,004	97.0	Weighted Average
312	61.0	2.84% Pervious Area
10,692	98.0	97.16% Impervious Area

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

Summary for Subcatchment 38S:

Runoff = 1.75 cfs @ 12.09 hrs, Volume= 5,445 cf, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
7,285	98.0	Paved parking, HSG B
7,932	61.0	>75% Grass cover, Good, HSG B
15,217	78.7	Weighted Average
7,932	61.0	52.13% Pervious Area
7,285	98.0	47.87% Impervious Area

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

Summary for Subcatchment 40S: BUILDING 4

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 6,071 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 41S: BUILDING 4

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 6,071 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
11,250	98.0	Roofs, HSG B
11,250	98.0	100.00% Impervious Area

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

Summary for Subcatchment 42S:

Runoff = 3.98 cfs @ 12.10 hrs, Volume= 13,279 cf, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
21,240	98.0	Paved parking, HSG B
9,027	61.0	>75% Grass cover, Good, HSG B
1,229	55.0	Woods, Good, HSG B
31,496	85.7	Weighted Average
10,256	60.3	32.56% Pervious Area
21,240	98.0	67.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.2200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	80	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	295	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	469	Total			

Summary for Subcatchment 43S:

Runoff = 4.04 cfs @ 12.10 hrs, Volume= 13,699 cf, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
22,966	98.0	Paved parking, HSG B
3,724	61.0	>75% Grass cover, Good, HSG B
3,677	60.0	Woods, Fair, HSG B
30,367	88.9	Weighted Average
7,401	60.5	24.37% Pervious Area
22,966	98.0	75.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.2400	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.2	80	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	44	0.2700	3.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	280	0.0470	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.3	454	Total			

Summary for Subcatchment 45S:

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 1,226 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
2,272	98.0	Paved parking, HSG B
2,272	98.0	100.00% Impervious Area

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

Summary for Subcatchment 46S:

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 1,217 cf, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
2,255	98.0	Paved parking, HSG B
2,255	98.0	100.00% Impervious Area

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

Summary for Subcatchment 47S:

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 4,276 cf, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
6,315	98.0	Paved parking, HSG B
4,634	61.0	>75% Grass cover, Good, HSG B
10,949	82.3	Weighted Average
4,634	61.0	42.32% Pervious Area
6,315	98.0	57.68% Impervious Area

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

Summary for Subcatchment 50S:

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 2,473 cf, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs
Type III 24-hr 50-YEAR Rainfall=6.72"

Area (sf)	CN	Description
9,796	61.0	>75% Grass cover, Good, HSG B
2,692	55.0	Woods, Good, HSG B
12,488	59.7	Weighted Average
12,488	59.7	100.00% Pervious Area

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

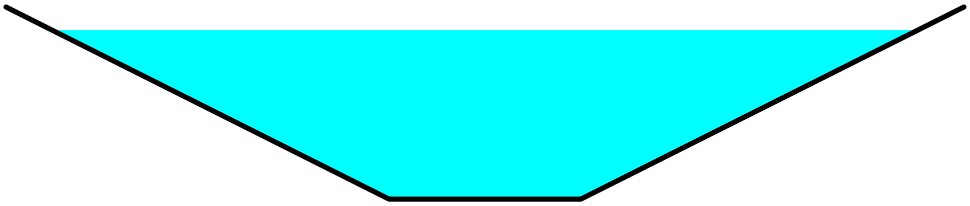
Summary for Reach 1R: SWALE

Inflow Area = 603,234 sf, 33.97% Impervious, Inflow Depth > 2.20" for 50-YEAR event
Inflow = 18.92 cfs @ 12.15 hrs, Volume= 110,525 cf
Outflow = 18.32 cfs @ 12.19 hrs, Volume= 110,342 cf, Atten= 3%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.89 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 6.0 min

Peak Storage= 2,476 cf @ 12.19 hrs
Average Depth at Peak Storage= 1.76'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 24.34 cfs

2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 255.0' Slope= 0.0078 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'



Summary for Reach 2R: SWALE

Inflow Area = 48,409 sf, 6.73% Impervious, Inflow Depth > 2.27" for 50-YEAR event
Inflow = 2.00 cfs @ 12.26 hrs, Volume= 9,142 cf
Outflow = 1.99 cfs @ 12.27 hrs, Volume= 9,134 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 2.61 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 2.1 min

Peak Storage= 96 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 26.66 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 126.0' Slope= 0.0159 '/'
Inlet Invert= 248.00', Outlet Invert= 246.00'

‡

Summary for Reach 3R: SWALE

Inflow Area = 194,527 sf, 0.14% Impervious, Inflow Depth > 1.98" for 50-YEAR event
Inflow = 6.93 cfs @ 12.25 hrs, Volume= 32,056 cf
Outflow = 6.89 cfs @ 12.27 hrs, Volume= 32,003 cf, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 6.09 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.48 fps, Avg. Travel Time= 3.7 min

Peak Storage= 623 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 174.16 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 550.0' Slope= 0.0527 '/'
Inlet Invert= 252.00', Outlet Invert= 223.00'

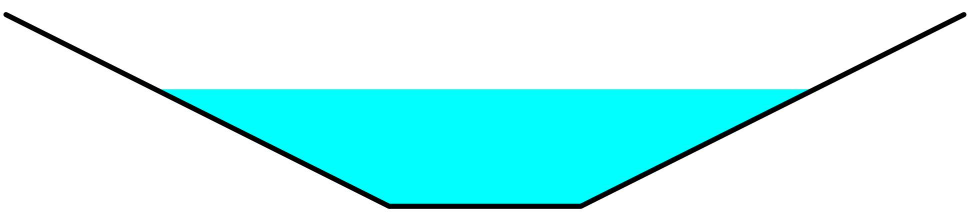
Summary for Reach 4R: SWALE

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 1.76" for 50-YEAR event
Inflow = 6.68 cfs @ 12.45 hrs, Volume= 68,819 cf
Outflow = 6.66 cfs @ 12.47 hrs, Volume= 68,688 cf, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 1.23 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 5.4 min

Peak Storage= 960 cf @ 12.47 hrs
Average Depth at Peak Storage= 1.22'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 19.38 cfs

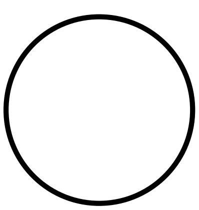
2.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 177.0' Slope= 0.0050 '/'
Inlet Invert= 212.08', Outlet Invert= 211.20'



Summary for Reach 5R: (new Reach)

Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.74 cfs

24.0" Round Pipe
n= 0.013
Length= 37.9' Slope= 0.0150 '/'
Inlet Invert= 218.57', Outlet Invert= 218.00'



Summary for Reach 33R: SWALE

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 1.01" for 50-YEAR event
Inflow = 0.68 cfs @ 16.39 hrs, Volume= 20,410 cf
Outflow = 0.68 cfs @ 16.42 hrs, Volume= 20,380 cf, Atten= 0%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Max. Velocity= 2.46 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 1.6 min

Peak Storage= 50 cf @ 16.42 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 31.32 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 182.0' Slope= 0.0330 '/'
Inlet Invert= 220.00', Outlet Invert= 214.00'

Summary for Pond 1P: HW#1

Inflow Area = 469,008 sf, 23.51% Impervious, Inflow Depth > 1.76" for 50-YEAR event
Inflow = 6.66 cfs @ 12.47 hrs, Volume= 68,688 cf
Outflow = 6.66 cfs @ 12.47 hrs, Volume= 68,688 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.66 cfs @ 12.47 hrs, Volume= 68,688 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 215.98' @ 12.46 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.73'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.73' / 210.31' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.66 cfs @ 12.47 hrs HW=215.98' TW=212.83' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 6.66 cfs @ 8.47 fps)

Summary for Pond 2P: CB#2

Inflow Area = 474,758 sf, 24.23% Impervious, Inflow Depth > 1.81" for 50-YEAR event
Inflow = 6.86 cfs @ 12.46 hrs, Volume= 71,438 cf
Outflow = 6.86 cfs @ 12.46 hrs, Volume= 71,438 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.86 cfs @ 12.46 hrs, Volume= 71,438 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 212.98' @ 12.24 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.21'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.21' / 210.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.86 cfs @ 12.46 hrs HW=212.85' TW=211.50' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.86 cfs @ 5.59 fps)

Summary for Pond 7P: CB#7

Inflow Area = 17,437 sf, 96.15% Impervious, Inflow Depth > 6.31" for 50-YEAR event
Inflow = 2.62 cfs @ 12.08 hrs, Volume= 9,166 cf
Outflow = 2.62 cfs @ 12.08 hrs, Volume= 9,166 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 12.08 hrs, Volume= 9,166 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.34' @ 12.10 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 12.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.37' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.61 cfs @ 12.08 hrs HW=218.32' TW=217.84' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.61 cfs @ 3.33 fps)

Summary for Pond 8P: CB#8

Inflow Area = 26,789 sf, 79.55% Impervious, Inflow Depth > 5.60" for 50-YEAR event
Inflow = 3.78 cfs @ 12.08 hrs, Volume= 12,496 cf
Outflow = 3.78 cfs @ 12.08 hrs, Volume= 12,496 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.78 cfs @ 12.08 hrs, Volume= 12,496 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.53' @ 12.09 hrs
Flood Elev= 223.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.05'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.05' / 216.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.77 cfs @ 12.08 hrs HW=219.52' TW=218.60' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.77 cfs @ 3.07 fps)

Summary for Pond 9P: CB#9

Inflow Area = 14,159 sf, 83.41% Impervious, Inflow Depth > 5.76" for 50-YEAR event
Inflow = 2.02 cfs @ 12.08 hrs, Volume= 6,801 cf
Outflow = 2.02 cfs @ 12.08 hrs, Volume= 6,801 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.02 cfs @ 12.08 hrs, Volume= 6,801 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 219.66' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.15' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.85 cfs @ 12.08 hrs HW=219.64' TW=219.52' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.85 cfs @ 1.51 fps)

Summary for Pond 10P: CB#10

Inflow Area = 5,381 sf,100.00% Impervious, Inflow Depth > 6.48" for 50-YEAR event
Inflow = 0.81 cfs @ 12.08 hrs, Volume= 2,904 cf
Outflow = 0.81 cfs @ 12.08 hrs, Volume= 2,904 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.08 hrs, Volume= 2,904 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.07' @ 12.09 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.59'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.59' / 217.70' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.80 cfs @ 12.08 hrs HW=220.06' TW=219.64' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.80 cfs @ 3.19 fps)

Summary for Pond 12P: CB#12

Inflow Area = 23,749 sf, 95.15% Impervious, Inflow Depth > 6.26" for 50-YEAR event
Inflow = 3.56 cfs @ 12.08 hrs, Volume= 12,398 cf
Outflow = 3.56 cfs @ 12.08 hrs, Volume= 12,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.56 cfs @ 12.08 hrs, Volume= 12,398 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.74' @ 12.09 hrs
Flood Elev= 220.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.50' / 216.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.55 cfs @ 12.08 hrs HW=218.73' TW=217.84' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.55 cfs @ 4.52 fps)

Summary for Pond 14P: CB#14

Inflow Area = 21,562 sf, 88.93% Impervious, Inflow Depth > 6.00" for 50-YEAR event
Inflow = 3.13 cfs @ 12.08 hrs, Volume= 10,785 cf
Outflow = 3.13 cfs @ 12.08 hrs, Volume= 10,785 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.13 cfs @ 12.08 hrs, Volume= 10,785 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.33' @ 12.10 hrs
Flood Elev= 223.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.11'	**18.0" Round Culvert** L= 152.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.11' / 216.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.13 cfs @ 12.08 hrs HW=218.32' TW=217.84' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.13 cfs @ 2.80 fps)

Summary for Pond 15P: CB#15

Inflow Area = 13,436 sf, 82.23% Impervious, Inflow Depth > 5.72" for 50-YEAR event
Inflow = 1.90 cfs @ 12.08 hrs, Volume= 6,400 cf
Outflow = 1.90 cfs @ 12.08 hrs, Volume= 6,400 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.90 cfs @ 12.08 hrs, Volume= 6,400 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.61' @ 12.09 hrs
Flood Elev= 221.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.60'	**15.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.60' / 217.21' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.90 cfs @ 12.08 hrs HW=218.61' TW=218.32' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 1.90 cfs @ 2.45 fps)

Summary for Pond 16P: CB#16

Inflow Area =	5,381 sf,100.00% Impervious,	Inflow Depth > 6.48"	for 50-YEAR event
Inflow =	0.81 cfs @ 12.08 hrs,	Volume=	2,904 cf
Outflow =	0.81 cfs @ 12.08 hrs,	Volume=	2,904 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.81 cfs @ 12.08 hrs,	Volume=	2,904 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.18' @ 12.08 hrs
Flood Elev= 226.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.72'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.72' / 217.70' S= 0.0701 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=220.18' TW=218.61' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond 17P: CB#17

Inflow Area =	12,834 sf,100.00% Impervious,	Inflow Depth > 6.48"	for 50-YEAR event
Inflow =	1.94 cfs @ 12.08 hrs,	Volume=	6,926 cf
Outflow =	1.94 cfs @ 12.08 hrs,	Volume=	6,926 cf, Atten= 0%, Lag= 0.0 min
Primary =	1.94 cfs @ 12.08 hrs,	Volume=	6,926 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.13' @ 12.52 hrs
Flood Elev= 236.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.15'	**15.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.15' / 234.00' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.94 cfs @ 12.08 hrs HW=235.32' TW=235.18' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 1.94 cfs @ 2.11 fps)

Summary for Pond 18P: CB#18

Inflow Area = 19,404 sf, 68.86% Impervious, Inflow Depth > 5.15" for 50-YEAR event
Inflow = 2.60 cfs @ 12.09 hrs, Volume= 8,321 cf
Outflow = 2.60 cfs @ 12.09 hrs, Volume= 8,321 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.60 cfs @ 12.09 hrs, Volume= 8,321 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.13' @ 12.52 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.98'	**18.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.98' / 232.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.60 cfs @ 12.09 hrs HW=235.30' TW=235.19' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.60 cfs @ 1.47 fps)

Summary for Pond 19P: CB#19

Inflow Area = 9,491 sf, 64.25% Impervious, Inflow Depth > 4.96" for 50-YEAR event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 3,919 cf
Outflow = 1.24 cfs @ 12.09 hrs, Volume= 3,919 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.09 hrs, Volume= 3,919 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.13' @ 12.51 hrs
Flood Elev= 237.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	233.70'	**15.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 233.70' / 233.08' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.22 cfs @ 12.09 hrs HW=235.37' TW=235.30' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.22 cfs @ 0.99 fps)

Summary for Pond 21P: CB#21

Inflow Area = 10,579 sf,100.00% Impervious, Inflow Depth > 6.48" for 50-YEAR event
Inflow = 1.60 cfs @ 12.08 hrs, Volume= 5,709 cf
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 5,709 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.08 hrs, Volume= 5,709 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.13' @ 12.51 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	234.80'	**15.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.80' / 234.25' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.60 cfs @ 12.08 hrs HW=235.64' TW=235.32' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 1.60 cfs @ 2.56 fps)

Summary for Pond 22P: CB#22

Inflow Area = 6,630 sf,100.00% Impervious, Inflow Depth > 6.48" for 50-YEAR event
Inflow = 1.00 cfs @ 12.08 hrs, Volume= 3,578 cf
Outflow = 1.00 cfs @ 12.08 hrs, Volume= 3,578 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.08 hrs, Volume= 3,578 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.13' @ 12.52 hrs
Flood Elev= 239.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	235.20'	**15.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 235.20' / 234.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.96 cfs @ 12.08 hrs HW=235.87' TW=235.64' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 0.96 cfs @ 2.10 fps)

Summary for Pond 24P: CB#24

Inflow Area = 26,271 sf, 92.21% Impervious, Inflow Depth > 6.14" for 50-YEAR event
Inflow = 3.89 cfs @ 12.08 hrs, Volume= 13,439 cf
Outflow = 3.89 cfs @ 12.08 hrs, Volume= 13,439 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.89 cfs @ 12.08 hrs, Volume= 13,439 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 242.06' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	240.50'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.50' / 234.00' S= 0.0625 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.89 cfs @ 12.08 hrs HW=242.06' TW=235.18' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 3.89 cfs @ 4.95 fps)

Summary for Pond 25P: CB#25

Inflow Area = 19,795 sf, 95.32% Impervious, Inflow Depth > 6.27" for 50-YEAR event
Inflow = 2.96 cfs @ 12.08 hrs, Volume= 10,348 cf
Outflow = 2.96 cfs @ 12.08 hrs, Volume= 10,348 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.96 cfs @ 12.08 hrs, Volume= 10,348 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 244.61' @ 12.08 hrs
Flood Elev= 250.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	243.50'	**12.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 243.50' / 240.60' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.95 cfs @ 12.08 hrs HW=244.61' TW=242.06' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.95 cfs @ 3.76 fps)

Summary for Pond 27P: CB#27

Inflow Area = 37,738 sf, 73.20% Impervious, Inflow Depth > 5.33" for 50-YEAR event
Inflow = 5.14 cfs @ 12.08 hrs, Volume= 16,773 cf
Outflow = 5.14 cfs @ 12.08 hrs, Volume= 16,773 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.14 cfs @ 12.08 hrs, Volume= 16,773 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 218.61' @ 12.09 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.93'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.93' / 215.88' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.13 cfs @ 12.08 hrs HW=218.60' TW=217.85' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.13 cfs @ 4.18 fps)

Summary for Pond 29P: DMH#29

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 2.02" for 50-YEAR event
Inflow = 4.14 cfs @ 12.56 hrs, Volume= 31,162 cf
Outflow = 4.14 cfs @ 12.56 hrs, Volume= 31,162 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.14 cfs @ 12.56 hrs, Volume= 31,162 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 239.01' @ 12.56 hrs
Flood Elev= 242.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	237.90'	**15.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.90' / 232.20' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.14 cfs @ 12.56 hrs HW=239.01' TW=233.92' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.14 cfs @ 3.59 fps)

Summary for Pond 30P: DMH#30

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 2.12" for 50-YEAR event
Inflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf
Outflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 233.94' @ 12.53 hrs
Flood Elev= 235.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	232.10'	**15.0" Round Culvert** L= 273.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.10' / 220.88' S= 0.0411 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.52 cfs @ 12.53 hrs HW=233.94' TW=222.62' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.52 cfs @ 5.32 fps)

Summary for Pond 32P: DMH#32

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 2.12" for 50-YEAR event
Inflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf
Outflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 222.62' @ 12.53 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	220.78'	**15.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.78' / 212.32' S= 0.0334 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.52 cfs @ 12.53 hrs HW=222.62' TW=214.08' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.52 cfs @ 5.32 fps)

Summary for Pond 33P: DMH#33

Inflow Area = 282,142 sf, 25.55% Impervious, Inflow Depth > 2.12" for 50-YEAR event
Inflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf
Outflow = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.52 cfs @ 12.53 hrs, Volume= 49,858 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 214.08' @ 12.53 hrs
Flood Elev= 218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.22'	**15.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.22' / 212.00' S= 0.0129 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.52 cfs @ 12.53 hrs HW=214.08' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.52 cfs @ 5.32 fps)

Summary for Pond 47P: CB#47

Inflow Area = 2,272 sf,100.00% Impervious, Inflow Depth > 6.48" for 50-YEAR event
Inflow = 0.34 cfs @ 12.08 hrs, Volume= 1,226 cf
Outflow = 0.34 cfs @ 12.08 hrs, Volume= 1,226 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.08 hrs, Volume= 1,226 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 236.78' @ 12.09 hrs
Flood Elev= 236.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	236.50'	**15.0" Round Culvert** L= 99.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 236.50' / 235.40' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.34 cfs @ 12.08 hrs HW=236.78' TW=235.87' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.34 cfs @ 2.54 fps)

Summary for Pond 101P: CB#101

Inflow Area = 256,408 sf, 11.33% Impervious, Inflow Depth > 1.23" for 50-YEAR event
Inflow = 2.45 cfs @ 12.09 hrs, Volume= 26,377 cf
Outflow = 2.45 cfs @ 12.09 hrs, Volume= 26,377 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.45 cfs @ 12.09 hrs, Volume= 26,377 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.47' @ 12.13 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.20'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.20' / 212.08' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.09 hrs HW=213.37' TW=212.95' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.45 cfs @ 3.12 fps)

Summary for Pond 102P: HW#102

Inflow Area = 243,556 sf, 7.72% Impervious, Inflow Depth > 1.00" for 50-YEAR event
Inflow = 0.68 cfs @ 16.42 hrs, Volume= 20,380 cf
Outflow = 0.68 cfs @ 16.42 hrs, Volume= 20,380 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 16.42 hrs, Volume= 20,380 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 213.67' @ 12.12 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.12'	**12.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.12' / 212.30' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 16.42 hrs HW=213.54' TW=212.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.68 cfs @ 2.20 fps)

Summary for Pond 108P: CB#108

Inflow Area = 15,217 sf, 47.87% Impervious, Inflow Depth > 4.29" for 50-YEAR event
Inflow = 1.75 cfs @ 12.09 hrs, Volume= 5,445 cf
Outflow = 1.75 cfs @ 12.09 hrs, Volume= 5,445 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 12.09 hrs, Volume= 5,445 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.25' @ 12.09 hrs
Flood Elev= 225.98'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.37'	**15.0" Round Culvert** L= 30.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.37' / 220.00' S= 0.0449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.75 cfs @ 12.09 hrs HW=223.25' TW=223.16' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.75 cfs @ 1.43 fps)

Summary for Pond 112P: CB#112

Inflow Area = 7,976 sf, 90.47% Impervious, Inflow Depth > 6.06" for 50-YEAR event
Inflow = 1.18 cfs @ 12.08 hrs, Volume= 4,028 cf
Outflow = 1.18 cfs @ 12.08 hrs, Volume= 4,028 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.18 cfs @ 12.08 hrs, Volume= 4,028 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.55' @ 12.48 hrs
Flood Elev= 222.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.20'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.20' / 217.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.18 cfs @ 12.08 hrs HW=220.56' TW=220.46' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.18 cfs @ 1.50 fps)

Summary for Pond 114P: DMH#114

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 3.16" for 50-YEAR event
Inflow = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf
Outflow = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.58' @ 12.46 hrs
Flood Elev= 226.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	219.19'	**24.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.19' / 218.00' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.05 cfs @ 12.13 hrs HW=221.01' TW=220.77' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 6.05 cfs @ 2.64 fps)

Summary for Pond 115P: DCB#115

Inflow Area = 92,418 sf, 25.78% Impervious, Inflow Depth > 3.16" for 50-YEAR event
Inflow = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf
Outflow = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.05 cfs @ 12.13 hrs, Volume= 24,323 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 224.07' @ 12.13 hrs
Flood Elev= 227.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	**18.0" Round Culvert** L= 235.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 219.29' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.05 cfs @ 12.13 hrs HW=224.07' TW=221.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.05 cfs @ 3.82 fps)

Summary for Pond 116P: CB#116

Inflow Area =	60,922 sf,	4.24% Impervious,	Inflow Depth > 2.18"	for 50-YEAR event	
Inflow =	2.65 cfs @	12.20 hrs,	Volume=	11,044 cf	
Outflow =	2.65 cfs @	12.20 hrs,	Volume=	11,044 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.65 cfs @	12.20 hrs,	Volume=	11,044 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 228.76' @ 12.20 hrs
Flood Elev= 233.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	227.94'	**15.0" Round Culvert** L= 125.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 227.94' / 222.91' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.65 cfs @ 12.20 hrs HW=228.76' TW=223.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.65 cfs @ 3.09 fps)

Summary for Pond 119P: CB#119

Inflow Area =	89,050 sf,	56.36% Impervious,	Inflow Depth > 4.55"	for 50-YEAR event	
Inflow =	8.73 cfs @	12.10 hrs,	Volume=	33,786 cf	
Outflow =	8.73 cfs @	12.10 hrs,	Volume=	33,786 cf,	Atten= 0%, Lag= 0.0 min
Primary =	8.73 cfs @	12.10 hrs,	Volume=	33,786 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.59' @ 12.45 hrs
Flood Elev= 226.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	218.57'	**24.0" Round Culvert** L= 37.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 218.57' / 218.00' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.73 cfs @ 12.10 hrs HW=220.93' TW=220.59' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.73 cfs @ 2.78 fps)

Summary for Pond 120P: DCB#120

Inflow Area =	66,796 sf, 42.29% Impervious,	Inflow Depth > 3.93"	for 50-YEAR event
Inflow =	5.53 cfs @ 12.12 hrs, Volume=	21,891 cf	
Outflow =	5.53 cfs @ 12.12 hrs, Volume=	21,891 cf,	Atten= 0%, Lag= 0.0 min
Primary =	5.53 cfs @ 12.12 hrs, Volume=	21,891 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.89' @ 12.12 hrs
Flood Elev= 227.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.71'	**18.0" Round Culvert** L= 269.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.71' / 218.67' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.53 cfs @ 12.12 hrs HW=223.89' TW=221.03' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.53 cfs @ 3.70 fps)

Summary for Pond 121P: CB#121

Inflow Area =	36,429 sf, 14.50% Impervious,	Inflow Depth > 2.70"	for 50-YEAR event
Inflow =	1.98 cfs @ 12.21 hrs, Volume=	8,192 cf	
Outflow =	1.98 cfs @ 12.21 hrs, Volume=	8,192 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.98 cfs @ 12.21 hrs, Volume=	8,192 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 226.75' @ 12.21 hrs
Flood Elev= 230.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	226.06'	**15.0" Round Culvert** L= 54.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.06' / 222.81' S= 0.0600 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.98 cfs @ 12.21 hrs HW=226.75' TW=223.75' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.98 cfs @ 2.84 fps)

Summary for Pond B1: INFILTRATION POND 1

Inflow Area =	113,915 sf, 75.64% Impervious,	Inflow Depth > 5.47"	for 50-YEAR event
Inflow =	15.32 cfs @ 12.08 hrs, Volume=	51,917 cf	
Outflow =	12.04 cfs @ 12.15 hrs, Volume=	44,060 cf,	Atten= 21%, Lag= 3.7 min
Discarded =	0.21 cfs @ 12.15 hrs, Volume=	9,140 cf	
Primary =	11.83 cfs @ 12.15 hrs, Volume=	34,921 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3

Peak Elev= 217.92' @ 12.15 hrs Surf.Area= 9,102 sf Storage= 16,409 cf
Flood Elev= 218.00' Surf.Area= 9,382 sf Storage= 17,174 cf

Plug-Flow detention time= 135.2 min calculated for 44,042 cf (85% of inflow)
Center-of-Mass det. time= 70.1 min (838.8 - 768.7)

Volume	Invert	Avail.Storage	Storage Description
#1	214.75'	17,174 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.75	2,279	0	0
216.00	4,499	4,236	4,236
217.00	5,997	5,248	9,484
218.00	9,382	7,690	17,174

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.75' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	214.75'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#3	Device 1	216.60'	**5.0" W x 13.2" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	217.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	217.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.21 cfs @ 12.15 hrs HW=217.92' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=11.82 cfs @ 12.15 hrs HW=217.92' TW=211.71' (Dynamic Tailwater)
├─**1=Culvert** (Passes 2.00 cfs of 10.72 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 1.89 cfs @ 4.12 fps)
│ └─**4=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.43 fps)
└─**5=Broad-Crested Rectangular Weir** (Weir Controls 9.82 cfs @ 1.90 fps)

Summary for Pond B2: POCKET POND 1

Inflow Area = 97,359 sf, 70.69% Impervious, Inflow Depth > 5.28" for 50-YEAR event
Inflow = 12.55 cfs @ 12.08 hrs, Volume= 42,873 cf
Outflow = 2.40 cfs @ 12.53 hrs, Volume= 18,696 cf, Atten= 81%, Lag= 26.5 min
Primary = 2.40 cfs @ 12.53 hrs, Volume= 18,696 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Starting Elev= 232.50' Surf.Area= 4,585 sf Storage= 6,096 cf
Peak Elev= 236.12' @ 12.53 hrs Surf.Area= 9,495 sf Storage= 31,401 cf (25,304 cf above start)
Flood Elev= 237.00' Surf.Area= 10,865 sf Storage= 40,310 cf (34,214 cf above start)

Plug-Flow detention time= 421.1 min calculated for 12,594 cf (29% of inflow)

Center-of-Mass det. time= 145.1 min (912.6 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	229.00'	40,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
229.00	550	0	0
230.00	1,050	800	800
232.00	2,480	3,530	4,330
232.50	4,585	1,766	6,096
234.00	6,510	8,321	14,418
236.00	9,300	15,810	30,228
237.00	10,865	10,083	40,310

Device	Routing	Invert	Outlet Devices
#1	Primary	232.50'	**15.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.50' / 232.20' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	232.50'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	236.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.39 cfs @ 12.53 hrs HW=236.12' TW=233.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.39 cfs of 8.73 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.09 cfs @ 7.11 fps)
  └─**3=Orifice/Grate** (Weir Controls 2.31 cfs @ 1.16 fps)

Summary for Pond B3: DETENTION POND 1

Inflow Area = 184,783 sf, 1.76% Impervious, Inflow Depth > 2.05" for 50-YEAR event
Inflow = 6.68 cfs @ 12.28 hrs, Volume= 31,549 cf
Outflow = 4.14 cfs @ 12.56 hrs, Volume= 31,162 cf, Atten= 38%, Lag= 17.0 min
Primary = 4.14 cfs @ 12.56 hrs, Volume= 31,162 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 245.70' @ 12.56 hrs Surf.Area= 4,176 sf Storage= 5,075 cf
Flood Elev= 248.00' Surf.Area= 8,476 sf Storage= 19,484 cf

Plug-Flow detention time= 21.6 min calculated for 31,149 cf (99% of inflow)
Center-of-Mass det. time= 14.9 min (888.9 - 874.0)

Volume	Invert	Avail.Storage	Storage Description
#1	244.00'	19,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
244.00	904	0	0
246.00	2,300	3,204	3,204
248.00	4,238	6,538	9,742

Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	**12.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 244.00' / 238.00' S= 0.0583 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=4.14 cfs @ 12.56 hrs HW=245.70' TW=239.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.14 cfs @ 5.27 fps)

Summary for Pond B4: INFILTRATION POND 2

Inflow Area = 204,461 sf, 39.73% Impervious, Inflow Depth > 3.83" for 50-YEAR event
Inflow = 16.76 cfs @ 12.11 hrs, Volume= 65,264 cf
Outflow = 6.05 cfs @ 12.48 hrs, Volume= 50,255 cf, Atten= 64%, Lag= 22.4 min
Discarded = 0.21 cfs @ 12.48 hrs, Volume= 9,507 cf
Primary = 5.84 cfs @ 12.48 hrs, Volume= 40,747 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 221.55' @ 12.48 hrs Surf.Area= 8,860 sf Storage= 26,191 cf
Flood Elev= 222.00' Surf.Area= 9,536 sf Storage= 30,365 cf

Plug-Flow detention time= 151.6 min calculated for 50,255 cf (77% of inflow)
Center-of-Mass det. time= 66.2 min (870.7 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	30,365 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	2,693	0	0
218.00	4,247	3,470	3,470
220.00	6,556	10,803	14,273
222.00	9,536	16,092	30,365

Device	Routing	Invert	Outlet Devices
#1	Primary	214.44'	**12.0" Round Culvert** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.44' / 214.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	220.00'	**10.0" Vert. Orifice X 2.00** C= 0.600
#3	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	217.00'	**1.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.21 cfs @ 12.48 hrs HW=221.55' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=5.84 cfs @ 12.48 hrs HW=221.55' TW=213.30' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.84 cfs of 9.72 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 5.58 cfs @ 5.12 fps)
  └─**3=Grate** (Weir Controls 0.26 cfs @ 0.70 fps)

Summary for Pond B5: BIORETENTION POND 1

Inflow Area = 30,725 sf, 60.33% Impervious, Inflow Depth > 4.84" for 50-YEAR event
Inflow = 3.73 cfs @ 12.09 hrs, Volume= 12,402 cf
Outflow = 3.69 cfs @ 12.10 hrs, Volume= 12,403 cf, Atten= 1%, Lag= 0.7 min
Primary = 3.69 cfs @ 12.10 hrs, Volume= 12,403 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 223.16' @ 12.10 hrs Surf.Area= 1,349 sf Storage= 1,870 cf
Flood Elev= 224.00' Surf.Area= 1,738 sf Storage= 3,165 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 37.7 min (818.9 - 781.1)

Volume	Invert	Avail.Storage	Storage Description
#1	221.00'	3,165 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
221.00	424	0	0
222.00	810	617	617
224.00	1,738	2,548	3,165

Device	Routing	Invert	Outlet Devices
#1	Primary	217.55'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.55' / 217.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	223.00'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	221.00'	**10.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=3.68 cfs @ 12.10 hrs HW=223.16' TW=217.75' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.68 cfs of 8.55 cfs potential flow)
  ├─**2=Grate** (Weir Controls 3.37 cfs @ 1.31 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.31 cfs)

Summary for Pond B6: DETENTION POND 2

Inflow Area = 232,259 sf, 8.10% Impervious, Inflow Depth > 2.37" for 50-YEAR event
Inflow = 8.95 cfs @ 12.24 hrs, Volume= 45,865 cf
Outflow = 0.65 cfs @ 16.52 hrs, Volume= 18,283 cf, Atten= 93%, Lag= 256.9 min
Primary = 0.65 cfs @ 16.52 hrs, Volume= 18,283 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs / 3
Peak Elev= 220.63' @ 16.52 hrs Surf.Area= 10,400 sf Storage= 30,893 cf
Flood Elev= 222.00' Surf.Area= 11,980 sf Storage= 46,271 cf

Plug-Flow detention time= 390.1 min calculated for 18,283 cf (40% of inflow)
Center-of-Mass det. time= 243.1 min (1,103.5 - 860.4)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	46,271 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	3,390	0	0
218.00	3,847	3,619	3,619
220.00	4,840	8,687	12,306
222.00	5,990	10,830	23,136

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.50' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.00'	**2.0" Vert. Orifice** C= 0.600
#3	Device 1	220.00'	**6.0" Vert. Orifice** C= 0.600
#4	Device 1	221.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 16.52 hrs HW=220.63' TW=220.12' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.65 cfs of 2.68 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 3.41 fps)
  ├─**3=Orifice** (Orifice Controls 0.58 cfs @ 2.95 fps)
  └─**4=Grate** (Controls 0.00 cfs)

Summary for Link A: CHASE BROOK

Inflow Area = 1,196,864 sf, 23.33% Impervious, Inflow Depth > 2.13" for 50-YEAR event
Inflow = 33.13 cfs @ 12.20 hrs, Volume= 212,035 cf
Primary = 33.13 cfs @ 12.20 hrs, Volume= 212,035 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.010 hrs

18. RIP RAP APRON CALCULATIONS

KNA *KEACH-NORDSTROM ASSOCIATES, INC.*

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

4/6/2021

The purpose of this spreadsheet is to calculate the dimensions of rip rap required to help prevent soil loss for the 25 year storm event.

Required input to the spreadsheet is

Q	peak flow in CFS
Do	diameter in feet of outlet or width of channel
Tw	tail water at end of apron

Depending on the tail water conditions either column 1 or column 2 is used for calculations

Column One where Tw<1/2Do	Column One where Tw>1/2Do
Length of Apron	
La = (1.8Q/Do^3/2)+7Do	La = 3*Q/Do^3/2+7Do
Width of Apron at outfall	
W1=3*Do	W1=3*Do
W2 = 3Do + La	W2=3Do+0.4*La
If defined channel use channel width for W1 and W2	
Rock Rip Rap	
d50 = (0.02*Q^4/3)/(Tw*Do)	Same

Input to Chart					Calculated Output		W2			USE	RIRAP GRADATION ENVELOPE d100		d85		d50		d15			
Description (Optional)		Q 25 (cfs)	Do (ft)	Tw (ft)	La	W1	no channel	d50, ft	d50 in	d50 in.	FROM in	TO in	FROM in	TO in	FROM in	TO in	FROM in	TO in	depth in	USE depth in.
HW#1	Headwall #1 outlet	4.79	1.25	0.83	19	4	11	0.2	1.87	10	15	20	13	18	10	15	3	5	25	25
HW#8	Headwall #8 outlet	2.96	1.25	4.39	15	4	10	0.0	0.19	10	15	20	13	18	10	15	3	5	25	25
HW#10	Headwall #10 outlet	6.11	2.00	2.93	20	6	14	0.0	0.46	10	15	20	13	18	10	15	3	5	25	25
HW#15	Headwall #15 outlet	5.94	2.00	2.93	20	6	14	0.0	0.44	10	15	20	13	18	10	15	3	5	25	25
HW#20	Headwall #20 outlet	1.92	1.25	4.30	13	4	9	0.0	0.11	4	6	8	5	7	4	6	1	2	10	10
HW#22	Headwall #22 outlet	2.13	1.25	4.30	13	4	9	0.0	0.12	10	15	20	13	18	10	15	3	5	25	25
HW#24	Headwall #24 outlet	3.84	2.00	4.30	18	6	13	0.0	0.17	10	15	20	13	18	10	15	3	5	25	25
HW#27	Headwall #27 outlet	3.53	1.25	0.83	16	4	10	0.1	1.24	10	15	20	13	18	10	15	3	5	25	25
HW#30	Headwall #30 outlet	1.56	1.25	1.34	12	4	9	0.0	0.26	10	15	20	13	18	10	15	3	5	25	25
HW#32	Headwall #32 outlet	6.37	2.00	1.34	21	6	14	0.1	1.06	4	6	8	5	7	4	6	1	2	10	10
HW#37	Headwall #37 outlet	6.35	2.00	1.34	21	6	14	0.1	1.05	10	15	20	13	18	10	15	3	5	25	25
HW#45	Headwall #45 outlet	1.55	1.00	0.42	10	3	13	0.1	1.03	10	15	20	13	18	10	15	3	5	25	25
HW#46	Headwall #46 outlet	0.40	1.00	0.70	8	3	6	0.0	0.10	10	15	20	13	18	10	15	3	5	25	25
HW#47	Headwall #47 outlet	0.37	1.00	0.95	8	3	6	0.0	0.07	10	15	20	13	18	10	15	3	5	25	25
HW#49	Headwall #49 outlet	1.40	1.25	1.34	12	4	8	0.0	0.22	4	6	8	5	7	4	6	1	2	10	10
HW#51	Headwall #51 outlet	1.99	1.00	0.89	13	3	8	0.1	0.67	10	15	20	13	18	10	15	3	5	25	25

19. SITE SPECIFIC SOIL REPORT

October 9, 2020

Mr Paul Chisholm
Keach-Nordstrom Assoc., Inc.
10 Commerce Park, Suite 3
Bedford, NH 03110

RE: Noury Investments, LLC
Tax Map 105, Lot 17
Hudson, New Hampshire

SUBJECT: Site-Specific Soil Map Report

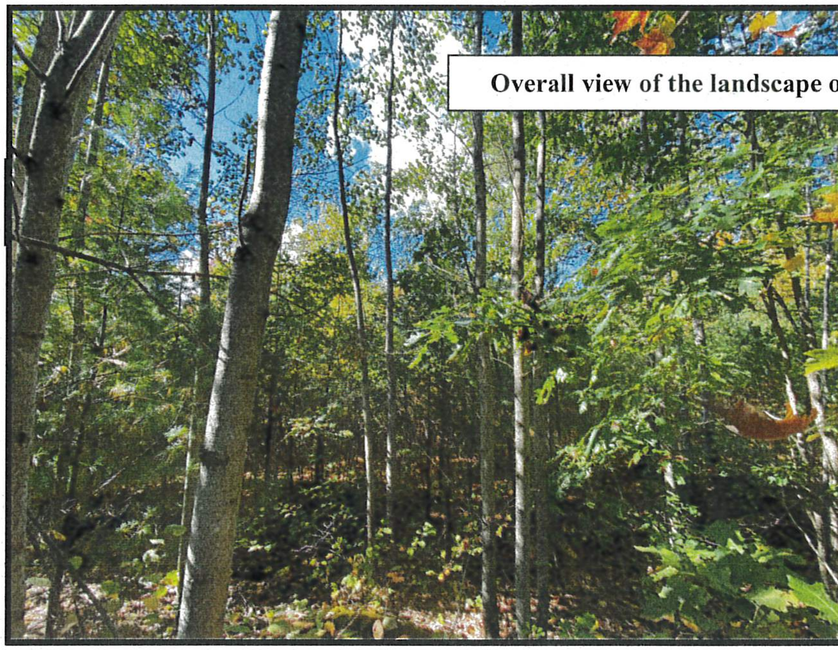
Dear Mr. Chisholm,

The purpose of this soil report and accompanying map is to document the soil characteristics for the project location referenced above.

This soil map was prepared by Stoney Ridge Environmental (SRE) by utilizing the Site-Specific Soil Mapping Standards for New Hampshire and Vermont (SSSMS), SSSNNE Special Publication No. 3, Version 5, December 2017. The soil map units were identified using the New Hampshire State-Wide Numerical Soils Legend, Issue #10, January 2011. The Site-Specific Standards apply the latest up to date knowledge of soils and provide the public with the most advanced soil resource information available today. The Site-Specific Standards are based on a universally recognized taxonomic system of soil classification and are supported by national soil mapping standards established by the USDA National Cooperative Soil Survey. They allow for the development of multi-purpose soil map products, which are carefully controlled and monitored through a state, regional, and national quality assessment program. The Site-Specific Standards are backed by the most advanced soil research program in the world. The Site-Specific Standards have been developed by the Society of Soil Scientists of Northern New England in cooperation with the USDA Natural Resources Conservation Service in response to the need to provide regulatory agencies, local officials, and land use planners with consistent high quality large scale soil resource information.

The accompanying soil map was developed on a base map of 1" = 60', with contour intervals of 2' with the area to be mapped as proposed lots, 17-2, 17-3 and 17-4. The base existing conditions plan was supplied by Keach-Nordstrom Associates, Inc. (KNA). The soils fieldwork for the Site-Specific Soils Map was performed on September 22 & 30, 2020 and included conducting soil test pits and augering to classify and map soils. The final drafting of the soil map took place on October 1, 2020. All field work and soil mapping was completed by Cynthia M. Balcius CSS, CWS, CPESC, Justin Sherman and Diane DeVries of SRE.

Location Description



Overall view of the landscape on site

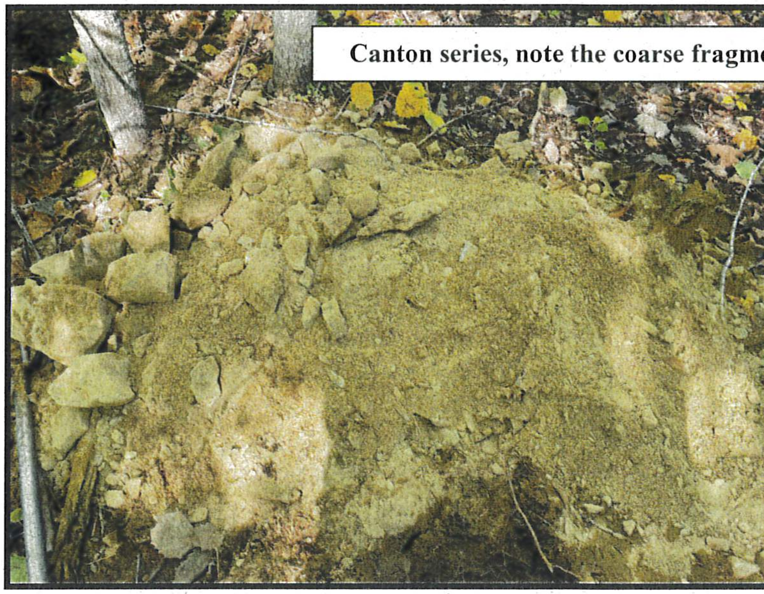
The site is located off Robinson Road in Hudson, New Hampshire. This parcel is a wooded lot, with no existing structures. The site is surrounded by both residential homes and commercial developments. There is one wetland system mapped on the southern edge of proposed lot 17-4. The soil survey did not extend into the wetland area of the lots. The overall site conditions features soils developed in glacial till materials and glacial till materials over ledge. The site was previously cut and as a result dense shrubs and saplings dominated the landscape. While on site SRE observed stone foundations, stone walls and an old log landing.

Another view of the dense shrubs and saplings that dominate the site.

Stoney Ridge Environmental LLC

Site Soil Description

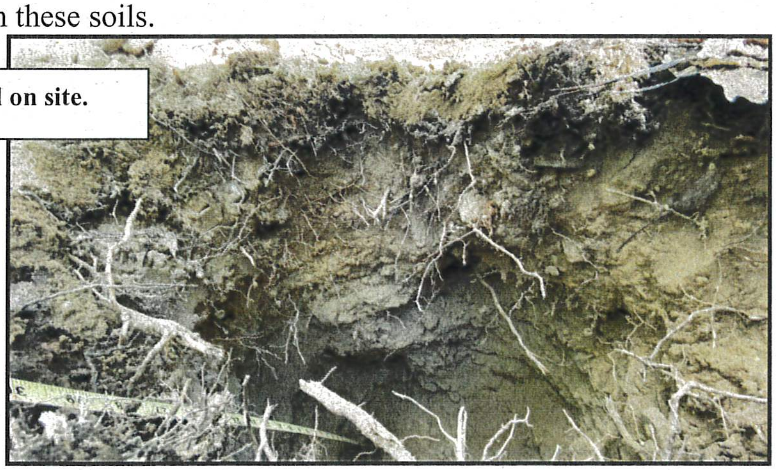
Canton sandy loam (42 A,B,C,D): Canton soils are well drained with fine sandy loam soils in the upper horizons over coarse sandy glacial till material. These soils do not feature a pan, and have a seasonal high water table greater than 40 inches from the soil surface. This soil type was mapped in the south/southwestern portion of the site along Robinson Road. The K_{sat} rates for this soil type range from 2.0 to 6.0 inches per hour in the upper horizon and 6.0 to 20 inches per hour in the lower substratum.



Canton series, note the coarse fragments.

Charlton fine sandy loam (62 A,B,C,D): Charlton soils are well drained soils formed in loamy glacial till. On this site the Charlton series did find some ledge deeper than 40 inches in depth.The seasonal high water table for these Charlton soils is found greater than 40 inches from the soil surface. Charlton soil was mapped through the majority of the site making up the central portions of all three lots. The K_{sat} rates for this soil type range from 0.6 to 6 inches per hour in the upper horizon and 0.6 to 6 inches per hour in the lower horizons.

Charlton-Chatfield Complex 60-40 (178 B, C, D, E): The Charlton-Chatfield Complex mapped on site consists of 60% Charlton soils, and 40% Chatfield soils. Like Charlton soil, Chatfield is also a well drained, fine sandy loam formed in glacial till over shallow bedrock. This soil type was mapped in the highest elevations in the northern corner of the site. The K_{sat} rates for the Charlton soils making up 60% of the complex range from 0.6 to 6 inches per hour in upper horizons and 0.6 to 6 inches per hour in the lower horizons. K_{sat} rates for the Chatfield soils making up the remaining 40% of the complex also range from 0.6 to 6 inches per hour in the upper horizons and 0.6-6 inches per hour in lower horizons. There was no observed seasonal high water table in these soils.



Example of Newfields soil on site.

Newfields fine sandy loam (444 A,B,C,D): Newfields soils are moderately well drained fine sandy loam soils, underlain by sandy glacial till. Depth to bedrock is greater than 60 inches, and the seasonal high water table on site was found between 20 to 35 inches from the soil surface. This soil type was mapped along the southern portion of the site adjacent to the delineated wetland. K_{sat} rates for this soil type range from 0.6 to 2 inches per hour in the upper horizon and 0.6 to 2 inches per hour in the lower horizon.

A Site-Specific Soil Map Unit legend for the site-specific soil map symbols used in the preparation of this map is attached to this report.

This completes the narrative report that accompanies the site-specific soil map prepared for the Noury Investments site located in Hudson, New Hampshire, Tax Map 105, Lot 17. If there are any questions regarding the soil map or the report, please feel free to contact me at 776-5825.

Sincerely,
Stoney Ridge Environmental, LLC

STATE OF NEW HAMPSHIRE
CYNTHIA
M.
BALCIUS
NO. 084
CERTIFIED SOIL SCIENTIST

10/9/20

Cynthia M. Balcius, CSS, CWS, CPESC
Senior Soil & Wetland Scientist

Justin Sherman
Assistant Project Manager

20. INFILTRATION FEASIBILITY REPORT

INFILTRATION FEASIBILITY REPORT

S.L. Chasse Steel

Map 105; Lots 17-2 & 17-3
Robinson Road
Hudson, New Hampshire

June 7, 2022

TABLE OF CONTENTS:

KEACH-NORDSTROM ASSOCIATES, INC.

I. Location of Practice

Two (2) infiltration practices are proposed for this project. One infiltration pond is proposed on the western side of lot 17-3 along Robinson Road and will collect, treat and recharge storm water. The second infiltration pond is proposed is on the western side of lot 17-2 and will also collect, treat and recharge storm water.

II. Existing Topography

The existing topography within the area of both proposed infiltration ponds is moderately flat with grades ranging between 3% and 10%.

III. Test Pit Locations

Data from a test pits (TP#1, TP#2 on lot 17-3) and (Tp#1 & TP#3 on lot 17-2) performed within the area of the proposed infiltration basin was used to determine infiltration rates and depth to seasonal high-water table.

IV. Seasonal High Water Table Elevation Summaries

The results from the test pit performed on 17-3 is as follows:

Test Pit #1	
The existing elevation of the ground	= 215 (approx. original grade)
Distance to SHWT	= 60” (5’ bottom of pit)
Elevation of SHWT	= 210
Lowest Elevation of Test Pit	= 210

In area of Practice (adjacent to TP#1)	
The existing elevation of the ground	= 215
Distance to SHWT (same as TP#1)	= 60” (5’)
Elevation of SHWT	= 210
Lowest Elevation of Test Pit	= 210

Test Pit #2	
The existing elevation of the ground	= 215 (approx. original grade)
Distance to SHWT	= 64” (5.3’ bottom of pit)
Elevation of SHWT	= 209.7
Lowest Elevation of Test Pit	= 209.7

In area of Practice (adjacent to TP#2)	
The existing elevation of the ground	= 214
Distance to SHWT (same as TP#2)	= 64” (5.3’)
Elevation of SHWT	= 208.7
Lowest Elevation of Test Pit	= 208.7

The results from the test pit performed on 17-2 is as follows:

Test Pit #1	
The existing elevation of the ground	= 216 (approx. original grade)
Distance to SHWT	= 72" (6' bottom of pit)
Elevation of SHWT	= 210
Lowest Elevation of Test Pit	= 210

In area of Practice (adjacent to TP#1)	
The existing elevation of the ground	= 214
Distance to SHWT (same as TP#1)	= 72" (6')
Elevation of SHWT	= 208
Lowest Elevation of Test Pit	= 208

Test Pit #3	
The existing elevation of the ground	= 218.5 (approx. original grade)
Distance to SHWT	= 70" (5.83' bottom of pit)
Elevation of SHWT	= 212.66
Lowest Elevation of Test Pit	= 212.66

V. Infiltration Rate Summary

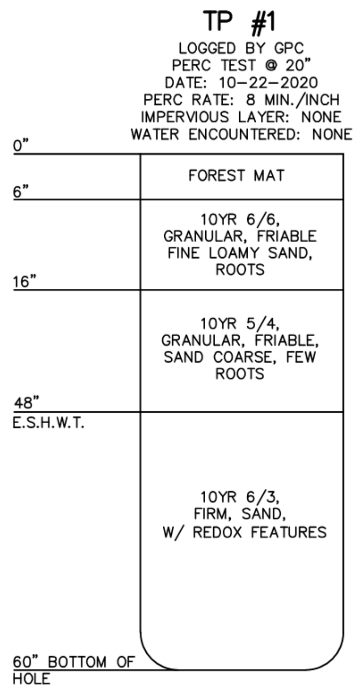
Soils in the area of the infiltration practice on lot 17-3 were determined to be Canton, sandy loam. Canton soils are classified as having a Ksat value of 2.0 inches/hour by the New Hampshire Stormwater Manual; Volume 2 dated December, 2008. By applying a 50% factor of safety, as required, a rate of 1.0 inches/hour was used in the analysis.

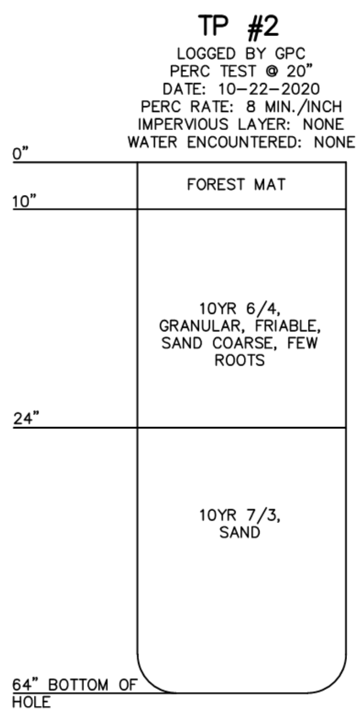
Soils in the area of the infiltration practice on lot 17-2 were determined to be Canton,sandy loam. Canton soils are classified as having a Ksat value of 2.0 inches/hour by the New Hampshire Stormwater Manual; Volume 2 dated December, 2008. By applying a 50% factor of safety, as required, a rate of 1.0 inches/hour was used in the analysis.

VI. Profile Descriptions

Profile descriptions are provided as follows.

17-3 Test Pit Logs

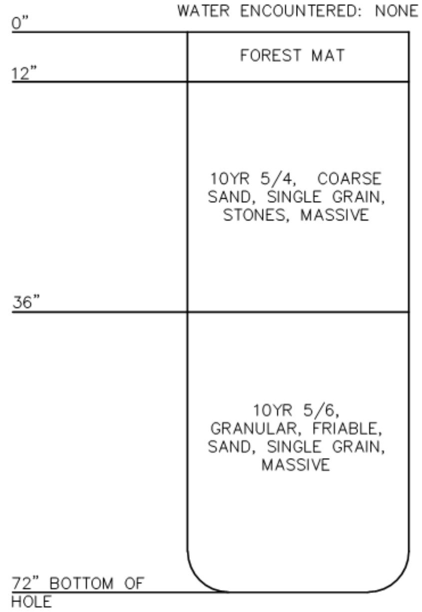




17-2 Test Pit

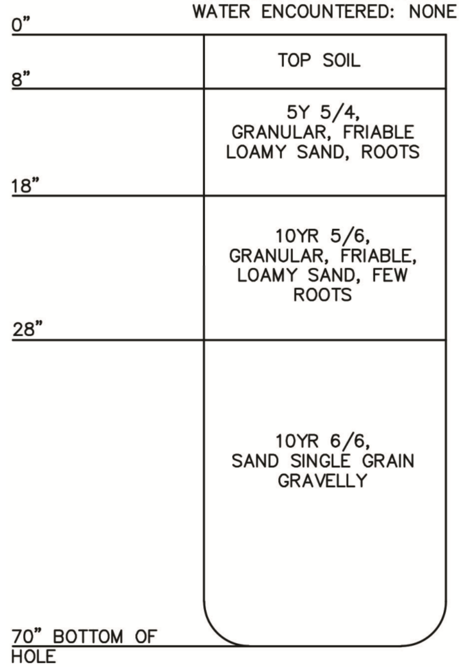
TP #1

LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-1-2021
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE



TP #3

LOGGED BY GPC
PERC TEST @ 20"
DATE: 3-16-2020
PERC RATE: 8 MIN./INCH
IMPERVIOUS LAYER: NONE
WATER ENCOUNTERED: NONE



21. OPERATION AND MAINTENANCE PLAN WITH CHECKLISTS

STORMWATER

OPERATION & MAINTENANCE PLAN

S.L. Chasse Steel
Robinson Road
Hudson, New Hampshire

Map 105; Lots 17-2 & 17-3

June 7, 2022

KNA KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities after construction is completed. The Applicant of the project is Steel Properties, LLC located at 8 Christine Drive Hudson, NH.

The subject properties are referenced on Map 105; Lots 17-2 & 17-3 in Hudson, New Hampshire. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the New Hampshire Department of Environmental Services and Hudson in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described and required in the Alteration of Terrain Permit unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The log will be made accessible to department and/or Hudson staff and a copy provided upon request.

Maintenance Requirements

Detention Basins:

- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed, and the vegetation maintained in healthy condition, as appropriate to the function of the facility and type of vegetation.

- Vegetated embankments that serve as “berms” or “dams” that impound water should be mowed at least once annually to prevent the establishment of woody vegetation.
- Embankments should be inspected at least annually 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.
- Inlet and outlet pipes/structures, energy dissipation structures/practices, and other structural appurtenances should be inspected at least annually by a qualified professional, and corrective action (e.g. maintenance, repairs or replacement) implemented as indicated by such inspection.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed when it significantly affects basin capacity.

Infiltration Ponds:

- Systems should be inspected 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.
- Trash and debris should be removed at each inspection.
- Inspection of pre-treatment measures at least twice annually and removal of accumulated sediment as warranted by inspection, but no less than once annually.
- At least once annually, the system should be inspected for drawdown time. If the pond does not drain within 72-hours following a rainfall event, a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to the removal of accumulated sediments or reconstruction of the basin bottom.

Sediment Forebays:

- Forebays help reduce the sediment load to downstream BMP’s, and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Treatment Swale:

- Systems should be inspected 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.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Bioretention Systems:

- Systems should be inspected 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.
- Pre-treatment 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 at each inspection.
- At least once annually, the system should be inspected for drawdown time. If the pond does not drain within 72-hours following a rainfall event, a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to the removal of accumulated sediments or reconstruction of the filter media.
- 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.

Catch Basins and Closed Drainage Network:

- Catch basins may require frequent maintenance. This may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually.
- Sediment should be removed when it approaches half of the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with the applicable state and federal regulations.

Outlet Protection:

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:

- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
  - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
    - Trash pickup;
    - Discarding;
    - Open burning;
    - Incineration; or
    - Burial of infested nursery.

II. Supporting Documents

Annual Inspection and Maintenance Reporting Form
for
S.L. Chasse Steel
Hudson, New Hampshire

Date: ____________________

To: **Steel Properties, LLC**

Re: **Certification of Inspection and Maintenance; Submittal of Forms**

Property Name: ____

Property Address: 199 & 201 Robinson Road, Hudson, NH

Contact Name: Stephen Chasse

Contact Phone #: (603) 886-3436

Contact Email Address: schasse@slchassesteelfab.com

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

______________________________	____________________
Name of Party Responsible for Inspection & Maintenance	Property Owner
______________________________	____________________
Authorized Signature	Signature

Long-Term Inspection & Maintenance Plan Checklist
S.L. Chasse Steel – Hudson, NH

Current Owner Name:	Date:	
Business Address:	Inspector:	
Weather:		
Date of Last Rainfall:	Amount:	Inches:
Best Management Practice		

Detention Basins	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Stormwater Ponds	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Infiltration Ponds	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Visual Inspection of vegetation? Yes ☐ No ☐
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Visual inspection of drawdown time? Yes ☐ No ☐

<table>
<tr><td colspan="4">Drawdown time less than 72 hours? Yes ☐ No ☐
(if no, call a qualified professional for inspection)</td></tr>
<tr><td rowspan="2">Sediment Forebays</td><td colspan="3">Reason for Inspection</td></tr>
<tr><td>Spring ☐</td><td>Fall/Yearly ☐</td><td>After Major Storm ☐</td></tr>
<tr><td colspan="4">Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:</td></tr>
<tr><td rowspan="2">Bioretention Systems</td><td colspan="3">Reason for Inspection</td></tr>
<tr><td>Spring ☐</td><td>Fall/Yearly ☐</td><td>After Major Storm ☐</td></tr>
<tr><td colspan="4">Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Visual inspection of drawdown time? Yes ☐ No ☐
Drawdown time less than 72 hours? Yes ☐ No ☐
(if no, call a qualified professional for inspection)</td></tr>
<tr><td rowspan="2">Treatment Swale</td><td colspan="3">Reason for Inspection</td></tr>
<tr><td>Spring ☐</td><td>Fall/Yearly ☐</td><td>After Major Storm ☐</td></tr>
<tr><td colspan="4">Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:</td></tr>
<tr><td rowspan="2">Catch Basins & Closed Drainage Network</td><td colspan="3">Reason for Inspection</td></tr>
<tr><td>Spring ☐</td><td>Fall/Yearly ☐</td><td>After Major Storm ☐</td></tr>
<tr><td colspan="4">Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:</td></tr>
<tr><td rowspan="2">Outlet Protection</td><td colspan="3">Reason for Inspection</td></tr>
<tr><td>Spring ☐</td><td>Fall/Yearly ☐</td><td>After Major Storm ☐</td></tr>
<tr><td colspan="4">Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:</td></tr>
<tr><td>General</td><td colspan="3">Reason for Inspection</td></tr>
</table>

	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐	No ☐	

Long-Term Inspection & Maintenance Log
S.L. Chasse Steel – Hudson, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Anti-icing Route Data Form
S.L. Chasse Steel – Hudson, NH

Truck Station:				
Date:				
Temperature:	Pavement Temperature:	Relative Humidity:	Dew Point:	Sky:
Reason For Applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

III. Control of Invasive Plants

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some Exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as “hitchhikers” among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

During maintenance activities, check for the presence of invasive plants and suitably remove according to the methods provided in the table below. The following table, based on the “Control of Invasive Plants” published by the New Hampshire Department of Agriculture, describes the most common invasive plants in this region and proper methods of disposal.

Name	Description	Invasive Qualities	Control Methods
Invasive Trees			
Norway Maple	- Large leaves - Will exude milky white sap when leaves are broken - Leaves turn color in Late October (fall foliage is yellow)	- Suppresses growth of grass, garden plants, and forest understory -Wind-borne seeds can germinate and grow in deep shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out plants, including the root systems. Use a forked spade or weed wrench. - Cut down the tree. Grind out the stump, or clip off re-growth. - Girdle[1] - Frill[2] - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray with glyphosate [3]* (mid-October to early November).
Tree of Heaven	- Long compound leaves with 11-25 lance shaped leaflets - Smell like peanut butter or burnt coffee when crushed	- Tough, can grow in poor conditions - Produces large quantities of wind-borne seeds - Grows rapidly - Secretes a toxin that kills other plants - Cannot be removed by mechanical means alone	- Pull seedlings when soil is moist. - Frill[2] (no more than 1" gap between cuts). Use Garlon 3a herbicide. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.* - Foliar spray[3]* (on regrowth) - Paint bottom 12" of bark with Garlon 4 Ultra (February/March). Use maximum strength specified on label for all herbicide applications.
Invasive Shrubs			
Autumn Olive	- Formerly recommended for erosion control and wildlife value	- Highly invasive, diminishes the overall quality of wildlife habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs (up to 4" diameter trunks). - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Bury stump - Do not mow

Invasive Shrubs (continued)			
Multiflora Rose	- Formerly recommended for erosion control, hedges, and wildlife habitat - Covered in white flowers in June - Very hard, curved thorns - Fringed edge to leaf stalk	- Huge shrub that chokes out all other vegetation - Too dense for most birds to nest in - Grows up trees like a vine in Shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems (at least 6” from the crown and 6” down). Use a forked spade or weed wrench for trees or shrubs. - Controlled burning[4] (on extensive infestations) - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants) - Herbicide may be applied in winter when other plants are dormant.
Bush Honeysuckles	- Includes Belle, Amur, Morrow’s, and Tatarian Honeysuckle	- Creates dense shade reducing plant diversity and eliminating nest sites in forest interior spaces	- Deadhead to prevent spread of seeds (on ornamentals). Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year (on shady sites only, brush cut in early spring and fall). - Controlled burning[4] (during growing season) - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate (late in the growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.*

Invasive Shrubs (continued)			
Blunt-Leaved Privet	- Medium sized shrub - Simple, oblong, dark green leaves 1-2” in length - Fragrant white flowers (spring) - Blackish-purple fruit (late summer)	- Toxic to mammals - Loss of valuable habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers - Do not cut back or mow
Burning Bush, Winged Euonymus	- Wide, corky wings on the Branches - Brilliant red autumn leaves - Fruit	- High seed production	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers
Japanese Barberry	- Spiny deciduous shrub - Small leaves	- Very dense, displaces native plants - Can change chemistry of soil	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers

Invasive Woody Vines			
Japanese Honeysuckle	- Gold and White flowers - Heavy scent and sweet nectar in June	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (fall or early spring when native vegetation is dormant) Plan to re-treat repeatedly
Oriental Bittersweet	- Bright orange seed capsules in clusters all along the stem - Flowers	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.*
Japanese Knotweed, Mexican Bamboo	- The stems have knotty joints, similar to bamboo - Grows 6-10' tall - Large, pointed oval or triangular leaves	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Can grow in shade	- Cut stem/ cut stump with Glyphosate (at least 3 times each during growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* - Treat with Rodeo - In gardens, heavy mulch or dense shade may kill it.

Invasive Herbaceous Plants			
Garlic Mustard	- White-flowered biennial - Rough scalloped leaves (kidney, heart, or arrow shaped) - Garlic smell, mustard taste when its leaves are crushed	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist (before it flowers in spring). Dig out larger plants, including the crown and root systems. Use a forked spade or weed wrench for trees or shrubs. Tamp down soil afterwards. - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn or send to a landfill. - Foliar spray[3]* (may be appropriate in some settings)
Japanese Stilt Grass	- Lime green color - Line of silvery hairs down the middle of the 2-3" long blade	- Tolerates sun or dense shade -Quickly invades areas left bare or disturbed by tilling or flooding - Builds a large seed bank in the soil	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.

Invasive Herbaceous Plants (continued)			
Mile-A-Minute Vine, Devil's Tail Tearthumb	- Triangular leaves - Barbed stems - Turquoise berries	- Rapid growth - Quickly covers and shades out herbaceous plants	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
Spotted Knapweed	- Thistle-like flowers	- Dense, crowds out native species	- Do not pull unless the plant is young and the ground is very soft. The root will break and produce several new plants. - Wear sturdy gloves - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - In lawns, spot treat with broad-leaf weed killer. Good lawn care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]*

[1]Girdle: Cut through the bark and growing layer all around the trunk, about 6" above the ground. Girdling is most effective in spring (when the sap is rising) & middle-late summer (when the tree is sending food to the roots). Clip off sucker sprouts.

[2]Frill: Using a machete, hatchet, or similar device, hack scars (several holes in larger trees) downward into the growing layer, and squirt in glyphosate (or triclopyr if specified in table). Follow label directions for injection and frill applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.

[3]Foliar Spray: Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

[4]Controlled Burning: Burning during the spring (repeated over several years) will allow native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective

*Herbicides: It is highly recommended that small populations try to be controlled using non-chemical methods where feasible. However, for large infestations, and for a few plants herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some plants; for these, triclopyr or Garlon 3a may be indicated. When using herbicides read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

IV. Stormwater Practice Location Plan

22. PLANS

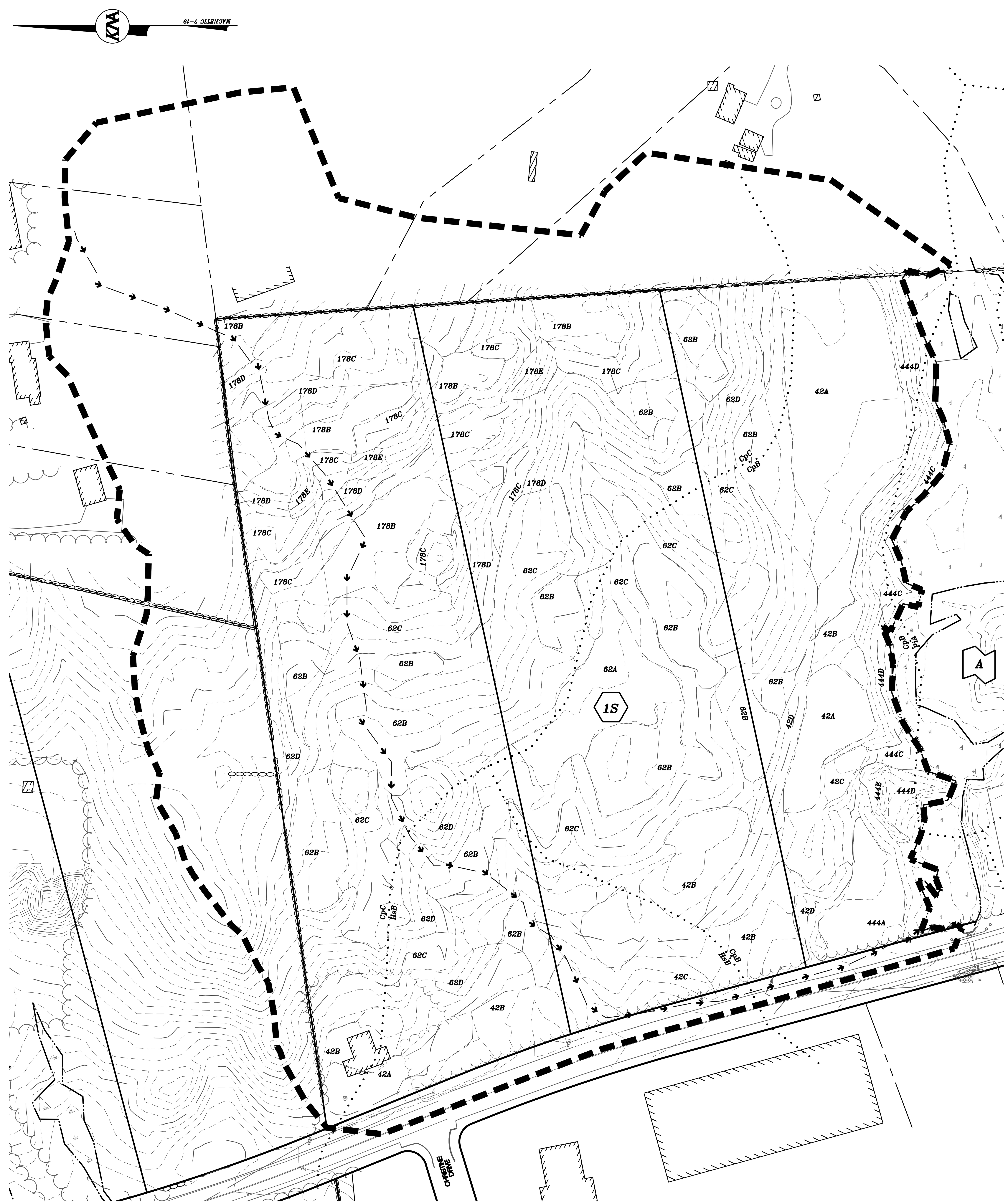
NON-RESIDENTIAL SITE PLAN SET (22" X 34")

PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22" X 34")

POST-DEVELOPMENT DRAINAGE AREAS PLANS (22" X 34")

PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22" X 34" – COLOR)

POST-DEVELOPMENT DRAINAGE AREAS PLANS (22" X 34" – COLOR)



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE PARCELS 17–2 & 17–3.

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 42A — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL DRAINED	B
42B	CANTON SANDY LOAM	3–8%	WELL DRAINED	B
42C	CANTON SANDY LOAM	8–15%	WELL DRAINED	B
42D	CANTON SANDY LOAM	15–25%	WELL DRAINED	B
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62D	CHARLTON FINE SANDY LOAM	15–25%	WELL DRAINED	B
178B	CHARLTON–CHATFIELD COMPLEX (60–40)	3–8%	WELL DRAINED	B
178C	CHARLTON–CHATFIELD COMPLEX (60–40)	8–15%	WELL DRAINED	B
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178E	CHARLTON–CHATFIELD COMPLEX (60–40)	25–50%	WELL DRAINED	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL DRAINED	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL DRAINED	B
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444D	NEWFIELDS FINE SANDY LOAM	15–25%	MODERATELY WELL DRAINED	B

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SCS SOIL MAP UNIT KEY

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CpB	CHATFIELD–HOLLIS–CANTON	3–8%
CpC	CHATFIELD–HOLLIS–CANTON	8–15%
HsB	HINCLKEY LOAMY SAND	3–8%
PiA	PIPESTONE LOAMY SAND	0–3%

SOURCE: WEB SOIL SURVEY, WWW.WEBSOILSURVEY.SC.EGOV.USDA.GOV

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

PRE DEVELOPMENT DRAINAGE AREA PLAN

S.L. CHASSE STEEL

MAP 105 LOTS 17-2 & 17-3
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

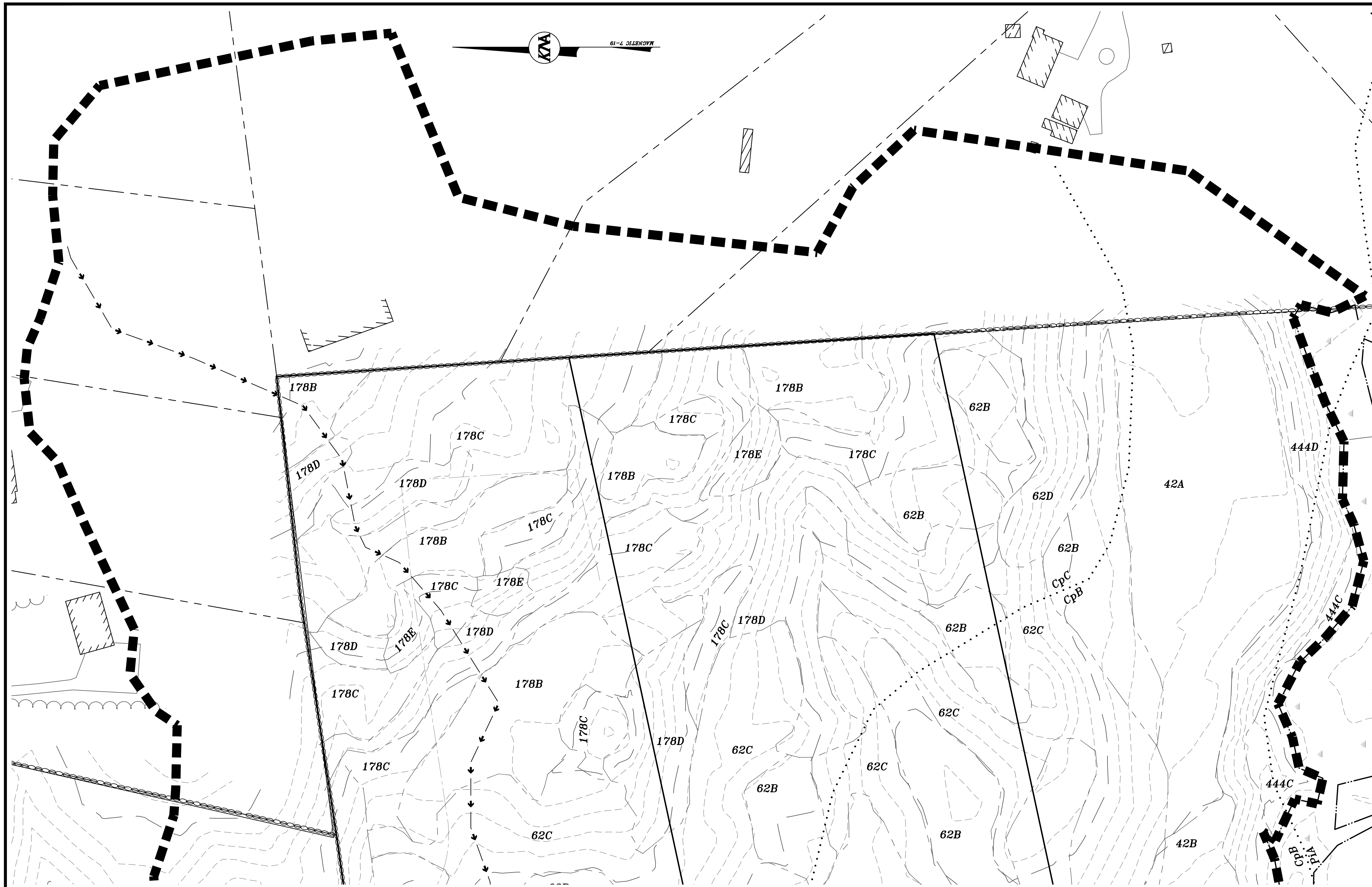
OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

REVISIONS

No.	DATE	DESCRIPTION	BY
3	09/01/21	AoT COMMENTS	SCV

DATE: APRIL 6, 2021 | **SCALE:** 1"=80'
PROJECT NO: 20–0921–2 | **SHEET** 1 **OF** 8



DRAINAGE LEGEND:

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- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
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- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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178B	CHARLTON–CHATFIELD COMPLEX (60–40)	3–8%	WELL DRAINED	B
178C	CHARLTON–CHATFIELD COMPLEX (60–40)	8–15%	WELL DRAINED	B
178D	CHARLTON–CHATFIELD COMPLEX (60–40)	15–25%	WELL DRAINED	B
178E	CHARLTON–CHATFIELD COMPLEX (60–40)	25–50%	WELL DRAINED	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL DRAINED	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL DRAINED	B
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SCS SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS
CpB	CHATFIELD–HOLLIS–CANTON	3–8%
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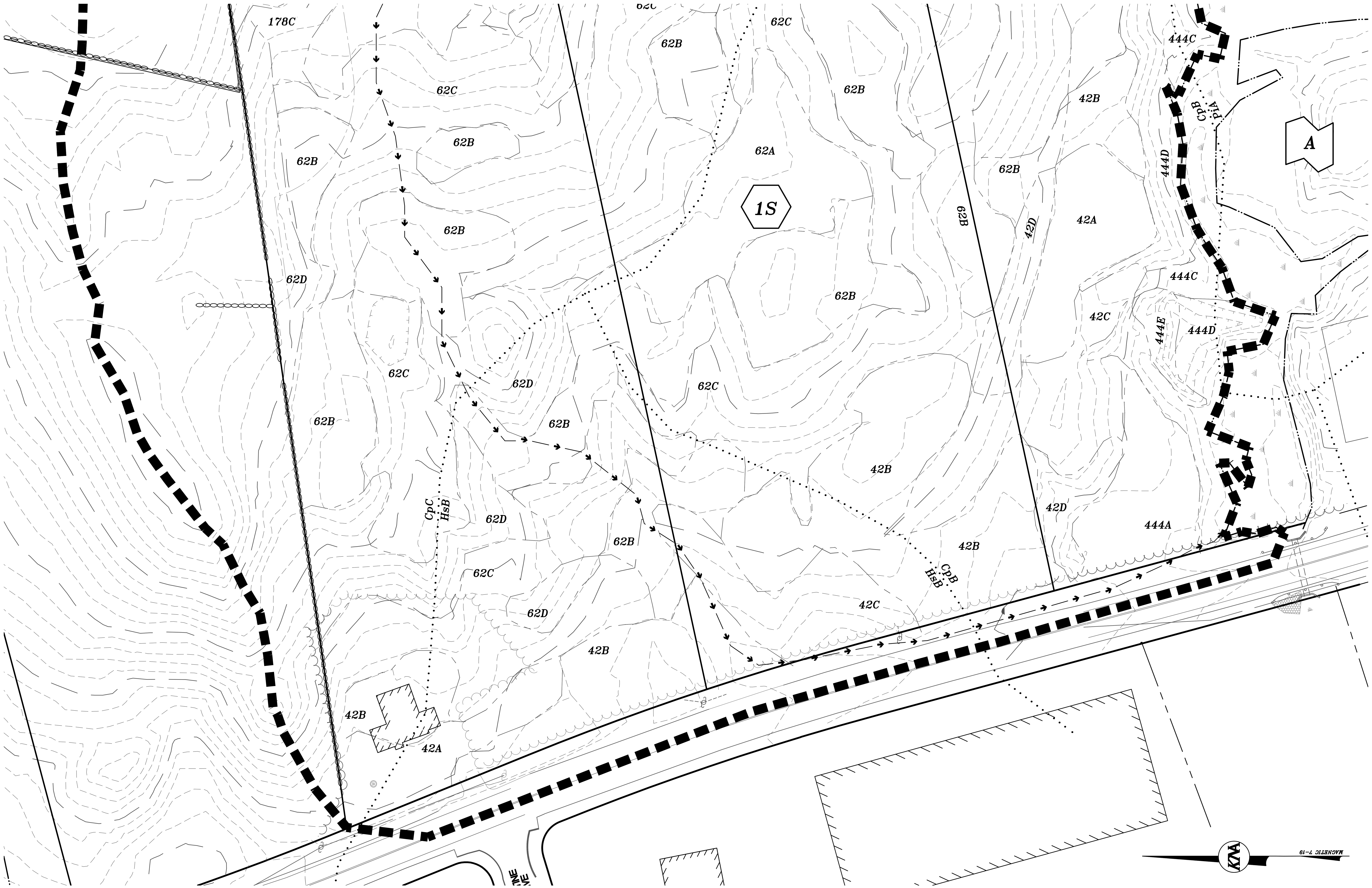
REVISIONS

No.	DATE	DESCRIPTION	BY
3	09/01/21	AoT COMMENTS	SCV

DATE: APRIL 6, 2021	SCALE: 1"=50'
PROJECT NO: 20–0921–2	SHEET 2 OF 8



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DIG SAFE

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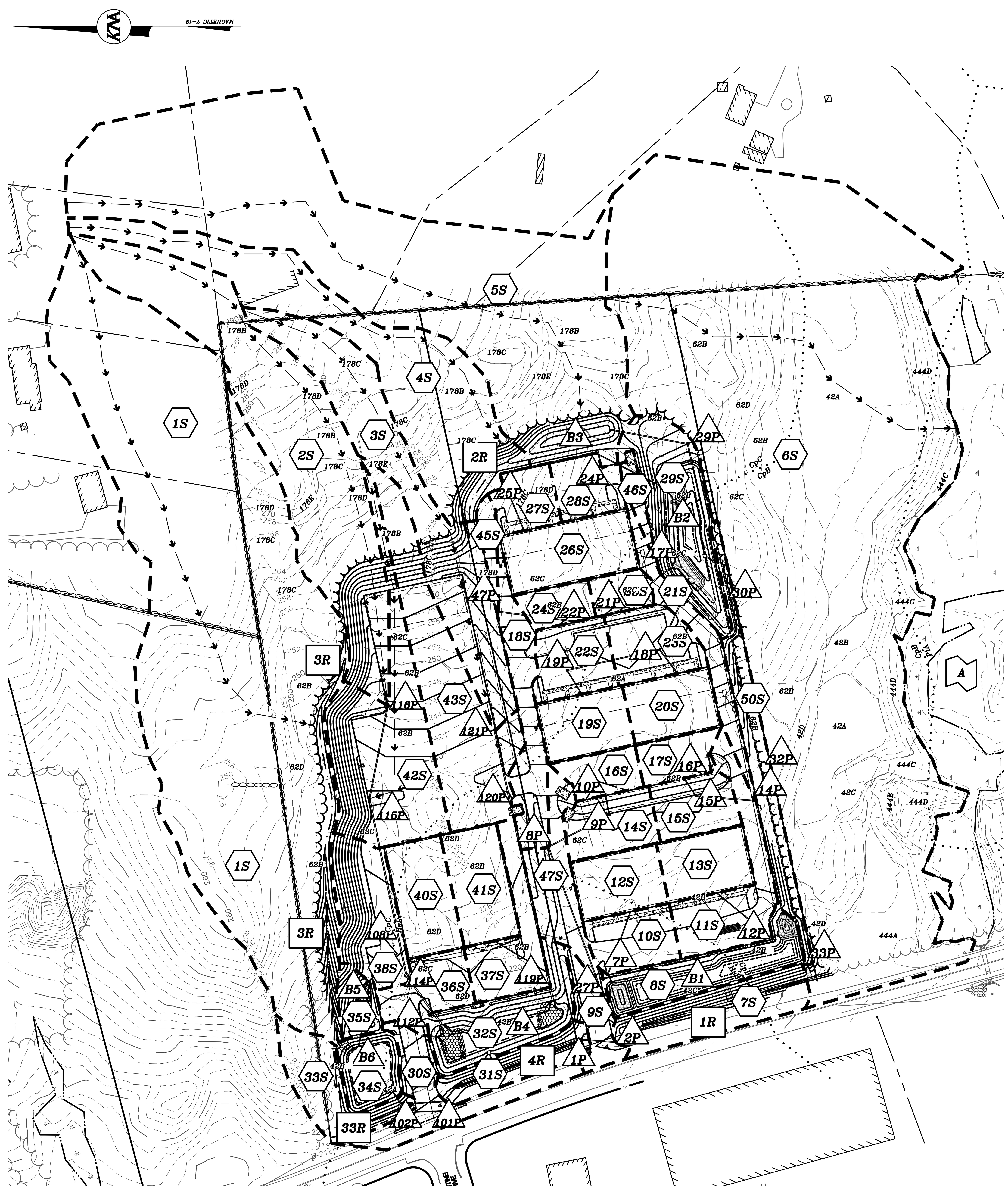

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1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE THE PARCELS 17–2 & 17–3 AFTER DEVELOPMENT.
2. PROPOSED FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "GRADING & DRAINAGE PLAN, S.L. CHASSE STEEL, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED APRIL 6, 2021".

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SCS SOIL LINES

SITE SPECIFIC SOIL LINES

42A DENOTES SOIL TYPE

P DENOTES POND

S DENOTES SUBCATCHMENT AREA

L DENOTES POINT OF INTEREST

R DENOTES REACH

LIMIT OF SUBCATCHMENT AREA

TIME OF CONCENTRATION

REACH

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL DRAINED	B
42B	CANTON SANDY LOAM	3–8%	WELL DRAINED	B
42C	CANTON SANDY LOAM	8–15%	WELL DRAINED	B
42D	CANTON SANDY LOAM	15–25%	WELL DRAINED	B
62A	CHARLTON FINE SANDY LOAM	0–3%	WELL DRAINED	B
62B	CHARLTON FINE SANDY LOAM	3–8%	WELL DRAINED	B
62C	CHARLTON FINE SANDY LOAM	8–15%	WELL DRAINED	B
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178C	CHARLTON–CHATFIELD COMPLEX (60–40)	8–15%	WELL DRAINED	B
178D	CHARLTON–CHATFIELD COMPLEX (60–40)	15–25%	WELL DRAINED	B
178E	CHARLTON–CHATFIELD COMPLEX (60–40)	25–50%	WELL DRAINED	B
444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL DRAINED	B
444B	NEWFIELDS FINE SANDY LOAM	3–8%	MODERATELY WELL DRAINED	B
444C	NEWFIELDS FINE SANDY LOAM	8–15%	MODERATELY WELL DRAINED	B
444D	NEWFIELDS FINE SANDY LOAM	15–25%	MODERATELY WELL DRAINED	B

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SCS SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS
CpB	CHATFIELD–HOLLIS–CANTON	3–8%
CpC	CHATFIELD–HOLLIS–CANTON	8–15%
HsB	HINCLKEY LOAMY SAND	3–8%
PiA	PIPESTONE LOAMY SAND	0–3%

SOURCE: WEB SOIL SURVEY, WWW.WEBSOILSURVEY.SC.EGOV.USDA.GOV

DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

POST DEVELOPMENT DRAINAGE AREA PLAN

S.L. CHASSE STEEL

MAP 105 LOTS 17-2 & 17-3
ROBINSON ROAD
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD/APPLICANT:
STEEL PROPERTIES, LLC
8 CHRISTINE DRIVE
HUDSON, NH 03051
H.C.R.D. BK. 9327 PG. 197

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

REVISIONS

No.	DATE	DESCRIPTION	BY
3	09/01/21	AoT COMMENTS	SCV

DATE: APRIL 6, 2021 **SCALE:** 1"=80'

PROJECT NO: 20–0921–2 **SHEET** 4 **OF** 8

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

SCS SOIL LINES

SITE SPECIFIC SOIL LINES

42A DENOTES SOIL TYPE

P DENOTES POND

S DENOTES SUBCATCHMENT AREA

L DENOTES POINT OF INTEREST

R DENOTES REACH

LIMIT OF SUBCATCHMENT AREA

TIME OF CONCENTRATION

REACH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON SANDY LOAM	0–3%	WELL DRAINED	B
42B	CANTON SANDY LOAM	3–8%	WELL DRAINED	B
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444A	NEWFIELDS FINE SANDY LOAM	0–3%	MODERATELY WELL DRAINED	B
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SCS SOIL MAP UNIT KEY

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HsB	HINCLKEY LOAMY SAND	3–8%
PiA	PIPESTONE LOAMY SAND	0–3%

SOURCE: WEB SOIL SURVEY, WWW.WEBSOILSURVEY.SC.EGOV.USDA.GOV

POST DEVELOPMENT DRAINAGE AREA PLAN

S.L. CHASSE STEEL

MAP 105 LOTS 17-2 & 17-3
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HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

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No.	DATE	DESCRIPTION	BY
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DATE: APRIL 6, 2021 | SCALE: 1"=50'

PROJECT NO: 20–0921–2 | SHEET 5 OF 8

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 42A — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

GRAPHIC SCALE

50 0 25 50 100 200

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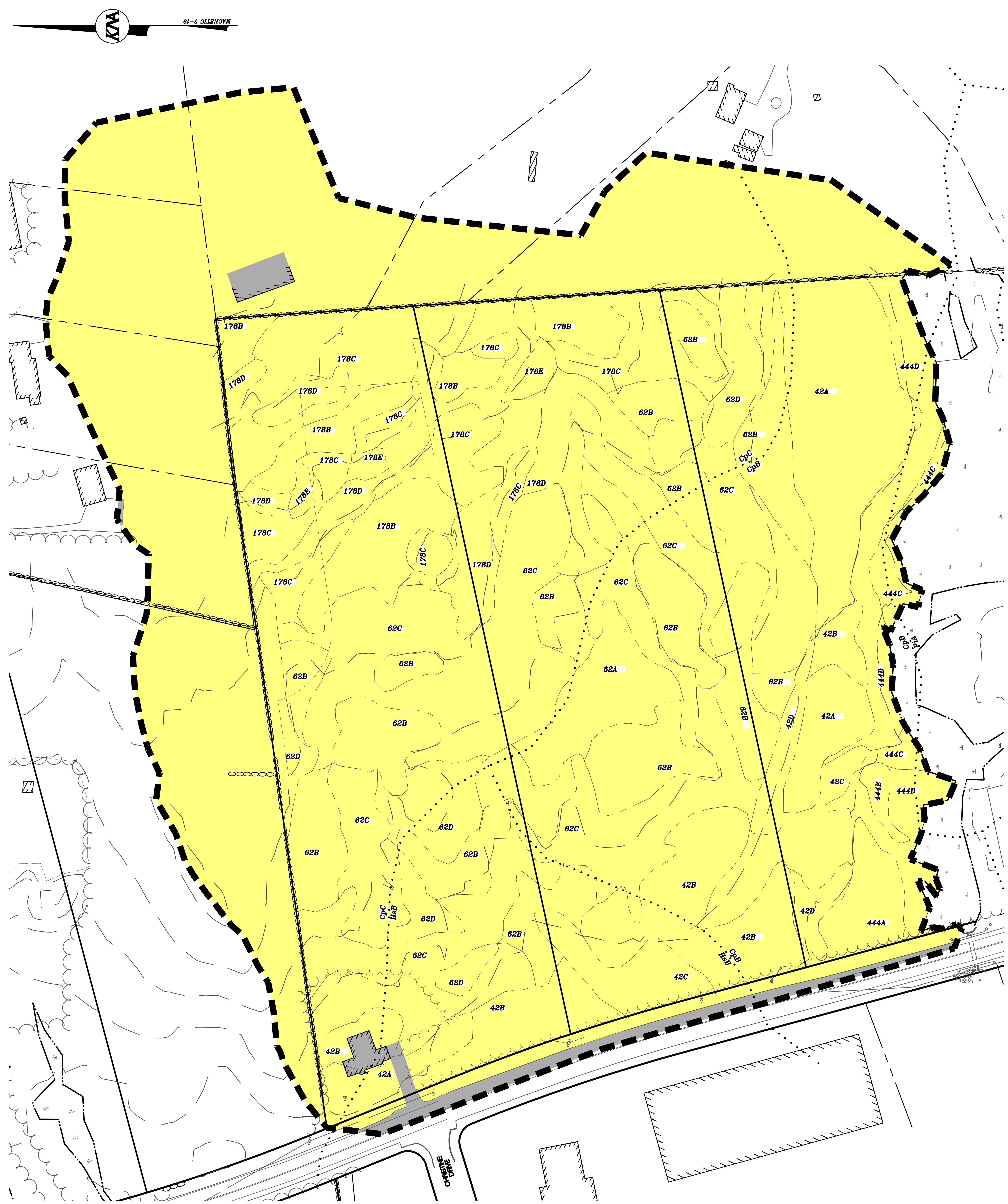
DATE: APRIL 6, 2021	SCALE: 1"=50'
PROJECT NO: 20–0921–2	SHEET 6 OF 8



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LEGEND:

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SCS SOIL LINES
SITE SPECIFIC SOIL LINES
LIMIT OF SUBCATCHMENT AREA
SOIL GROUP A
SOIL GROUP B
SOIL GROUP C
SOIL GROUP D
IMPERVIOUS AREA

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

PRE DEVELOPMENT SOILS MAP

S.L. CHASSE STEEL

MAP 105 LOTS 17-2 & 17-3
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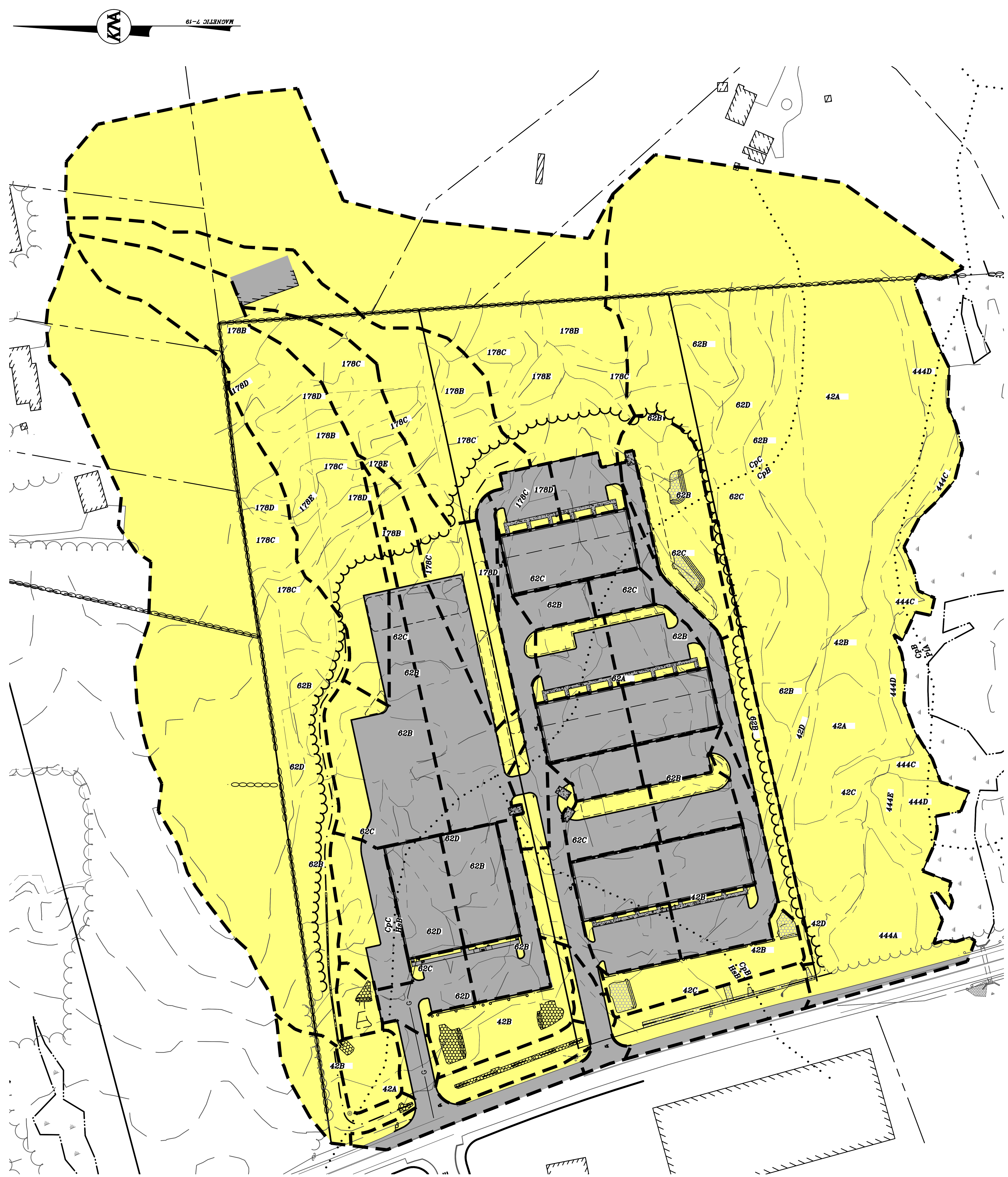
DATE: APRIL 6, 2021 **SCALE:** 1"=80'
PROJECT NO: 20–0921–2 **SHEET** 7 **OF** 8



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SCS SOIL LINES

SITE SPECIFIC SOIL LINES

LIMIT OF SUBCATCHMENT AREA

SOIL GROUP A

SOIL GROUP B

SOIL GROUP C

SOIL GROUP D

IMPERVIOUS AREA

GRAPHIC SCALE

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(IN FEET)
1 inch = 80 ft.

POST DEVELOPMENT SOILS MAP

S.L. CHASSE STEEL

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REVISIONS

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DATE: DECEMBER 8, 2020 **SCALE:** 1"=80'
PROJECT NO: 20–0921–2 **SHEET** 8 **OF** 8