



TOWN OF EXETER, NEW HAMPSHIRE

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709
www.exeternh.gov

LEGAL NOTICE EXETER PLANNING BOARD AGENDA

The Exeter Planning Board will meet on Thursday, June 8, 2023 at 7:00 P.M. in the Nowak Room of the Exeter Town Office building located at 10 Front Street, Exeter, New Hampshire to consider the following:

APPROVAL OF MINUTES: April 13, May 11 and May 25, 2023

NEW BUSINESS:

The application of Elizabeth A. Hewson Revocable Trust for a minor subdivision of an existing 2.30-acre parcel into three (3) residential lots. The subject property is located at 45 Pine Street, in the R-2, Single Family Residential zoning district. Tax Map Parcel #83-59. PB Case #23-5.

The application of Blind Tiger, LLC for a site plan review for the proposed reconstruction of the club house and additional parking at the Exeter Country Club. The subject property is located at 58 Jady Hill Avenue, in the R-2, Single Family Residential zoning district. Tax Map Parcel #52-1. PB Case #23-2.

The application of Meniscus Financial Holdings, LLC for a preliminary conceptual review for the proposed construction of a vehicle storage/display area and associated site improvements on the property located at 127 Portsmouth Avenue. The subject property is located in the C-2, Central Area Commercial zoning district. Tax Map Parcel #52-112-2. PB Case #23-7.

OTHER BUSINESS

- Master Plan Discussion
- Land Use Regulations Review
- Field Modifications
- Bond and/or Letter of Credit Reductions and Releases

EXETER PLANNING BOARD

Langdon J. Plumer, Chairman

1 **TOWN OF EXETER**
2 **PLANNING BOARD**
3 **NOWAK ROOM – TOWN OFFICE BUILDING**
4 **10 FRONT STREET**
5 **APRIL 13, 2023**
6 **DRAFT MINUTES**
7 **7:00 PM**

8 **I. PRELIMINARIES:**

9
10 **BOARD MEMBERS PRESENT BY ROLL CALL:** Chair Langdon Plumer, Vice-Chair Aaron Brown,
11 Pete Cameron, Clerk, Jennifer Martel, Gwen English, and Nancy Belanger Select Board
12 Representative

13
14 **STAFF PRESENT:** Town Planner Dave Sharples

15
16 **II. CALL TO ORDER:** Chair Plumer called the meeting to order at 7:00 PM and introduced the
17 members.

18
19 **III. OLD BUSINESS**

20
21 **APPROVAL OF MINUTES**

22
23 January 26, 2023

24
25 Ms. Belanger and Ms. English recommended edits.

26
27 ***Ms. Belanger motioned to approve the January 26, 2023 meeting minutes, as amended. Ms. English***
28 ***seconded the motion. A vote was taken, Mr. Cameron abstained, the motion passed 5-0-1.***

29
30 February 9, 2023

31
32 Mr. Cameron and Ms. English recommended edits.

33
34 ***Mr. Cameron motioned to approve the February 9, 2023 meeting minutes, as amended. Ms. Belanger***
35 ***seconded the motion. A vote was taken, all were in favor, the motion passed 6-0-0.***

36
37 March 23, 2023

38
39 Ms. English and Ms. Belanger recommended edits.

40
41 ***Ms. Belanger motioned to approve the March 23, 2023 meeting minutes, as amended. Mr. Cameron***
42 ***seconded the motion. A vote was taken, all were in favor, the motion passed 6-0-0.***

43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85

IV. NEW BUSINESS:

1. The application of Richard Schaefer and Debbi Schaefer for a minor subdivision of the existing 21 +/- acre parcel located at 24 Powder Mill Road. The applicant is proposing to subdivide off a 5.01 +/- acre parcel with frontage on Powder Mill Road for a new residence.
R-1, Low Density Residential zoning district
Tax Map Parcel #102-4
Planning Board Case #23-3

Chair Plumer read out loud the Public Hearing Notice.

Mr. Sharples noted the application was complete for review purposes.

Mr. Cameron motioned to open Planning Board Case #23-3. Vice-Chair Brown seconded the motion. A vote was taken, all were in favor, the motion passed 6-0-0.

Mr. Sharples noted the applicants are seeking a minor subdivision and have submitted a minor subdivision plan and supporting documents dated February 23, 2023. Mr. Sharples noted the applicants appeared before the Zoning Board of Adjustment at their November 15, 2022 meeting and were granted a variance for tests pits for an individual sewage disposal system 24 inches to the seasonal high water table. There was no TRC meeting but the application was reviewed by staff. There were no waivers requested.

Mr. Sharples noted that Code Enforcement Officer Doug Eastman determined that the proposal meets the minimum dimensional requirements however the property is located within the special flood hazard area (AE Flood one) and is subject to the recently amended Article 9.4 Floodplain Development Ordinance which prohibits new expansion except to correct a malfunction. The applicant was advised that relief will be necessary from the Zoning Board of Adjustment. Mr. Sharples noted the application was received after posting the ordinance to be adopted and that typically the Planning Board doesn't approve subject to a variance being obtained. Mr. Sharples offered to share the advice of legal counsel in non-public session.

By Roll Call Vice-Chair Brown motioned to go into non-public session pursuant to RSA 91-A:3(II) consideration of advice of legal counsel. Ms. Belanger seconded the motion. A roll call vote was taken: Ms. Belanger voted aye, Ms. English voted aye, Mr. Brown voted aye, Mr. Plumer voted aye, Mr. Cameron voted aye and Ms. Martel voted aye. The motion passed 6-0-0.

The meeting room was closed to the public at 7:24 PM.

Vice-Chair Brown motioned to come out of non-public session. Ms. Belanger seconded the motion. A vote was taken, all were in favor, the motion passed 6-0-0.

The meeting room was reopened to the public at 7:32 PM.

86

87 Vice-Chair Brown explained to the applicants that they were caught in a weird time frame and for that
88 reason the Board will listen to their presentation but not take action so as to not influence the Zoning
89 Board of Adjustment.

90

91 Henry Boyd of Millennium Engineering presented the application on behalf of the applicants who he
92 noted were subdividing a five-acre lot for the benefit of their daughter. He explained the flood zone and
93 elevations unique to the property and felt it was not possible for flood water to inundate the system,
94 however he noted the applicants were before the Board to subdivide the lot, not to build and building is
95 in the purview of the Building Inspector.

96

97 Mr. Sharples noted that at the time the applicant first went before the Zoning Board of Adjustment the
98 Zoning Board of Adjustment would not have known the specifics of the proposed floodplain ordinance
99 as it had not been finalized or posted before November 15th. Mr. Sharples advised that the filing
100 deadline for the ZBA was May 1st for their May 16th meeting.

101

102 ***Vice-Chair Brown motioned to continue the application of Richard Schaefer and Debbi Schaefer,***
103 ***Planning Board Case #23-3 to the Planning Board's May 25, 2023 meeting at 7:00 PM. Ms. English***
104 ***seconded the motion. A vote was taken, all were in favor, the motion passed 6-0-0.***

105

106 2. The application of C/A Design, Inc. (Wakefield Thermal) for a site plan review for the proposed
107 construction of a 40,000 SF addition to an existing industrial building, expanded parking, loading areas
108 and associated site improvements on the property located at 131 Portsmouth Avenue.

109 CT-Corporate Technology Park and C-2 Highway Commercial zoning districts

110 Tax Map Parcel #52-112

111 Planning Board Case #23-4

112

113 Chair Plumer read out loud the Public Hearing Notice.

114

115 Mr. Sharples noted the application was complete for review purposes.

116

117 ***Vice-Chair Brown motioned to open Planning Board Case #23-4. Ms. English seconded the motion. A***
118 ***vote was taken, all were in favor, the motion passed 6-0-0.***

119

120 Mr. Sharples noted the applicant was seeking site plan approval for the proposed construction of a
121 40,000 square foot addition to the existing building at 131 Portsmouth Avenue (former OSRAM Sylvania
122 property). The applicant submitted site plan review application, plans and supporting documents dated
123 February 28, 2023. A Technical Review Committee (TRC) meeting was held on March 23, 2023. A copy
124 of the TRC comment letter dated March 24, 2023 and UEI comment letter dated March 24, 2023 were
125 provided to the Board for review.

126 Mr. Sharples noted revised plans and supporting documents, TRC & UEI response comment letters were
127 received on March 31, 2023 and a second UEI comment letter dated April 6, 2023 were provided to the
128 Board for review.

129 Mr. Sharples noted the applicant obtained a variance from the Zoning Board of Adjustment on
130 September 20, 2022 to permit the expansion of the existing non-conforming light industrial use on the
131 property.

132 Mr. Sharples noted the applicant appeared before the Conservation Commission at their February 21,
133 2023 meeting to review the letter from wetland scientist, Jay Aube dated February 14, 2023 and their
134 NH DES Expedited Wetlands Permit application. An email dated March 23, 2023 was provided from
135 Conservation and Sustainability Planner, Kristen Murphy forwarding comments from Chair Andrew Koff
136 to Mr. Sharples dated 2/23/23. No Conditional Use Permit (CUP) was required because the wetlands
137 were manmade and not subject to buffer or CUP requirements. Ms. Murphy indicated the invasive
138 species management plan was satisfactory. There are no waivers being requested.

139 Tom Burns of TF Moran and Matt Van Zile, C/A Design, Inc. (Wakefield Thermal) presented the
140 application for site plan review. Mr. Burns indicated the proposal is to redevelop part of the office,
141 61,000 SF building, second story which is 37' high built in 1978 and existing gravel parking lot. Mr. Burns
142 displayed the proposed plan. He showed the existing access on GTE Drive and proposed second primary
143 access off Holland Drive. He noted the property had sewer, drainage, water and gas. Mr. Burns noted
144 that variance was obtained from the ZBA for expansion of the non-conforming light industrial use in the
145 C2 zoning district. Mr. Burns noted there would be a 40,000 SF addition (shown in red on the plan) on
146 the SW side and the parking area would be rebuilt and expanded and there would be a loading area and
147 parking for 153 cars. Mr. Burns reviewed the traffic analysis and lessened traffic impacts from utilizing
148 Holland Drive.

149 Mr. Burns reviewed the proposed drainage system and stormwater treatment system which would tie
150 into the existing system. He reviewed the NHDES Alteration of Terrain permit application currently
151 under review. He noted they received the dredge and fill permit last week and sewer discharge permit.

152 Mr. Burns reviewed the architectural design of the renovation and addition which would have light gray
153 insulated metal panels and faux wood panels.

154 Mr. Burns noted there were 150 employees proposed with three shifts but they would start with about
155 75 employees.

156 Chair Plumer opened the hearing to the public for comments and questions at 8:08 PM and being none
157 closed the hearing to the public.

158 Mr. Burns reviewed some of the outstanding comments, #7 concerning shallow pipe run which they can
159 adjust to run between structures, although slopes are allowable.

160 Mr. Burns noted buoyancy calculations for groundwater test pits which he asked the surveyor to update.

161 Mr. Burns addressed comment #12 water line on utility plan which he will have the surveyor update.

162 Mr. Burns addressed comment #18 concerning the 2 of 3 pipes shown – will connect.

163 Mr. Burns noted the lines would be turned on the landscaping sheet plans. He noted the tree roots will
164 not interfere with the easement line and offered to relocate another tree. Mr. Burns addressed the
165 loading docks and updating the drain line. He noted on the SE corner a line of trees to be shifted out of

166 the easement. Mr. Burns commented on the detail sheet, the insert should remain until the stormwater
167 system is online.

168 Ms. Martel asked about reviewing the existing tree line for significant trees and Mr. Burns responded
169 that no trees with greater than 20” caliper had been found.

170 Ms. Martel asked about lighting and photometrics and Mr. Burns indicated lighting would be downcast
171 and dark sky compliant and there would be no light spillage off site.

172 Chair Plumer asked if lights would be on all night because the facility is open 24 hours and Mr. Burns
173 responded – yes.

174 Vice-Chair Brown asked about invasive species and Mr. Burns indicated there were no hits at Natural
175 Heritage Bureau (NHB) for species.

176 Chair Plumer asked if the storm water management would handle the weight of trucks and Mr. Burns
177 responded – yes.

178 Chair Plumer asked about the roof line tie-in with the addition and Mr. Van Zile explained the tie-in to
179 the exiting roof.

180 Ms. English asked what the east side of the building would be used for and the white concrete retaining
181 wall. Mr. Burns explained there would be a drive up ramp with wall on either side, the dock as 4’ height
182 doors.

183 Chair Plumer asked about snow storage and Mr. Burns pointed out three areas on the plan.

184 Vice-Chair Brown asked about the fourth paragraph in the memo and whether one day the necessary o
185 the variance would not be required. Mr. Sharples noted the ordinance is proposing to change next year
186 or the year after.

187 Vice-Chair Brown asked about the Conservation Commission’s letter. Mr. Sharples noted it was part of
188 the TRC review and Ms. Murphy had emailed Steve at the DPW.

189 Mr. Cameron asked about electric vehicle charging stations and Mr. Burns showed the location
190 proposed for four stations pointing to the center of the bottom of the building plan. Mr. Cameron asked
191 if they would be for visitors or employees. Mr. Sharples noted the requirement is for readiness,
192 providing conduit and dedicated circuits for two percent. Mr. Burns noted there would likely be two
193 stations for four parking spaces.

194 Ms. Martel remarked that a future concern could be the equity of EV charging stations to be ADA
195 compliant and Vice-Chair Brown agreed that an employee could foreseeably require that.

196 Mr. Cameron asked if delivery trucks would be parked overnight and Mr. Van Zile responded that they
197 did not have a fleet of trucks and typically the trucks would come in and go out.

198 Ms. Belanger commented that she didn’t remember the school being taken into consideration in the
199 traffic analysis.

200 Ms. English asked about constructing solar panels and Mr. Van Zile responded that they are considering
201 it.

202 Ms. Martel asked if they had considered partnering to reduce the amount of paving. Mr. Burns noted
203 they looked at connecting but the grading was a steep difference at the corner. Mr. Burns noted the
204 access would improve truck circulation. Mr. Sharples explained that taking a left onto GTE Drive could
205 be a long wait and they discussed partnering at the TRC meeting.

206 Ms. Martel asked if anyone wanted to conduct a site walk and the Board seemed satisfied that a site
207 walk was not necessary.

208 Mr. Sharples noted that for future cases Section 9.2.3 of the regulations state that architectural design
209 guidelines may apply to industrial buildings. It does not appear that any part of this building will be
210 visible from the roadway but in future situations where the building is highly visible the "may" will mean
211 yes.

212 Mr. Sharples reviewed the proposed conditions of approval.

213 1. An electronic as-built plan of the entire property with details acceptable to the Town shall be
214 provided prior to the issuance of a Certificate of Occupancy. This plan must be in a dwg or dxf file
215 format and in NAD 1983 State Plane New Hampshire FIPS 2800 Feet coordinates;

216 2. All monumentation shall be set in accordance with Section 9.25 of the Site Plan Review and
217 Subdivision Regulations prior to signing the final plans.

218 3. A preconstruction meeting shall be arranged by the applicant and their contractor with the Town
219 Engineer prior to any site work commencing. The following must be submitted for review and approval
220 prior to the preconstruction meeting:

221 i. The SWPPP (stormwater pollution prevent plan), if applicable, be submitted to and received
222 for approval by DPW prior to preconstruction meeting; and

223 ii. A project schedule and construction cost estimate.

224 4.. Third party construction inspection fees shall be paid prior to scheduling the preconstruction
225 meeting.

226 5. All comments in the Underwood Engineers Inc. review letter dated 4/6/23 shall be addressed to the
227 satisfaction of the Town Planner prior to signing the final plans.

228 6. All outdoor lighting (including security lights) shall be down lit and shielded so no direct light is visible
229 from adjacent properties and/or roadways.

230 7. The three forms in the stormwater management report dated 2/20/23 rev. 3/31/23 which are:

231 i. stormwater operation and maintenance plan;

232 ii. de-icing lot; and

233 iii. jellyfish filter inspection and maintenance log

234 shall all be submitted to the Town Engineer annually on or before January 31st. This requirement shall
235 be an ongoing condition of approval.

236 8. All applicable State permit approval numbers shall be noted on the final plans.

237 9. All appropriate fees to be paid including but not limited to: sewer/water connection fees, impact
238 fees, and inspection fees (including third party inspections) prior to the issuance of a building permit or a
239 Certificate of Occupancy whichever is applicable as determined by the Town.

240 10. All landscaping shown on plans shall be maintained and any dead or dying vegetation shall be
241 replaced, no later than the following growing season, as long as the site plan remains valid. This
242 condition is not intended to circumvent the revocation procedures set forth in State statutes.

243 11. If determined applicable by the Exeter Department of Public Works, the applicant shall submit the
244 land use and stormwater management information about the project using the PTAPP Online Municipal
245 Tracking Tool. The PTAPP submittal must be accepted by DPW prior to the pre-construction meeting.

246 Vice-Chair Brown asked about the April 23, 2023 UEI letter, Page 2, outstanding items and Mr. Sharples
247 added that those should be consistent with what was presented this evening.

248 Mr. Sharples proposed:

249 12. The responses to the April 6, 2023 UEI comment letter shall be consistent with what was presented
250 this evening.

251 Mr. Burns commented on condition #2 monumentation and noted that was put in when the subdivision
252 was done. Mr. Sharples asked that he update the final plans.

253 ***Vice-Chair Brown motioned that the request of C/A Design, Inc. – Wakefield Thermal, Planning Board***
254 ***Case #23-4, for Site Plan approval be approved with the conditions outlined by Town Planner Dave***
255 ***Sharples. Ms. Belanger seconded the motion. A vote was taken, all were in favor, the motion passed***
256 ***6-0-0.***

257 VI. OTHER BUSINESS

- 258 • Master Plan Discussion

259 Mr. Sharples noted there would be a Master Plan Oversight Committee meeting next Thursday
260 at 8:15 AM.

- 261 • Land Use Regulations Review

262

- 263 • Field Modifications

264

265 Mr. Sharples reported on the 12-lot Carlisle subdivision off Watson. The potential buyer had
266 dropped the steep grade of the road and DPW and UEI are reviewing the proposal and there is
267 no change to any of the lots.

268

- 269 • Bond and/or Letter of Credit Reductions and Release

270

271 **VII. TOWN PLANNER'S ITEMS**

272 **VIII. CHAIRPERSON'S ITEMS**

273 **IX. PB REPRESENTATIVE'S REPORT ON "OTHER COMMITTEE ACTIVITY"**

274 **X. ADJOURN**

275 *Vice-Chair Brown motioned to adjourn the meeting at 9:05 PM. Ms. Belanger seconded the motion.*
276 *A vote was taken all were in favor, the motion passed 5-0-0.*

277 Respectfully submitted,

278 Daniel Hoijer,
279 Recording Secretary
280 Via Exeter TV

1 **TOWN OF EXETER**
2 **PLANNING BOARD**
3 **NOWAK ROOM – TOWN OFFICE BUILDING**
4 **10 FRONT STREET**
5 **MAY 11, 2023**
6 **DRAFT MINUTES**
7 **7:00 PM**

8 **I. PRELIMINARIES:**
9

10 **BOARD MEMBERS PRESENT BY ROLL CALL:** Chair Langdon Plumer, Vice-Chair Aaron Brown,
11 Pete Cameron, Clerk, Jennifer Martel, Gwen English, John Grueter, and Nancy Belanger Select
12 Board Representative
13

14 **STAFF PRESENT:** Town Planner Dave Sharples
15

16 **II. CALL TO ORDER:** Chair Plumer called the meeting to order at 7:00 PM and introduced the
17 members.
18

19 **III. OLD BUSINESS**
20

21 **APPROVAL OF MINUTES**
22

23 April 13, 2023 - *Tabled*
24

25 *Mr. Cameron motioned to table approval of the April 13, 2023 meeting minutes to the May 25, 2023*
26 *Planning Board meeting at 7:00 PM. Ms. Belanger seconded the motion. A vote was taken, all were*
27 *in favor, the motion passed 7-0-0.*
28

29 **IV. NEW BUSINESS:**

30 Planning Land Use Series

31 Mr. Sharples thanked Nate Kelley at Horsley Witten for his assistance.

32 Mr. Sharples noted that while Part 1 of the series focused on the benefits of undeveloped land, Part 2 of
33 the series will focus on the benefits of developed land. He noted that while undeveloped land provides
34 the materials for some of the resources we use, developed land turns those materials into the products
35 we use.

36 Mr. Sharples noted some examples of developed land were housing, jobs, mobility, goods and services,
37 a vibrant economy, tax base and emotions (security/hope).

38 Mr. Sharples charged the Board with rating each of the examples with a 1 or a 2 as to what were the
39 important benefits to them.

40 Mr. Sharples reviewed what was special about housing such as wealth, security, safety, and shelter
41 during different stages of life where you may start in a multi-family, then move to single-family and then
42 age restricted housing.

43 Mr. Sharples reviewed what was special about jobs such as the economy, finance, commerce, circulation
44 of currency, and investment in the community.

45 Mr. Brown asked if housing was still one of the top contributors to jobs as it used to be with
46 construction or whether technology had moved up to the top.

47 Mr. Sharples reviewed what was special about mobility such as trains, planes, roads, bridges, railroads
48 and even trash removal. Mobility allows you to get to the grocery store, the hairdresser, nail salon, auto
49 repair shop, travel, and contributes to the quality of life day to day, every day.

50 Chair Plumer asked about fire and police and how they fit in. Mr. Sharples noted they fit in with
51 healthcare and public safety.

52 Mr. Sharples reviewed what was special about a vibrant economy such as goods and services,
53 restaurants, a good education.

54 Mr. Sharples explained how the tax base relates to developed land. Homes, businesses, garages, sheds
55 are taxable and provide the means for public safety, maintenance, repair, infrastructure, trash removal
56 and education.

57 Mr. Brown noted that often undeveloped land can be an equal contributor to the tax base because the
58 revenue does not come with the costs that developed land does. Mr. Sharples noted he would discuss
59 the financial side next, striking a balance.

60 Ms. Martel asked about other areas where taxes on developed land do not provide the majority of the
61 tax base. Mr. Sharples indicated that for the purposes of the series, he would be relating to Exeter. Ms.
62 Martel opined that tax revenue should not be the only consideration. Mr. Brown noted examples where
63 zoning boards impact affordable housing, some communities where dense housing isn't welcomed and
64 the impact on schools. Mr. Sharples noted there are a lot of factors. Supply and demand drives the cost
65 up. Mr. Brown explained how the less dense housing supply drives the cost of land up.

66 Mr. Sharples described how education is important to the long term economic strategy of a community
67 providing essentials to the workplace, research and development.

68 Mr. Sharples noted what was special about the emotional security and hope housing provides including
69 security and safety. Ms. Martel noted examples of recreation, parks, theaters, gathering places, religion
70 and entertainment.

71 Mr. Sharples reviewed the question asked at the end of the first series, which was *what is the densest*
72 *single-family subdivision in Exeter?* He stated that the answer is Exeter Farms with 4.9 units per acre.
73 He recommended the Board members go into the neighborhood and see how it is a well maintained,
74 desirable neighborhood.

75 Ms. Martel asked about Rose Farm. Mr. Sharples noted it is an open space subdivision and he will try to
76 find out the answer for the next meeting.

77 Chair Plumer asked about the Academy’s pocket neighborhoods and Mr. Sharples noted those share
78 common lots. Mr. Brown noted the real density comes from condominiums and multi-family
79 developments.

80 Mr. Sharples provided the next question at the end of this second series, which was *what is the most*
81 *controversial zoning provision?*

82 Mr. Cameron provided a topic for discussion which was how regulations are gotten around. Mr.
83 Sharples agreed there were examples of regulations that were the same for everybody and examples of
84 ambiguity found in the language such as “to the extent practical” or “may.”

85 Mr. Cameron noted another topic is variances and how they are used to evade regulations. Mr.
86 Sharples noted the variances were set by statute and the criteria can’t be changed.

87 Mr. Brown noted the series was a great educational tool.

88 Ms. English reviewed the housing series done by Harmony Homes. She noted that RPC recorded the
89 meeting.

90 Ms. Belanger reported on the Housing Advisory Committee and their planned fieldtrip for the fall.

91 VI. OTHER BUSINESS

- 92 • Election of Officers

93 ***Mr. Grueter motioned to keep the same slate of officers as the past year. Ms. English***
94 ***seconded the motion. A vote was taken, all were in favor, the motion passed 7-0-0.***

- 95 • Master Plan Discussion

96 Vice-Chair Brown reported on the Master Plan Oversight Committee’s meeting this morning. He
97 noted that in addition to the Master Plan review, they talked about the bike and pedestrian
98 feedback and will eventually present to the Planning Board and Select Board. He noted they
99 talked about bad intersections including Winter Street and Front Street and the 2024 Greenway
100 project to connect trails. Mr. Sharples indicated that while Seabrook is a challenge with the
101 marsh, the plan is eight miles next year. Vice-Chair Brown noted that they provided some
102 impressive maps showing hiking trails, crosswalks and sidewalks.

- 103 • Field Modifications

104 Mr. Sharples reported that there was a modification to 32 Charter Street as they had trouble
105 with the wait time for a large transformer that was to go underground (about 18-24 months)
106 and will go end to pole to pole underground. The modification was approved by himself and
107 Paul Vlasich.

- 108 • Bond and/or Letter of Credit Reductions and Release

109

110

111 **VII. TOWN PLANNER'S ITEMS**

112 **VIII. CHAIRPERSON'S ITEMS**

113 **IX. PB REPRESENTATIVE'S REPORT ON "OTHER COMMITTEE ACTIVITY"**

114 **X. ADJOURN**

115 *Vice-Chair Brown motioned to adjourn the meeting at 8:27 PM. Mr. Cameron seconded the motion.*

116 *A vote was taken all were in favor, the motion passed 5-0-0.*

117 Respectfully submitted,

118 Daniel Hoijer,

119 Recording Secretary

120 Via Exeter TV

1 **TOWN OF EXETER**
2 **PLANNING BOARD**
3 **NOWAK ROOM – TOWN OFFICE BUILDING**
4 **10 FRONT STREET**
5 **MAY 25, 2023**
6 **DRAFT MINUTES**
7 **7:00 PM**

8 **I. PRELIMINARIES:**

9
10 **BOARD MEMBERS PRESENT BY ROLL CALL:** Chair Langdon Plumer, Vice-Chair Aaron Brown,
11 Gwen English, John Grueter, and Nancy Belanger Select Board Representative
12

13 **STAFF PRESENT:** Town Planner Dave Sharples
14

15 **II. CALL TO ORDER:** Chair Plumer called the meeting to order at 7:00 PM and introduced the
16 members.
17

18 **III. OLD BUSINESS**

19
20 **APPROVAL OF MINUTES**

21
22 April 13, 2023
23

24 Ms. English recommended edits.
25

26 ***Ms. Belanger motioned to table approval of the April 13, 2023 meeting minutes, as amended. Ms.***
27 ***English seconded the motion. A vote was taken, all were in favor, the motion passed 5-0-0.***
28

29 May 11, 2023
30

31 Mr. Grueter recommended edits.
32

33 ***Ms. Belanger motioned to table approval of the April 11, 2023 meeting minutes, as amended. Mr.***
34 ***Grueter seconded the motion. A vote was taken, all were in favor, the motion passed 5-0-0.***
35

36 **IV. NEW BUSINESS:**

37 The application of Richard Schaefer and Debbi Schaefer for a minor subdivision of the existing
38 21 +/- acre parcel located at 24 Power Mill Road. The Applicant is proposing to subdivide off a
39 5.01 +/- acre parcel with frontage on Powder Mill Road for a new residence.

40 R-1, Low Density Residential zoning district

41 Tax Map Parcel #102-4

42 Planning Board Case #23-3

43

44 Chair Plumer read out loud the Pubic Hearing Notice.

45

46 Mr. Sharples indicated the Applicants went before the Zoning Board of Adjustment at their May
47 16, 2023 meeting and the ZBA determined the common law standard applied and a variance
48 was not necessary. The applicant is not requesting any waivers.

49

50 Ms. English asked Mr. Sharples if he could explain how the common law doctrine applies in this
51 case and Mr. Sharples indicated the ZBA determined a variance was not needed and the zoning
52 is fine.

53

54 Henry Boyd of Millennium Engineering reviewed the septic design which he noted is an
55 Enviroseptic design 2.8' above the base flood elevation.

56

57 Mr. Grueter asked about the sand below where the effluent goes and Mr. Sharples indicated
58 there was 4' from the bottom to the seasonal high water table.

59

60 Chair Plumer opened the hearing to the public for comments and questions at 7:27 PM and
61 being none closed the hearing to public comment.

62

63 Mr. Sharples read out loud the proposed conditions of approval:

64

65 1. A dwg file of the plan shall be provided to the Town Planner showing all property lines and
66 monumentation prior to signing the final plans. This plan must be in NAD 1983 State Plane New
67 Hampshire FIPS 2800 Feet coordinates;

68 2. All monumentation shall be set in accordance with Section 9.25 of the Site Plan Review and
69 Subdivision Regulations prior to signing the final plan; and

70 3. As proposed by the applicant the bottom of the effluent disposal area on Lot A shall be a
71 minimum of 2.8' above base flood elevation.

72

73 ***Ms. Belanger motioned that the request of Richard Schaefer and Debbi Schaefer, Planning***
74 ***Board Case #23-3 for a minor subdivision approval, be approved with the three conditions***
75 ***stated by the Town Planner. Ms. English seconded the motion. A vote was taken, all were in***
76 ***favor, the motion passed 5-0-0.***

77

78 VI. OTHER BUSINESS

79 • Master Plan Discussion

80 • Field Modifications

81

- 82 • Bond and/or Letter of Credit Reductions and Release

83 Mr. Sharples reported that finance brought to his attention a review they are going through of
84 the past 20 years to research escrows being held with the intent to return them. A couple need
85 more research.

86 Vice-Chair Brown indicated that a \$5,000 escrow was put up in cash bond as a condition of
87 approval for Christina Estates. Mr. Sharples noted he would look into it.

88 **VII. TOWN PLANNER’S ITEMS**

89 **VIII. CHAIRPERSON’S ITEMS**

90 Chair Plumer reviewed committee assignments. Mr. Sharples noted that the Planning Board appoints to
91 sub-committees but the Board of Selectmen appoint to commissions. Ms. Belanger indicated she would
92 look into appointments to Rockingham Planning for Ms. English and Chair Plumer.

93 *Vice-Chair Brown motioned that the Planning Board request the Select Board appoint Ms. English and*
94 *Chair Plumer as representatives to the Rockingham Planning Commission. Ms. Belanger seconded the*
95 *motion. A vote was taken, all were in favor, the motion passed 5-0-0.*

96 **IX. PB REPRESENTATIVE’S REPORT ON “OTHER COMMITTEE ACTIVITY”**

97 **X. ADJOURN**

98 *Ms. Belanger motioned to adjourn the meeting at 7:48 PM. Mr. Grueter seconded the motion. A vote*
99 *was taken all were in favor, the motion passed 5-0-0.*

100 Respectfully submitted,

101 Daniel Hoijer,
102 Recording Secretary
103 Via Exeter TV



TOWN OF EXETER

Planning and Building Department

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

www.exeternh.gov

Date: May 31, 2023
To: Planning Board
From: Dave Sharples, Town Planner
Re: Elizabeth A. Hewson Revocable Trust PB Case #23-5

The Applicant is seeking a minor subdivision of an existing 2.30-acre parcel located at 45 Pine Street into three (3) residential lots. The Applicant is proposing to create a 1.2-acre parcel for the existing residence with frontage on Pine Street; and two (2) new residential lots, each 24,004 square feet in area with frontage on Nelson Drive. The subject property is located in the R-2, Single Family Residential zoning district and is identified as Tax Map Parcel #83-59.

The Applicant submitted a minor subdivision application, plans and supporting documents, dated May 8th, 2023 which are enclosed for your review.

There was no Technical Review Committee meeting, however, the plans were reviewed by staff for compliance with zoning and subdivision regulations. Doug Eastman, the Code Enforcement Officer, has determined that the proposal meets the minimum dimensional requirements.

There are no waivers being requested for this application.

I will be prepared with suggested conditions of approval at the meeting in the event the board decides to take action on the request.

Planning Board Motion:

Minor Subdivision Motion: I move that the request of Elizabeth A. Hewson Revocable Trust (PB Case #23-5) for Minor Subdivision approval be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Thank You.

Enclosures



RECEIVED

MAY 8 2023

TOWN OF EXETER
MINOR SUBDIVISION, MINOR
SITE PLAN, AND/OR LOT LINE
ADJUSTMENT APPLICATION

EXETER PLANNING OFFICE

No TRC
PH date 6/8/23

OFFICE USE ONLY

THIS IS AN APPLICATION FOR:

() MINOR SITE PLAN
 MINOR (3lots or less) SUBDIVISION () LOTS
 () LOT LINE ADJUSTMENT

PB#23-5	APPLICATION
5/8/23	DATE RECEIVED
125.00	APPLICATION FEE
100.00	PLAN REVIEW FEE
100.00	ABUTTER FEE
50.00	LEGAL NOTICE FEE
	INSPECTION FEE
\$ 375.00	TOTAL FEES
	AMOUNT REFUNDED

1. NAME OF LEGAL OWNER OF RECORD: ELIZABETH A. HEWSON REV. TRUST

ADDRESS: 45 PINE STREET

TELEPHONE: 603 285-5220

2. NAME OF APPLICANT: SAME

ADDRESS: _____

TELEPHONE: () _____

3. RELATIONSHIP OF APPLICANT TO PROPERTY IF OTHER THAN OWNER: _____

(Written permission from Owner is required, please attach.)

4. DESCRIPTION OF PROPERTY:

ADDRESS: 45 PINE STREET

TAX MAP: 83 PARCEL #: 59 ZONING DISTRICT: R-2

AREA OF ENTIRE TRACT: 100,159 SF PORTION BEING DEVELOPED: DIVISION INTO 3 LOTS
2.30 ACRES



5. EXPLANATION OF PROPOSAL: PROPOSAL IS TO DIVIDE LOT INTO 3 PARCELS. LOT 1 WILL BE 52,151 S.F. (1.20 ACRES) AND CONTAIN EXISTING DWELLING. PROPOSED LOTS 2 & 3 WILL BE 24,004 S.F. (0.55 ACRES) EACH.

6. ARE MUNICIPAL SERVICES AVAILABLE? (YES/NO) YES
IF YES, WATER AND SEWER SUPERINTENDENT MUST GRANT WRITTEN APPROVAL FOR CONNECTION. IF NO, SEPTIC SYSTEM MUST COMPLY WITH W.S.P.C.C. REQUIREMENTS.

7. LIST ALL MAPS, PLANS AND OTHER ACCOMPANYING MATERIAL SUBMITTED WITH THIS APPLICATION:

<u>ITEM:</u>	<u>NUMBER OF COPIES</u>
A. <u>22x34 PLAN</u>	<u>7</u>
B. <u>11x17 PLAN</u>	<u>15</u>
C. _____	_____
D. _____	_____
E. _____	_____
F. _____	_____

8. ANY DEED RESTRICTIONS AND COVENANTS THAT APPLY OR ARE CONTEMPLATED (YES/NO) NO IF YES, ATTACH COPY.

9. NAME AND PROFESSION OF PERSON DESIGNING PLAN:

NAME: HENRY H BOYD JR., LLS
ADDRESS: P.O. BOX 745 EXETER, NH 03833
PROFESSION: LAND SURVEYOR TELEPHONE: 603 778-0528

10. LIST ALL IMPROVEMENTS AND UTILITIES TO BE INSTALLED: NONE AT THIS TIME



11. HAVE ANY SPECIAL EXCEPTIONS OR VARIANCES BEEN GRANTED BY THE ZONING BOARD OF ADJUSTMENT TO THIS PROPERTY PREVIOUSLY?

(Please check with the Planning Department Office to verify) (YES/NO) NO IF YES, LIST BELOW AND NOTE ON PLAN.

NOTICE:

I CERTIFY THAT THIS APPLICATION AND THE ACCOMPANYING PLANS AND SUPPORTING INFORMATION HAVE BEEN PREPARED IN CONFORMANCE WITH ALL APPLICABLE TOWN REGULATIONS, INCLUDING BUT NOT LIMITED TO THE "SITE PLAN REVIEW AND SUBDIVISION REGULATION" AND THE ZONING ORDINANCE. FURTHERMORE, IN ACCORDANCE WITH THE REQUIREMENTS OF THE "SITE PLAN REVIEW AND SUBDIVISION REGULATIONS", I AGREE TO PAY ALL COSTS ASSOCIATED WITH THE REVIEW OF THIS APPLICATION.

DATE _____ APPLICANT'S SIGNATURE _____

ACCORDING TO RSA 676.4.I (c), THE PLANNING BOARD MUST DETERMINE WHETHER THE APPLICATION IS COMPLETE WITHIN 30 DAYS OF SUBMISSION. THE PLANNING BOARD MUST ACT TO EITHER APPROVE, CONDITIONALLY APPROVE, OR DENY AN APPLICATION WITHIN SIXTY FIVE (65) DAYS OF ITS ACCEPTANCE BY THE BOARD AS A COMPLETE APPLICATION. A SEPARATE FORM ALLOWING AN EXTENSION OR WAIVER TO THIS REQUIREMENT MAY BE SUBMITTED BY THE APPLICANT.



ABUTTERS: PLEASE LIST ALL PERSONS WHOSE PROPERTY IS LOCATED IN NEW HAMPSHIRE AND ADJOINS OR IS DIRECTLY ACROSS THE STREET OR STREAM FROM THE LAND UNDER CONSIDERATION BY THE BOARD. THIS LIST SHALL BE COMPILED FROM THE EXETER TAX ASSESSOR'S RECORDS.

TAX MAP 83-8 & 83-1
 NAME PHILLIPS EXETER ACADEMY
 ADDRESS 20 MAIN STREET
EXETER, NH 03833

TAX MAP 83-82
 NAME LISA & KEVIN PARMALEE
 ADDRESS 83 COURT STREET
EXETER, NH 03833

TAX MAP 83-9
 NAME JENNIS FRIZZELL
 ADDRESS 84 COURT STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-10
 NAME CHRISTOPHER & SHERYL DION TRUST
 ADDRESS 86 COURT STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-14
 NAME 92 COURT STREET REALTY TRUST
 ADDRESS 92 COURT STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-15
 NAME MARK DIFABIO
 ADDRESS 94 COURT STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-55
 NAME NORTH COURT STREET COND
 ADDRESS 95 COURT STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-56
 NAME THOMAS SCANLON TRUST
 ADDRESS 87 SOUTH ROAD
NORTH HAMPTON, NH 03862

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP 83-60
 NAME CHRIST CHURCH OF EXETER
 ADDRESS 43 PINE STREET
EXETER, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

Please attach additional sheets if needed



CHECK LIST FOR MINOR SITE PLAN REVIEW, MINOR SUBDIVISION AND LOT LINE ADJUSTMENT

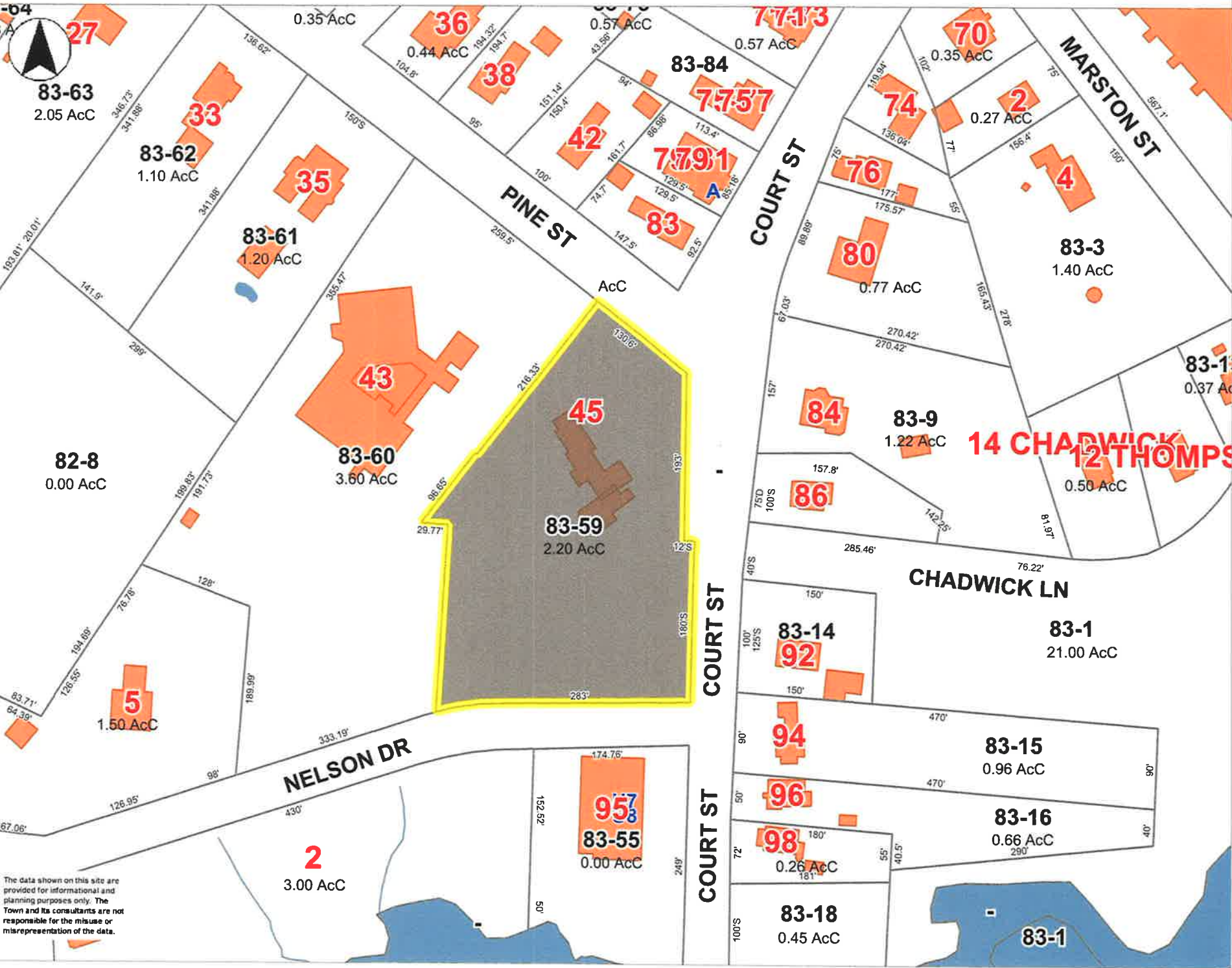
APPLICANT	TRC	REQUIRED EXHIBITS, SEE REGULATION 6.6.2.4
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) The name and address of the property owner, authorized agent, the person or firm preparing the plan, and the person or firm preparing any other data to be included in the plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	b) Title of the site plan, subdivision or lot line adjustment, including Planning Board Case Number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Scale, north arrow, and date prepared.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d) Location of the land/site under consideration together with the names and address of all owners of record of abutting properties and their existing use.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e) Tax map reference for the land/site under consideration, together with those of abutting properties.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	f) Zoning (including overlay) district references.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	g) A vicinity sketch showing the location of the land/site in relation to the surrounding public street system and other pertinent location features within a distance of 1,000-feet.
<input type="checkbox"/>	<input type="checkbox"/>	h) For minor site plan review only, a description of the existing site and proposed changes thereto, including, but not limited to, buildings and accessory structures, parking and loading areas, signage, lighting, landscaping, and the amount of land to be disturbed.
N/A	<input type="checkbox"/>	i) If deemed necessary by the Town Planner, natural features including watercourses and water bodies, tree lines, and other significant vegetative cover, topographic features and any other environmental features which are significant to the site plan review or subdivision design process.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	j) If deemed necessary by the Town Planner, existing contours at intervals not to exceed 2-feet with spot elevations provided when the grade is less than 5%. All datum provided shall reference the latest applicable US Coast and Geodetic Survey datum and should be noted on the plan.
N/A	<input type="checkbox"/>	k) If deemed necessary by the Town Planner for proposed lots not served by municipal water and sewer utilities, a High Intensity Soil Survey (HISS) of the entire site, or portion thereof. Such soil surveys shall be prepared and stamped by a certified soil scientist in accordance with the standards established by the Rockingham County Conservation District. Any cover letters or explanatory data provided by the certified soil scientist shall also be submitted.
N/A	<input type="checkbox"/>	l) State and federal jurisdictional wetlands, including delineation of required setbacks.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	m) A note as follows: "The landowner is responsible for complying with all applicable local, State, and Federal wetlands regulations, including any permitting and setback requirements required under these regulations."
<input checked="" type="checkbox"/>	<input type="checkbox"/>	n) Surveyed exterior property lines including angles and bearings, distances, monument locations, and size of the entire parcel. A professional land surveyor licensed in New Hampshire must attest to said plan.



N/A	<input type="checkbox"/>	<input type="checkbox"/>	o) For minor site plans only, plans are not required to be prepared by a professional engineer or licensed surveyor unless deemed essential by the Town Planner or the TRC.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p) For minor subdivisions and lot line adjustments only, the locations, dimensions, and areas of all existing and proposed lots.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	q) The lines of existing abutting streets and driveways locations within 100-feet of the site.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	r) The location, elevation, and layout of existing catch basins and other surface drainage features.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	s) The footprint location of all existing structures on the site and approximate location of structures within 100-feet of the site.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	t) The size and location of all existing public and private utilities.
N/A	<input type="checkbox"/>	<input type="checkbox"/>	u) The location of all existing and proposed easements and other encumbrances.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	v) All floodplain information, including contours of the 100-year flood elevation, based upon the Flood Insurance Rate Map for Exeter, as prepared by the Federal Emergency Management Agency, dated May 17, 1982.
N/A	<input type="checkbox"/>	<input type="checkbox"/>	w) The location of all test pits and the 4,000-square-foot septic reserve areas for each newly created lot, if applicable.
N/A	<input type="checkbox"/>	<input type="checkbox"/>	x) The location and dimensions of all property proposed to be set aside for green space, parks, playgrounds, or other public or private reservations. The plan shall describe the purpose of the dedications or reservations, and the accompanying conditions thereof (if any).
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	y) A notation shall be included which explains the intended purpose of the subdivision. Include the identification and location of all parcels of land proposed to be dedicated to public use and the conditions of such dedications, and a copy of such private deed restriction as are intended to cover part of all of the tract.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	z) Newly created lots shall be consecutively numbered or lettered in alphabetical order. Street address numbers shall be assigned in accordance with <u>Section 9.17 Streets</u> of these regulations.
N/A	<input type="checkbox"/>	<input type="checkbox"/>	aa) The following notations shall also be shown: <ul style="list-style-type: none"> • Explanation of proposed drainage easements, if any • Explanation of proposed utility easement, if any • Explanation of proposed site easement, if any • Explanation of proposed reservations, if any • Signature block for Board approval as follows: <div style="text-align: center; margin-top: 10px;"> Town of Exeter Planning Board _____ Chairman </div>
	<input type="checkbox"/>	<input type="checkbox"/>	_____ Date



- Parcels
- NH Highways
- Interstate
- US Highway
- State Highway
- Town Boundary
- Abutting Towns
- Streets
- Misc Streams
- Parcel Streams
- Open Water
- Buildings



The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.



Printed on 05/02/2023 at 08:25 AM



RECORDING 14.00
SURCHARGE 2.00

CONFIRMATORY WARRANTY DEED

We, Deanna L. MacDonald and Eric J. MacDonald, wife and husband, both of 117 Bow Street, Portsmouth, NH, for consideration paid, grant to Elizabeth A. Hewson, Trustee of the Elizabeth A. Hewson Revocable Trust of 2002, and Elizabeth A. Hewson, Successor Trustee of the James T. Hewson Revocable Trust of 2002, of 45 Pine Street, Exeter, NH 03833, with warranty covenants:

A certain tract or parcel of land with all the buildings thereon, situated in Exeter, County of Rockingham, State of New Hampshire, on the westerly side of Court Street, bounded and described as follows:

Beginning at a point on the Westerly side of said Court Street at the Northeasterly corner of the within described premises and at the Southeasterly corner of land now or formerly of Frank and Kasmiera Murphy, and thence running Southerly along the Westerly side of said Court Street 239.4 feet, more or less, to a point at land now or formerly of Raymond L. Belding, Jr.; thence turning and running Westerly in part along land of Belding and in part along land now or formerly of John E. LeBaron and Miriam E. LeBaron 283 feet, more or less, to a point; thence turning and running Northerly in part along land now or formerly of said John E. LeBaron and Miriam E. LeBaron and in part along land now or formerly of Christ Church, that portion of this bound which is along land of said Christ Church is defined by a chain link fence, 214.42 feet to land of said Murphys; thence turning and running Easterly along land of said Murphys 281 feet, more or less, to the Westerly side of said Court Street at the point of beginning.

This property is subject to the terms and provisions of an Agreement by and between Edgcomb Motor Sales, Inc. and John E. LeBaron and Miriam E. LeBaron, dated May 15, 1961 recorded in said Registry of Deeds in Book 1585, Page 17, concerning a right-of-way which is 45 feet in width and extends Westerly from the Westerly side of said Court Street along the Southerly boundary of the within premises.

Excepting herefrom any portion of said premises which was conveyed by Edgcomb Motor Sales, Inc. to Christ Church by deed dated January 15, 1968, recorded at the Rockingham County Registry of Deeds at Book 1895, Page 46.

This conveyance is subject to any encumbrances of record.

This is a non-contractual transfer.

Reference is made to a deed from Deanna L. MacDonald and Eric J. MacDonald, Trustees of the Deanna L. MacDonald Revocable Trust and Eric J. MacDonald and Deanna L. MacDonald, Trustees of the Eric J. MacDonald Revocable Trust of 2002 to Elizabeth A. Hewson, Trustee of the Elizabeth A. Hewson Revocable Trust of 2002 and Elizabeth A. Hewson, successor trustee of the James T. Hewson Revocable Trust of 2002,

83/59
6248-0565

Return to:
Elizabeth A. Hewson and James T. Hewson
45 Pine Street
Exeter, NH 03833



LCHIP	ROA432856	25.00
TRANSFER TAX	RO084838	23,325.00
RECORDING		18.00
SURCHARGE		2.00

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, that Deanna L. MacDonald and Eric J. MacDonald, Trustees of the Deanna L. MacDonald Revocable Trust and Eric J. MacDonald and Deanna L. MacDonald, Trustees of Eric J. MacDonald Revocable, husband and wife, of 45 Pine Street, Exeter, NH 03833, for consideration paid grant(s) to Elizabeth A. Hewson, Trustee of The Elizabeth A. Hewson Revocable Trust of 2002 and Elizabeth A. Hewson, Successor Trustee of James T. Hewson Revocable Trust of 2002, of 51 Niblick Lane, Greenland, NH 03840, with WARRANTY COVENANTS:

Three (3) certain tracts or parcels of land, with the buildings thereon, situated in Exeter, in the County of Rockingham, and the State of New Hampshire, bounded and described as follows:

PARCEL 1:

A certain tract of land, with the buildings thereon, situated in Exeter, in the County of Rockingham, and the State of New Hampshire, bounded and described as follows:

Beginning at a point on the southerly side of Pine Street at an iron pipe driven in the ground at land now or formerly of Helen D. Bourn; thence running

- 1) In a southeasterly direction by said Pine Street, 130 feet, 6 inches to a wooden fence post at the junction of Pine Street and Court Street; thence turning and running
- 2) In a southerly direction on said Court Street, 193 feet to an iron pipe driven in the ground at land now or formerly of Effie G. Tibbetts; thence turning and running
- 3) By said Tibbetts land in a westerly direction, 102 feet, 6 inches to an iron pipe driven in the ground; thence turning and running
- 4) In a northwesterly direction still by said Tibbetts land, 160 feet, 5 inches to an iron pipe driven in the ground at a junction of land formerly of one Olla H. Litch, land formerly of said Tibbetts and land now or formerly of said Bourn; and thence turning and running
- 5) 216 feet, 4 inches through a large pine tree to the point of beginning.

PARCEL 2:

A certain parcel of land, situated in Exeter in the County of Rockingham and State of New Hampshire, bounded and described as follows:

Beginning at the southeasterly corner of land of the Estate of Helen D. Bourn and in the northeasterly sideline of land now or formerly of John E. and Miriam E. LeBaron, and running northeasterly along said land, 98 feet, 8 inches, more or less, to the southwesterly corner of other land of Martin W. and Edna Souders; thence turning and running

- 1) Southeasterly along said Souders land, 163 feet, 5 inches, more or less, to a point in the northerly sideline of land now or formerly of Edgcomb Motor Sales, Inc.; thence turning and running
- 2) Westerly and again southerly along land now or of Edgcomb Motor Sales, Inc., as the fence now stands to the point of intersection of the northeasterly sideline of land now or formerly of LeBaron with said wire fence; thence turning and running
- 3) Northwesterly along land now or formerly of said LeBaron to the point of beginning.

3) Northwesterly along land now or formerly of said LeBaron to the point of beginning.

TOGETHER WITH and SUBJECT TO all reservations, restrictions and/or covenants, easements, liens, encumbrances and mortgages of record, if any, insofar as the same may now be in force and applicable.

PARCEL 3:

A certain tract or parcel of land, with all the buildings thereon, situated in Exeter, County of Rockingham, State of New Hampshire, on the westerly side of Court Street, bounded and described as follows:

Beginning at a point on the westerly side of said Court Street at the northeasterly corner of the within described premises and at the southeasterly corner of land now or formerly of Frank and Kasmiera Murphy, and thence running southerly along the westerly side of said Court Street, 239.4 feet, more or less, to a point at land now or formerly of Raymond L. Belding, Jr.; thence turning and running westerly in part along land of Belding and in part along land now or formerly of John E. LeBaron and Miriam E. LeBaron, 283 feet, more or less, to a point; thence turning and running northerly in part along land now or formerly of said John E. LeBaron and Miriam E. LeBaron and in part along land now or formerly of Christ Church, that portion of this bound which is along land of said Christ Church is defined by a chain link fence, 241.42 feet to land of said Murphys; thence turning and running easterly along land of said Murphys, 281 feet, more or less, to the westerly side of said Court Street at the point of beginning.

Excepting herefrom any portion of said premises which was conveyed by Edgcomb Motor Sales, Inc. to Christ Church of Exeter by deed dated January 15, 1968, recorded at the Rockingham County Registry of Deeds at Book 1895, Page 46.

The above three (3) parcels of land have been merged into one (1) tax lot being identified as Tax Map 83, Lot 59 by the Town of Exeter, N.H. Voluntary Lot Merger, dated August 31, 2006 and recorded in the Rockingham County Registry of Deeds at Book 4752, Page 1599.

Parcel 3 is subject to the terms and provisions of an Agreement by and between Edgcomb Motor Sales, Inc. and John E. LeBaron and Miriam E. LeBaron, dated May 15, 1961 and recorded in said Registry of Deeds at Book 1585, Page 17, concerning a right of way, which is 45 feet in width and extends westerly from the westerly side of said Court Street along the southerly boundary of the within described premises.

Meaning and intending to describe and convey the same premises conveyed to Parcel 3: Eric MacDonald & Deanna MacDonald by virtue of a Deed, dated 04/20/2006 and recorded in the Rockingham County Registry of Deeds at Book 4645, Page 1357 by deed dated August 21, 2017 and recorded in the Rockingham County Registry of Deeds in Book 5848, Page 2490.

The undersigned Deanna L. MacDonald and Eric J. MacDonald, Trustees of the Deanna L. MacDonald Revocable Trust hereby states pursuant to RSA 564-A:7, that said Trustee has full and absolute power in said Trust Agreement to sell, exchange, purchase, acquire, mortgage, refinance, encumber, discharge mortgages and pledge certain real estate situated at 45 Pine Street, Exeter, NH 03833 and no third party shall be bound to inquire whether the Trustee has said power or is properly exercising said power or to see to the proceeds paid for any conveyance.


The undersigned Eric J. MacDonald and Deanna L. MacDonald, Trustees of the Eric J. MacDonald Revocable Trust hereby states pursuant to RSA 564-A:7, that said Trustee has full and absolute power in said Trust Agreement to sell, exchange, purchase, acquire, mortgage, refinance, encumber, discharge mortgages and pledge certain real estate situated at 45 Pine Street, Exeter, NH 03833 and no third party shall be bound to inquire whether the Trustee has said power or is properly exercising said power or to see to the proceeds paid for any conveyance.

I/We, the grantor(s) hereby release all rights of homestead in the above described premises.

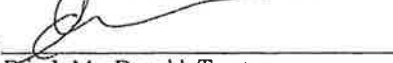
Executed this 10th day of December, 2018.


Deanna L. MacDonald Revocable Trust

By: 
Deanna L. MacDonald, Trustee

By: 
Eric J. MacDonald, Trustee

Eric J. MacDonald Revocable Trust

By: 
Eric J. MacDonald, Trustee

By: 
Deanna L. MacDonald, Trustee

State of New Hampshire
County of Rockingham

Then personally appeared before me on this 10th day of December, 2018, the said Deanna L. MacDonald and Eric J. MacDonald, Trustees of the Deanna L. MacDonald Revocable Trust and Eric J. MacDonald and Deanna L. MacDonald, Trustees of the Eric J. MacDonald Revocable Trust and acknowledged the foregoing to be his/her/their voluntary act and deed.


Notary Public

Notary-Name Printed

My commission expires:
(seal)

JAIME C. LYNCH
Notary Public State of New Hampshire
My Commission expires May 16, 2023

I/We, the grantor(s) hereby release all rights of homestead in the above described premises.

Executed this 10th day of December, 2018.

Deanna L. MacDonald Revocable Trust

By: *Deanna L. MacDonald*
Deanna L. MacDonald, Trustee

By: *Eric J. MacDonald*
Eric J. MacDonald, Trustee

Eric J. MacDonald Revocable Trust

By: *Eric J. MacDonald*
Eric J. MacDonald, Trustee

By: *Deanna L. MacDonald*
Deanna L. MacDonald, Trustee

State of New Hampshire
County of Rockingham

Then personally appeared before me on this 10th day of December, 2018, the said Deanna L. MacDonald and Eric J. MacDonald, Trustees of the Deanna L. MacDonald Revocable Trust and Eric J. MacDonald and Deanna L. MacDonald, Trustees of the Eric J. MacDonald Revocable Trust and acknowledged the foregoing to be his/her/their voluntary act and deed.

Jaime C. Lynch
Notary Public

Notary-Name Printed

My commission expires:
(seal)

JAIME C. LYNCH
Notary Public State of New Hampshire
My Commission expires May 16, 2023

Millennium Engineering, Inc.

P.O. Box 745
(603) 778-0528

Exeter, NH 03833
FAX (603) 772-0689

May 04, 2023

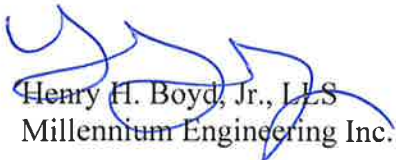
Town of Exeter
Planning Board
10 Front Street
Exeter, NH 03833

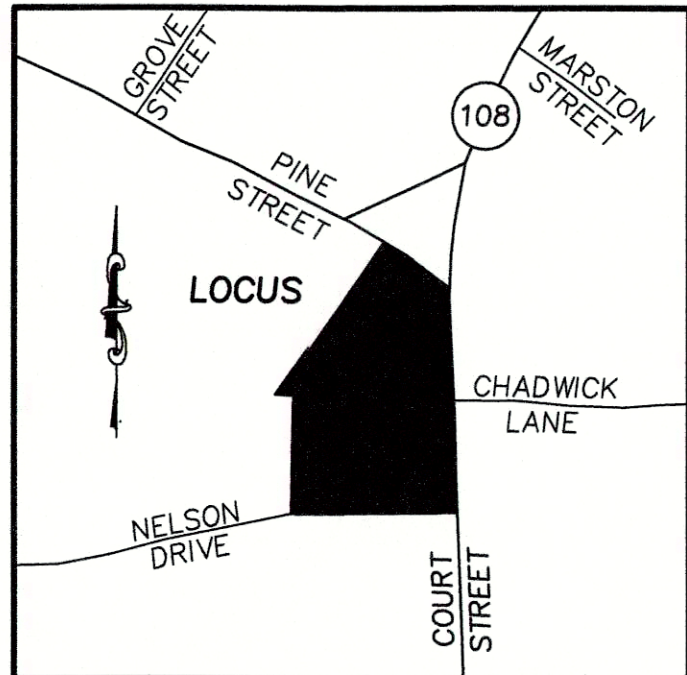
Re: Application for Minor Subdivision Map 83 Lot 59, 45 Pine Street Exeter, NH.

Dear Chairman:

The request is made to divide this 3.2-acre parcel into 3 lots. The existing dwelling will reside on Lot 1 which will be 52,151 s.f. in size. Lots 2 & 3 shall contain 24,004 s.f. each.

Respectfully,


Henry H. Boyd, Jr., LLS
Millennium Engineering Inc.



PLAN REFERENCES

"BOUNDARY SURVEY - MACDONALD PROPERTY PINE STREET & COURT STREET EXETER, NH" SCALE: 1"=40' DATE: FEB. 29, 2001 BY: GERRIT CONSULTING NOT RECORDED

"PLAN OF LAND FOR CHRIST EPISCOPAL CHURCH EXETER, NH" SCALE: 1"=40' DATE: DEC. 1963 BY: JOHN W. DURGIN CIVIL ENGINEERS #953

PLAN NOTE

THE PURPOSE OF THIS PLAN IS TO SHOW THE DIVISION OF THIS PARCEL INTO 3 LOTS FOR RESIDENTIAL PURPOSES.

TOWN OF EXETER PLANNING BOARD

CHAIRMAN _____ DATE _____

ZONING DISTRICT

R-2 RESIDENTIAL

MINIMUM REQUIREMENTS

AREA	15,000 S.F.
AREA (TWO FAMILY)	24,000 S.F.
LOT WIDTH	100'
LOT DEPTH	100'
BUILDING SETBACKS	
FRONT	25'
SIDE	15'
REAR	25'
BUILDING COVERAGE	
MAXIMUM	25%
OPEN SPACE	
MINIMUM	40%

RECORD OWNERS

ELIZABETH A. HEWSON REV. TRUST OF 2002
ELIZABETH A. HEWSON, TRUSTEE
45 PINE STREET
EXETER, NH 03833
BK. 6248 PG. 0565
SEE ALSO
BK. 5967 PG. 1511
100,159 S.F.
2.30 ACRES

N/F
PHILLIPS EXETER ACADEMY
20 MAIN STREET
EXETER, NH 03833
BK. 5867 PG. 1407

N/F
JENDESS FRIZZELL
84 COURT STREET
EXETER, NH 03833
BK. 5468 PG. 2192

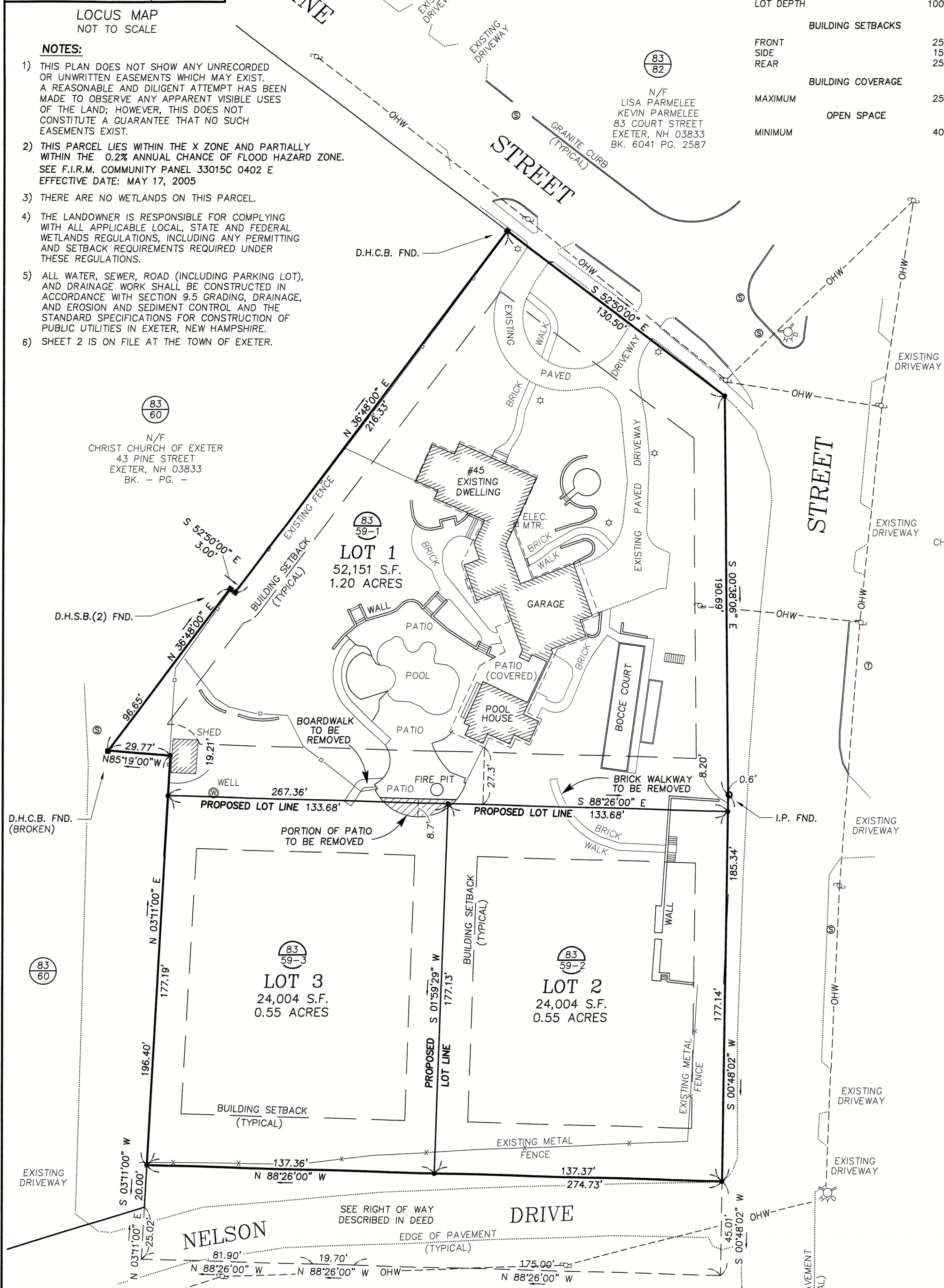
N/F
CHRISTOPHER & SHERYL K. DION REV. TRUST
CHRISTOPHER & SHERYL DION, TRUSTEES
86 COURT STREET
EXETER, NH 03833
BK. 6125 PG. 2908

N/F
PHILLIPS EXETER ACADEMY
20 MAIN STREET
EXETER, NH 03833
BK. 0612 PG. 0240

N/F
92 COURT STREET REALTY TRUST
MAGGIE D. & KYLE J., TRUSTEES
92 COURT STREET
EXETER, NH 03833
BK. 6168 PG. 2889

N/F
MARK J. DIFABIO
KATHY A. BUSCHER DIFABIO
94 COURT STREET
EXETER, NH 03833
BK. 4829 PG. 0881

- NOTES:**
- THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
 - THIS PARCEL LIES WITHIN THE X ZONE AND PARTIALLY WITHIN THE 0.2% ANNUAL CHANCE OF FLOOD HAZARD ZONE. SEE F.I.R.M. COMMUNITY PANEL 33015C 0402 E EFFECTIVE DATE: MAY 17, 2005
 - THERE ARE NO WETLANDS ON THIS PARCEL.
 - THE LANDOWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLANDS REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
 - ALL WATER, SEWER, ROAD (INCLUDING PARKING LOT), AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 9.5 GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC UTILITIES IN EXETER, NEW HAMPSHIRE.
 - SHEET 2 IS ON FILE AT THE TOWN OF EXETER.

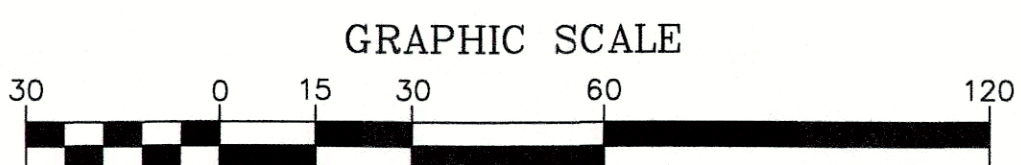


THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEEDS REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN/CITY ASSESSORS' RECORDS.

I CERTIFY:
THAT THIS ACTUAL SURVEY WAS MADE ON THE GROUND IN APRIL 2023.

THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF REGISTER OF DEEDS.
THAT THIS SURVEY CONFORMS TO THE REQUIREMENTS FOR ACCURACY FOR N.H. URBAN SURVEY.

(Signature)
HENRY H. BOYD, JR.
LICENSED LAND SURVEYOR
DATE: 05-04-2023



(IN FEET)
1 INCH = 30'

NO.	DATE	DESCRIPTION	BY

PLANNING BOARD CASE NUMBER 23-XX

LOT LAYOUT SHEET

PLAT OF LAND

IN
EXETER, NH

SHOWING
A MINOR SUBDIVISION
AT 45 PINE STREET AND NELSON DRIVE
(ASSESSORS MAP 83 LOT 59)

RECORD OWNERS
ELIZABETH A. HEWSON REVOCABLE TRUST
JAMES T. HEWSON REVOCABLE TRUST
45 PINE STREET EXETER, NH 03833

MILLENNIUM ENGINEERING INC.
ENGINEERS AND LAND SURVEYORS
P.O. BOX 745 13 HAMPTON ROAD EXETER, NH 03833
PHONE: (603) 778-0528 FAX: (603) 772-0689

SCALE: 1"=30' CALC. BY: R.S.G. PROJECT: E233045
DATE: MAY 02, 2023 CHKD. BY: H.H.B. SHEET 1 OF 2

- LEGEND**
- I.P. IRON PIPE
 - I ROD IRON ROD TO BE SET UNLESS NOTED OTHERWISE
 - D.H. DRILL HOLE
 - C.B. CONCRETE BOUND
 - S.B. STONE BOUND
 - FND. FOUND
 - ASSESSORS MAP AND PARCEL
 - HYDRANT
 - WATER SHUT OFF
 - OVER HEAD WIRE
 - UTILITY POLE
 - SEWER MAN HOLE
 - TELEPHONE MAN HOLE

953

PLAN NOTE

THE PURPOSE OF THIS PLAN IS TO SHOW THE DIVISION OF THIS PARCEL INTO 3 LOTS FOR RESIDENTIAL PURPOSES.

LOT 1
52,151 S.F.

EXISTING DWELLING
3,214 S.F. = 6.2% OF LOT AREA
EXISTING LOT COVERAGE
16,320 S.F. = 31.3% OF LOT AREA
OPEN SPACE = 68.7% OF LOT AREA

ZONING DISTRICT
R-2 RESIDENTIAL
MINIMUM REQUIREMENTS

AREA	15,000 S.F.
AREA (TWO FAMILY)	24,000 S.F.
LOT WIDTH	100'
LOT DEPTH	100'
BUILDING SETBACKS	
FRONT	25'
SIDE	15'
REAR	25'
BUILDING COVERAGE	
MAXIMUM	25%
OPEN SPACE	
MINIMUM	40%

RECORD OWNERS

ELIZABETH A. HEWSON REV. TRUST OF 2002
ELIZABETH A. HEWSON, TRUSTEE
45 PINE STREET
EXETER, NH 03833
BK. 6248 PG. 0565
SEE ALSO
BK. 5967 PG. 1511
100,159 S.F.
2.30 ACRES

N/F
PHILLIPS EXETER ACADEMY
20 MAIN STREET
EXETER, NH 03833
BK. 5867 PG. 1407

N/F
JENISS FRIZZELL
84 COURT STREET
EXETER, NH 03833
BK. 5468 PG. 2192

N/F
CHRISTOPHER & SHERYL K. DION REV. TRUST
CHRISTOPHER & SHERYL DION, TRUSTEES
86 COURT STREET
EXETER, NH 03833
BK. 6125 PG. 2908

N/F
PHILLIPS EXETER ACADEMY
20 MAIN STREET
EXETER, NH 03833
BK. 0612 PG. 0240

N/F
92 COURT STREET REALTY TRUST
MAGGIE D. & KYLE J., TRUSTEES
92 COURT STREET
EXETER, NH 03833
BK. 6168 PG. 2889

N/F
MARK J. DIFABIO
KATHY A. BUSCHER DIFABIO
94 COURT STREET
EXETER, NH 03833
BK. 4829 PG. 0881

UTILITIES NOTE

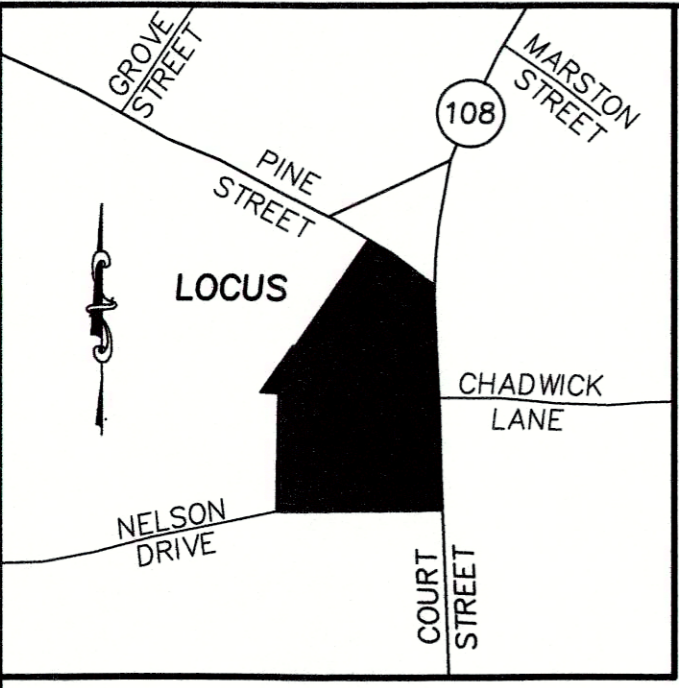
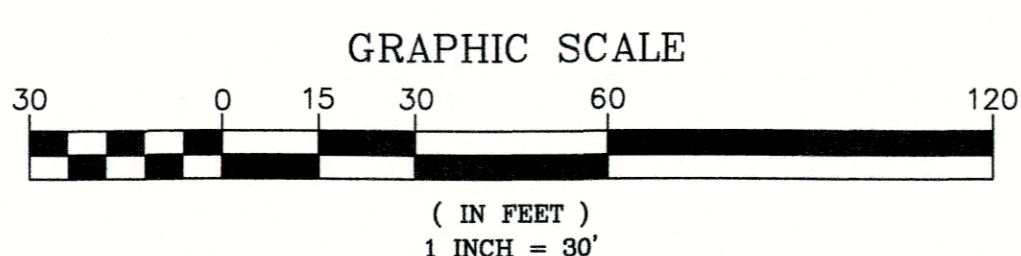
THE LOCATION OF UTILITIES SHOWN HEREON IS BASED ON INFORMATION PROVIDED BY OTHERS, AND WHERE POSSIBLE FROM MEASUREMENTS TAKEN IN THE FIELD, AND ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL CONTACT "DIGSAFE" AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST MARKING OF UNDERGROUND UTILITIES. MILLENNIUM ENGINEERING, INC., ASSUMES NO RESPONSIBILITY FOR ANY DAMAGES INCURRED DIRECTLY OR INDIRECTLY RESULTING THEREFROM.

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEEDS REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN/CITY ASSESSORS' RECORDS.

I CERTIFY:
THAT THIS ACTUAL SURVEY WAS MADE ON THE GROUND IN APRIL 2023.

THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF REGISTER OF DEEDS.
THAT THIS SURVEY CONFORMS TO THE REQUIREMENTS FOR ACCURACY FOR N.H. URBAN SURVEY.

LICENSED LAND SURVEYOR
DATE 05-04-2023



LOCUS MAP NOT TO SCALE

- NOTES:
- THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
 - THIS PARCEL LIES WITHIN THE X ZONE AND PARTIALLY WITHIN THE 0.2% ANNUAL CHANCE OF FLOOD HAZARD ZONE. SEE F.I.R.M. COMMUNITY PANEL 33015C 0402 E EFFECTIVE DATE: MAY 17, 2005
 - THERE ARE NO WETLANDS ON THIS PARCEL.
 - THE LANDOWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLANDS REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
 - ALL WATER, SEWER, ROAD (INCLUDING PARKING LOT), AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 9.5 GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC UTILITIES IN EXETER, NEW HAMPSHIRE.
 - ELEVATIONS SHOWN ARE BASED ON N.A.V.D.88.

N/F
CHRIST CHURCH OF EXETER
43 PINE STREET
EXETER, NH 03833
BK. - PG. -

N/F
THOMAS J. SCANLON TRUST
THOMAS J. & KAREN M. SCANLON, TRUSTEES
87 SOUTH ROAD
NORTH HAMPTON, NH 03862
BK. 6040 PG. 1388

N/F
NORTH COURT STREET CONDO MAIN
95 COURT STREET UNIT 3
EXETER, NH 03833
BK. - PG. -

N/F
MARK J. DIFABIO
KATHY A. BUSCHER DIFABIO
94 COURT STREET
EXETER, NH 03833
BK. 4829 PG. 0881

N/F
MARK J. DIFABIO
KATHY A. BUSCHER DIFABIO
94 COURT STREET
EXETER, NH 03833
BK. 4829 PG. 0881

N/F
MARK J. DIFABIO
KATHY A. BUSCHER DIFABIO
94 COURT STREET
EXETER, NH 03833
BK. 4829 PG. 0881

- LEGEND
- I.P. IRON PIPE
 - I ROD IRON ROD TO BE SET UNLESS NOTED OTHERWISE
 - D.H. DRILL HOLE
 - C.B. CONCRETE BOUND
 - S.B. STONE BOUND
 - FND. FOUND
 - ASSESSORS MAP AND PARCEL
 - HYDRANT
 - WATER SHUT OFF
 - OVER HEAD WIRE
 - UTILITY POLE
 - SEWER MAN HOLE
 - TELEPHONE MAN HOLE

NO.	DATE	DESCRIPTION	BY

PLANNING BOARD CASE NUMBER 23-XX

LOT LAYOUT SHEET

PLAT OF LAND

IN EXETER, NH

SHOWING
A MINOR SUBDIVISION
AT 45 PINE STREET AND NELSON DRIVE
(ASSESSORS MAP 83 LOT 59)

RECORD OWNERS
ELIZABETH A. HEWSON REVOCABLE TRUST
JAMES T. HEWSON REVOCABLE TRUST
45 PINE STREET EXETER, NH 03833

MILLENNIUM ENGINEERING INC.
ENGINEERS AND LAND SURVEYORS
P.O. BOX 745 13 HAMPTON ROAD EXETER, NH 03833
PHONE: (603) 778-0528 FAX: (603) 772-0689

SCALE: 1"=30' CALC. BY: R.S.G. PROJECT: E233045
DATE: MAY 02, 2023 CHKD. BY: H.H.B. SHEET 2 OF 2

96 Court Street
Exeter, NH 03833

June 1, 2023

Mr. Langdon J. Plumer
Chairperson Exeter Planning Board
Town of Exeter
10, Front Street
Exeter
NH 03833

Dear Mr. Plumber and Planning Board Members,

I am writing with reference to the application of the Elizabeth. A. Hewson Revocable Trust for “ a minor subdivision of an existing 2.30 acre parcel into 3 residential lots”. Tax Map Parcel #83-59. PB Case #23-5.

Firstly I was very disappointed to learn of this proposed development from a neighbour and not from your committee directly. Unfortunately, we will be away at the time of your meeting on 6-8-23 so will be unable to attend. Therefore, I am submitting my concerns in writing for your consideration.

When we purchased 96, Court Street in 2003 we selected this house because we did not want to live in a subdivision. Looking at the proposed development lot sizes of 24,004 square feet, it would appear that if this application is approved we will be gazing at possibly 2 duplexes for a total of 4 houses from our bedroom and downstairs windows. I feel that this would result in a decrease of our property value, and not improve the aesthetics of our neighbourhood. The first picture on the following page is the view from our front bedroom, obscured by leaves. The second view is taken from our our front garden path showing the view from the two downstairs rooms.

I would hope that the planning board would insist on the preservation of the trees along the property line on the Court Street side, especially the deciduous tree on the corner of Nelson Drive and Court Street. Preservation of the Court Street tree line would assist in mitigating the damage that this proposed development would do to the aesthetics of Court Street.

My other concern is one of drainage, eversince the bridge work was completed on the Little River we have had a pronounced increase in flooding in our cellar during periods of heavy rain which we have addressed with both the town engineer and town manager to no avail. Water skips the drain from above Chadwick Road and runs down the road and the swale outside our property and into our front garden and cellar. Water also floods into our garden from 94 Court Street as we appear to be at the lowest point. At times water also crosses Court Street from Nelson Drive onto our side of the road. I would like to be assured that drainage will be addressed in any approval of planning applications.

Thank you for reading my concerns. I expect to be kept informed of any further developments related to this application by your committee either by post or email at alennox1975@gmail.com.

Sincerely,
Angela J. Lennox, Ph.D



DAVID PRESTON LENNOX, D.MIN.

+ 603-772-1045
DPLENNOX1975@GMAIL.COM

96 COURT STREET
EXETER,
NEW HAMPSHIRE
03833
USA

Exeter Planning Board
10 Front Street
Exeter, New Hampshire 03833

1 June 2023

RECEIVED

JUN 2 2023

EXETER PLANNING OFFICE

Dear Board Members,

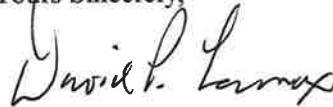
I was shocked to discover that the property across the street (Tax Map #89-59) is in the process of being subdivided into parcels which could lead to a pair of duplex houses in place of the shady lawn that is there now. My fear is that this will have a negative impact on our property value. It will certainly do permanent damage to the attractiveness of our neighbourhood.

It would be far better if this subdivision could be prevented. But if it has to be approved, it is my fervent hope that the trees along the Court Street side of the property can be preserved. The old hardwood at the corner of Nelson Drive and Court Street is especially important. These trees keep this part of Exeter attractive, and will screen any new houses from the traffic along Court Street. I urge you to do all that you can to preserve them.

I am sorry that I will be away on the 8th and will not be able to attend the meeting when this will be considered. I hope that this letter conveys the intensity of my concern about this matter.

Thank You.

Yours Sincerely,



David P. Lennox



TOWN OF EXETER

Planning and Building Department

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

www.exeternh.gov

Date: May 31, 2023

To: Planning Board

From: Dave Sharples, Town Planner

Re: Blind Tiger, LLC (Exeter Country Club) PB Case #23-2

The Applicant is seeking site plan approval for the proposed reconstruction of the existing club house, additional parking and associated site improvements at the Exeter Country Club located at 58 Jady Hill Avenue. The subject property is located in the R-2, Single Family Residential zoning district and is identified as Tax Map Parcel #52-1.

The Applicant submitted a site plan review application, plans and supporting documents, dated January 24, 2023 for review. A Technical Review Committee (TRC) meeting was conducted on February 16, 2023. At this meeting, it was determined that a second TRC would be necessary prior to the Applicant presenting the project to the Planning Board. A copy of the TRC comment letter, dated February 24, 2023 and UEI comment letter, dated February 17, 2023 are also enclosed for your review.

Revised plans and supporting documents were received on April 28, 2023. A second TRC meeting was scheduled and held on May 11, 2023. A second UEI comment letter, dated May 12, 2023 was provided and is enclosed for your review; there were no further TRC comments from Town Departments.

Subsequently, the Applicant has provided revised plans and supporting documents, dated May 24, 2023, addressing the comments and/or concerns discussed at the second TRC meeting. Copies are enclosed for your review. Staff is in the process of reviewing this submission to determine if all the TRC and UEI comments have been addressed and I will update the board at the meeting.

The Applicant is requesting several waivers from the Board's Site Plan and Subdivision Regulations in conjunction with the application and are outlined in the enclosed waiver request letter from Emanuel Engineering, dated April 25, 2023.

In the event the board chooses to hold a site walk, I will ask the applicant to mark out the important features of the site. I will be prepared with suggested conditions of approval at the meeting in the event the board decides to act on the request and forego a site walk.

Waiver Motions:

High Intensity Soils Survey (HISS) waiver motion: After reviewing the criteria for granting waivers, I move that the request of Blind Tiger LLC (PB Case #23-2) for a waiver from Section 7.4.10 and 7.5.4 of the Site Plan Review and Subdivision Regulations to provide High Intensity Soil Survey information on the **Existing Conditions Plan and Proposed Site Plan** be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Existing streets/driveways and information on all existing structures on site and within 200-feet of site waiver motion: After reviewing the criteria for granting waivers, I move that the request of Blind Tiger, LLC (PB Case #23-2) for a waiver from Section 7.4.13. and Section 7.4.15 of the Site Plan Review and Subdivision Regulations regarding identifying lines of existing abutting streets and driveway locations and information on all existing structures on site and within 200-feet of the site be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Stormwater Management for Redevelopment Standards waiver motion: After reviewing the criteria for granting waivers, I move that the request of Blind Tiger, LLC (PB Case #23-2) for a waiver from Section 9.3.2 of the Site Plan Review and Subdivision Regulations regarding stormwater management requirements for redevelopment be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Landscape Strips waiver motion: After reviewing the criteria for granting waivers, I move that the request of Blind Tiger, LLC (PB Case #23-2) for a waiver from Section 9.7.3 of the Site Plan Review and Subdivision Regulations regarding landscape strips to be provided to screen the view from adjacent residential properties be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Planning Board Motion:

Site Plan Motion: I move that the request of Blind Tiger, LLC (PB Case #23-2) for Site Plan approval be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Thank You.

Enclosures

Town of Exeter



Planning Board Application for Site Plan Review

October 2019



SITE PLAN REVIEW APPLICATION CHECKLIST

A COMPLETED APPLICATION FOR SITE PLAN REVIEW MUST CONTAIN THE FOLLOWING

1. Application for Hearing (✓)
2. Abutter's List Keyed to Tax Map (including the name and business address of every engineer, architect, land surveyor, or soils scientist whose professional seal appears on any plan submitted to the Board) (✓)
3. Completed- "Checklist for Site Plan Review" (✓)
4. Letter of Explanation (✓)
5. Written Request for Waiver (s) from "Site Plan Review and Subdivision Regulations" (if applicable) (✓)
6. Completed "Preliminary Application to Connect and /or Discharge to Town of Exeter- Sewer, Water or Storm Water Drainage System(s)"(if applicable) (✓)
7. Planning Board Fees (✓)
8. Seven (7) full-sized copies of Site Plan (✓)
9. Fifteen (15) 11"x17" copies of the final plan to be submitted **TEN DAYS PRIOR** to the public hearing date. (✓)
10. Three (3) pre-printed 1"x 2 5/8" labels for each abutter, the applicant and all consultants. (✓)

NOTES: All required submittals must be presented to the Planning Department office for distribution to other Town departments. Any material submitted directly to other departments will not be considered.



TOWN OF EXETER, NH APPLICATION FOR SITE PLAN REVIEW

OFFICE USE ONLY

THIS IS AN APPLICATION FOR:

- COMMERCIAL SITE PLAN REVIEW**
- INDUSTRIAL SITE PLAN REVIEW**
- MULTI-FAMILY SITE PLAN REVIEW**
- MINOR SITE PLAN REVIEW**
- INSTITUTIONAL/NON-PROFIT SPR**

_____	APPLICATION #
_____	DATE RECEIVED
_____	APPLICATION FEE
_____	PLAN REVIEW FEE
_____	ABUTTERS FEE
_____	LEGAL NOTICE FEE
_____	TOTAL FEES

_____	INSPECTION FEE
_____	INSPECTION COST
_____	REFUND (IF ANY)

1. **NAME OF LEGAL OWNER OF RECORD:** Exeter Country Club

_____ **TELEPHONE:** (603) 772-4752

ADDRESS: P.O. Box 1088, Exeter, NH 03833

2. **NAME OF APPLICANT:** Blind Tiger, LLC

ADDRESS: 3 Wright Lane, Exeter, NH 03833

_____ **TELEPHONE:** (603) 498-7005

3. **RELATIONSHIP OF APPLICANT TO PROPERTY IF OTHER THAN OWNER:** _____

Lessee

(Written permission from Owner is required, please attach.)

4. **DESCRIPTION OF PROPERTY:** Golf Course

ADDRESS: 58 Jady Hill Avenue

TAX MAP: 52 **PARCEL #:** 1 **ZONING DISTRICT:** R-2

AREA OF ENTIRE TRACT: 73.25 Acres **PORION BEING DEVELOPED:** South Corner



5. **ESTIMATED TOTAL SITE DEVELOPMENT COST** \$ 400,000

6. **EXPLANATION OF PROPOSAL:** Replace existing +/-3,000 SF club house with a new 68'x94' clubhouse with attached 20'x79' deck, construct additional parking for cars and golf carts, and provide associated drainage and utilities for the improvements. Also to show a future tent pad site west of the clubhouse.

7. **ARE MUNICIPAL SERVICES AVAILABLE? (YES/NO)** Yes

If yes, Water and Sewer Superintendent must grant written approval for connection.

If no, septic system must comply with W.S.P.C.C. requirements.

8. **LIST ALL MAPS, PLANS AND OTHER ACCOMPANYING MATERIAL SUBMITTED WITH THIS APPLICATION:**

<u>ITEM:</u>	<u>NUMBER OF COPIES</u>
A. <u>Inspection & Maintenance Plan</u>	<u>3</u>
B. <u>Stormwater Calculations</u>	<u>3</u>
C. <u>Site Plan Set</u>	<u>(7) 22"x34"</u>
D. _____	_____
E. _____	_____
F. _____	_____

9. **ANY DEED RESTRICTIONS AND COVENANTS THAT APPLY OR ARE CONTEMPLATED (YES/NO)** Yes IF YES, ATTACH COPY.

10. **NAME AND PROFESSION OF PERSON DESIGNING PLAN:**

NAME: Emanuel Engineering, Inc.

ADDRESS: 118 Portsmouth Avenue, Stratham NH 03885

PROFESSION: Civil Engineer **TELEPHONE:** (603) 772-4400

11. **LIST ALL IMPROVEMENTS AND UTILITIES TO BE INSTALLED:**

- New 68'x94' Clubhouse with attached 20'x79' deck with associated utilities

- Additional pavement for motor vehicles
- Cart storage

- Location of future tent pad site
- Associated Drainage



12. HAVE ANY SPECIAL EXCEPTIONS OR VARIANCES BEEN GRANTED BY THE ZONING BOARD OF ADJUSTMENT TO THIS PROPERTY PREVIOUSLY?

IF YES, DESCRIBE BELOW. (Please check with the Planning Department Office to verify)

Yes. Special Exception for an expansion of a non-conforming accessory use. Expansion of the parking lot.

Special Exception Case #197 was granted on March 11, 1975.

13. WILL THE PROPOSED PROJECT INVOLVE DEMOLITION OF ANY EXISTING BUILDINGS OR APPURTENANCES? IF YES, DESCRIBE BELOW.

(Please note that any proposed demolition may require review by the Exeter Heritage Commission in accordance with Article 5, Section 5.3.5 of the Exeter Zoning Ordinance).

Yes, the existing +/-3,000 SF clubhouse will be demolished.

14. WILL THE PROPOSED PROJECT REQUIRE A "NOTICE OF INTENT TO EXCAVATE" (State of NH Form PA-38)? IF YES, DESCRIBE BELOW.

Yes, groundwork will be required to build the new clubhouse, parking/cart areas, and associated utilities and drainage.

NOTICE: I CERTIFY THAT THIS APPLICATION AND THE ACCOMPANYING PLANS AND SUPPORTING INFORMATION HAVE BEEN PREPARED IN CONFORMANCE WITH ALL APPLICABLE REGULATIONS; INCLUDING BUT NOT LIMITED TO THE "SITE PLAN REVIEW AND SUBDIVISION REGULATIONS" AND THE ZONING ORDINANCE. FURTHERMORE, IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 15.2 OF THE "SITE PLAN REVIEW AND SUBDIVISION REGULATIONS", I AGREE TO PAY ALL COSTS ASSOCIATED WITH THE REVIEW OF THIS APPLICATION.

DATE 01-23-2023

OWNER'S SIGNATURE

W. J. Carbonneau
*(President, Board of Directors
Exeter Country Club)*

ACCORDING TO RSA 676.4.I (c), THE PLANNING BOARD MUST DETERMINE WHETHER THE APPLICATION IS COMPLETE WITHIN 30 DAYS OF SUBMISSION. THE PLANNING BOARD MUST ACT TO APPROVE, CONDITIONALLY APPROVE, OR DENY AN APPLICATION WITHIN SIXTY FIVE (65) DAYS OF ITS ACCEPTANCE BY THE BOARD AS A COMPLETE APPLICATION. A SEPARATE FORM ALLOWING AN EXTENSION OR WAIVER TO THIS REQUIREMENT MAY BE SUBMITTED BY THE APPLICANT.



ABUTTERS: PLEASE LIST ALL PERSONS WHOSE PROPERTY IS LOCATED IN NEW HAMPSHIRE AND ADJOINS OR IS DIRECTLY ACROSS THE STREET OR STREAM FROM THE LAND UNDER CONSIDERATION BY THE BOARD. THIS LIST SHALL BE COMPILED FROM THE EXETER TAX ASSESSOR'S RECORDS.

TAX MAP 64-105
NAME Hayes Mobile Home Park Inc
ADDRESS 56 Jady Hill Avenue
Exeter, NH 03833

TAXMAP65-2
NAME Daniel W. Chartrand
ADDRESS 63 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-27
NAME Thomas Nash
ADDRESS 67 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-26
NAME Timothy Gagnon
ADDRESS 69 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-25
NAME Michael S. Johnson
ADDRESS 71 Jady Hill Avenue
Exeter, NH 03833

TAXMAP 52-24
NAME Leon N. Morse
ADDRESS 73 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-3
NAME Maria George Carrasquillo
ADDRESS 77 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-2
NAME Janet A. Check
ADDRESS 79 Jady Hill Avenue
Exeter, NH 03833

TAX MAP 52-4
NAME Marshman Family Trust
ADDRESS 2 Webster Avenue
Exeter, NH 03833

TAX MAP 52-5
NAME Gregory McCarthy
ADDRESS 4 Webster Avenue
Exeter, NH 03833

TAX MAP 52-6
NAME Douglas B. Eastman
ADDRESS 12 Webster Avenue
Exeter, NH 03833

TAX MAP 52-7
NAME Jacques P. Wagemaker
ADDRESS 14 Webster Avenue
Exeter, NH 03833

TAX MAP 52-85
NAME Aruba Capital
ADDRESS PO Box 1540
Exeter, NH 03833

TAX MAP 52-86
NAME Tracy J. Middleton Family Trust
ADDRESS 7 Downing Court
Exeter, NH 03833

TAX MAP 52-87
NAME Clive Tomlinson
ADDRESS 1803 Tualatin Street
St. Helens, Oregon 97051

TAX MAP 52-91
NAME Barry W. Spracklin
ADDRESS 2 Melody Lane
Exeter, NH 03833

TAX MAP 52-92
NAME William C. Unger
ADDRESS 1 Melody Lane
Exeter, NH 03833

TAX MAP 52-93
NAME Anne S. Laszlo
ADDRESS 27 Allen Street
Exeter, NH 03833

Please attach additional sheets, if needed



ABUTTERS: PLEASE LIST ALL PERSONS WHOSE PROPERTY IS LOCATED IN NEW HAMPSHIRE AND ADJOINS OR IS DIRECTLY ACROSS THE STREET OR STREAM FROM THE LAND UNDER CONSIDERATION BY THE BOARD. THIS LIST SHALL BE COMPILED FROM THE EXETER TAX ASSESSOR'S RECORDS.

TAX MAP 51-10
 NAME Labonte Investment Realty LLC
 ADDRESS 355 Route 125
 Brentwood, NH 03833

TAXMAP 49-16
 NAME Russell F. Fredericksen
 ADDRESS 11 Newfields Road
 Exeter, NH 03833

TAX MAP 49-17-1
 NAME Abigail A Phillips Revocable Trust
 ADDRESS 9 Newfields Road
 Exeter, NH 03833

TAX MAP 53-7-1
 NAME Carpe Diem Trust
 ADDRESS 5 Newfields Road
 Exeter, NH 03833

TAX MAP 53-7
 NAME Cathleen A Toomey Revocable Trust
 ADDRESS 1 Newfields Road
 Exeter, NH 03833

TAX MAP 50-1, 50-2, 52-8, 52-9, and 52-97
 NAME Town of Exeter
 ADDRESS 10 Front Street
 Exeter, NH 03833

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

TAX MAP _____
 NAME _____
 ADDRESS _____

Please attach additional sheets, if needed



SITE PLAN REQUIREMENTS

7.4 Existing Site Conditions Plan

Submission of this plan will not be applicable in all cases. The applicability of such a plan will be considered by the TRC during its review process as outlined in Section 6.5 Technical Review Committee (TRC) of these regulations. The purpose of this plan is to provide general information on the site, its existing conditions, and to provide the base data from which the site plan or subdivision will be designed. The plan shall show the following:

APPLICANT	TRC	REQUIRED EXHIBITS
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.1 Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.2 Location of the site under consideration, together with the current names and addresses of owners of record, of abutting properties and their existing land use.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.3 Title, date, north arrow, scale, and Planning Board Case Number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.4 Tax map reference for the site under consideration, together with those of abutting properties.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.5 Zoning (including overlay) district references.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.6 A vicinity sketch or aerial photo showing the location of the land/site in relation to the surrounding public street system and other pertinent location features within a distance of 2,000-feet, or larger area if deemed necessary by the Town Planner.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.7 Natural features including watercourses and water bodies, tree lines, significant trees (20-inches or greater in diameter at breast height) and other significant vegetative cover, topographic features, and any other environmental features that are important to the site design process.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.8 Man-made features such as, but not limited to, existing roads, structures, and stone walls. The plan shall also indicate which features are to be retained and which are to be removed or altered.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.4.9 Existing contours at intervals not to exceed 2-feet with spot elevations provided when the grade is less than 5%. All datum provided shall reference the latest applicable US Coast and Geodetic Survey datum and should be noted on the plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.10 A High Intensity Soil Survey (HISS) of the entire site, or appropriate portion thereof. Such soil surveys shall be prepared by a certified soil scientist in accordance with the standards established by the Rockingham County Conservation District. Any cover letters or explanatory data provided by the certified soil scientist shall also be submitted.



<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.11 State and Federally designated wetlands, setback information, total wetlands proposed to be filled, other pertinent information and the following wetlands note: "The landowner is responsible for complying with all applicable local, state, and federal wetlands regulations, including any permitting and setback requirements required under these regulations."</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.12 Surveyed property lines including angles and bearings, distances, monument locations, and size of the entire parcel. A professional land surveyor licensed in New Hampshire must attest to said plan.</p>
<input type="checkbox"/> W	<input type="checkbox"/>	<p>7.4.13 The lines of existing abutting streets and driveway locations within 200-feet of the site.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.14 The location, elevation, and layout of existing catch basins and other surface drainage features.</p>
<input type="checkbox"/> W	<input type="checkbox"/>	<p>7.4.15 The shape, size, height, location, and use of all existing structures on the site and approximate location of structures within 200-feet of the site.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.16 The size and location of all existing public and private utilities, including off-site utilities to which connection is planned.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.17 The location of all existing easements, rights-of-way, and other encumbrances.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.18 All floodplain information, including the contours of the 100-year flood elevation, based upon the Flood Insurance Rate Map for Exeter, as prepared by the Federal Emergency Management Agency, dated May 17, 1982.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.19 All other features which would fully explain the existing conditions of the site.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>7.4.20 Name of the site plan or subdivision.</p>



7.5 Proposed Site Conditions Plan (Pertains to Site Plans Only)

The purpose of this plan is to illustrate and fully explain the proposed changes taking place within the site. The proposed site conditions plan shall depict the following:

APPLICANT	TRC	REQUIRED EXHIBITS
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.1 Proposed grades and topographic contours at intervals not to exceed 2-feet with spot elevations where grade is less than 5%. All datum provided shall reference the latest applicable US Coast and Geodetic Survey datum and should be noted on the plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.2 The location and layout of proposed drainage systems and structures including elevations for catch basins.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.3 The shape, size, height, and location of all proposed structures, including expansion of existing structures on the site and first floor elevation(s). Building elevation(s) and a rendering of the proposed structure(s).
<input type="checkbox"/> W	<input type="checkbox"/>	7.5.4 High Intensity Soil Survey (HISS) information for the site, including the total area of wetlands proposed to be filled.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.5 State and Federally designated wetlands, setback information, total wetlands proposed to be filled, other pertinent information and the following wetlands note: "The landowner is responsible for complying with all applicable local, state, and federal wetlands regulations, including any permitting and setback requirements required under these regulations."
<input type="checkbox"/> NA	<input type="checkbox"/>	7.5.6 Location and timing patterns of proposed traffic control devices.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.7 The location, width, curbing and paving of all existing and proposed streets, street rights-of-way, easements, alleys, driveways, sidewalks and other public ways. The plan shall indicate the direction of travel for one-way streets. See Section 9.14 – Roadways, Access Points, and Fire Lanes for further guidance.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.8 The location, size and layout of off-street parking, including loading zones. The plan shall indicate the calculations used to determine the number of parking spaces required and provided. See Section 9.13 – Parking Areas for further guidance.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.9 The size and location of all proposed public and private utilities, including but not limited to: water lines, sewage disposal facilities, gas lines, power lines, telephone lines, cable lines, fire alarm connection, and other utilities.
<input type="checkbox"/> W	<input type="checkbox"/>	7.5.10 The location, type, and size of all proposed landscaping, screening, green space, and open space areas.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.11 The location and type of all site lighting, including the cone(s) of illumination to a measurement of 0.5-foot-candle.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.12 The location, size, and exterior design of all proposed signs to be located on the site.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.13 The type and location of all solid waste disposal facilities and accompanying screening.



<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.14 Location of proposed on-site snow storage.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.15 Location and description of all existing and proposed easement(s) and/or right-of-way.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.16 A note indicating that: "All water, sewer, road (including parking lot), and drainage work shall be constructed in accordance with Section 9.5 Grading, Drainage, and Erosion & Sediment Control and the Standard Specifications for Construction of Public Utilities in Exeter, New Hampshire". See Section 9.14 Roadways, Access Points, and Fire Lanes and Section 9.13 Parking Areas for exceptions.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.5.17 Signature block for Board approval

OTHER PLAN REQUIREMENTS (See Section indicated)

- 7.7 Construction plan
- 7.8 Utilities plan
- 7.9 Grading, drainage and erosion & sediment control plan
- 7.10 Landscape plan
- 7.11 Drainage Improvements and Storm Water Management Plan
- 7.12 Natural Resources Plan
- 7.13 Yield Plan



January 24, 2023

Exeter Planning Board
Town of Exeter
10 Front Street
Exeter, NH 03833

RE: Letter of Explanation - "Blind Tiger LLC"
58 Jady Hill Avenue (Site)
Exeter, NH 03833
Tax Map 52, Lot 1

Dear Members of the Exeter Planning Board,

On behalf of Blind Tiger, LLC, who are leasing a portion of the Exeter Country Club property located at 58 Jady Hill Avenue, Exeter, NH, Tax Map 52, Lot 1, we offer the following narrative overview to help the board familiarize themselves with the project.

The subject parcel is located on a 73.25-acre site, which is the location of a 9-hole golf course, where an existing +/- 3,000 square foot clubhouse, golf cart storage, and associated parking and utilities are located. The property is serviced by public water and sewer. There were no wetlands found in the vicinity of the proposed work, as determined by Gove Environmental Services, Inc. (GES) in Spring 2022. There are no other known significant environmental features.

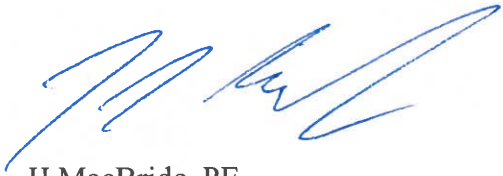
It is proposed that the existing 3,000 square foot clubhouse be replaced with a 68'x94' clubhouse and attached 20'x79' deck in the same general location. The clubhouse shall include a full restaurant and bar with four (4) golf simulators on the second floor. On the first floor of the clubhouse, a golf pro shop, locker rooms, and various storage rooms are proposed. The existing parking is to remain, but expanded parking is proposed to accommodate the larger building. In order to provide compliant parking, a large retaining wall (163 feet-long) must be provided between the parking and the 9th hole & practice green. Associated electric, gas, sewer, and water are also proposed. Additionally, drainage is also

proposed to accommodate the site improvements. There is no proposed change of use on the site.

An effort is being made to reduce the impact on any significant existing feature of the site. All of the proposed work will be done outside of the wetland and site setbacks. The proposed building is located primarily within the existing building footprint on site, but does extend outside of it due to its size. With the proposed drainage improvements on site, the peak flow and volume of stormwater from the site will be reduced.

If you have any other questions concerning this project, please reach out to us.

Sincerely,

A handwritten signature in blue ink, appearing to read 'JJ MacBride', is written in a cursive style.

JJ MacBride, PE

Civil Engineer

***Site Deeds, Easements,
and Reference Plans***

Blind Tiger, LLC
58 Jady Hill Avenue (Site)
Exeter, NH 03833

January 24, 2023

Prepared for: Blind Tiger, LLC
3 Wright Lane
Exeter, NH 03833

1406 290

EXETER SPORTSMAN'S CLUB, INC.

EXETER, N. H.

August 13, 1956

I, Fred B. Kent, Secretary of the Exeter Sportsman's Club, Inc. do hereby certify that action was taken by the Club with respect to the disposition of its real estate on Jady Hill Ave., Exeter, N. H. at the regular monthly meeting of the Club on June 18, 1956, as follows:

"Upon motion duly made and seconded it was voted to sell the land and building now owned by the Exeter Sportsman's Club on Jady Hill Ave. in Exeter, N. H. to the Exeter Country Club for the sum of three thousand seven hundred and fifty dollars (\$3,750.00).

Upon motion duly made and seconded it was voted that the President of the Club, John J. Cahill, and the Treasurer of the Club, Herman L. Smith, represent the Club in the transfer of the property and they are hereby empowered to sign any and all necessary documents for the transfer of the property."

All members of the Club in good standing were duly notified by mail that the Club would act on the sale of its owned real estate at the regular monthly meeting to be held on June 18, 1956. A quorum of the Club members were present at this meeting.

F. B. Kent
Secretary

August 14, 1956
County of Rockingham
State of New Hampshire

Then personally appeared Fred B. Kent and made oath that the statements contained herein and by him subscribed are true.

Before me:

Mae O Hayes
Notary Public

see
Geo. Seaman
U.S. Rev
Stamp #1.10

1496 336 **Know All Men By These Presents**

THAT Exeter Country Club, a corporation organized under the laws of the State of New Hampshire and having its place of business at Exeter, County of Rockingham, State of New Hampshire, for consideration hereof, grant to the Town of Exeter, a municipal corporation in the County of Rockingham, State of New Hampshire, with certain covenants, etc.

A certain tract or parcel of land situate in said Exeter, lying easterly of the Swampscoot River and northerly of land of Charles G. Hayes, bounded and described as follows:

Beginning at a point on the northeasterly sideline of land of Charles G. Hayes (this point being northwesterly two hundred seventy-three (273) feet of the northwest corner of land this day conveyed by the grantee to the grantor), and thence running north sixty-two degrees eighteen minutes west (N. 62° 18' W.) by the northeasterly sideline of said land of Charles G. Hayes four hundred forty-five (445) feet, more or less, to a point on the easterly bank of Squamscoot River; thence turning and running in a northeasterly direction by said Squamscoot River about three hundred seventy (370) feet to a point at other land of the grant or; thence turning and running south sixty-two degrees eighteen minutes east (S. 62° 18' E.) by said other land of the grantor about three hundred forty (340) feet to a point indicated by a marker set in the ground; thence turning and running south twenty-eight degrees thirty-nine minutes west (S. 28° 39' W.) still by other land of the grantor three hundred fifty (350) feet to the northeasterly sideline of said land of Charles G. Hayes at the point of beginning.

The grantor also grants to the grantee a right-of-way leading from Jady Hill Avenue over other land of the grantor to the described premises. This right of way shall be laid out to a minimum width of twenty (20) feet and unless otherwise stipulated by the grantor and grantee shall be adjacent to and parallel with the northeasterly sideline of land of Charles G. Hayes and the northeasterly sideline of land this day conveyed by the grantee to the grantor.

The described premises are a portion of the premises conveyed to the grantor by deed of ~~Exeter Apartments, Inc. by its deed dated the~~ ~~seventh day of August 1926 recorded in Rockingham County Registry~~ ~~of Deeds Book 106, Page 296.~~ The Jady Hill Land Company, by its deed dated the ninth day of November 1925, and recorded in Rockingham Records Book 810, Page 226.

Witness hand and seal this 18th day of

February, 19 59



WITNESS:
Geo. P. Seaman

Exeter Country Club
by *Charles H. Hatchelder, Jr.*
its President

STATE OF NEW HAMPSHIRE COUNTY OF ROCKINGHAM
On this the 18th day of February 59, before me,
the undersigned officer, personally appeared Charles H. Hatchelder, Jr., President of Exeter Country Club, 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 purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

Geo. P. Seaman
Justice of the Peace

Title of Officer.

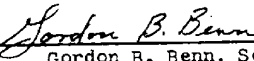
1496 337

To Whom It May Concern:

I, Gordon B. Benn, Secretary of Exeter Country Club do hereby certify as follows:

That at meetings of the Executive Committee of Exeter Country Club held April 10, 1958 and February 18, 1959, and at a special meeting of the membership of Exeter Country Club held on the fifth day of May 1958 by a combination of votes the Executive Committee and the Club membership voted unanimously to exchange parcels of land with the Town of Exeter, and particularly on the eighteenth day of February 1959 the plan and respective deeds of the Country Club and Town having been considered by the Executive Committee, Charles H. Batchelder, Jr., President of Exeter Country Club was authorized to execute and deliver on behalf of Exeter Country Club a deed conveying a parcel of land to the Town of Exeter described in a deed heretofore unexecuted from Exeter Country Club to Town of Exeter dated the eighteenth day of February 1959, to consummate the "land swap" heretofore authorized by the Club membership at a meeting duly called and held in accordance with notice on the fifth day of May 1958.

Witness my hand at Exeter, New Hampshire, this eighteenth day of February 1959, the foregoing being a true resume of the records of meetings of the Executive Committee and membership of Exeter Country Club.



Gordon B. Benn, Secretary

Rec. & recorded Feb. 26, 1 P.M. 1959

Consideration less than one hundred dollars.

BK2254 P0147

EASEMENT DEED

EXETER

EXETER COUNTRY CLUB

EXETER COUNTRY CLUB, husband/wife of EXETER, N.H., in the County of Rockingham, and the State of New Hampshire, for consideration paid, grant to Exeter & Hampton Electric Company, a New Hampshire corporation with a principal place of business in Exeter, in said County and State, its successors, assigns, lessees, licensees and permittees with QUIET ENJOYMENT covenants, the perpetual right and easement to build, maintain and operate and at its pleasure to remove, replace or substitute lines of poles with crossarms, wires and other appurtenances for the transmission of electric energy and intelligence including the necessary guys, over and across land of the Grantors located on JAY HILL AVE., together with wires leading to and from said poles or from poles or structures located on lands adjacent thereto, in the location described as follows:

This easement to cover - 5 - new poles and - 6 - ground guys starting @ Pole # 2783 and extending approximately 700 FT. running in a northwesterly direction

the exact location of the lines to be made definite by the erection thereof.

There is hereby conveyed the right to trim and remove from the premises of the Grantors such trees and other growth as in the judgment of the Grantee may interfere with or endanger the line or the operation thereof, all wood and timber to remain the property of the Grantors.

The Grantor covenants and agrees that if any poles or wires or associated equipment installed in pursuance of this conveyance are required to be removed in connection with the layout or acceptance of streets or highways, the Grantor will reimburse the Grantee for all of its costs incurred in connection therewith.

There is further conveyed the right at any and all reasonable time to enter upon said land of the Grantors or their successors in interest in order to accomplish the purposes hereinabove set forth.

We, the aforesaid Grantors, do hereby waive and relinquish all rights of dower, curtesy and homestead and any other interests therein.

WITNESS the hands and seals of the Grantors this 9th day of MARCH 1976.

Witness:

x John Bell

x John W. Flynn, Jr., Pres. Exeter Country Club

The State of New Hampshire Rockingham ss.

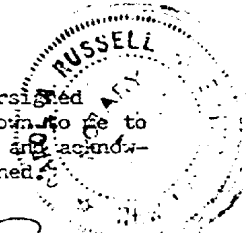
On this the 9th day of March, 1976, before me, the undersigned officer, personally appeared John W. Flynn, Jr., known to me to be the persons whose names is/are subscribed to the within instrument and acknowledged that he/they executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand.

120570 1-65

My Commission Expires May 31, 1977

Carol A. Russell Notary Public



REC'D ROCKINGHAM COUNTY REGISTRY OF DEEDS '76 MAR 30 PM 3:31 05893

59136

DEC 5 11 11 AM '88

BK2771 P2201

EASEMENT DEED

The Exeter Country Club of Jady Hill Lane
Exeter, New Hampshire, 03833
Town/City State Zip Code

for consideration paid grants to Exeter & Hampton Electric Company, 216 Epping Road, Exeter, NH 03833, and New England Telephone and Telegraph Company, 185 Franklin Street, Boston, MA, 02110, as tenants in common, and their respective successors and assigns and permittees, with quitclaim covenants, the perpetual right and easement to build, maintain, operate and replace (a) overhead lines of poles, wires and associated facilities and/or (b) underground lines of conduits, manholes, wires and associated facilities for the transmission of electricity and/or intelligence over, under or across land of the Grantor(s) on Jady Hill Road Street/Road, in Exeter, New Hampshire, on a strip 20 feet in width, the center line thereof to be fixed upon construction of the first line to cover new pole #s 3744 & 3745 and associated anchors, off main line pole 2412, Jady Hill Road, Exeter, NH

ROCKINGHAM COUNTY REGISTRY

and being a portion of the same premises conveyed to the Grantor(s) by deed of See Attachment, dated See Attachment, and recorded in Rockingham County Registry of Deeds, Book (Attachment), Page (Attachment).

There is hereby conveyed the right to trim and remove from the premises of the Grantor(s) such trees and other growth as in the judgment of the Grantee(s) may interfere with or endanger the line(s) or the operation thereof, all wood and timber to remain the property of Grantor(s). Facilities built by any utilities pursuant to the easement hereby granted shall be and remain the property of the utilities.

The Grantor(s) covenants and agrees that if any poles or wires or associated equipment installed in pursuance of this conveyance are required to be removed in connection with the layout or acceptance of streets or highways, the Grantor(s) will reimburse the Grantee(s) for of its costs incurred in connection therewith.

There is further conveyed the right at any and all reasonable time to enter upon said land of the Grantor(s) or their successors in interest in order to accomplish the purposes hereinabove set forth.

The Grantor(s) for them self, their heirs, executors, administrators and assigns, hereby covenant(s) that they will not erect or permit any building or any other structure upon said strip.

WITNESS the hand(s) and seal(s) of the Grantor(s) this 8th day of November, 1988.

Witness:
Henry L. Barlow
Virginia D. Emerson
State of New Hampshire) ss.
Rockingham County)
Personally appeared the subscriber(s) to the within instrument and acknowledged the same to be voluntary act and deed.

Grantor:
Joyce Adams, President
Sarah Campbell, Secretary
11/8, 1988

Constance S. Pittenger
Notary Public/Justice of the Peace
My Commission Expires May 21, 1991

71062
STATE OF NEW HAMPSHIRE
TAX ON TRANSFER
OF REAL PROPERTY
STATE TAX
COMMISSION
DEC-5'88
28.00
10669

RK2771 P2202

Attachment for Easement Deed to Exeter & Hampton Electric Co. for new pole #'s
3744 and 3745 and associated anchors, off main line pole 2412, Jady Hill Rd., Exeter

...and being a portion of the same premises conveyed to the Grantor(s) by deeds of:

-Charles Hayes	August 31, 1922	Book# 752 Page# 223
-Jady Hill Land Company	November 9, 1925	Book# 810 Page# 225
-Exeter Sportsmen's Club	August 17, 1956	Book# 1406 Page# 291
Town of Exeter	February 18, 1959	Book# 1496 Page# 338

Warranty Deed BK2782 P0381

I, RICHARD D. IRVINE, of Ormond, Florida
~~is~~ married
~~hereby~~ for consideration paid, grant to EXETER COUNTRY CLUB, INC.

of Lady Hill Road Exeter Rockingham County
(Street) (Town or City)
State of New Hampshire with WARRANTY covenants, the following described premises:

A certain easement over a certain parcel of land situate in Exeter, County of Rockingham, State of New Hampshire, and being more particularly bounded and described in Exhibit A attached hereto and made a part hereof; the interest herein conveyed is an undivided one-fourth interest.

07986
Feb 27 3 01 PM '89

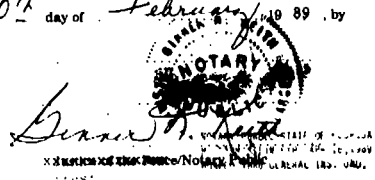


ROCKINGHAM COUNTY
REGISTRY OF DEEDS

The described premises are not homestead premises of the grantor nor the spouse of the grantor.

and other interests, if any, herein
WITNESS my hand this 10th day of February, 19 89
[Signature] Richard D. Irvine

STATE OF FLORIDA COUNTY OF Volusia
The foregoing instrument was acknowledged before me this 10th day of February, 19 89, by
Richard D. Irvine



BK2782 P0382

EXHIBIT A

An easement over a certain parcel of land in Exeter, County of Rockingham, State of New Hampshire, said parcel being described in a deed from William H. and Howard T. Irvine to Joanna Irvine recorded in the Rockingham County Registry of Deeds at Book 974, Page 361, and being more particularly described in a deed of Grantors to the Town of Exeter, Conservation Commission, being recorded herewith, all as shown on a plan of land entitled "Plan of Land in Exeter, N.H.; Irvine Lot and Irvine-Hayes Lot for the Exeter Conservation Commission" recorded in the Rockingham County Registry of Deeds as Plan Number 0-18932, being more particularly bounded and described as follows:

Beginning at a point on the Southeasterly boundary of said parcel thence turning and running North 41 39' 00" West a distance of 210.00 feet to an iron pin; thence turning and running South 34 27' 40" West 421.95 feet to an iron pin; thence continuing South 12 37' 00" West 269.41 feet to an iron pin at land now or formerly of Exeter Country Club; thence turning and running along land of said Country Club North 43 55' 30" East 630.18 feet to the point of beginning.

Said easement is to be used by said Country Club for the purposes of constructing, maintaining and using a golf tee and associated fairway. Said Country Club may use said property for such purposes and may clear, plant, such vegetation, regrade or fill such land and otherwise landscape such area as it may deem necessary, from time to time, for such purpose.

CONSERVATION EASEMENT DEED

I, Edward Kochy, President of the Exeter Country Club, Inc., a non-profit corporation duly organized and existing under the laws of the state of New Hampshire, with a principal place of business at Jady Hill Avenue, Town of Exeter, County of Rockingham, State of New Hampshire, and with a mailing address of Box 1088, Exeter, NH 03833, (hereinafter sometimes referred to as the "Grantor" which word where the context requires includes the plural and shall, unless the context clearly indicates otherwise, include the Grantor's executors, administrators, legal representatives, devisees, heirs and/or assigns),

For consideration paid, grant to the Town of Exeter with an address of 10 Front Street, Exeter, County of Rockingham, State of New Hampshire, contributions to which are deductible for federal income tax purposes pursuant to the United States Internal Revenue Code, (hereinafter sometimes referred to as the "Grantee" which word shall, unless the context clearly indicates otherwise, include the Grantee's successors and/or assigns),

With WARRANTY covenants, in perpetuity the following described Conservation Easement, pursuant to New Hampshire RSA 477:45-47 and RSA 221-A, over a certain parcel of land located on Jady Hill Avenue, Exeter, Rockingham County, State of New Hampshire, exclusively for conservation purposes, namely:

1. To assure that the Property will be retained forever in its undeveloped, scenic, and open space condition and to prevent any use of the Property that will significantly impair or interfere with the conservation and recreation values of the Property; and
2. To preserve the land subject to this easement for outdoor recreation by and/or the education of the general public, through the auspices of the Grantee, its permitted successors or assigns, as more particularly described below; and
3. To preserve open spaces of which the land area subject to this easement granted hereby consists, for the scenic enjoyment of the general public and consistent with New Hampshire RSA Chapter 79-A which states: "It is hereby declared to be in the public interest to encourage the preservation of open space in the state by providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, by maintaining the character of the state's landscape, and by conserving the land, water, forest, and wildlife resources", to yield a significant public benefit in connection therewith; and with NH RSA Chapter 221-A, which states: "The intent of the program is to preserve the natural beauty, landscape, rural character, natural resources, and high quality of life in New Hampshire by acquiring lands and interests in lands of statewide, regional, and local conservation and recreation importance.";

07991

FEB 22 3 04 PM '89

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

BK2782 P0393

all consistent and in accordance with the U.S. Internal Revenue Code, with respect to a portion of a certain parcel of land (herein referred to as the "Property"), consisting of a portion of a golf course, forest land, and salt marsh situated in the Town of Exeter, County of Rockingham, the State of New Hampshire, more particularly bounded and described as set forth in Exhibit "A" attached hereto and made a part hereof.

The 72-acre golf course, founded in the late 19th century, is one of the oldest in the country. The easement area has over 2000 feet of frontage on the Squamscott River, which is a tidal river feeding the Great Bay Estuary. The Squamscott River has over 25% of the salt marsh in the entire estuary. The woodland areas of the golf course are a registered Tree Farm. The property also provides access to a 13.36-acre town conservation area, known as the Irvine Property, at the junction of the Squamscott River and Wheelwright Creek. Together, the properties protect an important river corridor that is critical for the protection of flyways of migratory waterfowl, and the habitat of an endangered species, the common moorhen, and an endangered plant, the stout bulrush.

These significant conservation values are set forth in detail in baseline documentation on file with the Grantee.

The Conservation Easement hereby granted with respect to the Property is as follows:

1. USE LIMITATIONS

A. The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except agriculture and forestry as described below, and except commercial activities associated with the corporate purposes of the Grantor, being golf and other outdoor recreational activities, and not detrimental to the purposes of this Easement.

i. For the purposes hereof "agriculture" and "forestry" shall include agriculture, animal husbandry, floriculture and horticulture activities; the production of plant and animal products for domestic or commercial purposes, for example the growing and stocking of Christmas trees or forest trees of any size capable of producing timber, maple syrup and other forest products; and the cutting and sale of timber and other forest products not detrimental to the purposes of this easement.

ii. Agriculture and forestry on the Property shall be performed to the extent possible in accordance with a coordinated management plan for the sites and soils of the Property. Forestry and agricultural management activities shall be in accordance with the current scientifically based practices recommended by the U.S. Cooperative Extension Service, U.S. Soil Conservation Service, or other government or private natural resource conservation and management agencies then active. Management activities shall not materially impair the scenic quality of the Property as viewed from public waterways, great ponds, public roads, or public trails.

RK2782 P0394

B. The Property shall not be subdivided.

C. No structure or improvement such as a dwelling, dock, tennis court, swimming pool, miniature golf course, road, dam, fence, bridge, aircraft landing strip, asphalt, culvert, tower, mobile home, or shed shall be constructed, placed or introduced onto the Property except as necessary in the accomplishment of the agricultural, forestry, conservation, or permitted outdoor recreational uses of the Property and not detrimental to the purposes of this easement. Fences for the purpose of securing the Property are allowed.

D. No changes in topography, surface or sub-surface water systems, wetlands, or natural habitat shall be allowed that would harm state or federally recognized rare or endangered species. In addition, none of the aforementioned shall be allowed except as necessary in the accomplishment of the agricultural, forestry, habitat management, conservation or outdoor recreational uses of the Property and not detrimental to the purposes of this easement.

E. No outdoor advertising structures such as signs and billboards shall be displayed on the Property except as necessary in the accomplishment of the agricultural, forestry, conservation or outdoor recreational uses of the property and not detrimental to the purposes of this easement.

F. There shall be no mining, quarrying, excavation or removal of rocks, minerals, gravel, sand, top soil or other similar materials on the Property, except in connection with any improvements made pursuant to the provisions of paragraphs A, C, D, or E above.

No such rocks, minerals, gravel, sand, topsoil, or other similar materials shall be removed from the Property.

G. There shall be no dumping, injection, or burial of materials then known to be environmentally hazardous, including vehicle bodies or parts.

2. RESERVED RIGHTS

A. Grantor reserves the right to install, maintain, repair or replace utilities on the Property that serve the Property or unrestricted land of the Grantor.

B. Grantor reserves the right to maintain and improve all existing and future golf course areas. Any such improvement, including but not limited to relocation of a green, construction of a tee, or commercial harvesting of timber, shall be reviewed by the Grantee for consistency with the conservation purposes of this Conservation Easement Deed.

C. Grantor reserves the right to create ponds for the purpose of agriculture, fire protection, or wildlife habitat enhancement, or golf course improvement, in accordance with a plan developed by the U.S. Soil Conservation Service or other similar agency then active.

D. The Grantor must notify the Grantee in writing before exercising the aforesaid reserved rights provided for in this Easement.

E. Grantor reserves the right to post against vehicles, motorized or otherwise.

F. Grantor reserves the right to post against hunting.

G. Grantor reserves the right to enforce against trespassers not using the property in accordance with Paragraphs A, B, C, and D of Section 3 of this Conservation Easement Deed.

3. AFFIRMATIVE RIGHTS OF GRANTEE

A. The Grantee shall have reasonable access to the Property and all of its parts for such inspection as is necessary to maintain boundaries, to determine compliance and to enforce the terms of this Conservation Easement Deed and exercise the rights conveyed hereby and fulfill the responsibilities and carry out the duties assumed by the acceptance of this Conservation Easement Deed.

B. There is hereby conveyed pedestrian access to, on and across the Property for fishing and other transitory passive recreational purposes, including but not limited to, sledding, hiking, and cross-country skiing, but not camping, by members of the public, during periods of sufficient snow cover; but the Property may be posted against such access or otherwise restricted by the Grantee in the public interest. All such passive recreation activities shall be permitted when weather conditions allow such activities without causing damage to the premises which would be inconsistent with the conservation purposes of this Conservation Easement and with the commercial uses allowed hereunder.

C. The Grantee has the right to construct, manage, use, and maintain a trail as a public footpath in the presently wooded areas along the Squamscott River and to create and maintain vistas or overlooks associated with said trail. The Grantee has the right to build rude bridges, boardwalks and other devices to permit pedestrian movement along said right-of-way for the purpose of exercise and nature appreciation. The width, design and location of said trail shall be mutually agreed upon by Grantor and Grantee.

D. The Grantor hereby conveys to the Grantee an easement along the southern property line, shown on Plan D, Number 18931 recorded at the Rockingham County Registry of Deeds, five (5) feet in width for pedestrian access from Jady Hill Avenue to the trail described in section 3.C above. The location of said easement may be changed from time to time with the mutual consent of Grantor and Grantee.

E. The Grantee may use a right-of-way and easement of one rod in width for use by the public to gain access to the town owned conservation land known as the Irvine Property. The location of said right-of-way is shown on a survey entitled "Plan of Land in Exeter NH. Exeter Country Club", recorded at the Rockingham County Registry of Deeds as Plan #D-18931. The Grantee may pass and repass over said right-of-way with motor vehicles for emergency and maintenance purposes.

BK2782 P0396

For routine pedestrian use, the Grantee and Grantor may agree upon an alternate footpath.

F. Prior to the erection of structures on the Property, the Grantor shall submit plans to the Grantee for approval. Grantee shall have the right to approve or disapprove said plans, based on consistency with the purposes of this Conservation Easement Deed. Such approval shall not be unreasonably withheld. The term "structures" as used in this section shall not include tees, bunkers, greens or associated landscaping.

4. NOTIFICATION OF TRANSFER, TAXES, MAINTENANCE

A. Grantor agrees to notify the Grantee in writing within 10 days after the transfer of title of the Property.

B. Grantee shall be under no obligation to maintain the Property or pay any taxes or assessments thereon.

5. BENEFITS AND BURDENS

A. The burden of the easement conveyed hereby shall run with the Property and shall be enforceable against all future owners and tenants in perpetuity; the benefits of said easement shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferrable only to the State of New Hampshire or the U.S. Government or any subdivision of either of them consistently with Section 170 (c) (1) of the U.S. Internal Revenue Code, as amended, which government unit has among its purposes the conservation and preservation of land and water areas and agrees to and is capable of enforcing the conservation purposes of this easement. Any such assignee or transferee shall have like power of assignment or transfer. In accordance with RSA 221-A, under which this Conservation Easement Deed is acquired, "The sale, transfer, conveyance, or release of any such land or interest in land from public trust is prohibited." (RSA 221-A:11)

6. BREACH OF EASEMENT

A. When a breach of this Easement comes to the attention of the Grantee, it shall notify the then owner (Grantor) of the Property in writing of such breach, delivered in hand or by certified mail, return receipt requested.

B. Said Grantor shall have 30 days after receipt of such notice to undertake those actions, including restoration, which are reasonably calculated to swiftly cure the conditions constituting said breach and to notify the Grantee thereof.

C. If said Grantor fails to take such curative action, the Grantee, its successors or assigns, may undertake any actions that are reasonably necessary to cure such breach, and the cost thereof, including the Grantee's expenses, court costs and legal fees shall be paid by the said Grantor, provided the said Grantor is determined to be directly or indirectly responsible for the breach.

7. CONDEMNATION

A. Whenever all or part of the Property is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate in whole or in part the Easement conveyed hereby, the Grantor and the Grantee shall thereupon act jointly to recover the full damages resulting from such taking with all incidental or direct damages and expenses incurred by them thereby to be paid out of the damages recovered.

B. The balance of the damages (or proceeds) recovered shall be paid 12.74% to the Grantor and 87.26% to the Grantee which percentages represent the full and fair market values of the respective interest of the Grantor and Grantee in the Property which is the subject of this Easement Deed immediately after the execution and delivery hereof taken as a proportion of the sum of said values. The Grantee shall use its share of in a manner consistent with the conservation purposes set forth.

The Grantee by accepting and recording this Conservation Easement Deed for itself, its successors and assigns, agrees to be bound by and to observe and enforce the provisions hereof and assumes the rights and responsibilities herein provided for and incumbent upon the Grantee, all in the furtherance of the conservation purposes for which this Conservation Easement Deed is delivered.

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of February, 1989.

Charles F. Tucker
Witness

Edward Kochy
Grantor: Edward Kochy

The State of New Hampshire
Rockingham, ss.

Personally appeared Edward Kochy who acknowledged the foregoing to be his voluntary act and deed.

Before me,

Charles F. Tucker
Justice of the Peace/Notary Public

ACCEPTED: Town of Exeter

By: George N. Clark

Title: Town Manager
Duly Authorized

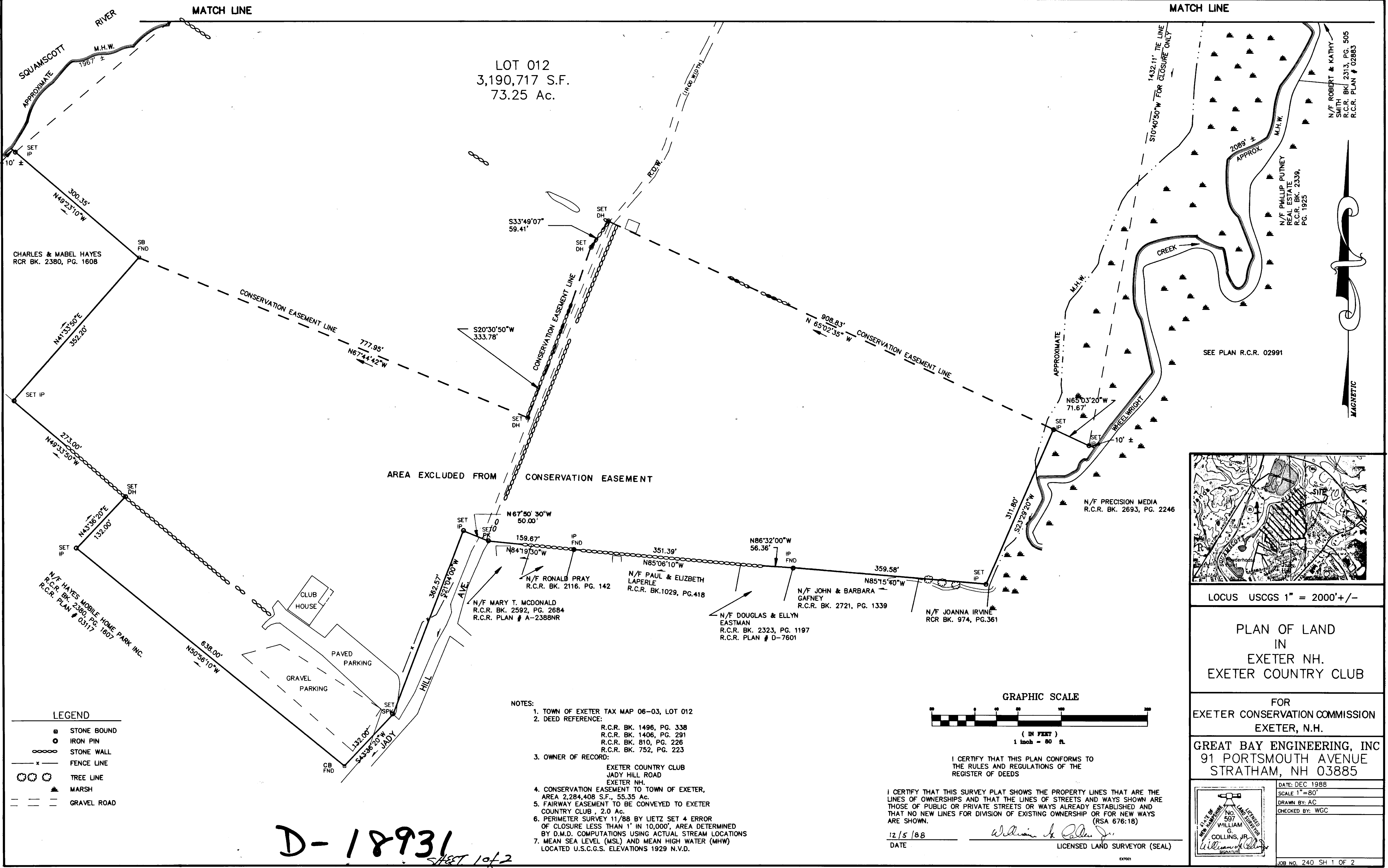
RK2782 P0398

EXHIBIT A

Being bounded and described as follows:

All that land of said Country Club located Northeasterly of the following line; beginning at a point at Wheelwright Creek thence continuing approximately 10 feet North 65° 03' 20" West to an iron pin; thence continuing in the same course 71.67 feet to an iron pin; thence continuing North 65° 02' 35" West, in part along a stone wall, 908.83 feet to a drill hole in the end of a stone wall; thence turning and running along said stone wall South 33° 49' 07" West 59.41 feet to a drill hole in the end of said stone wall; thence continuing in part along said stone wall South 20° 30' 50" West 333.78 feet to a drill hole in the end of said stone wall thence turning and running North 67° 44' 42" West 777.95 feet to a stone bound at land now or formerly of Charles and Mabel Hayes; thence turning and running along land of said Hayes North 49° 23' 10" West 300.35 feet to an iron pin approximately 10 feet from Squamscott River, thence continuing in the same course approximately 10 feet more or less to the Squamscott River; said area covered by the conservation easement being 55.35 acres more or less.

Dec 30 3 45 PM '88
 Dec 30 3 45 PM '88



LOCUS USCGS 1" = 2000' +/-

**PLAN OF LAND
 IN
 EXETER NH.
 EXETER COUNTRY CLUB**

FOR
 EXETER CONSERVATION COMMISSION
 EXETER, N.H.

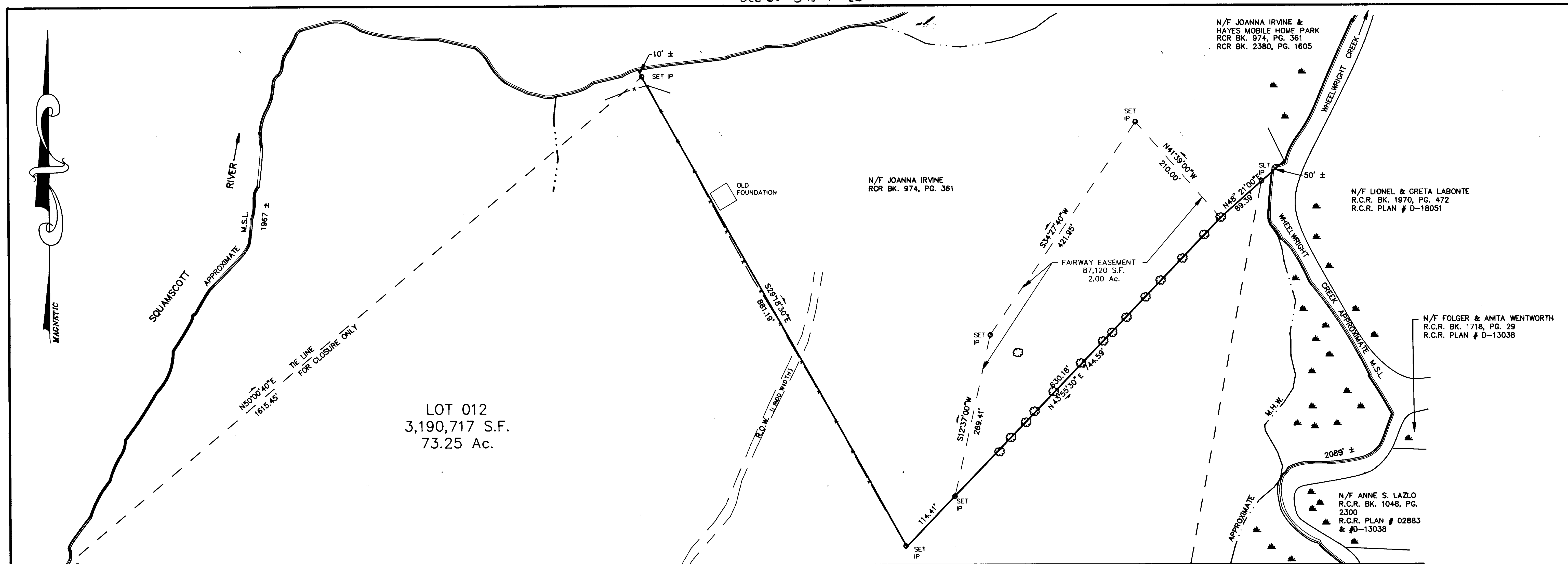
GREAT BAY ENGINEERING, INC
 91 PORTSMOUTH AVENUE
 STRATHAM, NH 03885

	DATE: DEC 1988
	SCALE: 1"=80'
	DRAWN BY: AC
	CHECKED BY: WGC
JOB NO. 240 SH 1 OF 2	

D-18931
 SHEET 1 of 2

Dec 30 3:45 PM '88

Dec 30 3:45 PM '88



MATCH LINE

MATCH LINE

SEE SHEET 1 FOR LEGEND AND NOTES.

PLAN OF LAND
IN
EXETER NH.
EXETER COUNTRY CLUB

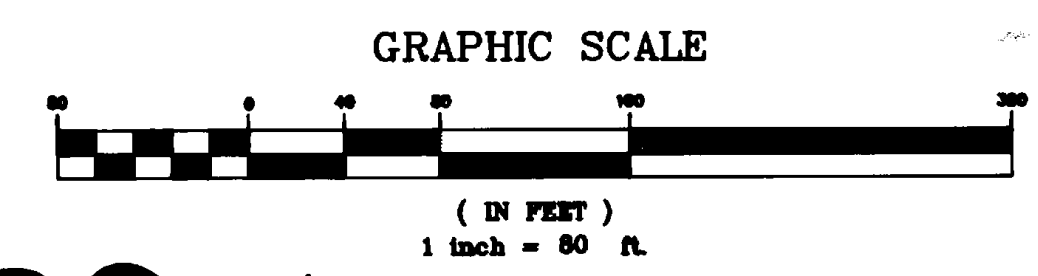
FOR
EXETER CONSERVATION COMMISSION
EXETER NH.

GREAT BAY ENGINEERING, INC
91 PORTSMOUTH AVENUE
STRATHAM, NH 03885

I CERTIFY THAT THIS PLAN CONFORMS TO
THE RULES AND REGULATIONS OF THE
REGISTER OF DEEDS.

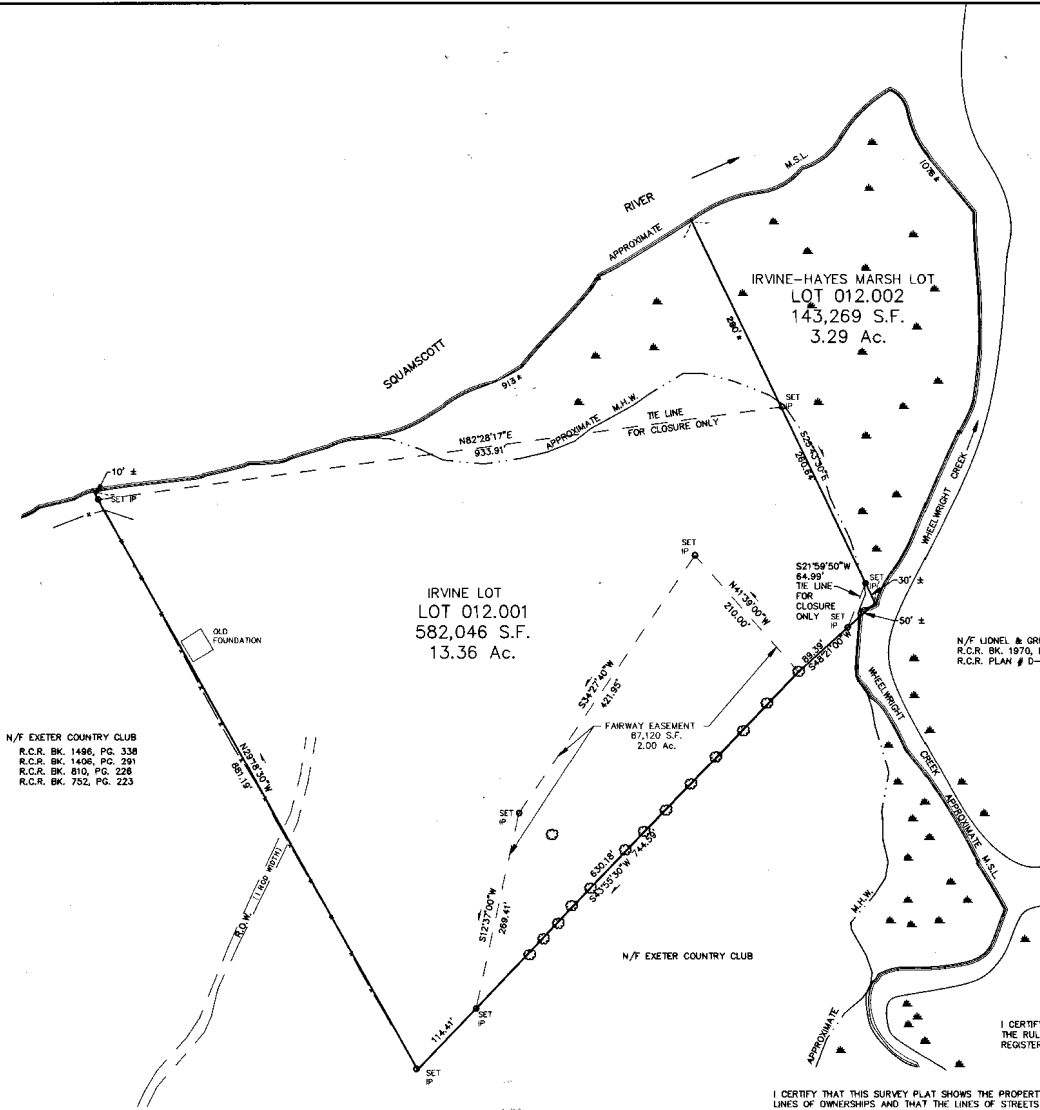
I CERTIFY THAT THIS SURVEY PLAT SHOWS THE PROPERTY LINES THAT ARE THE
LINES OF OWNERSHIPS AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE
THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND
THAT NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIP OR FOR NEW WAYS
ARE SHOWN. (RSA 676:18)

DATE 12/15/88
WILLIAM G. COLLINS, JR.
LICENSED LAND SURVEYOR (SEAL)



DATE: DEC 1988
SCALE: 1"=80'
DRAWN BY: AC
CHECKED BY: WGC
STATE OF NH NO. 587 WILLIAM G. COLLINS, JR. LAND SURVEYOR
JOB NO. 240 SH 2 OF 2

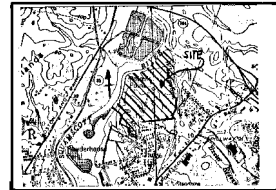
D-18931 Sheet 2 of 2



- NOTES:
1. TOWN OF EXETER TAX MAP 06-03, LOT 012.001 R.C.R. BK. 974, PG. 361 OWNER OF RECORD: JOANNA IRVINE, EXETER N.H.; TO BE CONVEYED TO TOWN OF EXETER.
 2. TOWN OF EXETER TAX MAP 06-03, LOT 012.002 R.C.R. BK. 974, PG. 361 & R.C.R. BK. 2380, PG. 1605. OWNER OF RECORD: JOANNA IRVINE (1/2 INTEREST), EXETER N.H. HAYES MOBILE HOME PARK (1/2 INTEREST), EXETER, N.H. IRVINE 1/2 INTEREST TO BE CONVEYED TO TOWN OF EXETER.
 3. FAIRWAY EASEMENT TO BE CONVEYED TO EXETER COUNTRY CLUB.
 4. PERIMETER SURVEY COMPLETED NOVEMBER 1988 BY LIETZ SET 4. ERROR OF CLOSURE LESS THAN 1" IN 10,000'. AREA DETERMINED BY D.M.D. COMPUTATIONS USING ACTUAL STREAM LOCATIONS.
 5. MEAN SEA LEVEL (MSL) AND MEAN HIGH WATER (MHW) LOCATED USCGS ELEVATIONS 1929 MVD.

N/F EXETER COUNTRY CLUB
 R.C.R. BK. 1486, PG. 338
 R.C.R. BK. 1406, PG. 291
 R.C.R. BK. 810, PG. 228
 R.C.R. BK. 752, PG. 223

N/F LIONEL & GRETA LABONTE
 R.C.R. BK. 1070, PG. 472
 R.C.R. PLAN # D-18051



LOCUS USCGS 1" = 2000' +/-

PLAN OF LAND
 IN
 EXETER, N.H.
 IRVINE LOT
 &
 IRVINE-HAYES LOT

FOR
 EXETER CONSERVATION COMMISSION
 EXETER, N.H.

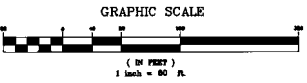
GREAT BAY ENGINEERING, INC
 91 PORTSMOUTH AVENUE
 STRATHAM, NH 03885

DATE	DECEMBER 1988
SCALE	1" = 80'
DRAWN BY:	AC
CHECKED BY:	WEC
DATE	12/6/88
LICENSED LAND SURVEYOR (SEAL)	

I CERTIFY THAT THIS SURVEY PLAT SHOWS THE PROPERTY LINES THAT ARE THE LINES OF OWNERSHIP AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIP OR FOR NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS

- LEGEND
- IRON PIN
 - ▲ MARSH
 - TREES
 - - - FENCE LINE
 - STONE WALL
 - GRAVEL ROAD



D-18932



64-105

65-2

52-24
52-23
52-22
52-21
52-20
52-19
52-18
52-17
52-16
52-15
52-14
52-13
52-12
52-11
52-10
52-9
52-8
52-7
52-6
52-5
52-4
52-3
52-2
52-25
52-26
52-27
52-28
52-29
52-30
52-31
52-32
52-33
52-34
52-35
52-36
52-37
52-38
52-39
52-40
52-41
52-42
52-43
52-44
52-45
52-46
52-47
52-48
52-49
52-50
52-51
52-52
52-53
52-54
52-55
52-56
52-57
52-58
52-59
52-60
52-61
52-62
52-63
52-64
52-65
52-66
52-67
52-68
52-69
52-70
52-71
52-72
52-73
52-74
52-75
52-76
52-77
52-78
52-79
52-80
52-81
52-82
52-83
52-84
52-85
52-86
52-87
52-88
52-89
52-90
52-91
52-92
52-93
52-94
52-95
52-96
52-97
52-98
52-99
52-100
52-101
52-102
52-103
52-104
52-104-1
52-104-2
52-104-3
52-104-4
52-104-5
52-104-6
52-104-7
52-104-8
52-104-9
52-104-10
52-104-11
52-104-12
52-104-13
52-104-14
52-104-15
52-104-16
52-104-17
52-104-18
52-104-19
52-104-20
52-104-21
52-104-22
52-104-23
52-104-24
52-104-25
52-104-26
52-104-27
52-104-28
52-104-29
52-104-30
52-104-31
52-104-32
52-104-33
52-104-34
52-104-35
52-104-36
52-104-37
52-104-38
52-104-39
52-104-40
52-104-41
52-104-42
52-104-43
52-104-44
52-104-45
52-104-46
52-104-47
52-104-48
52-104-49
52-104-50
52-104-51
52-104-52
52-104-53
52-104-54
52-104-55
52-104-56
52-104-57
52-104-58
52-104-59
52-104-60
52-104-61
52-104-62
52-104-63
52-104-64
52-104-65
52-104-66
52-104-67
52-104-68
52-104-69
52-104-70
52-104-71
52-104-72
52-104-73
52-104-74
52-104-75
52-104-76
52-104-77
52-104-78
52-104-79
52-104-80
52-104-81
52-104-82
52-104-83
52-104-84
52-104-85
52-104-86
52-104-87
52-104-88
52-104-89
52-104-90
52-104-91
52-104-92
52-104-93
52-104-94
52-104-95
52-104-96
52-104-97
52-104-98
52-104-99
52-104-100

NEWFIELDS RD

WEBSTER AVE

RIDGECREST DR

JADY HILL AVE

WEBSTER AVE

DOWNING CT

STEVENS CT

LEARY CT

LEARY CT

ALLEN ST

ALLEN ST

ALLEN ST

PORTSMOUTH AVE

OS RD

49-6

49-5

49-4

49-3

49-2

49-1

49-17

49-17-1

49-16

49-15

50-2

50-1

51-10

53-7-1

53-7

53-6

53-8

52-1

52-97

52-93

52-92

52-91

52-87-87

52-86

52-86

52-85

52-85

52-85

52-8

52-9

52-7

52-6

52-5

52-4

52-2

52-3

52-24

52-23

52-22

52-21

52-20

52-19

52-18

52-17

52-16

52-15

52-14

52-13

52-12

52-11

52-10

52-49-1

52-50

52-50

52-49

52-42

52-43

52-44

52-45

52-46

52-47

52-48

52-49

52-50

52-51

52-52

52-53

52-54

52-55

52-56

52-57

52-58

52-59

52-60

52-61

52-62

52-63

52-64

52-104-1

52-104-2

52-104-3

52-104-4

52-104-5

52-104-6

52-104-7

52-104-8

52-104-9

52-104-10

52-104-11

52-104-12

52-104-13

52-104-14

52-104-15

52-104-16

52-104-17

52-104-18

52-104-19

52-104-20

52-104-21

52-104-22

52-104-23

52-104-24

52-104-25

52-104-26

52-104-27

52-104-28

52-104-29

52-104-30

52-104-31

52-104-32

52-104-33

52-104-34

52-104-35

52-104-36

52-104-37

52-104-38

52-104-39

52-104-40

52-104-41

52-104-42

52-104-43

52-104-44

52-104-45

52-104-46

52-104-47

52-104-48

52-104-49

52-104-50

52-104-51

52-104-52

52-104-53

52-104-54

52-104-55

52-104-56

52-104-57

52-104-58

52-104-59

52-104-60

52-104-61

52-104-62

52-104-63

52-104-64

52-104-65

52-104-66

52-104-67

52-104-68

52-104-69

52-104-70

52-104-71

52-104-72

52-104-73

52-104-74

52-104-75

52-104-76

52-104-77

52-104-78

52-104-79

52-104-80

52-104-81

52-104-82

52-104-83

52-104-84

52-104-85

52-104-86

52-104-87

52-104-88

52-104-89

52-104-90

52-104-91

52-104-92

52-104-93

52-104-94

52-104-95

52-104-96

52-104-97

52-104-98

52-104-99

52-104-100

She questioned the need and market for these units, citing the delays in occupancies. She also spoke of the access to this property which is on a curve and could present hazards and also the number of units. She was concerned with drainage and spoke of the high water table in this area. Mr. Morse spoke of the multi-faceted aspects of this proposal regarding the 1970 zoning ordinance and the subsequent adoption of the 1973 Zoning Ordinance. The board addressed the question of vested rights as pertains to further construction in this development. Mrs. Holland further stated that the foundation was constructed without a building permit in 1973 or 74.

Mr. Langley in rebuttal stated that in January 1972, he had registered with the state a declaration for 16 condominium units and asked that the owners be allowed to complete the project to the benefit of the homeowners and the town. No others spoke in opposition, or in favor.

DECISION: Motion was made and seconded that, in this instance, the expansion of a non-conforming use, is not the appropriate application for this hearing and that no vested rights have accrued to the applicant to continue. (RE: Vachon vs Concord) The board would entertain an application for a variance to permit: (1) multi family homes in a single family district and (2) a density greater than that allowed by this ordinance. Vote: Unanimous. Mr. Miron abstaining.

CASE#197 Exeter Country Club, Jady Hill Ave., R-2 District. Request for a special exception as provided in Art. 4, Sec. 20, for the expansion of a parking lot.

Mr. Robert Stewart, vicepresident of the country club, was present to explain a proposal regarding expansion of a parking on Jady Hill Ave. He stated that some clearing and grading has been done on the site and requested the board to grant a special exception to allow the expansion of this parking lot, a non-conforming accessory use in this district. He stated that it is the club's intention not to pave this area at this time and that the original area has been much improved, the front having been used for parking for some time. No one spoke in opposition to the granting of this application.

DECISION: Motion was made and seconded to grant the special exception for an expansion of a non-conforming accessory use with the conditions that: (1) temporary grading be completed by June 1, 1975, (2) that prior to paving of this lot a site plan for drainage and landscaping be presented to and approved by the planning board. Vote: Unanimous

The next meeting of the Exeter Board of Adjustment will be on April 8, 1975.

Respectfully submitted,

Doug Mellin
Douglas R. Mellin
Planning Coordinator

TOWN OF EXETER

Planning and Building Department

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

www.exeternh.gov

Date: February 24, 2023

To: Bruce Scamman, P.E., JJ MacBride, P.E., Emanuel Engineering

From: Dave Sharples, Town Planner

Re: Site Plan Review TRC Comments
PB Case #23-2 Blind Tiger LLC (Exeter Country Club) – 58 Jady Hill Avenue
Tax Map Parcel #52-1

The following comments are provided as a follow-up for technical review of the site plans and supporting documents submitted on January 24th, 2023 for the above-captioned project. The TRC meeting was held on Thursday, February 16th, 2023 and materials were reviewed by Town departments.

TOWN PLANNER COMMENTS

1. Are there any known environmental hazards onsite? Have any environmental studies been completed and, if so, please provide copies;
2. Provide approval block on Cover Sheet;
3. Provide professional engineer stamp;
4. Provide location of significant trees per Section 7.4.7;
5. Monuments are shown but please explain what is meant by “set IP”, “Set DH” “Set PK” and “Set SPK”. I’m assuming IP is Iron Pin, DH is drill hole, and SPK is spike but what is PK? Also, does this mean that they will be set in the future since you do identify some as FND or “found”. Note # 5 on Sheet 1 of 2 of Plan of Land states that a fairway easement “to be conveyed”. I noted that this plan is from 1988, please provide a current plan of land that identifies current monumentation, stone walls, etc. I don’t believe a full resurvey is needed but I would like to know what monumentation exists today and if anything needs to be done to satisfy our regulations. Also remove the reference about conveying an easement that seems to have been conveyed in 1988;
6. The Existing Conditions plan show an “Existing Gravel Cart Storage Area” that is approximately 6,760 square feet. Despite Note # 2 stating that golf cart storage is

- part of the plan, there is no area identified for future cart storage except the area that is the equivalent to 3 parking stalls and comprises approximately 408 square-feet and a strip behind the loading area that is about 240 square feet. There is a “temporary cart storage for large events” below the first tee but this is just temporary. The proposed storage areas appear extremely limited in size and access to these areas seem to conflict with parking and loading areas. A site visit revealed that there are 34 golf carts and a beverage cart currently being stored at the site plus additional golf cart parking for returned carts. Please provide further detail on how many golf carts will be stored and where the golf cart return area will be to help determine if the areas shown are adequate;
7. There is a dashed area on the plan that conflicts with the tree-line that states “Regrade area with existing materials onsite” so maybe this is the future cart storage for additional carts? Either way, this area needs more detail on what grading will occur, what the proposed surface will be, will any of the stone wall be removed/altered, what will the new tree-line be, and all other details needed to review any disturbance of this area. This comment also pertains to the “Future Tent Pad Site”;
 8. There are two Iron Pipes Found along the eastern property line on the Existing Conditions Plan but they are not shown on the property line nor are they visible on the Plan of Land. Please explain these iron pipes;
 9. Please provide the size of off-site utilities to which connection is planned;
 10. Locate the nearest fire hydrant and show on plans;
 11. Will a knox box be provided? If so, show on Site Plan;
 12. Please provide details along with the architectural elevations on what materials will be used on the exterior of the proposed structure;
 13. Please provide the required landscape strip along the southerly boundary line between the proposed improvements and the Hayes Mobile Home Park. See Section 9.7.3 for details on what is required;
 14. It is noted that a waiver from Section 7.5.10 regarding landscaping has been submitted. While the decision on the waiver rests with the planning board, the board is interested in seeing the types, amounts and location of proposed plantings evidenced by review of past applications;
 15. The existing parking stalls remain at an angle but two-way traffic is allowed on both access aisles that are both narrower than 22’ to accommodate two-way traffic flow and ease of accessing and existing parking stalls. Have 90-degree parking stalls been examined in this area? It would be awkward for traffic entering the southerly curb cut and then trying to access a parking stall on the left. Also, allowing vehicles to back out of an angled parking stall and going in the opposite direction than the angle may not be the best layout. Has consideration been made to one-way traffic flow until in the southern lot at least the end of the existing parking lot? While this area

- is existing, the proposal is adding over 50 parking spaces that will be accessible by traversing through this area;
16. Provide evidence that Section 9.13.8 is being satisfied;
 17. The existing 110' +/- curb cut is being modified. The proposal is seeking to make two curb cuts of about 25' wide that is separated by a non-curbed depression. See Section 9.14.1 that requires curbing for these access points;
 18. Sections 9.14.3 and 9.14.4 both apply to this proposal. As such, please consider modifying the proposed curb cut to one access point as preferred by Section 9.14.3. The Planning Board should consider the access points when reviewing the proposal;
 19. There is a row of 19 parking stalls proposed along the southern property line. Please see Section 9.7.5 that requires a curbed planting island between every ten to fifteen parking spaces;
 20. No grading is allowed within 5' of a property line per Section 9.3.6.4. It appears that this provision is not being met in several areas along the southern and easterly boundaries;
 21. If applicable, list of state permits required;
 22. UEI will review and send comments under separate cover;
 23. We recommend the Planning Board discuss sidewalk access to the site. A public sidewalk currently exists on Jady Hill Ave but terminates at the southerly side of the northerly access road into Hayes Mobile Home Park. It appears that this proposed restaurant could draw folks from the surrounding neighborhoods and it may be prudent to consider extending the sidewalk from the end of the existing sidewalk to the parking area of the proposal. This is about 138' long;
 24. Provide lighting plan in accordance with Section 9.20; and
 25. The Planning Board may conduct a site walk. In preparation for the site walk, at a minimum, the applicant should all clearly mark all where the buildings and parking areas will be located. In other words, it should be easy for the board to understand where the buildings will be and where traffic will flow through the site.

PUBLIC WORKS COMMENTS

E-mail from Paul Vlasich, dated 2/22/23, indicating that UEI comments sufficed for DPW.

FIRE DEPARTMENT COMMENTS

Basic requirements of the Exeter Fire Department. This list is not all inclusive and other requests may be made during the review process. Unless specifically required by code, some room for compromise is open.

(Rev 5: 9/7/2017) Architectural Review:

- Interior utility room access

- Interior sprinkler room access
- Adequate attic access (sized for FF, if applicable))
- Catwalk access in unfinished areas that have sprinklers (handrails preferred)
- If building has truss roof or floors, must display sign according to ordinance 1301. Knox box required for all buildings with fire alarm or sprinkler systems (ordinance 1803)

Civil/Site Review:

- Hydrant near site access and towards rear of site (if applicable)

Sprinkler Review:

- NFPA 13(R,D) sprinkler system where required
- FDC: 4-inch storz with at least 18" clearance to ground
- Electric bell (no water motor gong)
- Attic protection in 13R systems

Fire Alarm Review:

- Single red beacon or strobe indicator on exterior (not horn-strobe)
- NFPA72 Fire Alarm System where required
- Cat 30 keys for pull stations and FACP

Elevators:

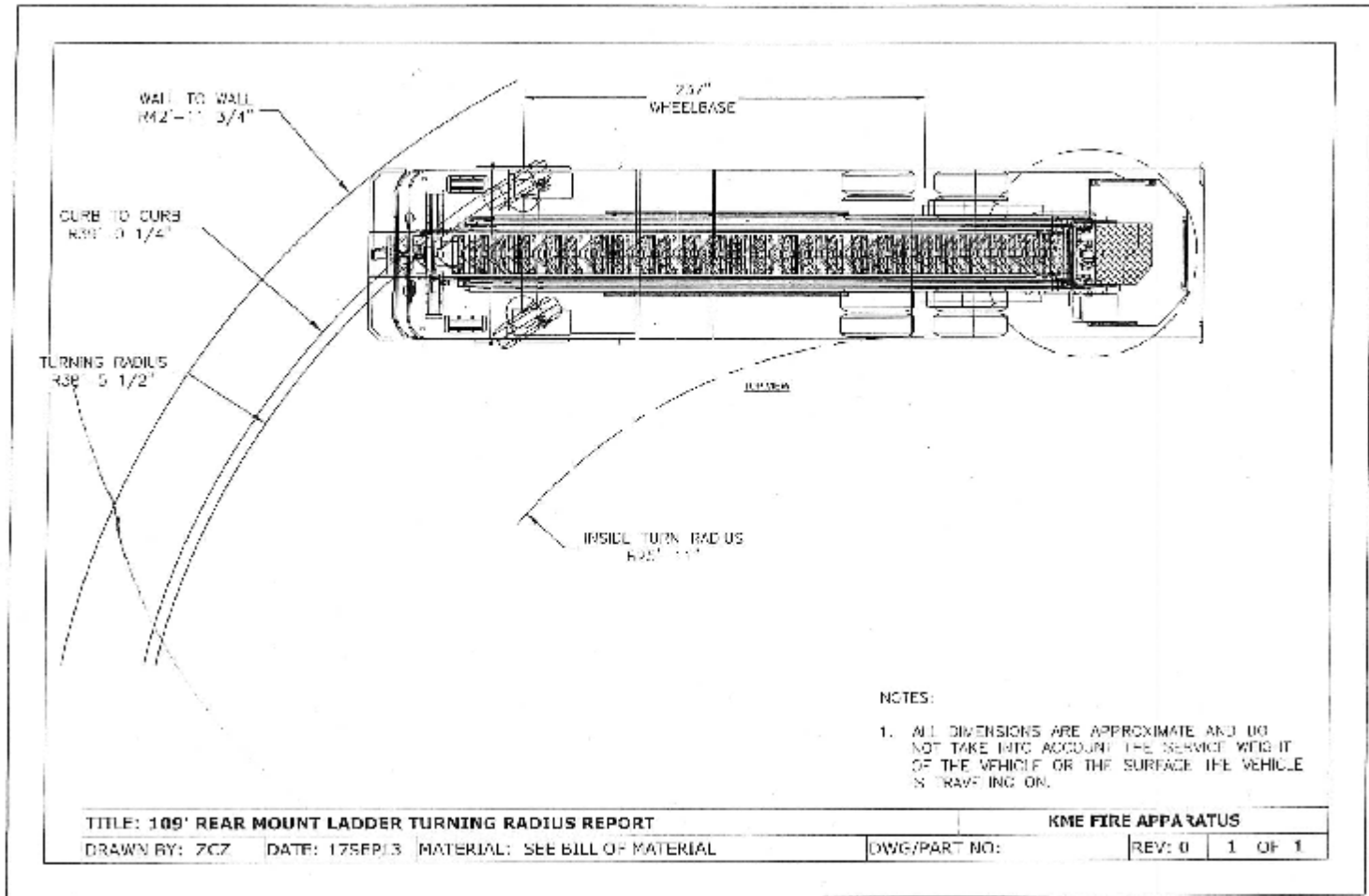
- Heat and smoke top and bottom (heats for the shunt trip)
- Dimensions to accommodate a stretcher (usually a 2500 lbs) 3'6" by 7' at a minimum
- Elevator recall to appropriate floor during an activation
- Sprinkler protection top and bottom if ANY combustibile material in shaft. (can omit per NFPA 13 guidelines)
- Phone in car needs to be able to dial 911

L-1 Ladder Truck Dimensions – attached.

CONSERVATION & SUSTAINABILITY PLANNER

- Sheet C-2 note 13 references Greenland.
- The project shall provide Electric Vehicle Charging Readiness based upon the standards defined in Site Plan/Subdivision Regulations 9.13.8.

Please submit revised plans along with a letter responding to these comments (and other review comments, if applicable) at your earliest convenience so we can arrange for a second technical review meeting prior to the project being presented to the Planning Board. A date for the public hearing will be scheduled accordingly.



2914.00

February 17, 2023

David Sharples, Town Planner
Town Planning Office, Town of Exeter
10 Front Street
Exeter, NH 03833

**Re: Exeter Country Club – Club House Replacement
Design Review Engineering Services**
Exeter, New Hampshire

Site Information:

Tax Map/Lot#:	52 / 1	Review No. 1
Address:	58 Jady Hill Avenue	
Lot Area:	73.25 ac (southern corner developed for this project)	
Proposed Use:	Commercial	
Water:	Town	
Sewer:	Town	
Zoning District:	R-2	
Applicant:	Blind Tiger, LLC (Lessee to property owner Exeter Country Club)	
Design Engineer:	Emanuel Engineering	

Application Materials Received:

- Site plan set entitled “Site Plan for Blind Tiger, LLC” dated January 24, 2023 prepared by Emanuel Engineering.
- Site plan application materials prepared by Emanuel Engineering.
- Miscellaneous materials prepared by Emanuel Engineering.
- Stormwater calculations and stormwater maintenance manual prepared by Emanuel Engineering.

Dear Mr. Sharples:

Based on our review of the above information, in addition to comments provided by the Town, we offer the following comments in accordance with the Town of Exeter Regulations and standard engineering practice.

General

1. The discrepancy between the depiction of the property line and the field located iron pipes was discussed at the TRC meeting on 2/16/23. The plans should clarify what those iron pipes are.

2. We are not reviewing the drainage calculations at this time, due to the revisions required as noted in comments below.
3. At the TRC meeting on 2/16/23, it was mentioned the future tent pad site will be removed from the plans and the lower level of the club house will contain a function room. We recommend that the application be amended to clearly define what is being proposed and the appropriate calculations revised for parking spaces and sewer design flows..
4. Regarding sewer design flows:
 - What is the existing flow, average and peak?
 - Will outdoor dining be offered on the deck, and if so, are those numbers included in the design flows?
 - Add flows for functions as noted above.
 - As a non-residential use, the Applicant must submit Section C of the Town of Exeter DPW's application to connect to sewer and water.
 - An NHDES Sewer Connection Permit will likely be required, since the function room will likely put flows over the 5,000 gpd threshold.
5. Provide a lighting plan.
6. Provide professional stamps on the drawing set per Town regulations.

Cover Sheet

7. Show Webster Avenue on the locus plan.

Existing Conditions Plan

8. Show the existing water service and label the size and material.
9. Show and label the size and material of existing water main on Jady Hill Avenue.
10. Label the size and material of all existing sewer lines.
11. Label the rim and inverts of the onsite sewer manhole.
12. Confirm there is no structure at the bend in the sewer line near the property line.
13. Show the sewer/force main on Webster Avenue.

Site Plan

14. What is the surface finish of the proposed cart storage area in the northeast corner of the area?
15. Revise Note 13 to reflect the Town of Exeter.
16. Label the EOP radii at the entrance curves and add curbing.
17. Provide a clear distinction between areas of existing and proposed pavement.
18. Show location of any HVAC or transformer pads needed, if applicable.
19. The angle of the parking spaces in the southern existing parking lots appear to be greater than 60 degrees. If this is the case, the aisle width must be increased since the aisles are shown as two-way traffic flow.
20. A sidewalk is located along one side of Jady Hill Avenue and ends at Hayes Park. Has consideration been given to extending the sidewalk by less than 150' to improve pedestrian access to the new restaurant?



21. The number and width of curb cuts for parking lot access should be reviewed by the Planning Board.
22. Provisions for an electric vehicle charging station is required.

Grading and Drainage Plan

23. Per Exeter's stormwater regulations for redevelopment, section 9.3.2, stormwater shall be captured and treated before it enters the Town right-of-way. Stormwater infiltration, detention and treatment areas shall be located on site and not within the Town's ROW. No drainage pipes or structures shall be located within the ROW.
24. No drainage connection shall be made to the Town system per section 9.3.2
25. Add a note stating the total disturbance area, including the area to be regraded indicated to the west of the parking area and all utility trenching.
26. It is noted the retaining wall to the south of the building will be up to 17' high. A wall of this height will require anchoring behind the wall, and the practice green will require partial reconstruction. This disturbance area should be included in the total disturbance area noted above. Fall protection shall be provided at the top of the walls.
27. Add a proposed tree line at the clearing limits of the area to be regraded in the southwest corner of the area and note the the intent of regrading the southwest corner.
28. Show proposed grading necessary to park golf carts along the western side of the path at the temporary cart storage for large events area.
29. Regrading is necessary in the existing parking area at the ADA compliant parking spot. Show proposed contours. Likewise, show proposed spot grades/contours as needed at the proposed parking spots in the northeast corner of the existing lot.
30. A note should be added indicating an NOI/SWPPP will be required for construction, and the SWPPP inspector must be a "Qualified Person", certified per the most current regulations.

Utility Plan

31. Show all new utility lines as darker, proposed lines.
32. Add a note indicating the iron pipe next to the sewer line is to be reset.
33. Regarding the water service:
 - The distance between the new water service and the gas line should be increased to a minimum of 10 feet.
 - A new shutoff should be added near the property line.
 - Indicate the connection point of the new water service to the existing water main.
 - Label the size and material of the new water service.
34. UE recommends that a profile of the proposed sewer service, from the building to the tie-in on Webster Avenue, be provided. Include the following information:
 - Indicate the ESHWT and ledge elevation, if known.
 - Indicate areas rigid insulation will be required.
 - Show the water main crossing.
 - Show the crossing of the drainage line between CB 1438 and DMH 453.



35. If the new grease interceptor will be exterior instead of interior, the interceptor should be indicated in plan and profile.
36. A new cleanout should be installed at the bend in the sewer line.
37. The tie-in location on Webster Avenue should be shown, with rim elevation and inverts labeled if the tie-in point is an existing manhole. The Applicant should be aware that Webster Ave is slated for construction activities. The Applicant should coordinate the project's improvements with those proposed by the Town of Exeter DPW.

Detail Sheets

38. Details should be grouped together by category. For instance, erosion control notes and details should be on the same sheet.
39. Add the following details:
 - Add pavement patch and sawcut details.
 - Lined concrete washout area.
 - Grease interceptor, if applicable.
 - Equipment pads for exterior HVAC units, transformer, etc. as applicable.

Stormwater Design and Modeling

40. Although we are not reviewing the stormwater calculations until a revised version has been submitted per the comments above, we note the following:
 - A narrative should be included.
 - Provide pollutant removal calculations for TSS, N, and P in accordance with the Town of Exeter regulations.
41. **PTAP Database: This project requires registration with the PTAP Database**, the Applicant is requested to enter project related stormwater tracking information contained in the site plan application documents using the Great Bay Pollution Tracking and Accounting Program (PTAP) database (www.unh.edu/unhsc/ptapp) and submit the information with the resubmitted response to comments.

A written response is required to facilitate future reviews. Please contact us if you have any questions.

Very truly yours,

UNDERWOOD ENGINEERS, INC.



Allison M. Rees, P.E.
Project Manager



Robert J. Saunders, P.E.
Senior Project Engineer





April 25, 2023

David Sharples, Town Planner
Town Planning Office, Town of Exeter
10 Front Street
Exeter, NH 03833

RE: Site Plan Review TRC Comments
PB Case #23-2 Blind Tiger LLC (Exeter Country Club) – 58 Jady Hill Avenue
Tax Map Parcel #52-1

Mr. Sharples,

This letter is in response to the follow up town comments provided on February 24, 2023 for the technical review meeting on February 16, 2023 concerning the Blind Tiger, LLC Site Plan Application at Exeter Country Club located at 58 Jady Hill Avenue, Exeter, NH 03833. We have responded in ***bold italics*** print below the town comments.

TOWN PLANNER COMMENTS

1. Are there any known environmental hazards onsite? Have any environmental studies been completed and, if so, please provide copies;

To our knowledge, there are not any known environmental hazards on site, and no environmental studies have been completed.

2. Provide approval block on Cover Sheet;

A signature block has been added to the Cover Sheet.

3. Provide professional engineer stamp;

A professional engineer's stamp has been added to the plan set.

4. Provide location of significant trees per Section 7.4.7;

The location of significant trees (20-inches or greater in diameter at breast height) have been added to the plan set.

5. Monuments are shown but please explain what is meant by “set IP”, “Set DH” “Set PK” and “Set SPK”. I’m assuming IP is Iron Pin, DH is drill hole, and SPK is spike but what is PK? Also, does this mean that they will be set in the future since you do identify some

civil & structural consultants, land planners

as FND or “found”. Note # 5 on Sheet 1 of 2 of Plan of Land states that a fairway easement “to be conveyed”. I noted that this plan is from 1988, please provide a current plan of land that identifies current monumentation, stone walls, etc. I don’t believe a full resurvey is needed but I would like to know what monumentation exists today and if anything needs to be done to satisfy our regulations. Also remove the reference about conveying an easement that seems to have been conveyed in 1988;

These labels are from the 1988 Great Bay Engineering, Inc. plan of land, therefore we cannot alter their plan. The abbreviations noted are standard surveying terms, therefore they must have overlooked putting some of the terms on their legend. IP means Iron Pin per their legend. DH means Drill Hole, PK means PK nail, and SPK means spike. PK nails are large nails with a dimple in the center than can be set in paved or concrete surfaces. When they identify these items as found (or FND), it means that they found the monument during the time of the survey. If it says it was set (SET), it means they set the monument after their original survey, but before the plan was finalized and recorded.

Per note #5 on Sheet C1, a survey was completed in Spring 2022 by James Verra and Associates, Inc. The existing conditions show all the monuments that they found at the time of their survey. Two iron pipes were found along Jady Hill Avenue, which were determined to be old fence posts. The plans have been revised, noting this. Additional monumentation found during the field survey has been added to Sheet B1.

Concerning the easements shown, we can remove the 1988 Great Bay Engineering, Inc. plans from the plan set altogether, but we cannot remove references from their plan. This plan was included within the plan set because their property lines were held by the surveyors.

6. The Existing Conditions plan show an “Existing Gravel Cart Storage Area” that is approximately 6,760 square feet. Despite Note # 2 stating that golf cart storage is part of the plan, there is no area identified for future cart storage except the area that is the equivalent to 3 parking stalls and comprises approximately 408 square-feet and a strip

behind the loading area that is about 240 square feet. There is a “temporary cart storage for large events” below the first tee but this is just temporary. The proposed storage areas appear extremely limited in size and access to these areas seem to conflict with parking and loading areas. A site visit revealed that there are 34 golf carts and a beverage cart currently being stored at the site plus additional golf cart parking for returned carts. Please provide further detail on how many golf carts will be stored and where the golf cart return area will be to help determine if the areas shown are adequate;

Since the TRC Meeting on February 16, 2023, there has been a change to the golf cart storage on site. The temporary cart storage area for large events is to be removed. The 10 proposed golf cart spaces parked up against the eastern edge of the proposed building are to remain, however, the storage for 7 carts adjacent to the 1st hole tee-box are to be reduced to 5 carts for easier access to the tee-boxes. The intent for the cart storage in this area is for easy pickup and drop-off for golfers starting or finishing a round of golf.

Our big change comes with the consolidation of cart storage on the western end of the proposed parking lot. In this area, we have shown storage for 20 carts. Between the proposed area for 15 carts near the 1st hole tee-boxes and the 20 carts west of the parking lot, we are providing storage for 35 carts. This satisfies the parking requirement for the 34 carts and beverage cart currently onsite at Exeter Country Club.

7. There is a dashed area on the plan that conflicts with the tree-line that states “Regrade area with existing materials onsite” so maybe this is the future cart storage for additional carts? Either way, this area needs more detail on what grading will occur, what the proposed surface will be, will any of the stone wall be removed/altered, what will the new tree-line be, and all other details needed to review any disturbance of this area. This comment also pertains to the “Future Tent Pad Site”;

Since the TRC Meeting on February 16, 2023, there has been a change to the plans, and this area no longer specifies this note. Instead of proposing the “Future Tent Pad Side” and the unspecified regrading to this area, the “Future Tent Pad Side” has been removed, and cart storage is now proposed in the area

of unspecified regrading, as described in response to comment #6. Details on the grading accommodating the proposed cart storage are shown on Sheet C3A.

8. There are two Iron Pipes Found along the eastern property line on the Existing Conditions Plan but they are not shown on the property line nor are they visible on the Plan of Land. Please explain these iron pipes;

As described in our response to comment #5, the two iron pipes found along Jady Hill Avenue were determined to be old fence posts. The plans have been revised, noting this. The property lines depicted on the 1988 Great Bay Engineering, Inc. plan of land were held.

9. Please provide the size of off-site utilities to which connection is planned;

The existing 6" diameter cast iron water main, and 2" diameter gas line along Jady Hill Avenue have been added to Sheet C1 and Sheet C4A. Additionally, the existing 8" sewer line and sewer manhole on Webster Avenue have been added to Sheet C4B.

10. Locate the nearest fire hydrant and show on plans;

The nearest fire hydrant is shown on Sheet C1, west of Jady Hill Avenue, on the top right portion of the plan, at the intersection with Webster Avenue. A Webster Avenue label has been added to the plan set.

11. Will a knox box be provided? If so, show on Site Plan;

A note has been added to Sheet C2, which reads: "All knox box, fire alarm system and fire sprinkler installation & inspections to be coordinated with the Exeter Fire Department."

12. Please provide details along with the architectural elevations on what materials will be used on the exterior of the proposed structure;

The architect (Dynamic Designs, P.C.) is aware of this comment and will be submitting their updated plans separately from our transmittal.

13. Please provide the required landscape strip along the southerly boundary line between the proposed improvements and the Hayes Mobile Home Park. See Section 9.7.3 for details on what is required;

A waiver for Section 9.7.3 has been submitted along with this transmittal.

14. It is noted that a waiver from Section 7.5.10 regarding landscaping has been submitted.

While the decision on the waiver rests with the planning board, the board is interested in

seeing the types, amounts and location of proposed plantings evidenced by review of past applications;

A Landscaping Plan (Sheet LA1) has been added to the plan set that specifies types, amounts, and locations of proposed plantings. All landscaping design was completed by Thorn and Thistle Gardens.

15. The existing parking stalls remain at an angle but two-way traffic is allowed on both access aisles that are both narrower than 22' to accommodate two-way traffic flow and ease of accessing and existing parking stalls. Have 90-degree parking stalls been examined in this area? It would be awkward for traffic entering the southerly curb cut and then trying to access a parking stall on the left. Also, allowing vehicles to back out of an angled parking stall and going in the opposite direction than the angle may not be the best layout. Has consideration been made to one-way traffic flow until in the southern lot at least the end of the existing parking lot? While this area is existing, the proposal is adding over 50 parking spaces that will be accessible by traversing through this area;

The southern existing parking lot has been revised per our discussion at the February 16, 2023 TRC meeting. Like the existing conditions show, the proposed lot is designed with two aisles, and three rows of parking. However, the parking spaces are now 90-degree perpendicular spaces, and provide the appropriate 19-foot length. Additionally, the aisle provides the required 22-foot width. The existing edge of pavement had to be revised to achieve this, where there will be some pavement cuts, but also some additional pavement proposed. Where pavement is proposed, the grades generally will match the existing grades, extending out to the new edge of pavement. Sheet C5 shows that both aisles are to remain as two-way traffic flow.

16. Provide evidence that Section 9.13.8 is being satisfied;

On Sheet C4A, conduits leading from the proposed building to 3 parking spaces is shown with a callout that states "Proposed conduit for EV readiness". Furthermore, note #13 on Sheet C2 specifies that 3 of the 120 provided parking spaces are to be EV ready spaces.

17. The existing 110' +/- curb cut is being modified. The proposal is seeking to make two curb cuts of about 25' wide that is separated by a non-curbed depression. See Section 9.14.1 that requires curbing for these access points;

Sloped granite curbs have been added to the proposed islands along Jady Hill Avenue. See Sheet C5.

18. Sections 9.14.3 and 9.14.4 both apply to this proposal. As such, please consider modifying the proposed curb cut to one access point as preferred by Section 9.14.3. The Planning Board should consider the access points when reviewing the proposal;

The number of site entrances/exits remains unchanged. Due to the middle row of parking on the existing lower parking lot, the entrance is split into two different locations.

The proposed parking lot is to function similarly, but instead of leaving the middle row on the lower parking lot unprotected, a curbed island is proposed. The curbed island has functions such as protecting the parked car at the end of the middle row of parking, serving as an area for the proposed stop sign, and collecting stormwater. Furthermore, providing a curbed island in this location acts as a traffic calming device. Instead of cars pulling into the parking lot at the same speed that they were traveling at on Jady Hill Avenue like they often do currently, they will need to slow down and make a turn. The island was provided at the direction of Exeter town officials.

The existing entrance is approximately 108-feet-wide. The northernmost entrance is proposed to be 33-feet-wide, and the southernmost entrance is proposed to be 22-feet-wide.

19. There is a row of 19 parking stalls proposed along the southern property line. Please see Section 9.7.5 that requires a curbed planting island between every ten to fifteen parking spaces;

The 19 proposed parking stalls have been revised. We are now proposing 18 parking spaces. Of these 18, there are 15 spaces proposed before providing a landscape island, and then another 3 spaces are proposed.

20. No grading is allowed within 5' of a property line per Section 9.3.6.4. It appears that this provision is not being met in several areas along the southern and easterly boundaries;

Grading has been revised on site so that grading is no longer proposed within 5' of the property line abutting Hayes Park. A retaining wall is now proposed south of the parking lot to avoid grading within 5' of the property line. See Sheet C3A.

21. If applicable, list of state permits required;

To our knowledge, there are no further state permits required.

22. UEI will review and send comments under separate cover;

See response letter to Underwood Engineers, Inc. comments dated April 25, 2023.

23. We recommend the Planning Board discuss sidewalk access to the site. A public sidewalk currently exists on Jady Hill Ave but terminates at the southerly side of the northerly access road into Hayes Mobile Home Park. It appears that this proposed restaurant could draw folks from the surrounding neighborhoods and it may be prudent to consider extending the sidewalk from the end of the existing sidewalk to the parking area of the proposal. This is about 138' long;

A proposed 4-foot-wide bituminous sidewalk is shown along Jady Hill Avenue on Sheet C5, which is a similar width and material as the other sidewalks along Jady Hill Avenue. The proposed sidewalk extends from the entrance of the site until the driveway for Hayes Park, which is where the existing sidewalk along Jady Hill Avenue begins.

24. Provide lighting plan in accordance with Section 9.20; and

A lighting plan (Sheet L01) by Exposure Lighting has been added to the plan set.

25. The Planning Board may conduct a site walk. In preparation for the site walk, at a minimum, the applicant should all clearly mark all where the buildings and parking areas will be located. In other words, it should be easy for the board to understand where the buildings will be and where traffic will flow through the site.

This can all be provided. Please let us know if/when the Planning Board plans to conduct the site walk and the proposed building and parking areas will be clearly delineated.

PUBLIC WORKS COMMENTS

E-mail from Paul Vlasich, dated 2/22/23, indicating that UEI comments sufficed for DPW.

See response letter to Underwood Engineers, Inc. comments dated April 25, 2023.

FIRE DEPARTMENT COMMENTS

Basic requirements of the Exeter Fire Department. This list is not all inclusive and other requests may be made during the review process. Unless specifically required by code, some room for compromise is open.

(Rev 5: 9/7/2017) Architectural Review:

- Interior utility room access
- Interior sprinkler room access
- Adequate attic access (sized for FF, if applicable))
- Catwalk access in unfinished areas that have sprinklers (handrails preferred)
- If building has truss roof or floors, must display sign according to ordinance 1301.
Knox box required for all buildings with fire alarm or sprinkler systems (ordinance 1803)

Civil/Site Review:

- Hydrant near site access and towards rear of site (if applicable)

Sprinkler Review:

- NFPA 13(R,D) sprinkler system where required
- FDC: 4-inch storz with at least 18" clearance to ground
- Electric bell (no water motor gong)
- Attic protection in 13R systems

Fire Alarm Review:

- Single red beacon or strobe indicator on exterior (not horn-strobe)
- NFPA72 Fire Alarm System where required
- Cat 30 keys for pull stations and FACP

Elevators:

- Heat and smoke top and bottom (heats for the shunt trip)
- Dimensions to accommodate a stretcher (usually a 2500 lbs) 3'6" by 7' at a minimum
- Elevator recall to appropriate floor during an activation

- Sprinkler protection top and bottom if ANY combustible material in shaft. (can omit per NFPA 13 guidelines)
- Phone in car needs to be able to dial 911

L-1 Ladder Truck Dimensions – attached.

Fire Truck Turning Templates have been provided in this transmittal.

CONSERVATION & SUSTAINABILITY PLANNER

- Sheet C-2 note 13 references Greenland.

Note #13 on Sheet C2 has been revised to indicate regulations for Exeter, NH.

- The project shall provide Electric Vehicle Charging Readiness based upon the standards defined in Site Plan/Subdivision Regulations 9.13.8.

As we noted in our response to comment #16, on Sheet C4A, conduits leading from the proposed building to 3 parking spaces is shown with a callout that states “Proposed conduit for EV readiness”. Furthermore, note #13 on Sheet C2 specifies that 3 of the 121 provided parking spaces are to be EV ready spaces.

Sincerely,



JJ MacBride, PE

Civil Engineer



April 25, 2023

David Sharples, Town Planner
Town Planning Office, Town of Exeter
10 Front Street
Exeter, NH 03833

RE: Exeter Country Club - Club House Replacement
Design Review Engineering Services
Exeter, New Hampshire

Mr. Sharples,

This letter is in response to the engineering review by Allison M. Rees, P.E. and Robert J. Saunders, P.E. of Underwood Engineers, Inc. dated February 17, 2023 for the Blind Tiger, LLC Site Plan Application at Exeter Country Club located at 58 Jady Hill Avenue, Exeter, NH 03833. We have responded in ***bold italics*** print below their comments.

General

1. The discrepancy between the depiction of the property line and the field located iron pipes was discussed at the TRC meeting on 2/16/23. The plans should clarify what those iron pipes are.

The two iron pipes found along Jady Hill Avenue were determined to be old fence posts. The plans have been revised, noting this.

2. We are not reviewing the drainage calculations at this time, due to the revisions required as noted in comments below.

We have updated the drainage calculations based on the comments of this letter and other TRC comments, and have included them within this transmittal.

3. At the TRC meeting on 2/16/23, it was mentioned the future tent pad site will be removed from the plans and the lower level of the club house will contain a function room. We recommend that the application be amended to clearly define what is being proposed and the appropriate calculations revised for parking spaces and sewer design flows.

The application has been amended, which now reads: "Explanation of Proposal: Replace existing +/-3,000 SF club house with a new 68'x94'

civil & structural consultants, land planners

118 PORTSMOUTH AVE. A202, STRATHAM, NH 03885 P: 603-772-4400 F: 603-772-4487 WWW.EMANUELENGINEERING.COM

clubhouse with attached 20'x79' deck, construct additional parking for cars and golf carts, and provide associated drainage and utilities for the improvements. The clubhouse is to include a restaurant/bar, golf simulators, a pro shop, locker rooms, and function room.”

On Sheet C2, we have updated the parking calculation to include 16 seats for the function room, which requires 6 spaces (1 space per 3 seats). After adding this to the previous calculation, the required number of parking spaces is 118, and we are providing 120.

The “Preliminary Application to Connect and/or Discharge to Town of Exeter Sewer, Water, and/or Stormwater Drainage Systems(s)” has also been revised. All flows of stormwater have been removed from the application. Additionally, the proposed water and sewer flows have been revised to reflect the additional flow generated by the 16-seat function room. Corresponding calculations and fees have similarly been revised. Due to the function room flow being added, the proposed flow has increase from 4,800 GPD to 4,992 GPD.

4. Regarding sewer design flows:

- What is the existing flow, average and peak?

All existing sewer flow data available provided by the Exeter, NH Water & Sewer Division of Public Works has been attached to this transmittal.

Since January 2020, the largest septic usage was in August 2021, which was 9,020 gallons that month. This averages to approximately 300 gallons per day for that month.

- Will outdoor dining be offered on the deck, and if so, are those numbers included in the design flows?

Outdoor dining will be offered on the deck and the numbers have been included in the design flows.

- Add flows for functions as noted above.

Per our response to comment #3, the “Preliminary Application to Connect and/or Discharge to Town of Exeter Sewer, Water, and/or Stormwater Drainage Systems(s)” has also been revised. All flows of stormwater have been removed from the application. Additionally, the proposed water and sewer flows have been revised to reflect the additional flow generated by the 16-seat function room. Corresponding calculations and fees have similarly been revised. Due to the function room flow being added, the proposed flow has increase from 4,800 GPD to 4,992 GPD.

- As a non-residential use, the Applicant must submit Section C of the Town of Exeter DPW's application to connect to sewer and water.

Section C of the Town of Exeter DPW’s application has be completed and attached to this transmittal.

- An NHDES Sewer Connection Permit will likely be required, since the function room will likely put flows over the 5,000 gpd threshold.

Our proposed flow is 4,992 GPD which is short of the 5,000 GPD threshold, therefore an NHDES Sewer Connection Permit is not required.

5. Provide a lighting plan.

A lighting plan (Sheet L01) by Exposure Lighting has been added to the plan set.

6. Provide professional stamps on the drawing set per Town regulations.

Within this plan set has been stamped by a professional engineer.

Cover Sheet

7. Show Webster Avenue on the locus plan.

Webster Avenue has been added to the locus plan.

Existing Conditions Plan

8. Show the existing water service and label the size and material.

The existing 6” diameter cast iron water main is now shown on Sheet C1. We have been in close contact with Exeter’s Public Works Department Water & Sewer Division, who have marked all known utilities in the area. We specifically asked about any information of what is in the Town right-of-way as

well as what is on site, but only found markings in the right-of-way. We have added an approximate location of the existing water line to the plan set. The existing water line on site is to be abandoned, therefore we do not believe that its exact location is particularly necessary.

9. Show and label the size and material of existing water main on Jady Hill Avenue.

The existing 6” diameter cast iron water main is now shown on Sheet C1. The size and material were verified by Matt Berube (former Water & Sewer Manager of Exeter, but has since left the position). The location was delineated from the “Town of Exeter, New Hampshire Webster Avenue Pump Station & Force Main Upgrades” provided by Paul Vlastic on March 6, 2023.

10. Label the size and material of all existing sewer lines.

The existing 4” diameter sewer line has been added to Sheet C1. This line is to be abandoned in post-development conditions; therefore, the material of the pipe has been omitted.

11. Label the rim and inverts of the onsite sewer manhole.

The rim elevation of the existing onsite sewer manhole has been added to Sheet C1. The existing sewer lines and sewer manhole are to be replaced; therefore, the inverts have been omitted.

12. Confirm there is no structure at the bend in the sewer line near the property line.

We have been in close contact with Exeter’s Public Works Department Water & Sewer Division, who have marked all known utilities in the area. Upon inspecting their markings, there does not appear to be any structure at the bend in the sewer line.

13. Show the sewer/force main on Webster Avenue.

The existing sewer manhole and sewer line on Webster Avenue has been added to Sheet C4A.

Site Plan

14. What is the surface finish of the proposed cart storage area in the northeast corner of the area?

The 5 proposed cart spaces in the northwest corner of the proposed parking lot, and the 9 proposed cart spaces south of the proposed dumpsters are no longer proposed. Furthermore, the 7 proposed cart spaces west of the 1st hole tee boxes

are to be reduced to 5. Alternatively, these cart spaces are to be provided west of the proposed parking area.

On Sheet C5, each of the cart storage areas have been specified to identify a gravel surface.

15. Revise Note 13 to reflect the Town of Exeter.

Note #13 on Sheet C2 has been revised to indicate regulations for Exeter, NH.

16. Label the EOP radii at the entrance curves and add curbing.

Sheet C5 "Paving and Curbing Plan" has been added to the plan set to clarify items such as the EOP radii and other paving/curbing dimensioning. Curbing has also been added at the entrance of the site. Sheet C5 clarifies the extent of the curbing.

17. Provide a clear distinction between areas of existing and proposed pavement.

A bold dotted line has been added to Sheet C5 that clearly distinguishes existing and proposed pavement.

18. Show location of any HVAC or transformer pads needed, if applicable.

Four (4) proposed HVAC units were added to Sheet C4A west of the proposed building.

19. The angle of the parking spaces in the southern existing parking lots appear to be greater than 60 degrees. If this is the case, the aisle width must be increased since the aisles are shown as two-way traffic flow.

The southern existing parking lot has been revised per our discussion at the February 16, 2023 TRC meeting. Like the existing conditions show, the proposed lot is designed with two aisles, and three rows of parking. However, the parking spaces are now 90-degree perpendicular spaces, and provide the appropriate 19-foot length. Additionally, the aisle provides the required 22-foot width. The existing edge of pavement had to be revised to achieve this, where there will be some pavement cuts, but also some additional pavement proposed. Where pavement is proposed, the grades generally will match the existing grades, extending out to the new edge of pavement. Sheet C5 shows that both aisles are to remain as two-way traffic flow.

20. A sidewalk is located along one side of Jady Hill A venue and ends at Hayes Park. Has consideration been given to extending the sidewalk by less than 150' to improve pedestrian access to the new restaurant?

A proposed 4-foot-wide bituminous sidewalk is shown along Jady Hill Aveune on Sheet C5, which is a similar width and material as the other sidewalks along Jady Hill Avenue. The proposed sidewalk extends from the entrance of the site until the driveway for Hayes Park, which is where the existing sidewalk along Jady Hill Avenue begins.

21. The number and width of curb cuts for parking lot access should be reviewed by the Planning Board.

The number of site entrances/exits remains unchanged. Due to the middle row of parking on the existing lower parking lot, the entrance is split into two different locations.

The proposed parking lot is to function similarly, but instead of leaving the middle row on the lower parking lot unprotected, a curbed island is proposed. The curbed island has functions such as protecting the parked car at the end of the middle row of parking, serving as an area for the proposed stop sign, and collecting stormwater. Furthermore, providing a curbed island in this location acts as a traffic calming device. Instead of cars pulling into the parking lot at the same speed that they were traveling at on Jady Hill Avenue like they often do currently, they will need to slow down and make a turn. The island was provided at the direction of Exeter town officials.

The existing entrance is approximately 108-feet-wide. The northernmost entrance is proposed to be 33-feet-wide, and the southernmost entrance is proposed to be 22-feet-wide.

22. Provisions for an electric vehicle charging station is required.

On Sheet C4A, conduits leading from the proposed building to 3 parking spaces is shown with a callout that states "Proposed conduit for EV readiness". Furthermore, note #13 on Sheet C2 specifies that 3 of the 120 provided parking spaces are to be EV ready spaces.

Grading and Drainage Plan

23. Per Exeter's stormwater regulations for redevelopment, section 9.3.2, stormwater shall be captured and treated before it enters the Town right-of-way. Stormwater infiltration, detention and treatment areas shall be located on site and not within the Town's ROW.

No drainage pipes or structures shall be located within the ROW.

Site drainage has been revised on site so that stormwater infiltration, detention, and treatment areas are located on site and not within the Town's ROW.

Furthermore, all drainage pipes and structures have been relocated outside of the ROW.

In post-development conditions, 22,835 square feet of untreated impervious area will enter the Town ROW without being captured and treated. However, the pre-development conditions allow 45,505 square feet of untreated impervious to enter the Town ROW without being captured and treated, therefore there is a net decrease of 22,670 square feet (~50% reduction).

24. No drainage connection shall be made to the Town system per section 9.3.2

The connection of site drainage to the existing catch basin at the Jady Hill Avenue – Webster Avenue intersection has been removed.

25. Add a note stating the total disturbance area, including the area to be regraded indicated to the west of the parking area and all utility trenching.

Note #14 has been added to Sheet C3A & C3B that states a total disturbance area of 75,200 square feet, which includes all trenching and all other site disturbance on site and within the town right-of-way.

The area that previously read “regrade area with excess materials on site” is no longer specified. The site has been redesigned so that cart storage is proposed in this area. The “future tent pad site” also is no longer proposed.

26. It is noted the retaining wall to the south of the building will be up to 17' high. A wall of this height will require anchoring behind the wall, and the practice green will require partial reconstruction. This disturbance area should be included in the total disturbance area noted above. Fall protection shall be provided at the top of the walls.

The disturbance area on the practice green was included in the calculated site disturbance area as shown on Note #14 on Sheet C3A. A 6-foot-tall fence is called out on the plan as fall protection for the proposed retaining wall.

27. Add a proposed tree line at the clearing limits of the area to be regraded in the southwest corner of the area and note the intent of regrading the southwest corner.

The area that previously read “regrade area with excess materials on site” is no longer specified. The site has been redesigned so that cart storage is proposed in this area. The “future tent pad site” also is no longer proposed. A proposed tree line has been provided at the new clearing limits of the proposed design.

28. Show proposed grading necessary to park golf carts along the western side of the path at the temporary cart storage for large events area.

The overflow cart storage for large events has been removed from the plans, therefore grading is no longer necessary.

29. Regrading is necessary in the existing parking area at the ADA compliant parking spot. Show proposed contours. Likewise, show proposed spot grades/contours as needed at the proposed parking spots in the northeast corner of the existing lot.

Additional spot grades have been added to Sheet C3A that help clarify the proposed grading in the existing area at the ADA compliant parking spaces. Furthermore, additional spot grades are shown at the start of the cart path in this area.

30. A note should be added indicating an NOI/SWPPP will be required for construction, and the SWPPP inspector must be a "Qualified Person", certified per the most current regulations.

Note #13 has been added to Sheet C3A, which reads: “Prior to construction, it is necessary to submit a Notice of Intent (NO) and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP inspector must be a “qualified person” who is certified according to the latest regulations governing such certifications.”

Utility Plan

31. Show all new utility lines as darker, proposed lines.

The new utility lines on Sheet C4A have been revised, showing them as darker, proposed lines.

32. Add a note indicating the iron pipe next to the sewer line is to be reset.

As noted in comment #1, the two iron pipes found along Jady Hill Avenue were determined to be old fence posts. The plans have been revised, noting this. With this new information, we do not believe it is necessary to reset the pipe.

33. Regarding the water service:

- The distance between the new water service and the gas line should be increased to a minimum of 10 feet.

The distance between the proposed water service and gas line has been increased to 10 feet. The distance between the two lines has been labeled on Sheets C4A & C4B.

- A new shutoff should be added near the property line.

A new water shutoff has been added to Sheets C4A & C4B near the property line.

- Indicate the connection point of the new water service to the existing water main.

The connection point of the new water service to the existing water main is now shown on Sheets C4A & C4B.

- Label the size and material of the new water service.

The size and material of the new water services has been added to Sheets C4A & C4B. The domestic water line is to be a 2" diameter poly pipe, and the fire water line is to be a 6" diameter ductile iron pipe.

34. UE recommends that a profile of the proposed sewer service, from the building to the tie-in on Webster Avenue, be provided. Include the following information:

A profile of the proposed sewer service from the proposed building got the tie-in on Webster Avenue has been added to Sheet C4B.

- Indicate the ESHWT and ledge elevation, if known.

There has been no subsurface investigation in the vicinity of the proposed sewer service, therefore the ESHWT and ledge elevations are not known.

- Indicate areas rigid insulation will be required.

An area of insulation is shown on the proposed sewer service profile on Sheet C4B.

- Show the water main crossing.

The existing water main crossing is depicted on the proposed sewer service profile on Sheet C4B.

- Show the crossing of the drainage line between CB 1438 and DMH 453.

The crossing of the proposed sewer line going under the existing drainage line near the Jady Hill Avenue and Webster Avenue intersection is depicted on the proposed sewer service profile on Sheet C4B.

35. If the new grease interceptor will be exterior instead of interior, the interceptor should be indicated in plan and profile.

The grease interceptor is to be installed interior of the building. Note #13 on Sheet C4A has been revised to say “The new grease interceptor for the proposed restaurant within the clubhouse shall be installed in the interior of the building.”

36. A new cleanout should be installed at the bend in the sewer line.

The existing sewer line is to be abandoned; therefore, a new cleanout will not be required at the bed. The proposed sewer line does include a bend, and a sewer manhole is proposed at this location as shown on Sheet C4B.

37. The tie-in location on Webster Avenue should be shown, with rim elevation and inverts labeled if the tie-in point is an existing manhole. The Applicant should be aware that Webster Ave is slated for construction activities. The Applicant should coordinate the project's improvements with those proposed by the Town of Exeter DPW.

The proposed sewer pipe is to tie into the existing sewer manhole on Webster Avenue. The rim elevation of the existing sewer manhole and existing invert of the sewer line exiting the manhole is shown on Sheet C4B. Additionally, the invert of the proposed sewer pipe tying in to the manhole is shown.

From the TRC meeting, we are aware of the Town of Exeter DPW construction plans of a new sewer force main on Jady Hill Avenue and Webster Avenue. However, we have been told that they do not have a timeline on this project, therefore we have to plan independently from this. Should a clearer timeline arise, we would be more than willing to coordinate them.

Detail Sheets

38. Details should be grouped together by category. For instance, erosion control notes and details should be on the same sheet.

Details have been rearranged so as to group each detail in a certain category. D1 is now “Notes & Erosion Control details”, D2 is “Drainage Details”, D3 is “Utility Details”, and D4 is “Site Details”.

39. Add the following details:

- Add pavement patch and sawcut details.

A “Saw cut & Grind Down Detail” has been added to Sheet D4.

- Lined concrete washout area.

A concrete washout area detail has been added to Sheet D1.

- Grease interceptor, if applicable.

The grease interceptor is to be installed interior of the building. Note #13 on Sheet C4A has been revised to say “The new grease interceptor for the proposed restaurant within the clubhouse shall be installed in the interior of the building.”

- Equipment pads for exterior HV AC units, transformer, etc. as applicable.

A “Typical Exterior Concrete Pad Detail” has been added to Sheet D4.

Stormwater Design and Modeling

40. Although we are not reviewing the stormwater calculations until a revised version has been submitted per the comments above, we note the following:

- A narrative should be included.

A narrative has been written and included within the Drainage Calculations packet.

- Provide pollutant removal calculations for TSS, N, and P in accordance with the Town of Exeter regulations.

Pollutant removal calculations for TSS, N, and P have been provided within the Drainage Calculations packet. Furthermore, a waiver has been submitted due to the Nitrogen not quite meeting the town removal requirements.

41. PTAP Database: This project requires registration with the PTAP Database, the Applicant is requested to enter project related stormwater tracking information contained in the site plan application documents using the Great Bay Pollution Tracking and Accounting Program (PT AP) database (www.unh.edu/unhsc/ptapp) and submit the information with the resubmitted response to comments.

We have registered with the PTAP Database and submitted this project with the required stormwater tracking information contained in the site plan application documents. See attached for a copy of the PTAP submission.

Sincerely,



JJ MacBride, PE

Civil Engineer



April 25, 2023

Exeter Planning Board
Town of Exeter
10 Front Street
Exeter, NH 03833

RE: Waiver Request – Blind Tiger, LLC Site Plan at Exeter Country Club –
58 Jady Hill Avenue, Exeter, NH

Members of the Exeter Planning Board,

We request to waive the following requirements from the Site Plan Review and Subdivision Regulations for the Town of Exeter, New Hampshire as amended February 2022: Section 7.4.10, Section 7.4.13, Section 7.4.15, Section 7.5.4, Section 9.3.2.6, and Section 9.7.3. See below for these sections whose description can be found below with EEI comments in *italics* of why we seek a waiver:

Section 7.4.10 - A High Intensity Soil Survey (HISS) of the entire site, or appropriate portion thereof. Such soil surveys shall be prepared by a certified soil scientist in accordance with the standards established by the Rockingham County Conservation District. Any cover letters or explanatory data provided by the certified soil scientist shall also be submitted.

&

Section 7.5.4 - High Intensity Soil Survey (HISS) information for the site, including the total area of wetlands proposed to be filled.

Per these two regulations, a High Intensity Soil Survey (HISS) of the entire site is required for the existing and proposed conditions. We have conducted a review of the property and do not believe that a HISS is necessary for the proposed development. We have accessed the soil information of the site from the USDA-NRCS Web Soil Survey which provides detailed information on soil characteristics, including soil type,

civil & structural consultants, land planners

hydrological groups, and drainage rates. This information, along with our own site inspections, has given us a good understanding of the soil conditions on the property.

Additionally, within our drainage calculations, we have been conservative with the infiltration rates (0.3 inches per hour) as specified by the Ksat values for New Hampshire Soils for Chatfield-Hollis-Canton complex soils.

Due to the measures that we have taken, we believe we are carrying out the spirit and intent of the regulations, and the need to provide a HISS would cause our client unnecessary hardship; therefore, we request a waiver from this requirement.

Section 7.4.13 - The lines of existing abutting streets and driveway locations within 200-feet of the site.

&

Section 7.4.15 - The shape, size, height, location, and use of all existing structures on the site and approximate location of structures within 200-feet of the site.

These two regulations require that the plans show the various items within 200-feet of the site. However, due to the massive size of the 73.25-acre site, this becomes very difficult to depict within the plan set, especially due to the fact that only a small portion of the site is shown on the majority of the plans.

Performing of survey for the required items would cause our client unnecessary hardship, and using aerial photography to show them might not accurately portray these items. Jady Hill Avenue is shown on the plans at the site entrance, and the abutters' driveways are shown across the street, therefore we believe we are carrying out the spirit and intent of these regulations.

Section 9.3.2.6 - Runoff from impervious surfaces shall be treated to achieve at least 80% removal of Total Suspended Solids (TSS) and at least 60% removal of both total nitrogen and total phosphorus using appropriate treatment measures, as specified in the NH Stormwater Manual (refer to Volume 2, page 6, Table 2.1 Summary of Design Criteria, Water Quality Volume for treatment criteria) or other equivalent means. Where practical, the use of natural, vegetated filtration and/or

infiltration practices or subsurface gravel wetlands for water quality treatment is preferred given its relatively high nitrogen removal efficiency. All new impervious area draining to surface waters impaired by nitrogen, phosphorus or nutrients shall be treated with stormwater BMP's designed to optimize pollutant removal efficiencies based on design standards and performance data published by the UNH Stormwater Center and/or included in the latest version of the NH Stormwater Manual.

Note: The Anti-Degradation provisions of the State Water Quality Standards require that runoff from development shall not contribute additional pollutant loads to existing water body impairments.

This regulation requires that at least 80% removal of Total Suspended Solids (TSS) and at least 60% removal of both total nitrogen and total phosphorous.

Our proposal includes the construction of a bioretention basin that achieves 97% TSS removal, 44% total nitrogen removal, and 99% total phosphorous removal, as per the UNH Stormwater Center data report. We meet the requirements for the TSS and total phosphorous removal, but fall short by 16% for the nitrogen removal. This bioretention basin will take on the majority of the proposed impervious area as well as a portion of existing impervious area that was not treated previously. In pre-development conditions there is 48,015 square feet of untreated impervious area, and in post-development conditions there is 39,060 square feet of untreated impervious area, resulting in a net decrease of 8,955 square feet of untreated imperious area. We acknowledge that with our proposed site improvements, we are increasing the impervious area of the site by 11,530 square feet, but found merit in decreasing the untreated impervious area, as mentioned.

Furthermore, the treated water will be conveyed to an existing detention pond that supplies water for watering the golf course. We have been told that the detention pond sometimes runs dry, and water needs to be pumped into it from a nearby well. The nitrogen within our treated stormwater can be used when watering the golf course to promote growth and require less fertilizer on site. The nutrients from the nitrogen can be spread over the golf course, therefore it is unnecessary to achieve the required 60%

removal rate. Per this regulation, vegetated filtration is preferred, and this process would achieve this.

For the above reasons, we believe we are carrying out the spirit and intent of the regulations. Further treatment of stormwater would create an unnecessary hardship, drastically change the proposed development and becoming more costly.

Section 9.7.3- Landscape Strips: Where appropriate, existing trees and vegetation shall be incorporated into landscape or buffer strips. Landscape strips shall be at least 20-feet in width and 4 to 6 feet in height to effectively screen the view from adjacent residential properties. If approved by the Board, the use of fencing, landscaped berms and/or other type screening materials can be used in lieu of providing a 20 foot wide planted landscape strip. Landscape strips shall be used for screening purposes in the following situations:

- 1. Where a proposed non-residential use abuts a residential zoning district.**
- 2. Where a proposed non-residential use abuts an existing residential use.**
- 3. Where a proposed road of any development abuts an existing property line or is within 20 feet of a property line in which the existing use is residential.**

This regulation requires a 20-foot landscaped buffer strip between the subject parcel and Hayes Park to the south. Since the use of the subject parcel is commercial and the Hayes Park is residential, the regulations require a 20-foot landscaped buffer strip.

However, due to the circumstances on site, we believe that we are carrying out the spirit and intent of the regulation without providing the 20-foot buffer strip. In proposed conditions, existing woodlands screen the parking lot from abutting properties to the south. Additionally, with such a difference in elevation (greater than 20 feet in areas) between the proposed parking lot and toe of slope of properties to the south, there will be little to no visibility of the cars or their lights in these areas. Any plantings provided south of the parking would likely not even be visible to the abutters to the south.

We believe that the requirement of providing additional plantings to the south of the parking lot an unnecessary hardship that would create unneeded costs for our client.

Your favorable consideration for the above waivers would be appreciated.

Sincerely,

A handwritten signature in blue ink, appearing to read 'JJ MacBride', with a stylized, cursive script.

JJ MacBride, PE

Civil Engineer

2914.00

May 12, 2023

David Sharples, Town Planner
Town Planning Office, Town of Exeter
10 Front Street
Exeter, NH 03833

**Re: Exeter Country Club – Club House Replacement
Design Review Engineering Services**
Exeter, New Hampshire

Site Information:

Tax Map/Lot#:	52 / 1	Review No. 2
Address:	58 Jady Hill Avenue	
Lot Area:	73.25 ac (southern corner developed for this project)	
Proposed Use:	Commercial	
Water:	Town	
Sewer:	Town	
Zoning District:	R-2	
Applicant:	Blind Tiger, LLC (Lessee to property owner Exeter Country Club)	
Design Engineer:	Emanuel Engineering	

Application Materials Received:

- Response letter to previous comments, prepared by Emanuel Engineering, dated April 25, 2023.
- Site plan set entitled “Site Plan for Blind Tiger, LLC” revised April 20, 2023 prepared by Emanuel Engineering.
- Miscellaneous materials prepared by Emanuel Engineering.
- Stormwater calculations and stormwater maintenance manual prepared by Emanuel Engineering, revised April 25, 2023.

Dear Mr. Sharples:

Based on our review of the above information, in addition to comments provided by the Town, we offer the following comments in accordance with the Town of Exeter Regulations and standard engineering practice. Please note the previous comments have been addressed satisfactorily.

Site Plans

1. The bituminous sidewalk along Jady Hill Avenue shall be 5'-wide with a 3'-wide grass strip between the sidewalk and the edge of road. It is noted the utility pole will be within the backside of the sidewalk.
2. We recommend eliminating the parking island at the western end of the dead-end strip of parking on the southern side of the parcel in order to provide a 22'-wide drive aisle.

Stormwater Design and Modeling

3. Proposed catch basin PCB4 should be outfitted with a beehive grate.
4. The southern parking entrance should be regraded to create a low spot along the property line to direct stormwater runoff to the proposed drywell, PDW5.
5. The drainage pipe carrying stormwater to the existing pond discharges within the delineated wetlands line, which requires a Wetlands Permit from the NHDES. If the riprap apron and pipe do not extend into the wetlands, a permit will not be required.
6. Several (long) runs of drainage piping are proposed at 0.002 slope, while other sections are proposed with more typical slopes. UE strongly recommends that drainage be installed at 0.0022 slope or greater.
7. Tc – generally Time of Concentration in the model should be a minimum of five (5) minutes. A number of the catchments both pre- and post- are utilizing Tc's under five (5) minutes. Please update the Tc's and evaluate the effects.
8. UE acknowledges the stormwater treatment for TSS, TN, and TP appears to be in general compliance with the Town of Exeter regulations, however per comment 9 below, the applicant is utilizing the simple method for the calculations rather than inputting the project into the PTAP database to evaluate pre- and post- stormwater quality. Please complete the project registration within the PTAP database and submit the results with the resubmittal.
9. **PTAP Database: This project requires registration with the PTAP Database**, the Applicant is requested to enter project related stormwater tracking information contained in the site plan application documents using the Great Bay Pollution Tracking and Accounting Program (PTAP) database (www.unh.edu/unhsc/ptapp), and submit the information with the resubmitted response to comments.

Utility Comments

10. The proposed 12" sewer force main that is part of the Town's sewer project in that area should be shown on sheet C4B in order to evaluate potential conflicts with the proposed water and sewer services.
11. Utility horizontal separation distances:
 - a. The proposed water and sewer services must be a minimum of 10' apart horizontally.
 - b. We recommend increased separation between the outside of the water services and the outside of the 3'-wide underground utility trench.



12. A redesign of the sewer service was discussed at the TRC meeting on 5/11/23. It was noted the manholes could be eliminated, cleanouts installed, and the service could possibly be realigned.
13. If the sewer service is not redesigned, the following comments apply:
 - a. Rigid insulation should be installed over the pipe where cover is less than 4.5' in cross-country areas and less than 6' under pavement.
 - b. A minimum of 18" of vertical clearance is required between the outside diameters of the water and sewer pipes. The sewer profile indicates a separation of less than 18" at the proposed water services and the existing public water main.
 - c. As shown, the sewer service crossing over the top of the water main and water service must be sleeved.
 - d. Rigid insulation should be installed between the existing drain line and the sewer service at Sta. 1+96
14. Abandoned utilities should be removed, capped, or filled with flowable fill. Confirm with the Town DPW regarding requirements to properly abandon utilities within the ROW.

Detail Sheets


15. Provide the following details:
 - a. Sewer manhole (if applicable, per comments above)
 - b. Bituminous sidewalk (per Town standard of 2.5 inches of pavement and 12" of crushed gravel)
 - c. Drainage manhole
16. The sewer line installation detail shows a minimum cover of 2'. Please revise to 4.5'.

A written response is required to facilitate future reviews. Please contact us if you have any questions.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Allison M. Rees, P.E.
Project Manager



Robert J. Saunders, P.E.
Senior Project Engineer

AMR:scc





May 23, 2023

David Sharples, Town Planner
Town Planning Office, Town of Exeter
10 Front Street
Exeter, NH 03833

RE: Exeter Country Club - Club House Replacement
Design Review Engineering Services
Exeter, New Hampshire

Mr. Sharples,

This letter is in response to the second engineering review by Allison M. Rees, P.E. and Robert J. Saunders, P.E. of Underwood Engineers, Inc. dated May 12, 2023 for the Blind Tiger, LLC Site Plan Application at Exeter Country Club located at 58 Jady Hill Avenue, Exeter, NH 03833. We have responded in ***bold italics*** print below their comments.

Site Plans

1. The bituminous sidewalk along Jady Hill Avenue shall be 5'-wide with a 3' -wide grass strip between the sidewalk and the edge of road. It is noted the utility pole will be within the backside of the sidewalk.

The proposed bituminous sidewalk along Jady Hill Avenue has been revised to be 5-foot-wide with a 3-foot-wide grass strip between the sidewalk and the edge of the road. See Sheet C5. As noted, the proposed sidewalk will run through the existing nuclear siren pole, and a note has been added that the pole is to be paved around.

2. We recommend eliminating the parking island at the western end of the dead-end strip of parking on the southern side of the parcel in order to provide a 22' -wide drive aisle.

The parking configuration has been adjusted, which now proposes a 22-foot-wide aisle on the southern side of the parcel, connecting the parking areas in the vicinity. However, for stormwater conveyance to the proposed bioretention area, the parking island is to remain.

To create room for the 22-foot-wide aisle, there was some extra space on the western end of the proposed parking, and the parking spaces were pushed to the west a few feet. Additionally, the proposed parking spaces to the east of the 22-foot-wide aisle were

civil & structural consultants, land planners

118 PORTSMOUTH AVE. A202, STRATHAM, NH 03885 P: 603-772-4400 F: 603-772-4487 WWW.EMANUELENGINEERING.COM

pushed to the east, and the proposed island with the rock infiltration area has been reduced.

Stormwater Design and Modeling

3. Proposed catch basin PCB4 should be outfitted with a beehive grate.

The rim for proposed catch basin PCB4 has been revised to be NEENAH #R-4253 (beehive grate) within the drainage structure charts on Sheets C3A, C3B, and C4A.

4. The southern parking entrance should be regraded to create a low spot along the property line to direct stormwater runoff to the proposed drywell, PDW5.

The existing low spot along Jady Hill Avenue is approximately 10 feet from the property line and has been added to Sheet C3. If the low spot is moved onto the subject parcel, the slope at the entrance of the property will be too steep (10-14%), whereas the existing slope in this area is approximately 6%.

After a phone conversation with Paul Vlasich (Exeter DPW), it was agreed that a tip down in the curb of the proposed island will be provided (Sheet C5), which will allow stormwater on site and within Jady Hill Avenue to runoff into the proposed drywell (PDW5). Stone will be provided to the proposed drywell and rock infiltration area to ensure that stormwater does not get held up at the driveway entrance or in the road. A detail has been added to Sheet D2 called "Rock Infiltration at Tip Down Detail", which shows more clearly what is proposed.

5. The drainage pipe carrying stormwater to the existing pond discharges within the delineated wetlands line, which requires a Wetlands Permit from the NHDES. If the riprap apron and pipe do not extend into the wetlands, a permit will not be required.

The proposed drainage pipe carrying stormwater to the existing pond (PDL7) has been revised to daylight outside of the existing wetlands. There is existing stone riprap near the edge of the pond, which is where PDL7 now discharges.

6. Several (long) runs of drainage piping are proposed at 0.002 slope, while other sections are proposed with more typical slopes. UE strongly recommends that drainage be installed at 0.0022 slope or greater.

Pipes PDL5 and PDL6 have been revised so that the slopes are now 0.003 as shown on Sheets C3A, C3B, and C4A.

7. Tc - generally Time of Concentration in the model should be a minimum of five (5) minutes. A number of the catchments both pre- and post- are utilizing Tc's under five (5) minutes. Please update the Tc's and evaluate the effects.

The Tc for the pre- and post-development HydroCAD modeling have been revised at each subcatchment so that it is a minimum of five (5) minutes. Attached within this transmittal is a revised version of the Drainage Calculations.

8. UE acknowledges the stormwater treatment for TSS, TN, and TP appears to be in general compliance with the Town of Exeter regulations, however per comment 9 below, the applicant is utilizing the simple method for the calculations rather than inputting the project into the PTAP database to evaluate pre- and post- stormwater quality. Please complete the project registration within the PTAP database and submit the results with the resubmittal.

The project was previously inputted into the PTAPP database, but due to changes in proposed seating determinations of the new clubhouse, it has been updated. See updated PTAPP printout submitted within this transmittal. Per the PTAPP data inputted, there is 1.1 acres of impervious cover and 0.91 acres of effective impervious cover due to the proposed bioretention basin on site. With this data, there is a 0.19 acre decrease of effective impervious cover, which meets the requirements for the Town of Exeter. Actual results can be obtained after Town review and construction of the project.

9. PTAP Database: This project requires registration with the PTAP Database, the Applicant is requested to enter project related stormwater tracking information contained in the site plan application documents using the Great Bay Pollution Tracking and Accounting Program (PTAP) database (www.unh.edu/unhsc/ptapp), and submit the information with the resubmitted response to comments.

See response to comment #8 for information on the PTAPP submission.

Utility Comments

10. The proposed 12" sewer force main that is part of the Town's sewer project in that area should be shown on sheet C4B in order to evaluate potential conflicts with the proposed water and sewer services.

The proposed 12" sewer force main that is part of the Town's sewer project in that area is now shown on Sheets C4A and C4B.

11. Utility horizontal separation distances:

- a. The proposed water and sewer services must be a minimum of 10' apart horizontally.

The proposed water and sewer services have been revised such that they are now 10' apart horizontally. See Sheets C4A & C4B. Additionally, note #3 has been added to the Septic Pipe Listing on Sheet C4B that says: "All pipes to be sleeved or encased in concrete within 10' of any water line crossing."

- b. We recommend increased separation between the outside of the water services and the outside of the 3'-wide underground utility trench.

The proposed services to the building have been redesigned. The proposed water line is now 14-feet from the proposed utilities.

12. A redesign of the sewer service was discussed at the TRC meeting on 5/11/23. It was noted the manholes could be eliminated, cleanouts installed, and the service could possibly be realigned.

The proposed sewer service has been redesigned as shown on Sheet C4B. The sewer line is now a straight shot from the proposed building to the existing sewer manhole on Webster Avenue. The proposed sewer manholes have been eliminated, and cleanouts are now proposed at changes in slope of the proposed sewer line.

13. If the sewer service is not redesigned, the following comments apply:
- Rigid insulation should be installed over the pipe where cover is less than 4.5' in cross-country areas and less than 6' under pavement.
 - A minimum of 18" of vertical clearance is required between the outside diameters of the water and sewer pipes. The sewer profile indicates a separation of less than 18" at the proposed water services and the existing public water main.
 - As shown, the sewer service crossing over the top of the water main and water service must be sleeved.
 - Rigid insulation should be installed between the existing drain line and the sewer service at Sta. 1 +96

The sewer service has been redesigned to no longer use sewer manholes. Instead, cleanouts are specified at locations of change in direction or slope. These details listed above no longer apply. See response to item #12 of this document.

14. Abandoned utilities should be removed, capped, or filled with flowable fill. Confirm with the Town DPW regarding requirements to properly abandon utilities within the ROW.

Note #14 has been added to Sheet C4A, which reads "All abandoned utilities shall either be removed, capped, or filled with flowable fill."

Detail Sheets

15. Provide the following details:

- a. Sewer manhole (if applicable, per comments above)

The proposed sewer manholes have been revised to cleanouts; therefore, this detail is no longer applicable. See response to item #12 of this document.

- b. Bituminous sidewalk (per Town standard of 2.5 inches of pavement and 12" of crushed gravel)

A bituminous sidewalk detail has been added to Sheet C5, which specifies 2.5" of asphalt and 12" of gravel. The detail refers to the "Paved Driveway Section" detail on Sheet D4 for material specifications.

- c. Drainage manhole

A typical catch basin/manhole detail has been added to Sheet D2.

16. The sewer line installation detail shows a minimum cover of 2'. Please revise to 4.5'.

The sewer line installation detail on Sheet D3 has been revised. It now shows a minimum cover of 4'-6" rather than 2'.

Sincerely,



JJ MacBride, PE

Civil Engineer



TOWN OF EXETER, NEW HAMPSHIRE

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

www.exeternh.gov

DATE: February 13, 2018
TO: Applicants
FROM: Planning & Building Department
RE: Preliminary Application to Connect and/or Discharge to Town of Exeter Sewer, Water and/or Storm Drainage System(s)

Attached is the "Preliminary Application to Connect and/or Discharge to Town of Exeter Sewer, Water or Storm Water Drainage System(s)". This Application form must be completed by the applicant or the applicant's authorized agent for projects that are subject to Planning Board approval or for a change of use. It is a prerequisite for submission of the "Applications for Sewer Service, Water Service and Storm Drainage Work." All of the application forms referenced above must be completed and approved prior to the issuance of a building permit. This application is intended to address a number of different scenarios and therefore, all sections may not be applicable to your particular situation. Please read the application carefully and fill out as completely as possible. If there are any questions, please feel free to contact the Planning and Building Department Offices. All forms must be submitted to the Planning and Building Department Office for review and distribution.

Please Note: Any approval(s) granted in conjunction with this application will be valid for a period of one (1) year from the date of such approvals(s).



TOWN OF EXETER - DEPARTMENT OF PUBLIC WORKS

**PRELIMINARY APPLICATION TO CONNECT AND/OR DISCHARGE TO TOWN OF EXETER
SEWER, WATER, AND/OR STORMWATER DRAINAGE SYSTEM(S)**

Project Name Exeter Country Club

Project Location 58 Jady Hill Avenue

Applicant/Owner Name Blind Tiger, LLC (Applicant)

Mailing Address 3 Wright Lane, Exeter, NH 03833

Phone Number (603) 498-7005 email garywarriner@msn.com

Project Engineer Bruce Scamman, PE (Emanuel Engineering, Inc.)


Mailing Address 118 Portsmouth Avenue

Phone Number (603) 772-4400 email bscamman@emanuelengineering.com

Type of Discharge/Connection Sewer Water Stormwater

Application completed by

Name JJ MacBride, PE

Signature  Date 5/10/23

Reviewed and verified by Planning & Building Department _____

DESIGN FLOWS

The water and sewer design flow shall be based upon the New Hampshire Code of Administrative Rules, Env-Wq 1000 Subdivisions; Individual Sewage Disposal Systems, Table 1008-1 Unit Design Flow Figures (current version) or other methodology which may be deemed acceptable by the Town of Exeter. The minimum fee for a single-family residential unit is based on the design flow for two (2) bedrooms. Existing water and sewer flows may be based on meter readings for the current use.

If the proposed discharge is non-residential or is residential but exceeds 5,000 gallons per day (gpd), Section C must be completed. Certain water and sewer discharges must be approved by the State of New Hampshire Department of Environmental Services by way of permit and plan submittals. It is the responsibility of the applicant to ensure submittals are made to the state through the town is necessary. Final town approval cannot be made without the state's approval if required.

Stormwater design flows are based on the drainage analysis prepared by the applicant using the most current published precipitation data available.

APPROVALS ARE VALID FOR PERIOD OF ONE (1) YEAR FROM DATE OF APPROVAL

SECTION A: PROPOSED NEW CONNECTIONS OR MODIFICATION OF EXISTING CONNECTIONS

SANITARY SEWER

Description of work Replace existing 3,000 SF clubhouse with a new 68'x94' clubhouse, which includes a 80 seat restaurant, 47 seat bar, and 36 seat function room. The clubhouse is on a 9-hole golf course. Between the golf course and restaurant/bar, there are approximately 20 employees.

Title of plan Site Plan for Blind Tiger, LLC

Total design flow (gpd) 4,972

**For any non-residential discharge or residential discharge exceeding 5,000 GPS, or for a change of use, complete Section C of this form.*

Approved _____ Date _____
Water & Sewer Managing Engineer

WATER

Description of work Replace existing 3,000 SF clubhouse with a new 68'x94' clubhouse, which includes a 80 seat restaurant, 47 seat bar, and 36 seat function room. The clubhouse is on a 9-hole golf course. Between the golf course and restaurant/bar, there are approximately 20 employees.

Title of plan Site Plan for Blind Tiger, LLC

Total design flow (gpd) 4,972

Approved _____ Date _____
Water & Sewer Managing Engineer

STORMWATER

Description of work _____

Title of plan _____

Total design flow (10-year storm, CFS) _____

Approved _____ Date _____
Highway Superintendent

APPROVALS ARE VALID FOR PERIOD OF ONE (1) YEAR FROM DATE OF APPROVAL

SECTION B: IMPACT FEES

Provide the following information to determine if a water and/or sewer impact fee will be required for a new development or a change or increase in use.

Current/prior Use(s)

Describe current use(s) Golf Course and restaurant

<u>Use</u>	<u>Unit Flow (gpd)</u>	<u>Total Existing Flow</u>
Restaurant (60 seats + 6 employees) (40 gpd per seat + 20 per employee)		2,520
Function Room (80 seats)	(12 gpd per seat)	960
Total existing flow		3,480 GPD

Proposed Use(s)

Describe proposed use(s) Golf Course, bar, restaurant, and function room

<u>Use</u>	<u>Unit Design Flow (gpd)</u>	<u>Total Design Flow</u>
36 seat function room	(12 gpd/seat)	432
80 seat restaurant	(40 gpd/seat)	3,200
47 seat bar	(20 gpd per seat)	940
20 employees	(20 gpd per employee)	400
Total proposed flow		4,972 GPD

Impact Fees (80% of the design flow)

Change in flow rate (gpd) 1,492 x 0.8 = Impact Fee flow rate (gpd) 1,193.6

If there is a decrease in flow rates, no water or sewer impact fee will be charged. If there is an increase in flow rates, a water and/or sewer impact fee will be charged using the following formula:

Sewer Impact Fee: Flow increase (gpd) 1,193.6 x \$4.85 = \$5,788.96

Water Impact Fee: Flow increase (gpd) 1,193.6 x \$2.00 = \$2,387.20

Approved by Town of Exeter

Town Planner _____ Date _____

Water & Sewer Managing Engineer _____ Date _____

APPROVALS ARE VALID FOR PERIOD OF ONE (1) YEAR FROM DATE OF APPROVAL

SECTION C: SANITARY SEWER CLASSIFICATION AND BASELINE MONITORING

(NON-RESIDENTIAL DISCHARGES OR RESIDENTIAL DISCHARGE OVER 5,000 GPD)

In accordance with Title 40 of the Code of Federal Regulations, Part 403 Section 403.14, information provided herein shall be available to the public without restriction except as specified in 40 CFR Part 2. A discharge permit will be issued on the basis of the information provided in this section.

In accordance with all terms and conditions of the Town of Exeter, New Hampshire Ordinances Chapter 15, all persons discharging wastewater into the town’s facilities shall comply with all applicable federal, state, and local Industrial Pre-treatment rules.

PART I - USER INFORMATION

Property Owner Name Exeter Country Club
Owner’s Representative Blind Tiger, LLC (Gary Warriner)
Address 58 Jady Hill Avenue
Phone (603) 498-7005 email garywarriner@msn.com
Tenant Name .
Address .
Phone . email .

PART II - PRODUCT OR SERVICE INFORMATION

Products Manufactured None
Services Provided Restaurant & Bar
SIC Code(s) 5810 Building Area (SF) 6,400
Number of Employees 20 Days/week of operation 7 Shifts per day .

PART III - CATEGORY OF SEWER DISCHARGE

Type of Discharge Septic Proposed Existing Change of Use

Water Use (gpd) 4,992 (from Section A)

Check all that apply:

- Domestic waste only (toilets & sinks)
- Domestic waste plus some process wastewater
- Federal pre-treatment standards (40 CFR) applies

PART IV - CLASSIFICATION DETERMINATION

(to be completed by Town staff)

CLASS 1 - SIGNIFICANT OR CATEGORICAL INDUSTRIAL USER _____

CLASS 2 - MINOR INDUSTRIAL OR COMMERCIAL USER _____

CLASS 3 - INSIGNIFICANT INDUSTRIAL OR COMMERCIAL USER _____

CLASS 4 - NON-SYSTEM USER, OR DISCONTINUED SERVICE _____

See attached sheet for the basis of the determination.

Determined by _____ Title _____ Date _____

Approved _____ Date _____

Water & Sewer Managing Engineer

PART V - CERTIFICATION

I have personally examined and am familiar with the information submitted in this section for the above name use. The information provided is true, accurate and complete. I am aware that there are significant penalties from federal, state and/or town regulatory agencies for submitting false information, including the possibility of fine and/or imprisonment.

I acknowledge and agree to pay all charges incurred for monitoring, testing and subsequent analysis performed on the Town of Exeter sewer, water and/or stormwater drainage system(s), in the course of determining the town's ability to serve the project. Further, I acknowledge and agree that failure to accurately declare said flow requirements shall be sufficient cause to deny access to the Town of Exeter sewer, water and/or stormwater drainage system(s). Gary Warriner (Blind Tiger, LLC)

Signature of Applicant  Date 5/8/2023

Name of Property Owner Exeter Country Club

APPROVALS ARE VALID FOR PERIOD OF ONE (1) YEAR FROM DATE OF APPROVAL

USER CLASSIFICATION SYSTEM FOR INDUSTRIAL DISCHARGE

CLASS 1: SIGNIFICANT INDUSTRIAL USER

Any industry and/or commercial establishment that:

- Is subject to National Pre-treatment standards as outlined in 40 CFR (Code of Federal Regulations) 403.5 (a) (b).
- Discharges a non-domestic waste stream of 5,000 GPD, or more.
- Contributes a non-domestic waste stream totaling 5% or more of the average dry weather hydraulic or organic (BOD<TSS< etc.) capacity of the Town of Exeter Sewer Treatment Facility.
- Has the reasonable potential, in the opinion of the POT Supervisor, to adversely affect the treatment plant, its workers, or the collection system by reason of inhibition, pass- through pollutants, or sludge contamination.

CLASS 2: MINOR INDUSTRIAL USERS

Small industries and commercial establishments (e.g. restaurants, auto repair shops, cleaners, etc.) whose individual discharges do not significantly impact the Town of Exeter Sewer Treatment Facility or systems, degrade receiving water quality or contaminate the sludge. Industries that have the potential to discharge a non-domestic or process waste stream, but at the present time discharge only sanitary waste, may also be included in this class. However, this class shall not include any categorical industries. Industries and commercial establishments in this classification will require a permit and be subject to all inspection, compliance monitoring, enforcement, and reporting requirements of the pretreatment program.

CLASS 3: INSIGNIFICANT INDUSTRIAL USERS

Users which will be eliminated from participation in Exeter's Pretreatment Program. These include industries and/or commercial establishments that discharge only domestic waste (toilets and sinks only) into the municipal sewer system or do not have any reasonable chance of discharging a non-domestic waste stream to the POTW. Class 3 users will be required to notify the Exeter Sewer Division of any change in discharge quantity or character.

CLASS 4: NON-SYSTEM USER

Any industry, business or commercial establishment identified in the Master List of Industrial Users that are not connected to the Exeter Sewer system or which has ceased to discharge to the system.

Industries and/or commercial establishments classified as Class 1 or Class 2 users will be regulated individually and have specific effluent limitations (including conventional pollutants, where necessary) in the discharge permit. All Class 1 and Class 2 users will require a State Discharge Permit, and be subject to all inspection, compliance monitoring, and enforcement and reporting requirements of the pretreatment program.

Exeter Country Club - Blind Tiger, LLC
Submission ID 310
Approval Status New Submission
Map No. 51
Lot No. 1
Property Owner Exeter Country Club
Project Street Address 58 Jady Hill Avenue
This project is for a municipality No
This project is inside MS-4 Permit Area Yes
Project is within the 200 meter coastal zone or stream buffer zone No
Discharges to an impaired waterbodyNo
Offsite mitigation No
By submitting this form, I certify all information is true and correct to the best of my knowledge and professional judgement. Yes
Town Exeter
Land Use Type Commercial and Industrial
Hydrologic Unit Code (HUC)-10 0106000308 – Exeter Squamscott River
Last Updated By jmacbride
Report Submitted By jmacbride
Last Updated On Fri, 05/12/2023 - 10:51
Report Submitted Tue, 04/11/2023 - 15:08

- Draft dated May 12, 2023 submitted by Emanuel Engineering, Inc.
 -Status: Awaiting Town review and construction for results. Design Results appear to meet Town requirements.

Impervious Surface Management Table - Structural BMPs

Structural BMP	Impervious Surface Managed (ac)	Runoff Volume Storage at Design Capacity (ft ³)	Design Storm Depth (")	Infiltration Rate (in/hr)
Bio-filtration	0.46	2275.00	1.4	0.27
Total Impervious Cover (acres)	1.37			
Total Management (acres)	0.46			
Effective Impervious Cover (acres)	0.91			

Land Use Conversion Table

Soils		Existing Conditions			Future Conditions		
Hydrologic Group	Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres
B	5.37	Open Space	1.61	0.00	Open Space	1.74	0.00
		Forest	2.66	0.00	Forest	2.26	0.00
		Other	0.24	0.24	Other	0.11	0.11
		Commercial/Institutional	0.09	0.09	Commercial/Institutional	0.19	0.19
		Transportation (roads/parking lots)	0.77	0.77	Transportation (roads/parking lots)	1.07	1.07
Totals	5.37		5.37	1.1		5.37	1.37

Wastewater Management Table

Existing Conditions			Future Conditions		
Management Option	Discharge (GPD)	Description	Management Option	Discharge (GPD)	Description
Sewered	3480.00	Golf course and restaurant: Restaurant: 60 seats + 6 employees Function Room: 80 seats	Sewered	4972.00	Golf course, bar, restaurant, and function room: -36 seat function room -80 seat restaurant -47 seat bar -20 employees
Totals	3480			4972	

District 1 Monthly Usage

As of April 17, 2023

Address

58 JADY HILL AVENUE

1211900-0
1831829407
EXETER COUNTRY CLUB

Apr-23	Mar-23	Feb-23	Jan-23
1,150	40	80	90

Dec-22	Nov-22	Oct-22	Sep-22	Aug-22	Jul-22	Jun-22	May-22	Apr-22	Mar-22	Feb-22	Jan-22
340	3,880	4,480	5,750	7,470	6,140	5,710	5,620	2,120	50	80	340

Dec-21	Nov-21	Oct-21	Sep-21	Aug-21	Jul-21	Jun-21	May-21	Apr-21	Mar-21	Feb-21	Jan-21
550	3,560	4,470	5,700	9,020	6,480	5,680	5,000	1,690	50	40	40

Dec-20	Nov-20	Oct-20	Sep-20	Aug-20	Jul-20	Jun-20	May-20	Apr-20	Mar-20	Feb-20	Jan-20
130	5,160	6,010	7,350	8,000	6,630	6,230	2,280	460	150	70	380

JJ MacBride

From: Jason Fritz <jfritz@exeternh.gov>
Sent: Thursday, May 18, 2023 8:25 AM
To: JJ MacBride
Cc: Bruce Scamman; Nick Bouchard
Subject: Re: Fire Truck Dimensions - Exeter Country Club

Good morning,

Yes, did receive and review the submitted turning templates. They look good. Did you have the plans reviewed by an FPE for a sprinkler system?

Thank you,

On Fri, May 12, 2023 at 3:32 PM JJ MacBride <jmacbride@emanuelengineering.com> wrote:

Deputy Fire Chief Fritz,

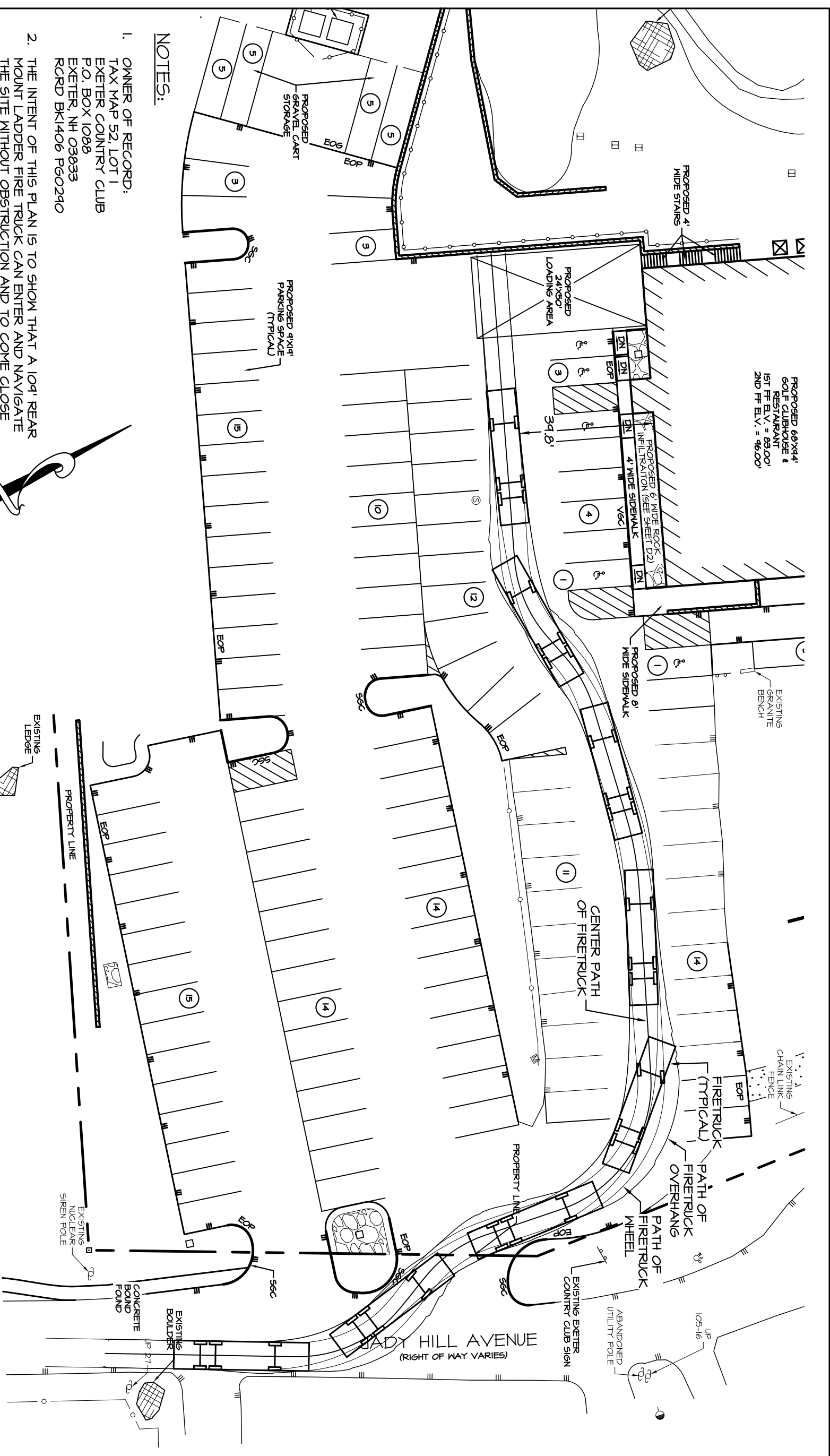
We took our proposed project for improving the clubhouse at Exeter Country Club to a Exeter TRC meeting yesterday (May 11). During the meeting, they wanted us to reach out to you in order to make sure that you received the turning templates, and whether they were adequate for your fire trucks to access the site. I have attached the turning templates to this email.

Please let me know if you need any further information from us, or anything revised on the turning templates. We appreciate your help with this.

Thanks,

JJ MacBride, P.E.

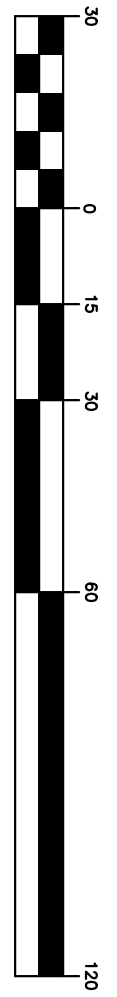




PROPOSED 68'x44'
GOLF CLUBHOUSE &
RESTAURANT
1ST FF E.L.V. = 83.00'
2ND FF E.L.V. = 76.00'

NOTES:

1. OWNER OF RECORD:
TAX MAP 52, LOT 1
EXETER COUNTRY CLUB
P.O. BOX 1088
EXETER, NH 03833
RORD BK1406 PG0240
2. THE INTENT OF THIS PLAN IS TO SHOW THAT A 100' REAR MOUNT LADDER FIRE TRUCK CAN ENTER AND NAVIGATE THE SITE WITHOUT OBSTRUCTION AND TO COME CLOSE ENOUGH TO THE PROPOSED BUILDING FOR ROOF ACCESS.
3. THE VEHICLE PATH TRACKING FEATURE FROM CARLSON CIVIL 2021 WAS USED TO DEMONSTRATE THE APPROXIMATE VEHICLE PATH. PARAMETERS OF THE FIRE TRUCK INCLUDE A 34'-FOOT CENTER TURN RADIUS, AND A 8.33'-FOOT-WIDE BY 34.75'-FOOT-LONG VEHICLE PER INFORMATION PROVIDED BY THE EXETER FIRE DEPARTMENT.
4. FIELDWORK COMPLETED BY JAMES VERRA AND ASSOCIATES, INC. IN SPRING 2022.



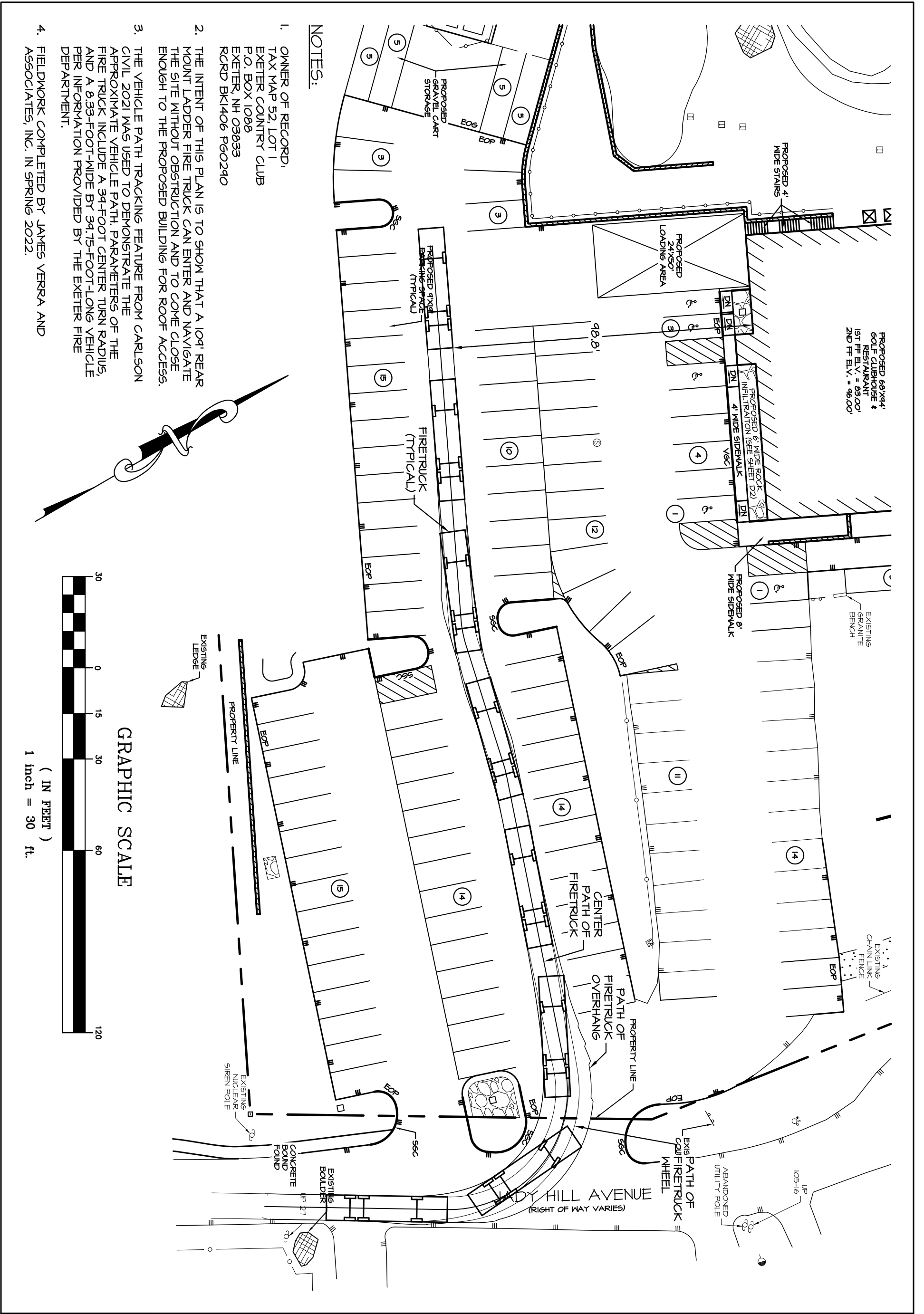
GRAPHIC SCALE

FIRE TRUCK TURNING RADIUS OPTION I
BLIND TIGER, LLC
58 JADY HILL AVENUE (SITE)
EXETER, NH 03833

DRAWN BY:	JJM	JOB #:	21-157
CHECKED BY:	BDS	SCALE:	1" = 30'
DATE:	APRIL 25, 2023	DWG:	SKI

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A202
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

SEAL



NOTES:

1. OWNER OF RECORD:
TAX MAP 52, LOT 1
EXETER COUNTRY CLUB
P.O. BOX 1088
EXETER, NH 03833
RORD BK1406 PG0240
2. THE INTENT OF THIS PLAN IS TO SHOW THAT A 100' REAR MOUNT LADDER FIRE TRUCK CAN ENTER AND NAVIGATE THE SITE WITHOUT OBSTRUCTION AND TO COME CLOSE ENOUGH TO THE PROPOSED BUILDING FOR ROOF ACCESS.
3. THE VEHICLE PATH TRACKING FEATURE FROM CARLSON CIVIL 2021 WAS USED TO DEMONSTRATE THE APPROXIMATE VEHICLE PATH. PARAMETERS OF THE FIRE TRUCK INCLUDE A 34'-FOOT CENTER TURN RADIUS, AND A 8.33'-FOOT-WIDE BY 34.75'-FOOT-LONG VEHICLE PER INFORMATION PROVIDED BY THE EXETER FIRE DEPARTMENT.
4. FIELDWORK COMPLETED BY JAMES VERRA AND ASSOCIATES, INC. IN SPRING 2022.

FIRE TRUCK TURNING RADIUS OPTION 2 BLIND TIGER, LLC 58 JADY HILL AVENUE (SITE) EXETER, NH 03833			
DRAWN BY:	JJM	JOB #:	21-157
CHECKED BY:	BDS	SCALE:	1" = 30'
DATE:	APRIL 25, 2023	DWG:	SK2


**EMANUEL
ENGINEERING**
civil & structural consultants, land planners
 118 PORTSMOUTH AVENUE, A202
 STRATHAM, NH 03885
 P: 603-772-4400 F: 603-772-4487
 WWW.EMANUELENGINEERING.COM

SEAL



1889
EXETER, NH

EXTERIOR

DYNAMIC
DESIGNS

www.dynamicdesignsinc.net



1889
EXETER, NH

EXTERIOR

DYNAMIC
DESIGNS

www.dynamicdesignsinc.net

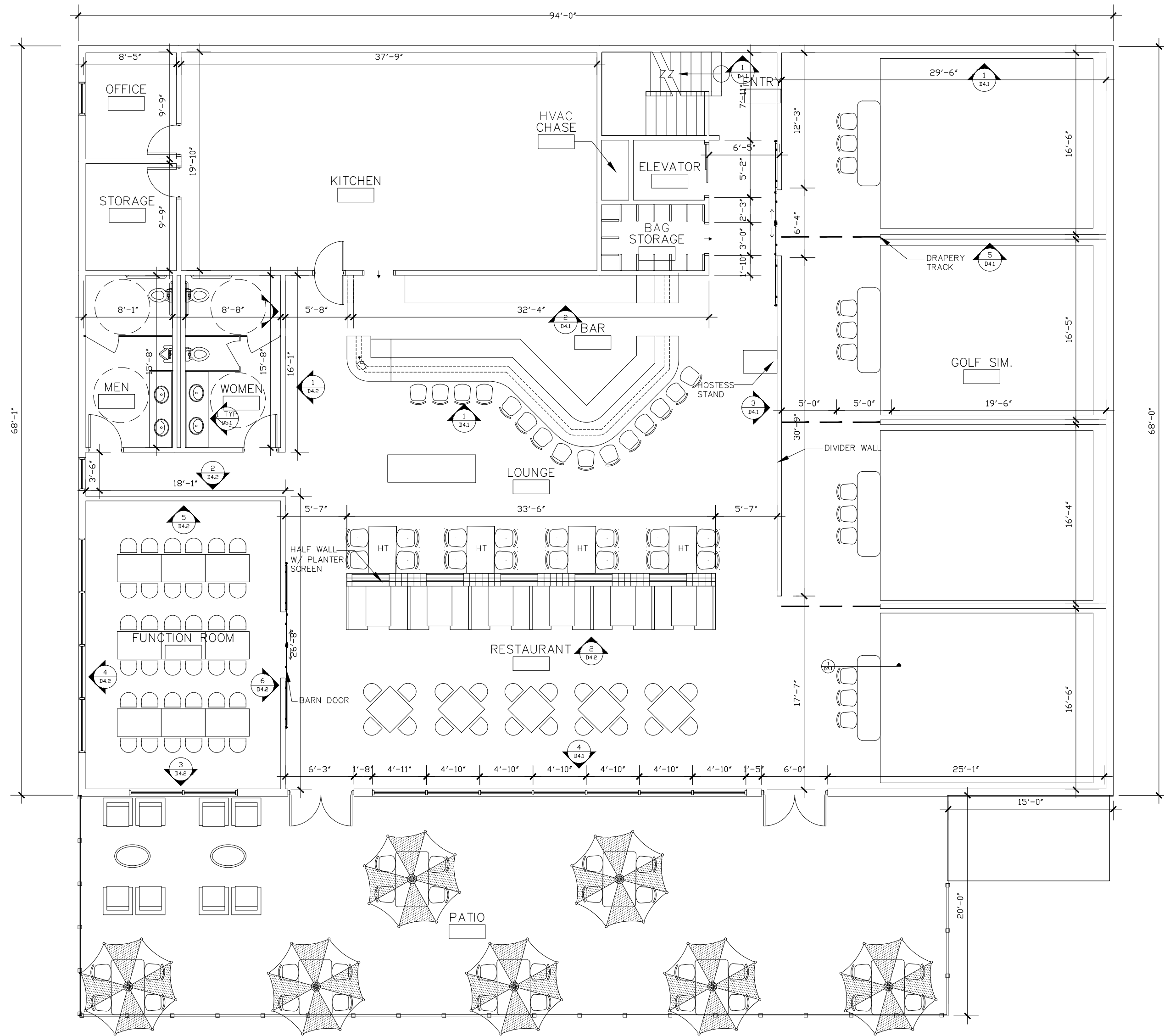


1889
EXETER, NH

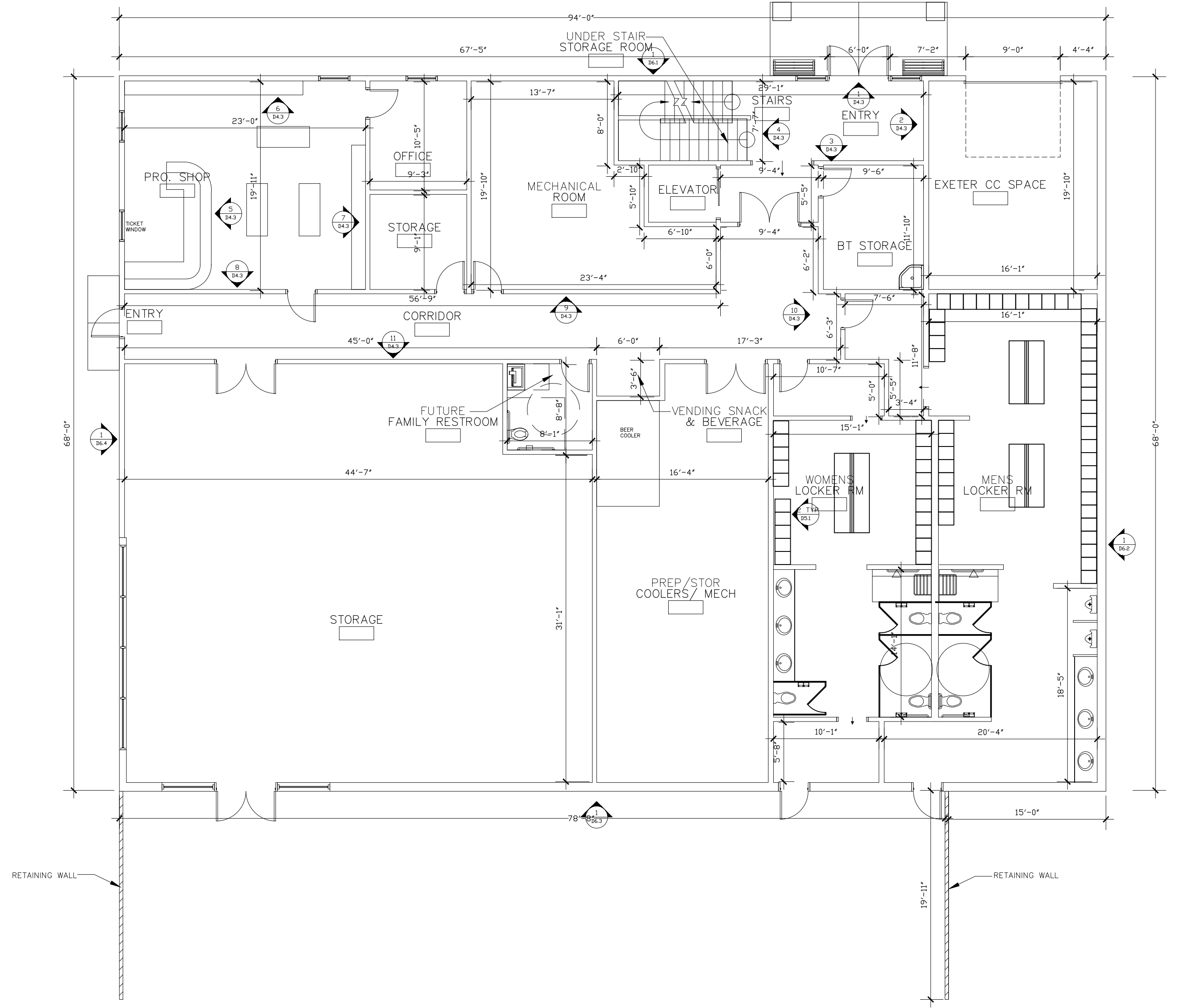
EXTERIOR

DYNAMIC
DESIGNS

www.dynamicdesignsinc.net



1 MAIN LEVEL- FLOOR PLAN
SCALE 1/8" = 1'-0"



2 LOWER LEVEL- FLOOR PLAN
SCALE 1/8" = 1'-0"

FLOOR PLAN LEGEND	GENERAL NOTES
GARAGE DOOR	- GOLF SIMULATOR- ARCHITECT TO COORDINATE WITH MANUFACTURE SPECIFICATIONS - LOCKERS IN LOCKER ROOM TO BE PROVIDED BY OWNER - ARCHITECT TO COORDINATE WITH KITCHEN CONSULTANT ON EQUIPMENT LAYOUT
DOOR	
WALL	
HALF-WALL	
WINDOW	
ELEVATION TAG	
ENLARGED PLAN TAG	
BARN STYLE DOOR- REFER TO DECOR SPEC D-4.	
SECTION TAG	

issued for:

- preliminary 1/20/2022
- client approval 5/10/2023
- landlord approval
- bidding
- permit
- construction
- revision

do not measure drawing use figured dimensions only
copyright 2023 all rights reserved

FLOOR PLAN

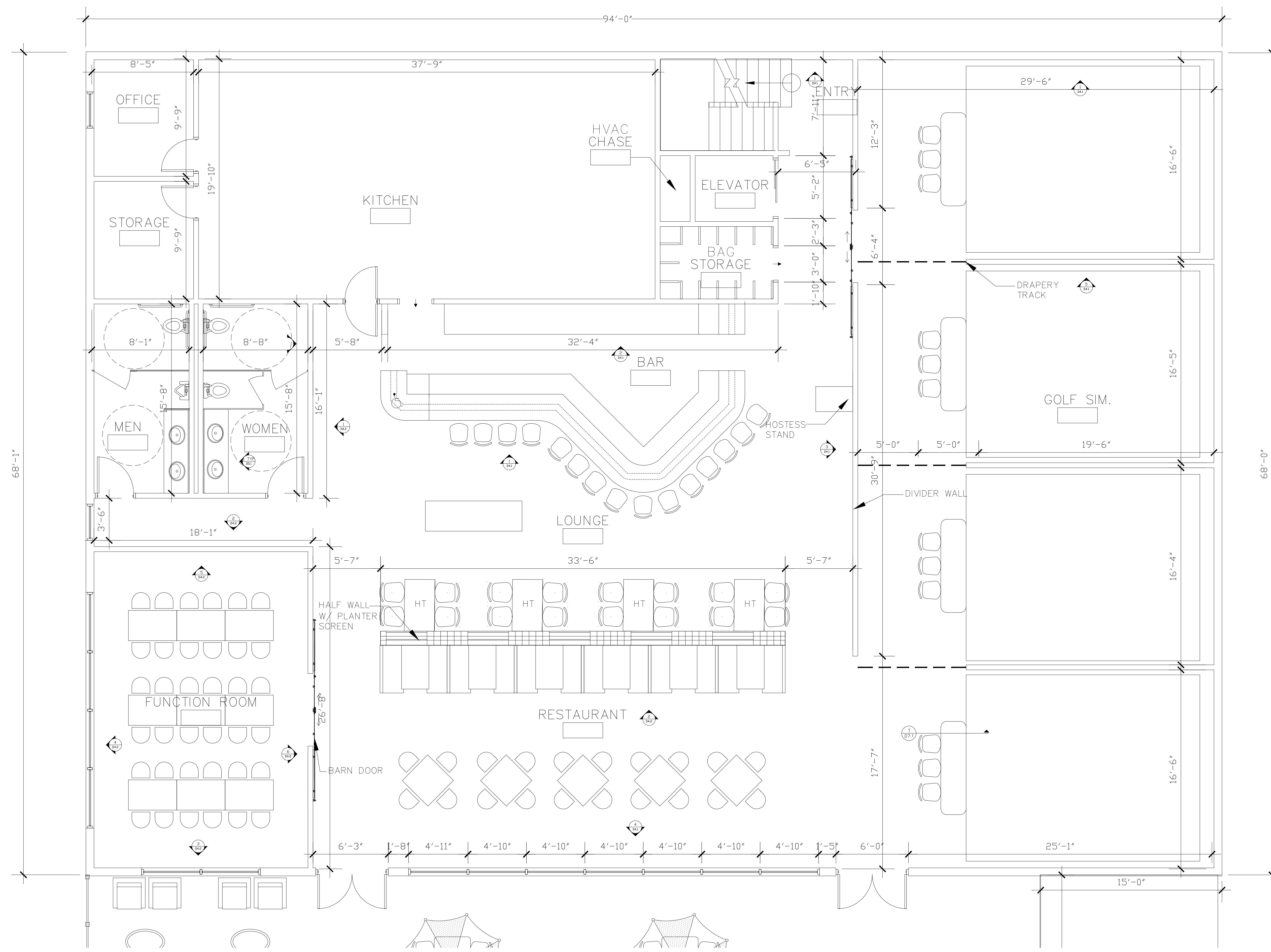
1889
EXETER, NH

DYNAMIC DESIGNS
DYNAMIC DESIGNS, P.C.
299 East Footh St, Birmingham, NH 03009
866.644.8982

seal date: license no:
seal name:
seal signature:

project no.
sheet no.
D-1.1

DESIGN DISCLAIMER
DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.



issued for:

- preliminary 1/20/2022
- client approval 5/10/2023
- landlord approval
- bidding
- permit
- construction
- revision

do not measure drawing use figured dimensions only
copyright 2023 all rights reserved

ENLARGED FLOOR PLAN
UPPER LEVEL

1889
EXETER, NH

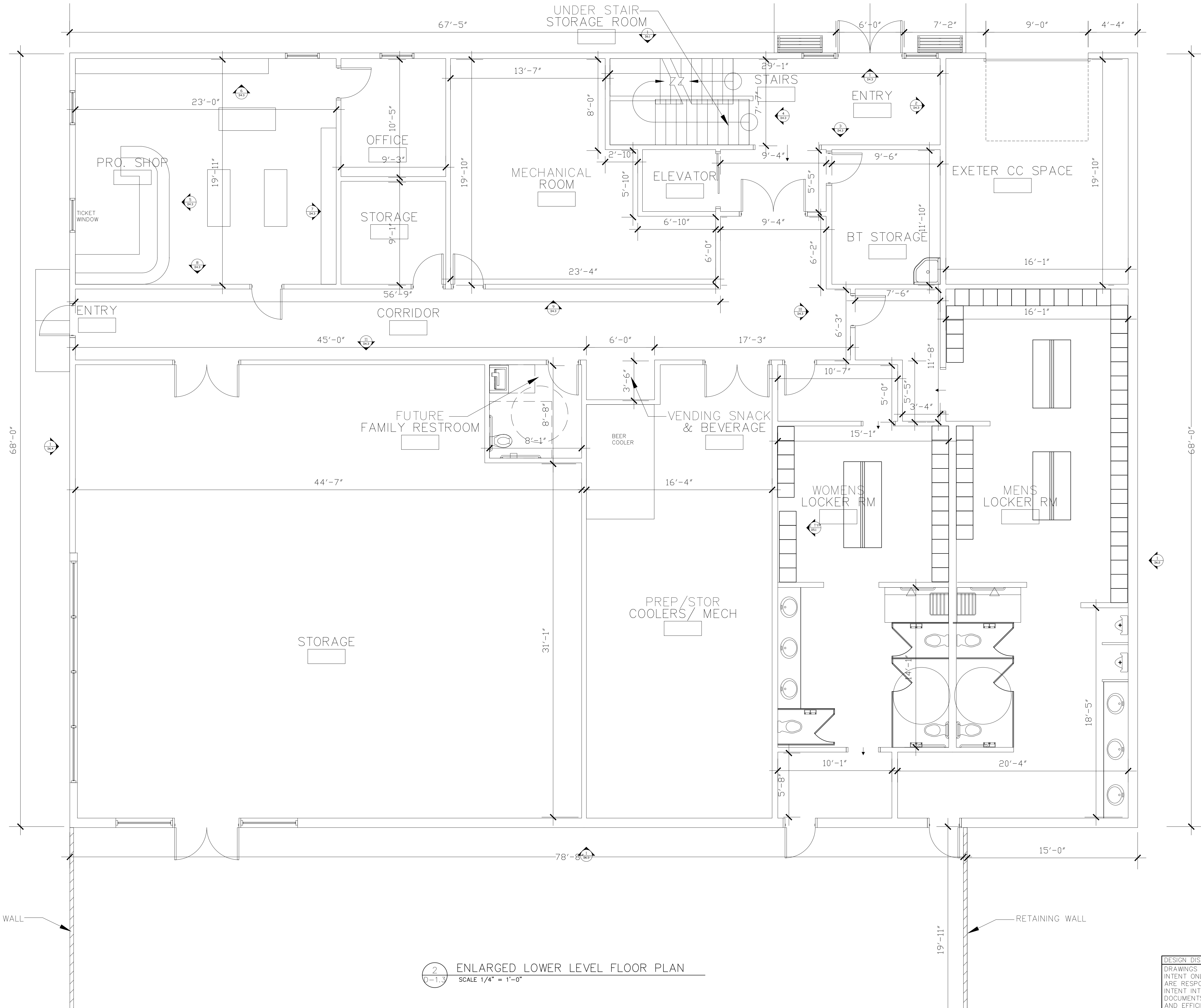
DYNAMIC DESIGNS
DYNAMIC DESIGNS, P.C.
 299 East Footh St. Birmingham, NH 03009
 603.644.8992

seal date: license no:
 seal name:
 seal signature:

project no.
 sheet no.
 D-1.2

2 ENLARGED MAIN LEVEL FLOOR PLAN
 D-1.2 SCALE 1/4" = 1'-0"

DESIGN DISCLAIMER
 DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.



- issued for:
- preliminary 1/20/2022
 - client approval 5/10/2023
 - landlord approval
 - bidding
 - permit
 - construction
 - revision

do not measure drawing
use figured dimensions only
copyright 2023
all rights reserved

ENLARGED FLOOR PLAN
LOWER LEVEL

1889

EXETER, NH

**DYNAMIC
DESIGNS**
DYNAMIC DESIGNS, P.C.
299 East Foothills St., Birmingham, AL 35209
866.644.8992

seal date: license no:
seal name:
seal signature:

project no.

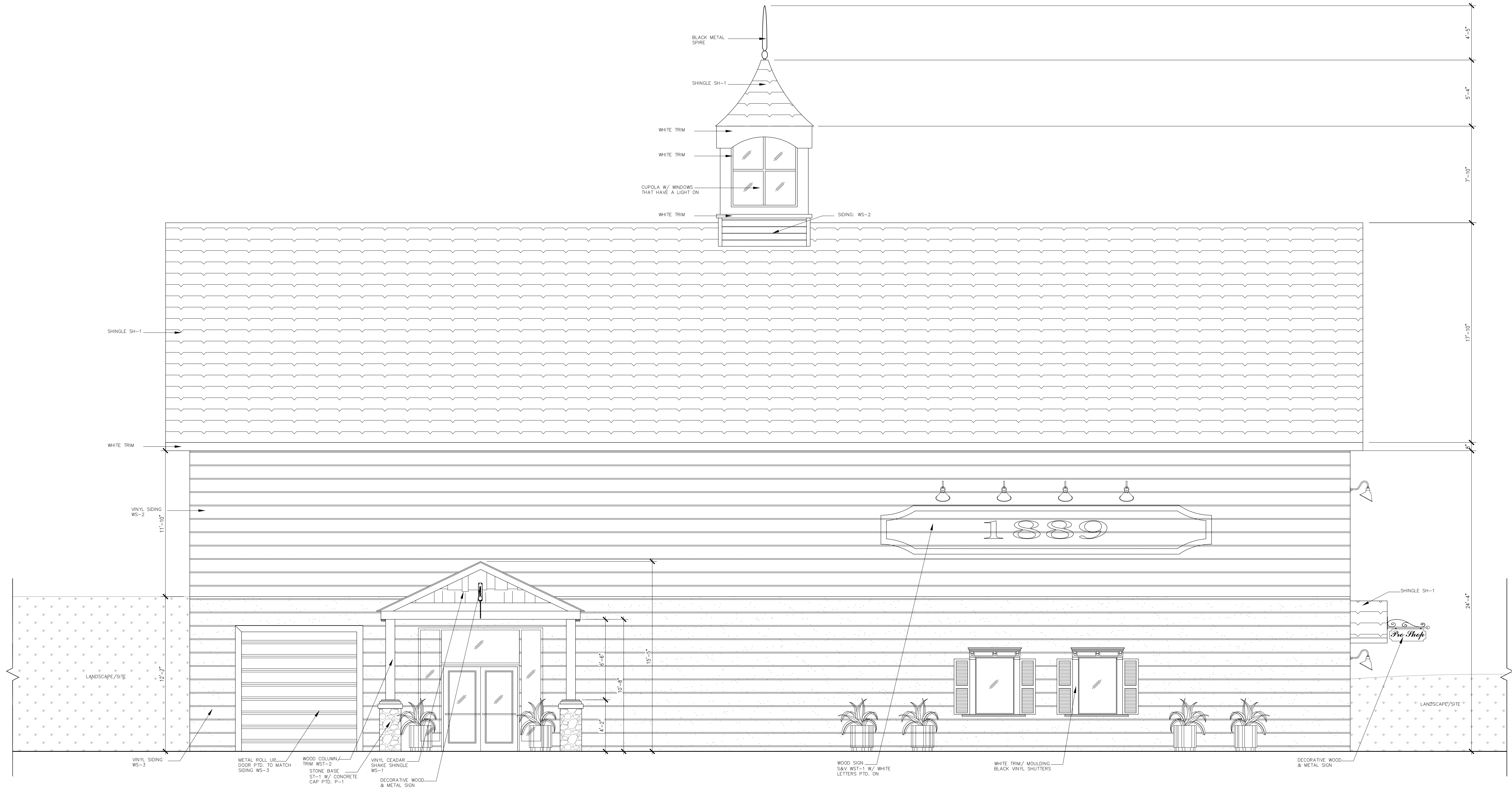
sheet no.
D-1.3

2 ENLARGED LOWER LEVEL FLOOR PLAN
D-1.3 SCALE 1/4" = 1'-0"

DESIGN DISCLAIMER
DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.

RETAINING WALL

RETAINING WALL



1
D6.1 EXTERIOR ELEVATION- ENTRANCE
SCALE 1/4" = 1'-0"

issued for:

- preliminary 1/20/2022
- client approval 5/10/2023
- landlord approval
- bidding
- permit
- construction
- revision

do not measure drawing use figured dimensions only
copyright 2023 all rights reserved

EXTERIOR ELEVATIONS

1889

EXETER, NH

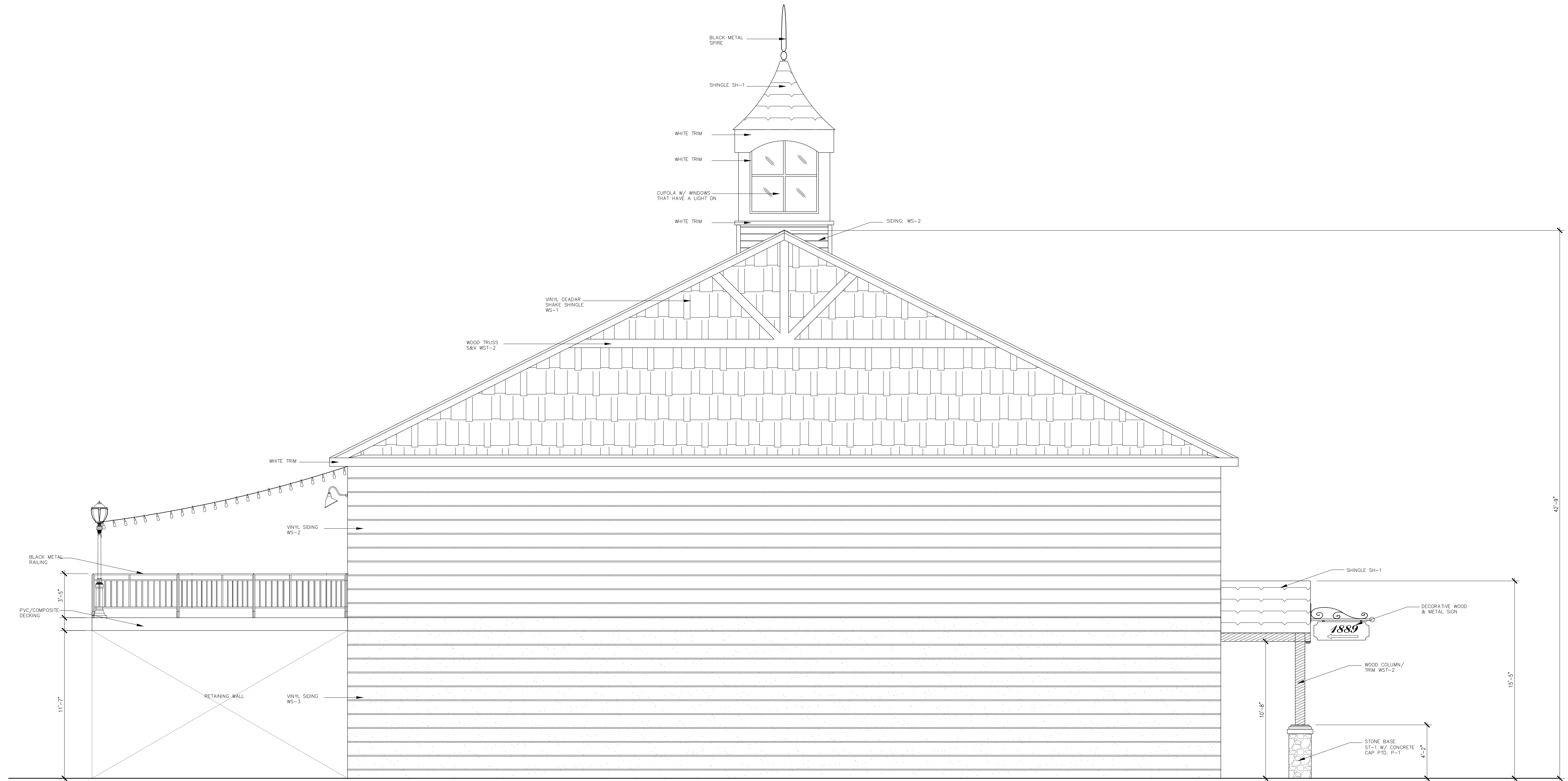
DYNAMIC DESIGNS
DYNAMIC DESIGNS, P.C.
299 East Foothills St. Birmingham, NH 03009
960.644.8982

seal date: license no:
seal name:
seal signature:

project no.

sheet no.
D-6.1

DESIGN DISCLAIMER
DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.



issued for:

- preliminary
1/20/2022
- client approval
5/10/2023
- landlord approval
- bidding
- permit
- construction
- revision

do not measure drawing
use figured dimensions only

copyright 2023
all rights reserved

EXTERIOR ELEVATIONS

1889

EXETER, NH

**DYNAMIC
DESIGNS**

DYNAMIC DESIGNS, P.C.
259 East Freet St., Birmingham, NH 03009
866.644.8982

seal date: license no.:

seal name:

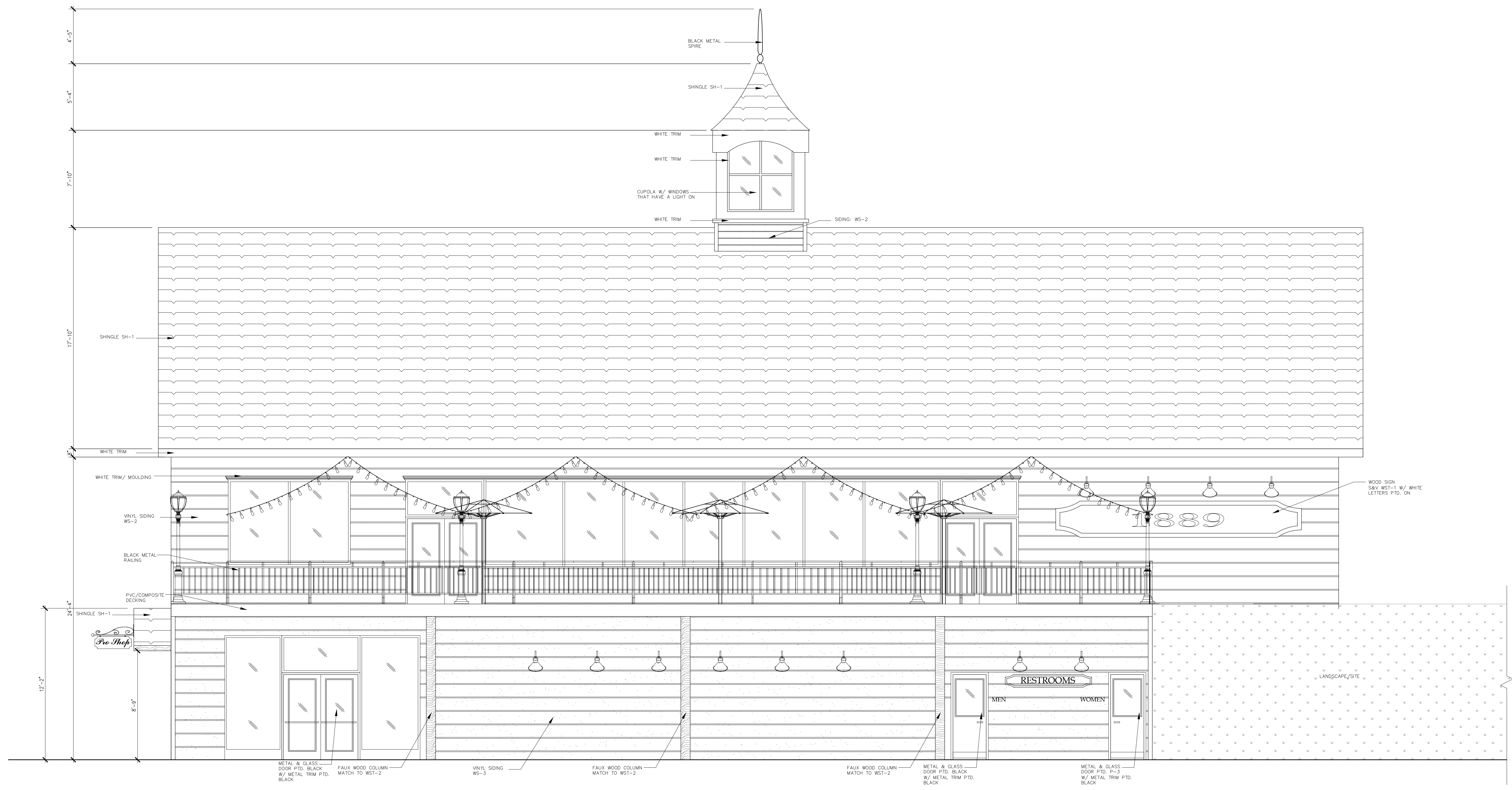
seal signature:

project no.

sheet no.
D-6.2

1 EXTERIOR ELEVATION
D6.2 SCALE 1/4" = 1'-0"

DESIGN DISCLAIMER
DRAWINGS ARE MEANT TO CONVEY DESIGN
INTENT ONLY. ARCHITECT AND ENGINEERS
ARE RESPONSIBLE FOR INSTILLING DESIGN
INTENT INTO WORKABLE CONSTRUCTION
DOCUMENTS THAT WILL PROVIDE A SAFE
AND EFFICIENT BUILDING.



issued for:

- preliminary 1/20/2022
- client approval 5/10/2023
- landlord approval
- bidding
- permit
- construction
- revision

do not measure drawing use figured dimensions only

copyright 2023 all rights reserved

EXTERIOR ELEVATIONS

1889

EXETER, NH

DYNAMIC DESIGNS
DYNAMIC DESIGNS, P.C.
 259 East Footh St. Birmingham, NH 03009
 603.644.1892

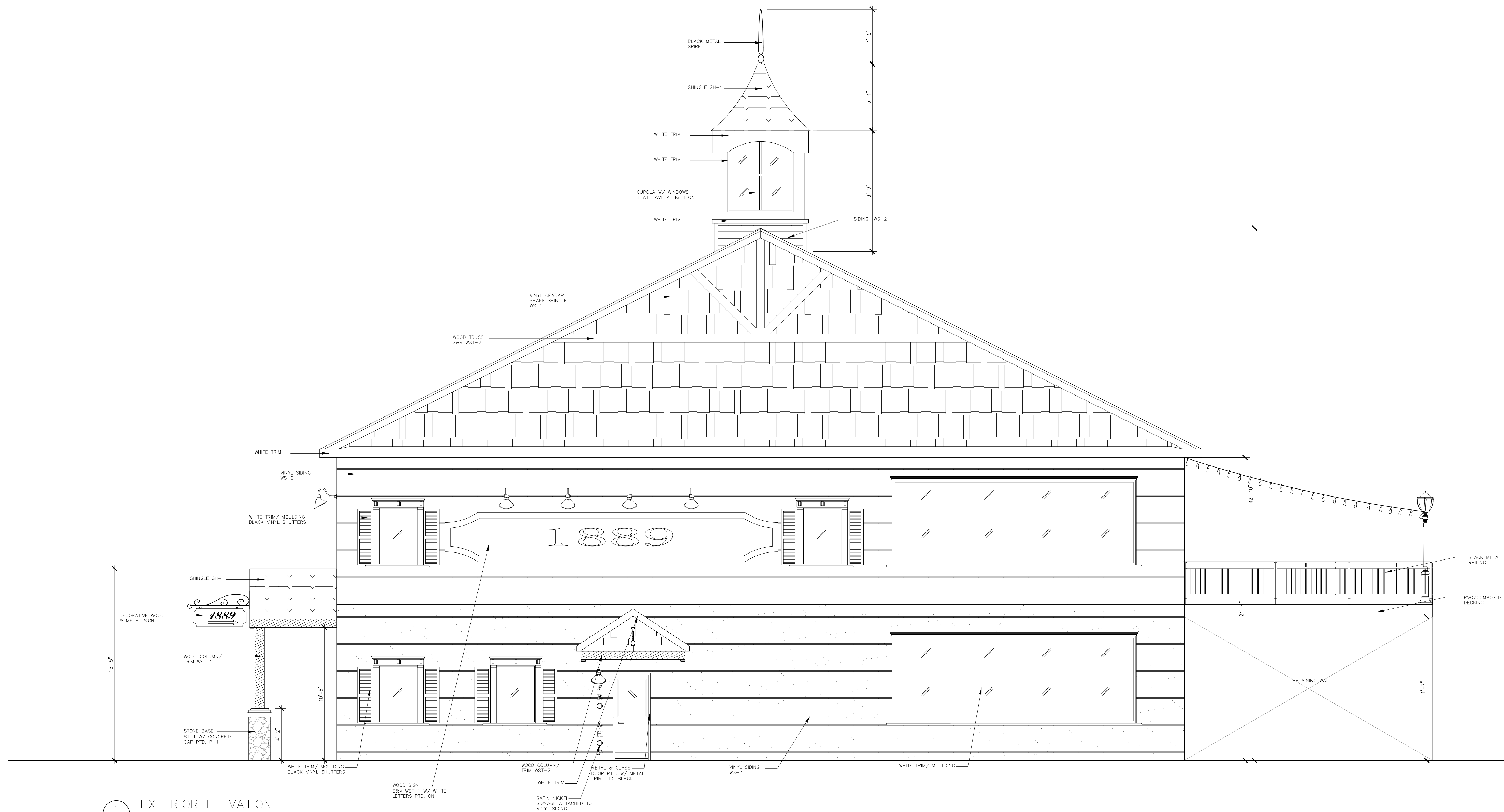
seal date: license no:
 seal name:
 seal signature:

project no.

sheet no.
 D-6.3

1 EXTERIOR ELEVATION
 D6.3 SCALE 1/4" = 1'-0"

DESIGN DISCLAIMER
 DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.



- issued for:
- preliminary
1/20/2022
 - client approval
5/10/2023
 - landlord approval
 - bidding
 - permit
 - construction
 - revision

do not measure drawing
use figured dimensions only
copyright 2023
all rights reserved

EXTERIOR ELEVATIONS

1889

EXETER, NH

**DYNAMIC
DESIGNS**
DYNAMIC DESIGNS, P.C.
259 East Front St. Birmingham, NH 03009
866.644.8992

seal date: _____ license no.: _____
seal name: _____
seal signature: _____

project no. _____

sheet no.
D-6.4

1 EXTERIOR ELEVATION
D6.4 SCALE 1/4" = 1'-0"

DESIGN DISCLAIMER
DRAWINGS ARE MEANT TO CONVEY DESIGN INTENT ONLY. ARCHITECT AND ENGINEERS ARE RESPONSIBLE FOR INSTILLING DESIGN INTENT INTO WORKABLE CONSTRUCTION DOCUMENTS THAT WILL PROVIDE A SAFE AND EFFICIENT BUILDING.



Catalog #: _____ Project: _____

Prepared By: _____ Date: _____ Type: _____

Mirada Medium (MRM)

Outdoor LED Area Light



IP66 IK08



OVERVIEW	
Lumen Package	7,000 - 48,000
Wattage Range	48 - 401
Efficacy Range (LPW)	117 - 160
Weight lbs(kg)	30 (13.6)

QUICK LINKS

[Ordering Guide](#)[Performance](#)[Photometrics](#)[Dimensions](#)

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System

- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated sealed optical chamber in 1 component.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in IES Types 2, 3, 5W, FT, FTA and AM.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377. Also Available in Phosphor Converted Amber with Peak intensity at 610nm.
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical

- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz or optional High Voltage (347-480 Vac).
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L and 48L lumen packages rated to +40°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls

- Optional integral passive infrared Bluetooth™ motion and photocell sensor (see page 8 for more details). Fixtures operate independently and can be commissioned via iOS or Android configuration app

- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7. (see controls section for more details).

Installation

- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional 3" drill pattern B3 for easy fastening of LSI products.

Warranty

- LSI LED Fixtures carry a 5-year warranty.

Listings

- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet Locations.
- IP66 rated Luminaire per IEC 60598.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2)
- IK08 rated luminaire per IEC 66262 mechanical impact code



Mirada Medium Outdoor LED Area Light

ORDERING GUIDE

[Back to Quick Links](#)TYPICAL ORDER EXAMPLE: **MRM LED 36L SIL FTA UNV DIM 50 70CRI ALSCS04 BRZ IL**

Family	Light Source	Lumen Package	Light Output	Distribution	Orientation ²	Voltage	Driver
MRM - Mirada	LED	7L - 7,000 lms 9L - 9,000 lms 12L - 12,000 lms 18L - 18,000 lms 24L - 24,000 lms 30L - 30,000 lms 36L - 36,000 lms 42L - 42,000 lms 48L - 48,000 lms Custom Lumen Packages ¹	SIL - Silicone	2 - Type 2 3 - Type 3 5W - Type 5 Wide FT - Forward Throw FTA - Forward Throw Automotive AM - Automotive Merchandise	(blank) - standard L - Optics rotated left 90° R - Optics rotated right 90°	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	DIM - 0-10V Dimming (0-10%)

Color Temp	Color Rendering	Finish	Options
50 - 5,000 CCT 40 - 4,000 CCT 30 - 3,000 CCT AMB - Phosphor Converted Amber ¹²	70CRI - 70 CRI	BLK - Black BRZ - Dark Bronze GMG - Gun Metal Gray GPT - Graphite MSV - Metallic Silver PLP - Platinum Plus SVG - Satin Verde Green WHT - White	(Blank) - None IH - Integral Half Louver (Moderate Spill Light Cutoff) ² IL - Integral Louver (Sharp Spill Light Cutoff) ²

Controls (Choose One)

(Blank) - None

Wireless Controls System

ALSC - AirLink Synapse Control System
 ALSCH - AirLink Synapse Control System Host / Satellite³
 ALSCH02 - AirLink Synapse Control System with 12-20' Motion Sensor
 ALSCH02 - AirLink Synapse Control System Host / Satellite with 12-20' Motion Sensor³
 ALSCH04 - AirLink Synapse Control System with 20-40' Motion Sensor
 ALSCH04 - AirLink Synapse Control System Host / Satellite with 20-40' Motion Sensor³
 ALBSC1 - AirLink Blue Wireless Motion & Photo Sensor Controller (8-24' mounting height)
 ALBSC2 - AirLink Blue Wireless Motion & Photo Sensor Controller (25-40' mounting height)

Stand-Alone Controls

EXT - 0-10v Dimming leads extended to housing exterior
 CR7P - 7 Pin Control Receptacle ANSI C136.41⁵
 IMSBT1 - Integral Bluetooth™ Motion and Photocell Sensor (8-24' MH)⁵
 IMSBT2 - Integral Bluetooth™ Motion and Photocell Sensor (25-40' MH)⁵

Button Type Photocells

PC120 - 120V
 PC208-277 - 208 - 277V
 PC347 - 347V

Accessory Ordering Information⁷

CONTROLS ACCESSORIES	
Description	Order Number ⁸
PC120 Photocell for use with CR7P option (120V) ⁸	122514
PC208-277 Photocell for use with CR7P option (208V, 240V, 277V) ⁸	122515
Twist Lock Photocell (347V) for use with CR7P ⁸	122516
Twist Lock Photocell (480V) for use with CR7P ⁸	122518
AirLink 5 Pin Twist Lock Controller ⁸	661409
AirLink 7 Pin Twist Lock Controller ⁸	661410
PMOS24-24V Pole-Mounted Occupancy Sensor (24V)	663284CLR
Shorting Cap for use with CR7P	149328

FUSING OPTIONS⁹

Description	Order Number
Single Fusing (120V)	See Fusing Accessory Guide
Single Fusing (277V)	
Double Fusing (208V, 240V)	
Double Fusing (480V)	
Double Fusing (347V)	

SHIELDING OPTIONS

Mirada Small	See Shielding Guide
Mirada Medium	
Mirada Large	
Zone Medium	
Zone Large	
Slice Medium	

MOUNTING ACCESSORIES⁹

Description	Order Number ⁸
Universal Mounting Bracket	684616CLR
Adjustable Slip Filter (2" - 2 3/8" Tenon)	688138CLR
Horizontal Slip Filter (2" - 2 3/8" Tenon)	652761CLR
Quick Mount Pole Bracket (Square Pole)	687073CLR
Quick Mount Pole Bracket (4-5" Round Pole)	689903CLR
15 Tilt Quick Mount Pole Bracket (Square Pole)	688003CLR
15 Tilt Quick Mount Pole Bracket (4-5" Round Pole)	689905CLR
Wall Mount Bracket	382132CLR
Wood Pole Bracket (6" Minimum Pole Diameter)	751219CLR

MISCELLANEOUS ACCESSORIES

Description	Order Number
Field Install Integral Louver (Sharp Spill Light Cutoff)	690981
Field Install Integral Half Louver (Moderate Spill Light Cutoff)	743415
10" Linear Bird Spike Kit (3' Recommended per Luminaire)	751632

FOOTNOTES:

- Custom lumen and wattage packages available, consult factory. Values are within industry standard tolerances but not DLC listed.
- Not available with 5W distribution
- Consult Factory for availability.
- Not available in HV.
- IMSBT is field configurable via the LSI app that can be downloaded from your smartphone's native app store.
- Control device or shorting cap must be ordered separately. See Accessory Ordering Information.

- Accessories are shipped separately and field installed.
- Factory installed CR7P option required. See Options.
- "CLR" denotes finish. See Finish options.
- Only available with ALSC/ALSCH control options.
- Fusing must be located in hand hole of pole. See [Fusing Accessory Guide](#) for compatibility.
- Only available in 9L, 12L, 18L and 24L Lumen Packages. Consult factory for lead time and availability.



Mirada Medium Outdoor LED Area Light

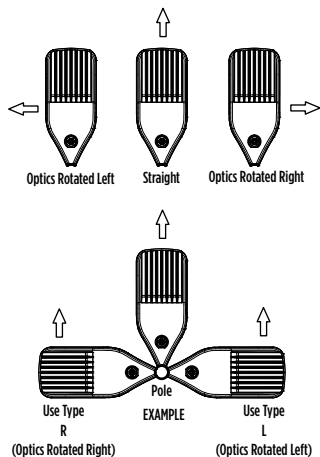
ACCESSORIES

MOUNTING ACCESSORIES		SHIELDING, POLES & MISC. ACCESSORIES	
Side Arm	Universal Mounting Bracket Mounts to ≥ 3" square or round (tapered/straight) poles with (2) mounting hole spaces between 3.5" to 5" Part Number: BKA UMB CLR		Shielding Integral Louver Field Install Integral Louver provides maximum backlight control by shielding each individual row of LEDs Part Number: 686485 Integral Half Louver Field Install Integral Half Louver provides great backlight control without impacting front side distribution. Part Number: 743416 External Shield External shield blocks view of light source from any side of luminaire, additional shielding configurations available Part Number: 785970BLK (3") / 785962BLK (6")
	Quick Mount Plate True one person installation to existing/new construction poles with hole spaces between 2.4 to 4.6" Part Number: BKS PQM B3B5 XX CLR		
	15° Tilt Quick Mount Plate True one person installation to existing/new construction poles with hole spaces between 2.4 to 4.6" Part Number: BKS P015 B3B5 XX CLR		
Tenon / Slipfitter	Adjustable Slipfitter Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and provides 180° of tilt (max 45° above horizontal) Part Number: BKA ASF CLR		Poles Square Poles 14 - 39" steel and aluminum poles in 4", 5" and 6" sizes for retrofit and new construction Part Number: 45Q/55Q/65Q Round Poles 10 - 30" steel and aluminum poles in 4" and 5" sizes for retrofit and new construction Part Number: 4RP/5RP Tapered Poles 20' - 39" steel and aluminum poles for retrofit and new construction Part Number: RTP
	Square Tenon Top Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and allows for mounting up to 4 luminaires Part Number: BKA XNM *		
	Square Internal Slipfitter Mounts inside 4" or 5" square pole and allows for mounting up to 4 luminaires Part Number: BKA X_ISF * CLR		
Wall Mount / Wood Pole	Wall Mount Bracket Mounts onto vertical wall surface (hardware/anchors not included) Part Number: BKS XBO WM CLR		Misc. Bird Spikes 10' Linear Bird Spike Kit, 4' recommended per luminaire, includes silicone adhesive and application tool Part Number: 751632
	Wood Pole Bracket Mounts onto wooden poles (6" minimum OD, hardware/anchors not included) Part Number: BKS XBO WP CLR		

Replace CLR with paint finish description
 Replace XX with SQ for square pole or RD for round pole (≥3" OD)
 Replace * with S (Single), D180 (Double @180°), D90 (Double @90°), T90 (Triple), Q90 (Quad)
 Replace _ with 4 (4" square pole) or 5 (5" square pole)

OPTICS ROTATION

Top View



ACCESSORIES/OPTIONS

Integral Louver (IL) and House-Side Shield (IH)

Accessory louver and shield available for improved backlight control without sacrificing street side performance. LSI's Integral Louver (L) and Integral House-Side Shield (IH) options deliver backlight control that significantly reduces spill light behind the poles for applications with pole locations close to adjacent properties. The design maximizes forward reflected light while reducing glare, maintaining the optical distribution selected, and most importantly eliminating light trespass. Both options rotate with the optical distribution.

Luminaire Shown with Integral Louver (IL)



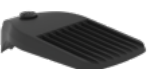
Luminaire Shown with IMSBT Option



7 Pin Photoelectric Control

7-pin ANSI C136.41-2013 control receptacle option available for twist lock photocontrols or wireless control modules. Control accessories sold separately. Dimming leads from the receptacle will be connected to the driver dimming leads (Consult factory for alternate wiring).

Luminaire Shown with CR7P





Mirada Medium Outdoor LED Area Light

[Back to Quick Links](#)

PERFORMANCE

DELIVERED LUMENS*												
Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
7L	2	70	7560	157	B2-U0-G2	7560	157	B2-U0-G2	7560	157	B2-U0-G2	48
	3		7616	159	B1-U0-G2	7616	159	B1-U0-G2	7616	159	B1-U0-G2	
	5W		7292	152	B3-U0-G1	7292	152	B3-U0-G1	7292	152	B3-U0-G1	
	FT		7562	158	B2-U0-G2	7562	158	B2-U0-G2	7562	158	B2-U0-G2	
	FTA		7595	158	B2-U0-G2	7595	158	B2-U0-G2	7595	158	B2-U0-G2	
	AM		7687	160	B1-U0-G1	7687	160	B1-U0-G1	7687	160	B1-U0-G1	
9L	2	70	9853	159	B2-U0-G2	9853	159	B2-U0-G2	9853	159	B2-U0-G2	62
	3		9926	160	B2-U0-G2	9926	160	B2-U0-G2	9926	160	B2-U0-G2	
	5W		9504	153	B3-U0-G2	9504	153	B3-U0-G2	9504	153	B3-U0-G2	
	FT		9856	159	B2-U0-G3	9856	159	B2-U0-G3	9856	159	B2-U0-G3	
	FTA		9900	160	B2-U0-G2	9900	160	B2-U0-G2	9900	160	B2-U0-G2	
	AM		10019	162	B2-U0-G1	10019	162	B2-U0-G1	10019	162	B2-U0-G1	
12L	2	70	13135	155	B3-U0-G2	13135	155	B3-U0-G2	13135	155	B3-U0-G2	85
	3		13232	156	B2-U0-G2	13232	156	B2-U0-G2	13232	156	B2-U0-G2	
	5W		12669	149	B4-U0-G2	12669	149	B4-U0-G2	12669	149	B4-U0-G2	
	FT		13138	155	B2-U0-G3	13138	155	B2-U0-G3	13138	155	B2-U0-G3	
	FTA		13196	155	B2-U0-G2	13196	155	B2-U0-G2	13196	155	B2-U0-G2	
	AM		13355	157	B2-U0-G2	13355	157	B2-U0-G2	13355	157	B2-U0-G2	
18L	2	70	19318	143	B3-U0-G3	19318	143	B3-U0-G3	19318	143	B3-U0-G3	135
	3		19461	144	B3-U0-G3	19461	144	B3-U0-G3	19461	144	B3-U0-G3	
	5W		18633	138	B4-U0-G2	18633	138	B4-U0-G2	18633	138	B4-U0-G2	
	FT		19324	143	B3-U0-G3	19324	143	B3-U0-G3	19324	143	B3-U0-G3	
	FTA		19408	144	B3-U0-G3	19408	144	B3-U0-G3	19408	144	B3-U0-G3	
	AM		19641	145	B3-U0-G2	19641	145	B3-U0-G2	19641	145	B3-U0-G2	
24L	2	70	25957	147	B4-U0-G3	25957	147	B4-U0-G3	25957	147	B4-U0-G3	176
	3		26149	149	B3-U0-G4	26149	149	B3-U0-G4	26149	149	B3-U0-G4	
	5W		25037	142	B5-U0-G3	25037	142	B5-U0-G3	25037	142	B5-U0-G3	
	FT		25964	148	B3-U0-G4	25964	148	B3-U0-G4	25964	148	B3-U0-G4	
	FTA		26077	148	B3-U0-G3	26077	148	B3-U0-G3	26077	148	B3-U0-G3	
	AM		26393	150	B3-U0-G2	26393	150	B3-U0-G2	26393	150	B3-U0-G2	
30L	2	70	32417	140	B4-U0-G3	32417	140	B4-U0-G3	32417	140	B4-U0-G3	232
	3		32656	141	B3-U0-G4	32656	141	B3-U0-G4	32656	141	B3-U0-G4	
	5W		31267	135	B5-U0-G3	31267	135	B5-U0-G3	31267	135	B5-U0-G3	
	FT		32424	140	B3-U0-G4	32424	140	B3-U0-G4	32424	140	B3-U0-G4	
	FTA		32566	140	B4-U0-G3	32566	140	B4-U0-G3	32566	140	B4-U0-G3	
	AM		32960	142	B3-U0-G3	32960	142	B3-U0-G3	32960	142	B3-U0-G3	
36L	2	70	38275	133	B4-U0-G4	38275	133	B4-U0-G4	38275	133	B4-U0-G4	288
	3		38557	134	B4-U0-G5	38557	134	B4-U0-G5	38557	134	B4-U0-G5	
	5W		36917	128	B5-U0-G4	36917	128	B5-U0-G4	36917	128	B5-U0-G4	
	FT		38283	133	B4-U0-G5	38283	133	B4-U0-G5	38283	133	B4-U0-G5	
	FTA		38450	134	B4-U0-G4	38450	134	B4-U0-G4	38450	134	B4-U0-G4	
	AM		38916	135	B3-U0-G3	38916	135	B3-U0-G3	38916	135	B3-U0-G3	



Mirada Medium Outdoor LED Area Light

PERFORMANCE (CONT.)

DELIVERED LUMENS*												
Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
42L	2	70	4418	125	B5-U0-G4	4418	125	B5-U0-G4	4418	125	B5-U0-G4	354
	3		4444	126	B4-U0-G5	4444	126	B4-U0-G5	4444	126	B4-U0-G5	
	5W		42555	120	B5-U0-G4	42555	120	B5-U0-G4	42555	120	B5-U0-G4	
	FT		44130	125	B4-U0-G5	44130	125	B4-U0-G5	44130	125	B4-U0-G5	
	FTA		44322	125	B4-U0-G4	44322	125	B4-U0-G4	44322	125	B4-U0-G4	
	AM		44859	127	B4-U0-G3	44859	127	B4-U0-G3	44859	127	B4-U0-G3	
48L	2	70	48795	122	B5-U0-G4	48795	122	B5-U0-G4	48795	122	B5-U0-G4	401
	3		49156	123	B4-U0-G5	49156	123	B4-U0-G5	49156	123	B4-U0-G5	
	5W		47066	117	B5-U0-G4	47066	117	B5-U0-G4	47066	117	B5-U0-G4	
	FT		48809	122	B4-U0-G5	48809	122	B4-U0-G5	48809	122	B4-U0-G5	
	FTA		49021	122	B5-U0-G4	49021	122	B5-U0-G4	49021	122	B5-U0-G4	
	AM		49615	124	B4-U0-G3	49615	124	B4-U0-G3	49615	124	B4-U0-G3	

ELECTRICAL DATA (AMPS)*						
Lumens	120V	208V	240V	277V	347V	480V
7L	0.40	0.23	0.20	0.17	0.14	0.10
9L	0.52	0.30	0.26	0.22	0.18	0.13
12L	0.71	0.41	0.35	0.31	0.24	0.18
18L	1.13	0.65	0.56	0.49	0.39	0.28
24L	1.47	0.85	0.73	0.64	0.51	0.37
30L	1.93	1.12	0.97	0.84	0.67	0.48
36L	2.40	1.38	1.20	1.04	0.83	0.60
42L	2.95	1.70	1.48	1.28	1.02	0.74
48L	3.4A	1.9A	1.7A	1.5A	1.2A	0.8A

ELECTRICAL DATA - PHOSPHOR CONVERTED AMBER (AMPS)*							
Lumens	Watts	120V	208V	240V	277V	347V	480V
9L	74.3	0.6A	0.4A	0.3A	0.3A	0.2A	0.2A
12L	102.9	0.9A	0.5A	0.4A	0.4A	0.3A	0.2A

*Electrical data at 25°C (77°F). Actual wattage may differ by +/-10%

RECOMMENDED LUMEN MAINTENANCE ¹ (7-18L)					
Ambient	Initial ²	25h ²	50hr ²	75hr ²	100hr ²
0-50 C	100%	96%	92%	88%	84%

RECOMMENDED LUMEN MAINTENANCE ¹ (24-48L)					
Ambient	Initial ²	25h ²	50hr ²	75hr ²	100hr ²
0-40 C	100%	100%	97%	94%	92%

- Lumen maintenance values at 25C are calculated per TM-21 based on LM-80 data and in-situ testing.
- In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
- In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.

DELIVERED LUMENS*					
Lumen Package	Distribution	Phosphor Converted Amber (Peak 610nm)			Wattage
		Delivered Lumens	Efficacy	BUG Rating	
9L	2	5848	80	B2-U0-G2	74
	3	6018	82	B1-U0-G2	
	5W	5471	74	B3-U0-G1	
	FT	5801	79	B1-U0-G2	
	FTA	5924	81	B1-U0-G1	
	AM	5995	81	B1-U0-G1	
12L	2	7530	74	B2-U0-G2	102
	3	7749	76	B1-U0-G2	
	5W	7045	69	B3-U0-G2	
	FT	7470	73	B2-U0-G2	
	FTA	7628	75	B2-U0-G2	
	AM	7720	76	B1-U0-G1	
18L	2	9311	69	B2-U0-G2	135
	3	9582	71	B2-U0-G2	
	5W	8712	65	B3-U0-G2	
	FT	9237	68	B2-U0-G2	
	FTA	9433	70	B2-U0-G2	
	AM	9546	71	B2-U0-G1	
24L	2	10955	63	B2-U0-G2	175
	3	11273	64	B2-U0-G2	
	5W	10249	59	B3-U0-G2	
	FT	10867	62	B2-U0-G2	
	FTA	11097	63	B2-U0-G2	
	AM	11230	64	B2-U0-G1	

*LEDs are frequently updated therefore values are nominal.



Mirada Medium Outdoor LED Area Light

PHOTOMETRICS

[Back to Quick Links](#)

Luminaire photometry has been conducted by an accredited laboratory in accordance with IESNA LM-79. As specified by IESNA LM-79 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

MRM-LED-30L-SIL-2-40-70CRI

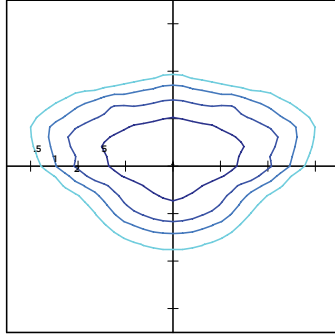
LUMINAIRE DATA

Type 2 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,416
Watts	232
Efficacy	140
IES Type	Type II - Short
BUG Rating	B4-U0-G3

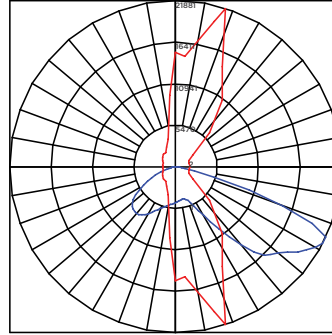
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	4796	15%
Medium (30-60)°	19811	61%
High (60-80)°	7474	23%
Very High (80-90)°	335	1%
Uplight (90-180)°	0	0%
Total Flux	32416	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

■ 5 FC ■ 2 FC ■ 1 FC ■ 0.5 FC

MRM-LED-30L-SIL-3-40-70CRI

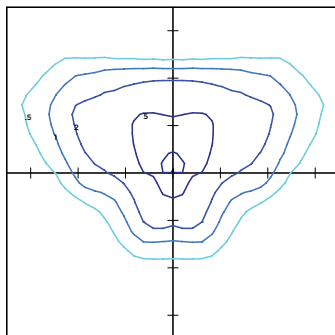
LUMINAIRE DATA

Type 3 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,656
Watts	232
Efficacy	141
IES Type	Type III - Short
BUG Rating	B3-U0-G4

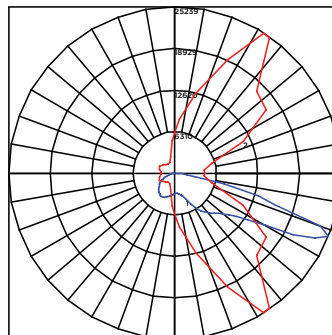
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	3385	10%
Medium (30-60)°	16250	50%
High (60-80)°	12430	38%
Very High (80-90)°	591	2%
Uplight (90-180)°	0	0%
Total Flux	32656	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

■ 5 FC ■ 2 FC ■ 1 FC ■ 0.5 FC

MRM-LED-30L-SIL-FT-40-70CRI

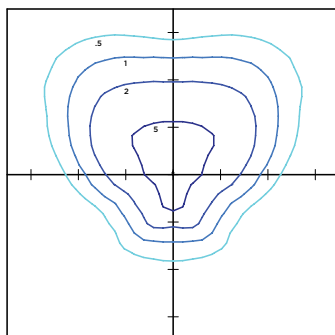
LUMINAIRE DATA

Type FT Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,424
Watts	232
Efficacy	140
IES Type	Type IV - Short
BUG Rating	B3-U0-G4

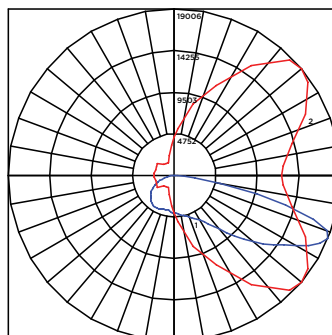
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	3952	12%
Medium (30-60)°	15505	48%
High (60-80)°	12279	38%
Very High (80-90)°	688	2%
Uplight (90-180)°	0	0%
Total Flux	32424	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

■ 5 FC ■ 2 FC ■ 1 FC ■ 0.5 FC





Mirada Medium Outdoor LED Area Light

PHOTOMETRICS (CONT)

MRM-LED-30L-SIL-5W-40-70CRI

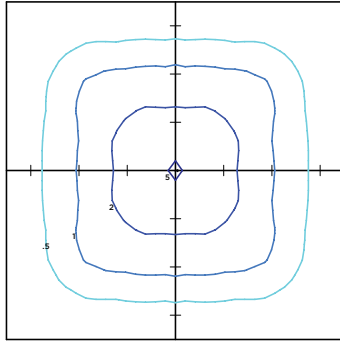
LUMINAIRE DATA

Type 5W Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	31,267
Watts	232
Efficacy	135
IES Type	Type VS - Short
BUG Rating	B5-U0-G3

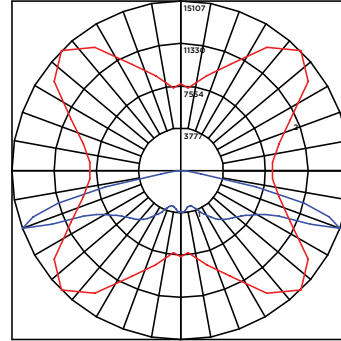
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	3138	10%
Medium (30-60)°	13193	42%
High (60-80)°	14641	47%
Very High (80-90)°	296	1%
Uplight (90-180)°	0	0%
Total Flux	31267	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

■ 5 FC
 ■ 2 FC
 ■ 1 FC
 ■ 0.5 FC

MRM-LED-30L-SIL-FTA-40-70CRI

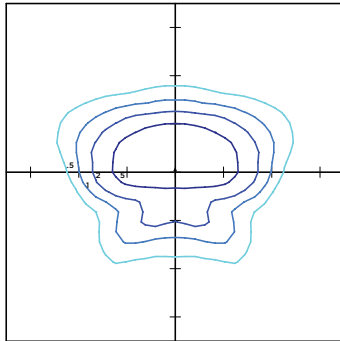
LUMINAIRE DATA

Type FTA Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,566
Watts	232
Efficacy	140
IES Type	Type VS - Short
BUG Rating	B4-U0-G3

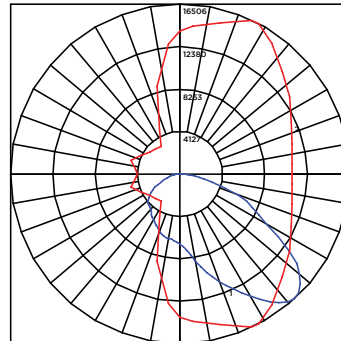
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	6986	21%
Medium (30-60)°	19172	59%
High (60-80)°	5875	18%
Very High (80-90)°	534	2%
Uplight (90-180)°	0	0%
Total Flux	32566	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

■ 5 FC
 ■ 2 FC
 ■ 1 FC
 ■ 0.5 FC

MRM-LED-30L-SIL-AM-40-70CRI

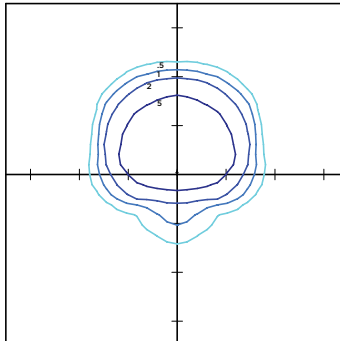
LUMINAIRE DATA

Type AM Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,960
Watts	232
Efficacy	142
IES Type	Type III - Very Short
BUG Rating	B3-U0-G3

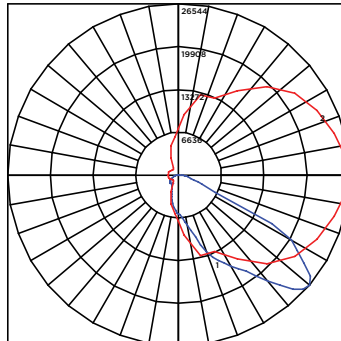
Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30)°	6363	19%
Medium (30-60)°	22026	67%
High (60-80)°	4192	13%
Very High (80-90)°	379	1%
Uplight (90-180)°	0	0%
Total Flux	32960	100%

ISO FOOTCANDLE



POLAR CURVE



25' Mounting Height/ 25' Grid Spacing

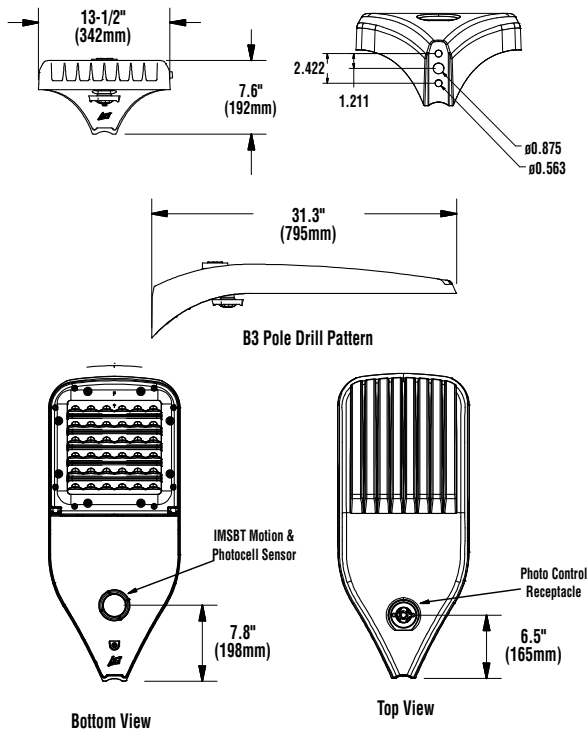
■ 5 FC
 ■ 2 FC
 ■ 1 FC
 ■ 0.5 FC



Mirada Medium Outdoor LED Area Light

[Back to Quick Links](#)

PRODUCT DIMENSIONS



LUMINAIRE EPA CHART - MRM									
Tilt Degree		0°	30°	45°	Tilt Degree		0°	30°	45°
	Single	0.5	1.5	1.9		T90°	1.0	2.5	2.8
	D180°	1.0	1.5	1.9		TN120°	1.0	3.3	3.9
	D90°	0.8	1.9	2.3		Q90°	1.0	2.5	2.8

CONTROLS

AirLink Wireless Lighting Controller

The AirLink integrated controller is a California Title 24 compliant lighting controller that provides real-time light monitoring and control with utility-grade power monitoring. It includes a 24V sensor input and power supply to connect a sensor into the outdoor AirLink wireless lighting system. The wireless integrated controller is compatible with this fixture.

Click the link below to learn more details about AirLink.

<https://www.lsicorp.com/wp-content/uploads/documents/products/airlink-outdoor-specsheet.pdf>

Integral Bluetooth™ Motion and Photocell Sensor (IMSBT)

Slim low profile sensor provides multi-level control based on motion and/or daylight. Sensor controls 0-10 VDC LED drivers and is rated for cold and wet locations (-30° C to 70° C). Two unique PIR lenses are available and used based on fixture mounting height. All control parameters are adjustable via an iOS or Android App capable of storing and transmitting sensor profiles.

Click the link below to learn more details about IMSBT.

<https://www.lsicorp.com/wp-content/uploads/documents/products/imsbt-specsheet.pdf>

AirLink Blue

Wireless Bluetooth Mesh Outdoor Lighting Control System that provides energy savings, code compliance and enhanced safety/security for parking lots and parking garages. Three key components; Bluetooth wireless radio/sensor controller, Time Keeper and an iOS App. Capable of grouping multiple fixtures and sensors as well as scheduling time-based events by zone. Radio/Sensor Controller is factory integrated into Area/Site, Wall Mounted, Parking Garage and Canopy luminaires.

Click the link below to learn more details about AirLink Blue.

<https://www.lsicorp.com/product/airlink-blue/>



Mirada Small Wall Sconce Silicone (XWS SIL)

Outdoor LED Wall Light



OVERVIEW

Lumen Package (lm)	2,000 - 8,000
Wattage Range (W)	13 - 61
Efficacy Range (LPW)	126 - 162
Weight lbs (kg)	10 (4.5)

QUICK LINKS

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: TBD lbs in carton.
- Max luminaire shipping weight: 12 lbs in carton (20 lbs w/EH option)

Optical System

- State-of-the-Art one piece silicone optic provides industry leading optical control while also acting as an integrated gasket reducing system complexity and improving fixture reliability.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, and FT.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377.
- Minimum CRI of 70

Electrical

- High-performance driver features over-voltage under-voltage, short-circuit, and over temperature protection.

- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion (THD): <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F).
- Power factor (PF): >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance. Driver complies with FCC standards. Accessible driver and electrical components.
- Optional battery backup provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. Standard battery rated for 0°C to 50°C with cold weather battery rated for -20°C to 50°C (40°C max for 8L). 120-277V Only.

Controls

- Optional integral passive infrared Bluetooth™ motion. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- Optional button photocell turns fixtures on and off based on ambient light levels for dusk to dawn lighting.

- LSI's AirLink Blue wireless control system options allow for fixture and motion sensor grouping while reducing energy and maintenance costs.

Installation

- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to <https://www.lsicorp.com/resources/terms-conditions-warranty/> for more information.

Listings

- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- IK08 rated luminaire per IEC 66262 mechanical impact code.

Mirada Small Wall Sconce Silicone (XWS SIL)

Type : _____

 **Have questions?** Call us at (800) 436-7800

ORDERING GUIDE

TYPICAL ORDER EXAMPLE: XWS LED 6L SIL FT UNV DIM 40 70CRI ALBCS1 BLK CWBB						
Prefix	Light Source	Lumen Package	Lens	Distribution	Voltage	Driver
XWS - Mirada Small Wall Sconce	LED	2L - 2,000 3L - 3,000 5L - 5,000 6L - 6,000 8L - 8,000 Custom Lumen Packages ¹	SIL - Silicone	2 - Type 2 3 - Type 3 FT - Forward Throw	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	DIM - 0-10v Dimming (0-10%)
Color Temperature	Color Rendering	Controls			Finish	Options
50 - 5000K 40 - 4000K 30 - 3000K	70CRI - 70 CRI	Blank - None Wireless Controls ALBCS1 - AirLink Blue Wireless Motion & Photo Sensor Controller (8-24' mounting height) ² Standalone Controls EXT - 0-10v Dimming leads extended to housing exterior IMSBT1 - Integral Bluetooth™ Motion Sensor 8-24' MH ^{2,3} Button Type Photocells PCI120 - 120V PCI208-277 - 208 -277V PCI347 - 347V			BLK - Black BRZ - Dark Bronze GMG - Gun Metal Gray GPT - Graphite MSV - Metallic Silver PLP - Platinum Plus SVG - Satin Verde Green WHT - White	Blank - None BB - 10w Battery Back-up (0°C) ⁴ CWBB - 10w Cold Weather Battery Backup (-20°C) ⁴ BB20 - 20W Battery Back-up (0°C) ⁴ EH - Extended Housing ⁵ SP1 - 10kV Surge Protection Device



Need more information?
[Click here for our glossary.](#)

Have additional questions?
 Call us at (800) 436-7800



ACCESSORY ORDERING INFORMATION*

Part Number	Description
758274CLR	XWS Extended Housing/Surface Conduit Wiring Box
760159CLR	XWS Spacer Plate/Wiring Box

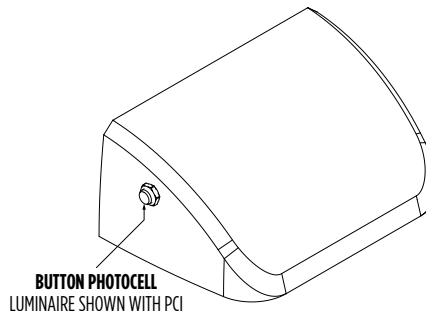
*Accessories are shipped separately and field installed.

Battery Backup

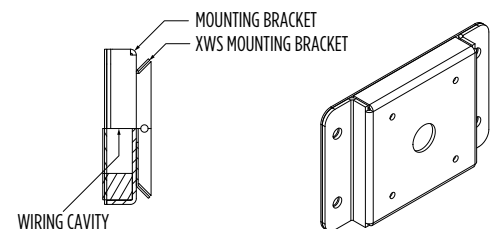
- Emergency battery system provides 90-minutes of constant power to the LED system, ensuring code compliance.
- A test switch/indicator button is installed on the housing for ease of maintenance.
- 10w battery delivers ~1,500 lumens during emergency mode.
- 20w battery delivers ~3,000 lumens during emergency mode.



Luminaire shown with sensor & battery backup



BUTTON PHOTOCELL
LUMINAIRE SHOWN WITH PCI



WIRING CAVITY

MOUNTING BRACKET
XWS MOUNTING BRACKET

1 Custom lumen and wattage packages available, consult factory. Values are within industry standard tolerances but not DLC listed.
 2 When high voltage (HV) is specified, IMSBT and ALBCS control options are limited to 6L and 8L lumen packages.
 3 IMSBT is field configurable via the LSI app that can be downloaded from your smartphone's native app store.
 4 Universal Voltage Only (120-277V). 20W Battery Backup only available 2L - 6L.
 5 For applications with surface conduit.

Mirada Small Wall Sconce Silicone (XWS SIL)

Type : _____

 Have questions? Call us at (800) 436-7800

PERFORMANCE

Delivered Lumens ¹												
Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	Bug Rating	Delivered Lumens	Efficacy	Bug Rating	Delivered Lumens	Efficacy	Bug Rating	
2L	2	70	1,851	142	B1-U0-G1	1,974	152	B1-U0-G1	1,976	152	B1-U0-G1	13
	3		1,930	148	B1-U0-G1	2,058	158	B1-U0-G1	2,060	158	B1-U0-G1	
	FT		1,889	145	B1-U0-G1	2,015	155	B1-U0-G1	2,017	155	B1-U0-G1	
3L	2	70	2,765	146	B1-U0-G1	2,950	155	B1-U0-G1	2,953	155	B1-U0-G1	19
	3		2,884	152	B1-U0-G1	3,077	162	B1-U0-G1	3,079	162	B1-U0-G1	
	FT		2,822	149	B1-U0-G1	3,010	158	B1-U0-G1	3,012	159	B1-U0-G1	
5L	2	70	4,655	133	B2-U0-G1	4,965	142	B2-U0-G1	4,970	142	B2-U0-G1	35
	3		4,855	139	B1-U0-G1	5,179	148	B1-U0-G1	5,184	148	B1-U0-G1	
	FT		4,750	136	B1-U0-G2	5,067	145	B1-U0-G2	5,072	145	B1-U0-G2	
6L	2	70	5,578	130	B2-U0-G1	5,950	138	B2-U0-G2	5,956	139	B2-U0-G2	43
	3		5,819	135	B1-U0-G2	6,207	144	B1-U0-G2	6,214	145	B1-U0-G2	
	FT		5,693	132	B1-U0-G2	6,073	141	B1-U0-G2	6,079	141	B1-U0-G2	
8L	2	70	7,531	123	B2-U0-G2	8,034	132	B2-U0-G2	8,041	132	B2-U0-G2	61
	3		7,856	129	B2-U0-G2	8,380	137	B2-U0-G2	8,388	138	B2-U0-G2	
	FT		7,687	126	B2-U0-G2	8,199	134	B2-U0-G2	8,207	135	B2-U0-G2	

Electrical Data - Current Draw AMPS ²						
Lumen Package	120V	208V	240V	277V	347V	480V
2L	0.11	0.06	0.05	0.05	0.04	0.03
3L	0.16	0.09	0.08	0.07	0.05	0.04
5L	0.29	0.17	0.15	0.13	0.10	0.07
6L	0.36	0.21	0.18	0.16	0.12	0.09
8L	0.51	0.29	0.25	0.22	0.18	0.13

Recommended Lumen Maintenance - XWS ³					
Ambient Temperature C°	Initial ⁴	25K hrs. ⁴	50K hrs. ⁴	75K hrs. ⁵	100K hrs. ⁵
25	100%	95%	90%	85%	80%
40	100%	91%	82%	73%	65%

1 LEDs are frequently updated therefore values are nominal

2 Electrical data at 25C (77F). Actual wattage may differ by +/-10%.

3 Lumen maintenance values at 25°C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing.

4 In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip).

5 In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times NA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip).

Mirada Small Wall Sconce Silicone (XWS SIL)

Type : _____

 Have questions? Call us at (800) 436-7800

PHOTOMETRICS

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

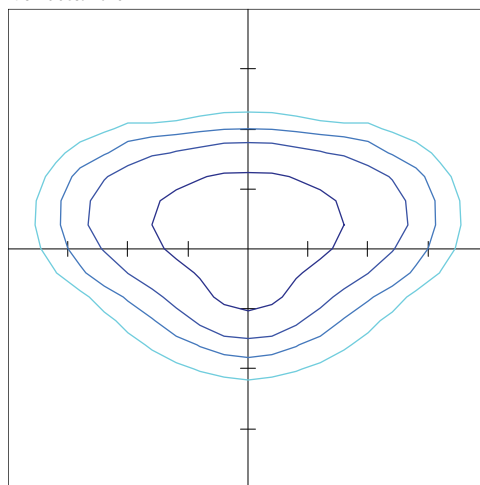
See the individual product page on <https://www.lsicorp.com/> for detailed photometric data.

XWS-LED-6L-SIL-2-40-70CRI

Luminaire Data	
Type 2 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	5,951
Watts	42.5
Efficacy	138
IES Type	Type II - Short
BUG Rating	B1-U0-G1

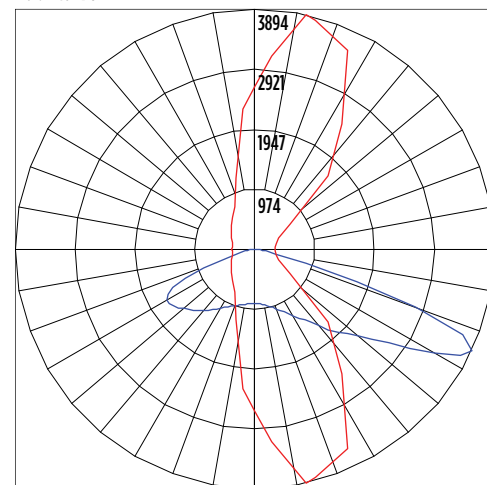
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	834	20%
Medium (30-60°)	3,379	50%
High (60-80°)	1,647	28%
Very High (80-90°)	91	1%
Uplight (90-180°)	0	0%
Total Flux	5,951	100%

ISO Footcandle



10' Mounting Height / 10' Grid Spacing
 5 FC 2 FC 1 FC 0.5 FC

Polar Curve



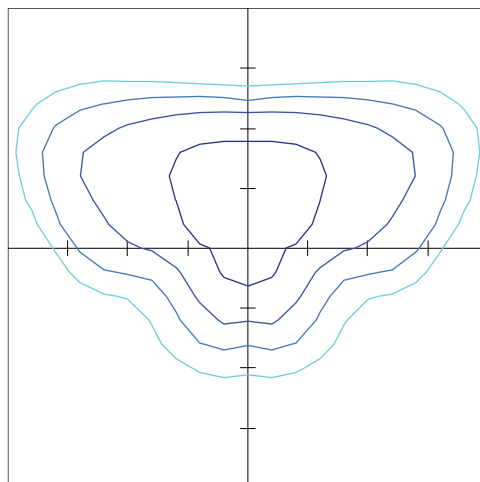
Vertical Plane Horizontal Cone

XWS-LED-6L-SIL-3-40-70CRI

Luminaire Data	
Type 3 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	6,208
Watts	42.5
Efficacy	146
IES Type	Type III - Medium
BUG Rating	B1-U0-G2

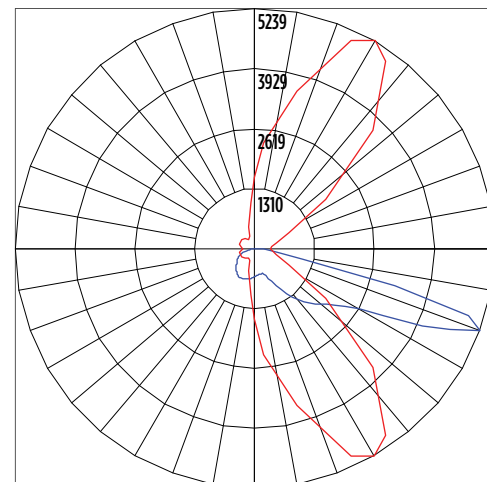
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	582	9%
Medium (30-60°)	2,997	48%
High (60-80°)	2,506	40%
Very High (80-90°)	124	2%
Uplight (90-180°)	0	0%
Total Flux	6,208	100%

ISO Footcandle



10' Mounting Height / 10' Grid Spacing
 5 FC 2 FC 1 FC 0.5 FC

Polar Curve



Vertical Plane Horizontal Cone

Mirada Small Wall Sconce Silicone (XWS SIL)

Type : _____

 Have questions? Call us at (800) 436-7800

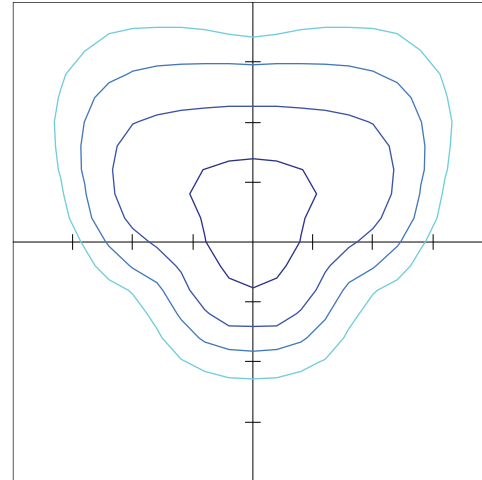
PHOTOMETRICS

XWS-LED-6L-SIL-FT-40-70CRI

Luminaire Data	
Type FT Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	6,073
Watts	42.5
Efficacy	143
IES Type	Type IV - Short
BUG Rating	B1-U0-G2

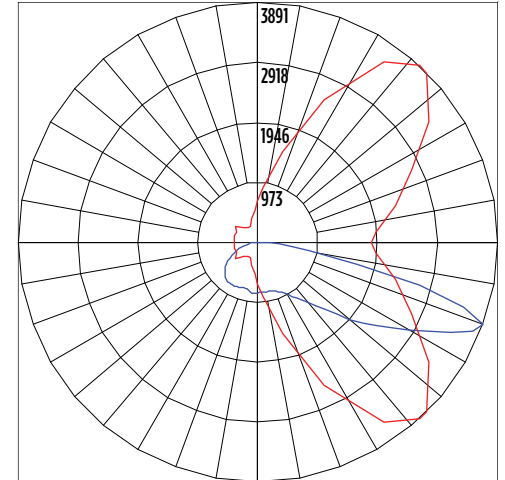
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	708.3	12%
Medium (30-60°)	2,715.5	45%
High (60-80°)	2,475.4	41%
Very High (80-90°)	173.6	3%
Uplight (90-180°)	0	0%
Total Flux	6,073	100%

ISO Footcandle



10' Mounting Height / 10' Grid Spacing
■ 5 FC ■ 2 FC ■ 1 FC ■ 0.5 FC

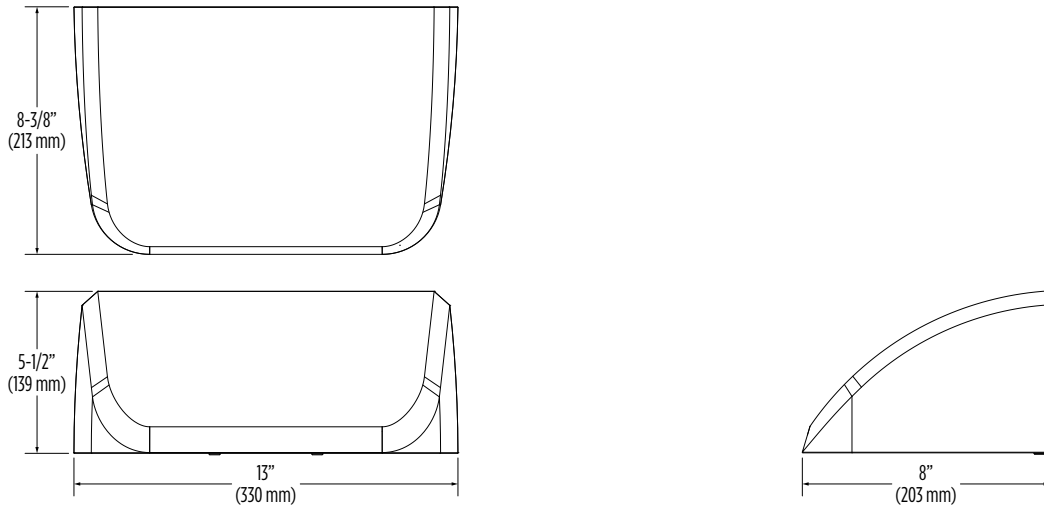
Polar Curve



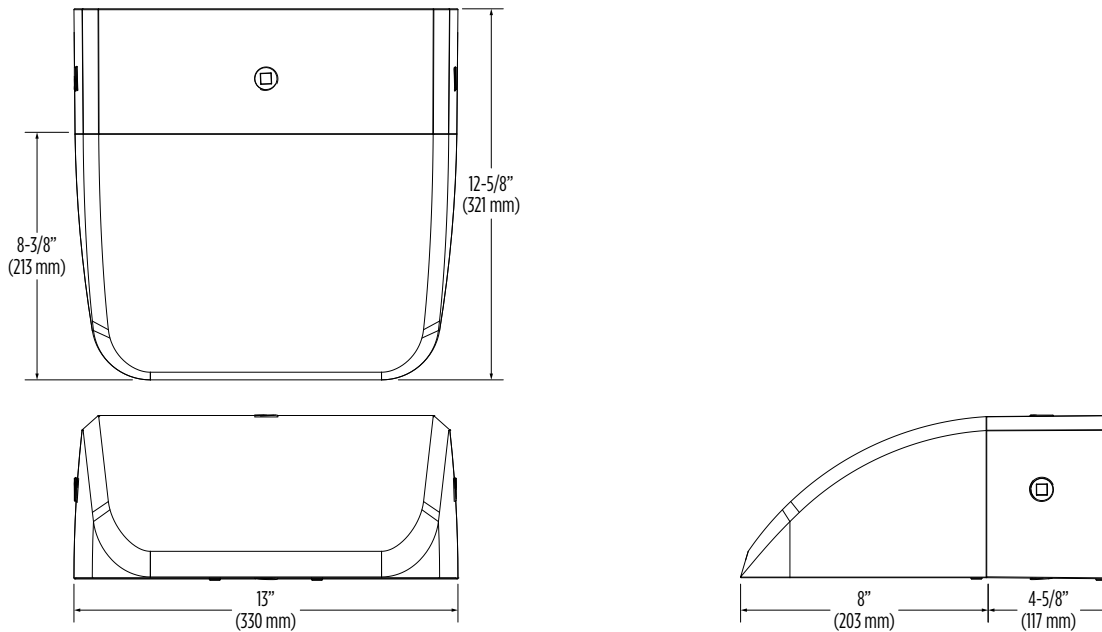
■ Vertical Plane ■ Horizontal Cone

PRODUCT DIMENSIONS

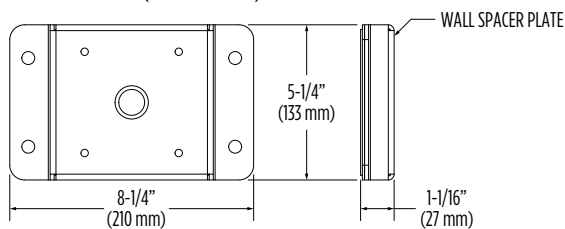
STANDARD HOUSING (XWS)



SCWB EXTENDED HOUSING (XWS 758274CLR)



XWS SPACER PLATE/WIRING BOX (XWS 760159CLR)



NOTE: Wall spacer plate allows the luminaire to float off the wall and provides space for securing wires (8.25" X 5.25" X 1.07").

CONTROLS

Integral Bluetooth™ Motion and Photocell Sensor (IMSBT1, IMSBT2)

Slim low profile sensor provides multi-level control based on motion and/or daylight. Sensor controls 0-10 VDC LED drivers and is rated for cold and wet locations (-30° C to 70° C). Two unique PIR lenses are available and used based on fixture mounting height. All control parameters are adjustable via an iOS or Android App capable of storing and transmitting sensor profiles.

[Click here to learn more details about IMSBT](#)

AirLink Blue (ALBC, ALBCS1, ALBCS2)

Wireless Bluetooth Mesh Lighting Control System that provides energy savings, code compliance and enhanced safety/security. Three key components; Bluetooth wireless radio/sensor controller, Time Keeper and an App. Capable of grouping multiple fixtures and sensors as well as scheduling time-based events by zone. Radio/Sensor Controller is factory integrated into luminaires.

[Click here to learn more details about AirLink Blue](#)



Catalog #: _____

Project: _____

Prepared By: _____

Date: _____

Steel Poles

Square Straight



QUICK LINKS

[Ordering Guide](#)[Configurations](#)[Dimensions](#)[EPA](#)

FEATURES & SPECIFICATIONS

Pole Shaft

- Straight poles are 4", 5", or 6" square.
- Pole shaft is electro-welded ASTM-A500 Grade C steel tubing with a minimum yield strength of 50,000 psi.
- On Tenon Mount steel poles, tenon is 2-3/8" O.D. high-strength pipe. Tenon is 4-3/4" in length.

Hand-Hole

- Standard hand-hole location is 12" above pole base.
- Poles 22' and above have a 3" x 6" reinforced hand-hole. Shorter poles have a 2" x 4" non-reinforced hand-hole.

Base

- Pole base is ASTM-A36 hot-rolled steel plate with a minimum yield strength of 36,000 psi.
- Two-piece square base cover is optional.

Anchor Bolts

- Poles are furnished with anchor bolts featuring zinc-plated double nuts and washers. Galvanized anchor bolts are optional.
- Anchor Bolts conform to ASTM F 1554-07a Grade 55 with a minimum yield strength of 55,000 PSI.

Ground Lug

- Ground lug is standard.

Duplex Receptacle

- Weatherproof duplex receptacle is optional.

Ground Fault Circuit Interrupter

- Self-testing Ground fault circuit interrupter is optional.

Finishes

- Every pole is provided with the DuraGrip Protection System and a 5-year limited warranty:
- When the top-of-the line DuraGrip Plus Protection System is selected, in addition to the DuraGrip Protection System, a non-porous, automotive-grade corrosion coating is applied to the lower portion of the pole interior sealing and further protecting it from corrosion. This option extends the limited warranty to 7 years.

Determining The Luminaire/Pole Combination For Your Application:

- Select luminaire from luminaire ordering information.
- Select bracket configuration if required
- Determine EPA value from luminaire/ bracket EPA chart
- Select Pole Height
- Select MPH to match wind speed in the application area (See windspeed maps).
- Confirm pole EPA equal to or exceeding value of luminaire/bracket EPA
- Consult factory for special wind load requirements and banner brackets.

Pole Vibration Damper

- A pole vibration damper is recommended in open terrain areas of the country where low steady state winds are common.
- Non-tapered poles and lightly loaded poles are more susceptible to destructive vibration if a damper is not installed.

Listings

- UL Listed
- BAA/TAA Compliant



Steel Poles - Square Straight

Type: _____

 **Have questions?** Call us at (800) 436-7800

ORDERING GUIDE

[Back to Quick Links](#)

TYPICAL ORDER EXAMPLE: 4SQ B3 S11G 24 S PLP DGP						
Pole Series	Mounting Method	Material	Height ²	Mounting Configuration	Pole Finish	Options
4SQ - 4" x 4" Square Straight Pole (New Build)	Bolt-On Mount¹ - See pole selection guide for patterns and fixture matches	S11G - 11 Ga. Steel (4SQ/4SQU and 5SQ/5SQU Only)	8'	S - Single/Parallel	BRZ - Bronze	GA - Galvanized Anchor Bolts
5SQ - 5" x 5" Square Straight Pole (New Build)			10'			
6SQ - 6" x 6" Square Straight Pole (New Build)	B5 - 5" Traditional Drilling Pattern	S07G - 07 Ga. Steel	12'	D180 - Double	BLK - Black	SF - Single Flood ³
4SQU - 4" x 4" Square Straight Pole (Retrofit)			13'			
5SQU - 5" x 5" Square Straight Pole (Retrofit)	B3 - 3" Reduced Drilling Pattern		14'	D90 - Double	PLP - Platinum Plus	DF - Double Flood ³
6SQU - 6" x 6" Square Straight Pole (Retrofit)			15'			
	B2 - 2" Reduced Drilling Pattern		16'	DN90 - Double	WHT - White	DGP - DuraGrip ³ Plus
			17'			
	T - Tenon Mount - See pole selection guide for tenon and fixture/bracket matches		17'6"	T90 - Triple	SVG - Satin Verde Green	LAB - Less Anchor Bolts
			18'			
			20'			
			22'			
			22'6"			
			23'			
			24'			
			25'			
			26'			
			27'			
	I - No Mounting Holes ¹ - Use with: BKA-IFM4 - Flush Mount Adapter ⁷ Greenlee Lifestyle CH Mounting Style Enterprise, Lexington, Constitution PT Single Mounting ²		28'	TN120 - Triple	GPT - Graphite	CRXX - Conduit Raceway ⁴
			30'			
			32'			
			35'			
			39'	Q90 - Quad	MSV - Metallic Silver	
				QN90 - Quad	BZA - Alternate Bronze	
				N - Tenon Mount (Standard Tenon size is 2-3/8" O.D.) ⁸		



Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800



Accessory Ordering Information

DESCRIPTION	PART NUMBER
4BC - 4" Square Base Cover	122559CLR
5BC - 5" Square Base Cover	122561CLR
6BC - 6" Square Base Cover	122563CLR
5BC - 5' Square Universal Base Cover	132488CLR
6BC - 6' Square Universal Base Cover	131252CLR
ER2 - Weatherproof Duplex Receptacle	122566CLR
GFI - Ground Fault Circuit Interrupter	122567CLR
MH5 - mounting Hole Plugs for use with 5" traditional drill pattern (3 set of 3 plugs)	132336
MH3 - mounting Hole Plugs for use with 3" reduced drill pattern (3 set of 3 plugs)	681126
MH2 - Mounting Hole Plugs for use with 2" reduced drill pattern (3 sets of 3 plugs)	725841
Vibration Damper - 4" Square Pole (bolt-on mount only)	172539
Vibration Damper - 5" Square Pole (bolt-on mount only)	172538
Vibration Damper - 6" Square Pole (bolt-on mount only)	178361

FOOTNOTES:

1 - See Area Light Brackets - 3" Reduced Drill Pattern and Area Light Brackets - 5" Traditional Drill Pattern Spec Sheets.

2 - Pole heights will have +/- 1/2" tolerance.

3 - See Flood Lighting Brackets section for choice of FBO brackets.

4 - CR selection must indicate required height and side of pole mounting location. Mounting template required at time of order.



Steel Poles - Square Straight

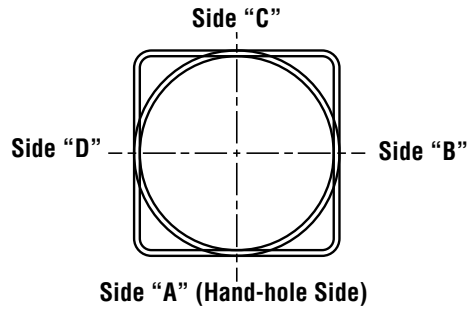
Type: _____

 **Have questions?** Call us at (800) 436-7800

DRILLING LOCATIONS

[Back to Quick Links](#)

Sides	A	B	C	D
Hand-hole	X			
Single	X			
D180		X		X
D90	X			X
DN90 ¹				
T90	X	X		X
TN120 ²				
Q90	X	X	X	X
QN90 ³				
Single FBO	X			
Double FBO		X		X

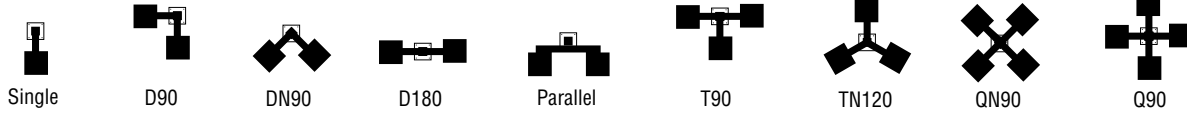


NOTES:

- 1 - Two locations will be 45° to the left and right of Side A.
- 2 - Other two locations will be 120° to the left and right of Side A.
- 3 - Two locations will be 45° to the left and right of Side A and two locations will be 135° to the left and right of Side A.

Consult factory for custom variations. Standard SF and DF pole preparations are located 3/4 of the height of the pole from the base, except on 20' poles. Maximum height for SF and DF pole preparations on 20' poles is 13' from the base.

FIXTURE CONFIGURATIONS



BOLT CIRCLE

STANDARD BASEPLATE

4" (102mm) square
10-1/8" (257mm) sq.



11" (279mm) Dia. Bolt Circle

5" (127mm) square
10-1/8" (257mm) sq.



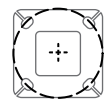
11" (279mm) Dia. Bolt Circle

5" (127mm) square
10-1/8" (257mm) sq.



11" (279mm) Dia. Bolt Circle

6" (152mm) square
12" (305mm) sq.



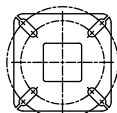
12" (305mm) Dia. Bolt Circle

Bolt Circle Designator	B	C	D	J
Bolt Circle	Slotted 8"-11" (203mm-279mm)	Slotted 9"-11" (229mm-279mm)	Slotted 9"-11" (229mm-279mm)	Slotted 12" (305mm)
Anchor Bolt Size	3/4" x 30" (19mm x 762mm)	3/4" x 30" (19mm x 762mm)	1" x 36" (25mm x 914mm)	1" x 36" (25mm x 914mm)
Anchor Bolt Projection	3-1/4" (83mm)	3-1/4" (83mm)	4" (102mm)	4" (102mm)
Base Plate Opening for Wireway Entry	3-5/8" (92mm)	4-3/4" (121mm)	4-5/8" (117mm)	5-5/8" (143mm)
Base Plate Dimensions	10-1/8" sq. x 3/4" thk. (257mm x 19mm)	10-1/8" sq. x 3/4" thk. (257mm x 19mm)	10-1/8" sq. x 1" thk. (257mm x 25mm)	12" sq. x 1-1/8" thk. (305mm x 29mm)
Pole Gauge	11	11	7	7

Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

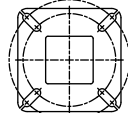
UNIVERSAL BASEPLATE

4" (102mm) square
10.5" (267mm) sq.



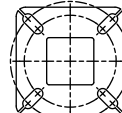
4SQ

5" (127mm) square
11.125" (283mm) sq.



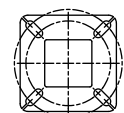
5SQ

5" (127mm) square
11.75" (298mm) sq.



5SQ

6" (152mm) square
12-1/2" (318mm) sq.



14" (356mm) Dia. Bolt Circle

Bolt Circle Designator	E	F	G	H
Bolt Circle	Slotted 9"-12"	Slotted 10"-13"	Slotted 10"-13"	Slotted 11"-14" (279mm-356mm)
Anchor Bolt Size	3/4" x 30" (19mm x 762 mm)	3/4x 30" (25mm x 914 mm)	1x 36" (25mm x 914 mm)	1" x 36" (25mm x 914mm)
Anchor Bolt Projection	3-1/4" (83 mm)	3-1/4" (83 mm)	4" (102 mm)	4" (102mm)
Base Plate Opening for Wireway Entry	3-5/8" (92mm)	4-3/4" (121mm)	5-1/8" (130 mm)	5-5/8" (143mm)
Base Plate Dimensions	10-1/2" sq. x 3/4" thk. (267 mm x 19 mm)	11-1/8 sq. x 3/4" thk. (283 mm x 19 mm)	11-3/4" sq. x 1" thk. (298 mm x 25 mm)	12 1/2" sq. x 1 1/8" thk. (318mm x 29mm)
Pole Gauge	11	11	7	7

Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

Steel Poles - Square Straight

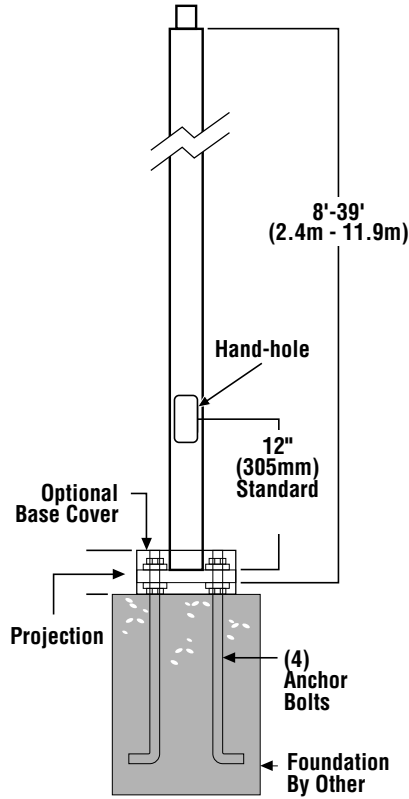
Type: _____

 Have questions? Call us at (800) 436-7800

PRODUCT DIMENSIONS

[Back to Quick Links](#)

SQT -
N= 2-3/8" (60mm) O.D. x 4-3/4" (121mm) Tenon

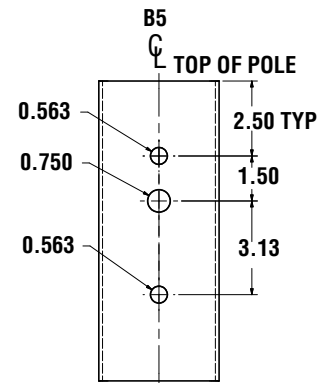
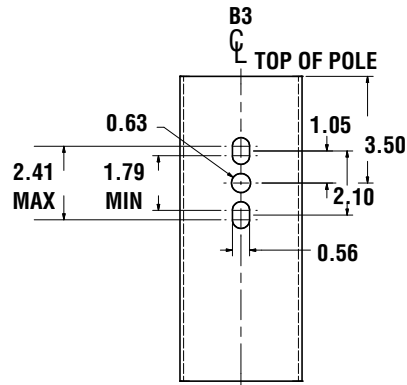
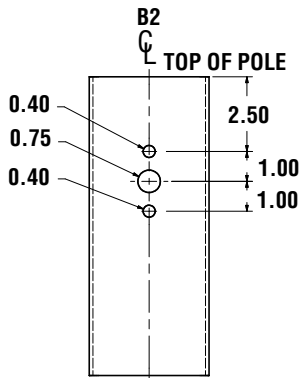


SF -
**Single Flood
 Pole Preparation**



SHIPPING WEIGHTS	
4"(102mm) sq. 11 Ga. is approximately	7.50 lbs./ft.
4"(102mm) sq. 07 Ga. is approximately	10.00 lbs./ft.
5"(127mm) sq. 11 Ga. is approximately	9.00 lbs./ft.
5"(127mm) sq. 07 Ga. is approximately	12.50 lbs./ft.
6"(152mm) sq. 07 Ga. is approximately	15.40 lbs./ft.
Anchor Bolts (3/4" x 30")(19mm x 762mm)	15 lbs. (7kg)/set
Anchor Bolts (1" x 36")(25mm x 914mm)	30 lbs. (14kg)/set

Bolt-On Mount 2-Bolt Pattern



Steel Poles - Square Straight

Type: _____

 **Have questions?** Call us at (800) 436-7800

WIND SPEED

[Back to Quick Links](#)

EPA Information

All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.

CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

NOTE: Pole calculations include a 1.3 gust factor over steady wind velocity. Example: poles designed to withstand 80 MPH steady wind will withstand gusts to 104 MPH. EPAs are for locations 100 miles away from hurricane ocean lines. Consult LSI for other areas. Note: Hurricane ocean lines are the Atlantic and Gulf of Mexico coastal areas. For applications in Florida or Canada, consult factory.

Use ONLY with "Wind Speed Map for ASCE 7-10"

POLE ¹	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor bolt Dia {in}	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
4" x 11-ga x 12'	12	11	B	8" - 11"	0.75	13.9	12.5	11.3	9.2	7.6	6.3	5.2	4.3	3.6
4" x 11-ga x 14'	14	11	B	8" - 11"	0.75	10.7	9.5	8.5	6.8	5.4	4.4	3.5	2.7	2.1
4" x 11-ga x 16'	16	11	B	8" - 11"	0.75	8.2	7.2	6.4	4.9	3.8	2.9	2.1	1.5	1.0
4" x 11-ga x 18'	18	11	B	8" - 11"	0.75	6.3	5.4	4.7	3.4	2.4	1.6	1.0	0.4	n/a
4" x 11-ga x 20'	20	11	B	8" - 11"	0.75	4.6	3.9	3.2	2.1	1.2	0.6	n/a	n/a	n/a
4" x 11-ga x 22'	22	11	B	8" - 11"	0.75	7.6	6.6	5.7	4.2	3.0	2.0	1.2	0.5	n/a
4" x 11-ga x 24'	24	11	B	8" - 11"	0.75	6.0	5.1	4.3	2.9	1.8	0.9	n/a	n/a	n/a
4" x 11-ga x 26'	26	11	B	8" - 11"	0.75	4.6	3.7	3.0	1.7	0.7	n/a	n/a	n/a	n/a
4" x 7-ga x 14'	14	7	B	8" - 11"	0.75	18.3	16.4	14.9	12.2	10.2	8.5	7.1	5.9	5.0
4" x 7-ga x 16'	16	7	B	8" - 11"	0.75	14.7	13.2	11.8	9.6	7.8	6.3	5.2	4.2	3.4
4" x 7-ga x 18'	18	7	B	8" - 11"	0.75	11.9	10.5	9.3	7.4	5.9	4.6	3.6	2.8	2.1
4" x 7-ga x 20'	20	7	B	8" - 11"	0.75	9.6	8.4	7.4	5.7	4.3	3.2	2.3	1.6	0.9
4" x 7-ga x 22'	22	7	B	8" - 11"	0.75	7.7	6.6	5.7	4.2	3.0	2.0	1.2	0.5	n/a
4" x 7-ga x 24'	24	7	B	8" - 11"	0.75	6.0	5.1	4.3	2.9	1.8	0.9	n/a	n/a	n/a
4" x 7-ga x 26'	26	7	B	8" - 11"	0.75	4.6	3.7	3.0	1.7	0.7	n/a	n/a	n/a	n/a
4" x 7-ga x 28'	28	7	B	8" - 11"	0.75	3.3	2.5	1.8	0.7	n/a	n/a	n/a	n/a	n/a
4" x 7-ga x 30'	30	7	B	8" - 11"	0.75	2.2	1.4	0.8	n/a	n/a	n/a	n/a	n/a	n/a
5" x 11-ga x 14'	14	11	C	9" - 11"	0.75	17.4	15.7	14.1	11.5	9.3	7.7	6.3	5.2	4.2
5" x 11-ga x 16'	16	11	C	9" - 11"	0.75	13.8	12.3	10.9	8.7	6.9	5.5	4.3	3.3	2.5
5" x 11-ga x 18'	18	11	C	9" - 11"	0.75	10.8	9.6	8.4	6.5	4.9	3.7	2.6	1.8	1.1
5" x 11-ga x 20'	20	11	C	9" - 11"	0.75	8.5	7.3	6.3	4.6	3.2	2.1	1.2	0.5	n/a
5" x 11-ga x 22'	22	11	C	9" - 11"	0.75	10.9	9.5	8.3	6.2	4.5	3.2	2.1	1.2	0.5
5" x 11-ga x 24'	24	11	C	9" - 11"	0.75	8.8	7.5	6.4	4.5	3.0	1.8	0.8	n/a	n/a
5" x 11-ga x 26'	26	11	C	9" - 11"	0.75	6.8	5.7	4.6	3.0	1.6	0.6	n/a	n/a	n/a
5" x 11-ga x 28'	28	11	C	9" - 11"	0.75	5.2	4.1	3.2	1.6	0.4	n/a	n/a	n/a	n/a
5" x 11-ga x 30'	30	11	C	9" - 11"	0.75	3.6	2.7	1.8	0.4	n/a	n/a	n/a	n/a	n/a
5" x 7-ga x 20'	20	7	D	9" - 11"	1.00	21.6	19.3	17.3	14.0	11.3	9.2	7.4	6.0	4.8
5" x 7-ga x 22'	22	7	D	9" - 11"	1.00	20.7	18.6	16.6	13.3	10.7	8.5	6.8	5.4	4.2
5" x 7-ga x 24'	24	7	D	9" - 11"	1.00	17.7	15.6	13.8	10.8	8.5	6.6	5.0	3.7	2.6
5" x 7-ga x 26'	26	7	D	9" - 11"	1.00	14.9	13.1	11.4	8.8	6.6	4.9	3.5	2.3	1.3
5" x 7-ga x 28'	28	7	D	9" - 11"	1.00	12.5	10.9	9.4	6.9	4.9	3.4	2.1	1.0	n/a
5" x 7-ga x 30'	30	7	D	9" - 11"	1.00	10.3	8.9	7.5	5.2	3.4	2.0	0.8	n/a	n/a
5" x 7-ga x 35'	35	7	D	9" - 11"	1.00	6.0	4.8	3.6	1.8	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 24'	24	7	J	12"	1.00	18.6	16.4	14.3	11.2	8.6	6.5	4.8	3.4	2.2
6" x 7-ga x 26'	26	7	J	12"	1.00	15.6	13.4	11.7	8.8	6.5	4.6	3.0	1.8	0.7
6" x 7-ga x 28'	28	7	J	12"	1.00	12.9	10.9	9.3	6.7	4.6	2.8	1.5	n/a	n/a
6" x 7-ga x 30'	30	7	J	12"	1.00	10.4	8.8	7.3	4.8	2.9	1.3	n/a	n/a	n/a
6" x 7-ga x 32'	32	7	J	12"	1.00	8.3	6.8	5.5	3.1	1.3	n/a	n/a	n/a	n/a
6" x 7-ga x 34'	34	7	J	12"	1.00	6.5	5.0	3.7	1.6	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 35'	35	7	J	12"	1.00	5.5	4.2	2.9	0.9	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 39'	39	7	J	12"	1.00	2.3	1.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a

All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.

CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

Note:

1- Poles shorter than these listed here in for each gauge have EPA rating equal to or greater than what is provided in this table. To Confirm EPA ratings on shorter poles, contact LSI Industries.

2- LSI Industries recommends a vibration damper be ordered with this length.



Steel Poles - Square Straight

Type: _____

 Have questions? Call us at (800) 436-7800

WIND SPEED

POLE ¹	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor bolt Dia {in}	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
5" x 11-ga x 14'	14	11	F	11"	0.75	17.6	15.8	14.2	11.5	9.4	7.7	6.3	5.2	4.3
5" x 11-ga x 14'	14	11	F	13"	0.75	17.6	15.8	14.2	11.5	9.4	7.7	6.3	5.2	4.3
5" x 11-ga x 16'	16	11	F	11"	0.75	13.9	12.2	11.0	8.8	7.0	5.5	4.3	3.4	2.5
5" x 11-ga x 16'	16	11	F	13"	0.75	13.9	12.2	11.0	8.8	7.0	5.5	4.3	3.4	2.5
5" x 11-ga x 18'	18	11	F	11"	0.75	11.0	9.6	8.4	6.5	5.0	3.7	2.7	1.8	1.1
5" x 11-ga x 18'	18	11	F	13"	0.75	11.0	9.6	8.4	6.5	5.0	3.7	2.7	1.8	1.1
5" x 11-ga x 20'	20	11	F	11"	0.75	8.6	7.4	6.4	4.6	3.3	2.2	1.3	0.5	-
5" x 11-ga x 20'	20	11	F	13"	0.75	8.6	7.4	6.4	4.6	3.3	2.2	1.3	0.5	-
5" x 11-ga x 22'	22	11	F	11"	0.75	12.7	11.1	9.6	7.4	5.6	4.1	3.0	2.0	1.1
5" x 11-ga x 22'	22	11	F	12"	0.75	10.3	8.9	7.7	5.7	4.1	2.8	1.8	0.9	-
5" x 11-ga x 22'	22	11	F	13"	0.75	8.6	7.4	6.4	4.6	3.1	2.0	1.1	-	-
5" x 11-ga x 24'	24	11	F	11"	0.75	10.2	8.9	7.6	5.6	4.0	2.6	1.6	0.7	-
5" x 11-ga x 24'	24	11	F	12"	0.75	8.0	6.9	5.8	4.0	2.6	1.5	0.5	-	-
5" x 11-ga x 24'	24	11	F	13"	0.75	6.7	5.5	4.6	3.0	1.7	0.7	-	-	-
5" x 11-ga x 26'	26	11	F	11"	0.75	8.1	6.9	5.8	4.0	2.5	1.3	-	-	-
5" x 11-ga x 26'	26	11	F	12"	0.75	6.2	5.1	4.1	2.6	1.3	-	-	-	-
5" x 11-ga x 26'	26	11	F	13"	0.75	5.0	4.0	3.1	1.6	0.5	-	-	-	-
5" x 11-ga x 28'	28	11	F	11"	0.75	6.3	5.2	4.3	2.5	1.1	-	-	-	-
5" x 11-ga x 28'	28	11	F	12"	0.75	4.6	3.6	2.7	1.2	-	-	-	-	-
5" x 11-ga x 28'	28	11	F	13"	0.75	3.4	2.5	1.7	-	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	11"	0.75	4.7	3.7	2.8	1.2	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	12"	0.75	3.1	2.2	1.4	-	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	13"	0.75	2.0	1.2	0.5	-	-	-	-	-	-
5" x 7-ga x 20'	20	7	G	11"	0.75	19.0	17.0	15.0	12.2	9.7	7.8	6.2	5.0	3.8
5" x 7-ga x 20'	20	7	G	12"	0.75	21.4	19.1	17.1	13.8	11.2	9.1	7.3	5.9	4.7
5" x 7-ga x 20'	20	7	G	13"	0.75	21.4	19.2	17.2	13.9	11.3	9.2	7.4	6.0	4.8
5" x 7-ga x 20'	20	7	G	11"	1	21.7	19.4	17.4	14.0	11.4	9.3	7.5	6.0	4.8
5" x 7-ga x 20'	20	7	G	13"	1	21.7	19.4	17.4	14.0	11.4	9.3	7.5	6.0	4.8
5" x 7-ga x 22'	22	7	G	11"	0.75	16.0	14.1	12.5	9.8	7.6	5.9	4.4	3.3	2.3
5" x 7-ga x 22'	22	7	G	12"	0.75	17.7	15.9	14.2	11.2	8.7	7.0	5.4	4.1	3.0
5" x 7-ga x 22'	22	7	G	13"	0.75	19.9	17.3	15.6	12.6	10.0	8.0	6.3	5.0	3.8
5" x 7-ga x 22'	22	7	G	11"	1	21.0	18.7	16.7	13.4	10.6	8.5	6.8	5.4	4.2
5" x 7-ga x 22'	22	7	G	12"	1	23.4	20.6	18.4	15.0	12.2	9.9	8.0	6.4	5.1
5" x 7-ga x 22'	22	7	G	13"	1	21.3	18.8	17.0	13.7	11.0	8.8	7.0	5.6	4.3
5" x 7-ga x 24'	24	7	G	11"	0.75	13.3	11.6	10.0	7.7	5.7	4.2	2.9	1.9	1.0
5" x 7-ga x 24'	24	7	G	12"	0.75	15.0	13.0	11.6	8.9	6.8	5.1	3.8	2.6	1.7
5" x 7-ga x 24'	24	7	G	13"	0.75	16.6	14.6	12.9	10.2	8.0	6.1	4.6	3.3	2.3
5" x 7-ga x 24'	24	7	G	11"	1	17.5	15.7	13.9	10.9	8.6	6.7	5.0	3.7	2.7
5" x 7-ga x 24'	24	7	G	12"	1	20.0	17.4	15.4	12.3	9.9	7.8	6.0	4.7	3.5
5" x 7-ga x 24'	24	7	G	13"	1	18.1	16.0	14.2	11.0	8.7	6.7	5.3	3.9	2.8
5" x 7-ga x 26'	26	7	G	11"	0.75	10.9	9.3	8.0	5.9	4.1	2.7	1.6	0.6	-
5" x 7-ga x 26'	26	7	G	12"	0.75	12.4	10.9	9.5	7.0	5.1	3.6	2.3	1.3	-
5" x 7-ga x 26'	26	7	G	13"	0.75	14.0	12.3	10.7	8.1	6.0	4.4	3.1	2.0	1.0
5" x 7-ga x 26'	26	7	G	11"	1	15.0	13.2	11.5	8.8	6.7	4.9	3.5	2.3	1.3



Steel Poles - Square Straight

Type: _____

 Have questions? Call us at (800) 436-7800

WIND SPEED

POLE ¹	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA									
			Designator	Dia. (in)	Anchor bolt Dia {in}	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH	
5" x 7-ga x 26'	26	7	G	12"	1	17.0	14.8	13.0	10.2	7.9	6.0	4.4	3.1	2.1	
5" x 7-ga x 26'	26	7	G	13"	1	15.3	13.5	11.8	9.0	6.8	5.0	3.6	2.5	1.4	
5" x 7-ga x 28'	28	7	G	11"	0.75	8.9	7.4	6.3	4.3	2.7	1.4	-	-	-	
5" x 7-ga x 28'	28	7	G	12"	0.75	10.2	8.8	7.5	5.3	3.5	2.1	1.0	-	-	
5" x 7-ga x 28'	28	7	G	13"	0.75	11.8	10.2	8.8	6.4	4.5	3.0	1.7	0.7	-	
5" x 7-ga x 28'	28	7	G	11"	1	12.5	10.9	9.5	7.0	5.0	3.3	2.1	1.0	-	
5" x 7-ga x 28'	28	7	G	12"	1	14.2	12.4	11.0	8.2	6.0	4.3	3.0	1.7	0.8	
5" x 7-ga x 28'	28	7	G	13"	1	12.9	11.0	9.7	7.2	5.2	3.6	2.2	1.1	-	
5" x 7-ga x 30'	30	7	G	11"	0.75	7.0	5.8	4.7	2.8	1.3	-	-	-	-	
5" x 7-ga x 30'	30	7	G	12"	0.75	8.4	7.0	5.8	3.8	2.2	0.9	-	-	-	
5" x 7-ga x 30'	30	7	G	13"	0.75	9.7	8.2	7.0	4.8	3.0	1.6	0.5	-	-	
5" x 7-ga x 30'	30	7	G	11"	1	10.4	8.8	7.6	5.3	3.4	2.0	0.8	-	-	
5" x 7-ga x 30'	30	7	G	12"	1	12.0	10.3	9.0	6.4	4.4	2.9	1.6	0.5	-	
5" x 7-ga x 30'	30	7	G	13"	1	10.6	9.1	7.7	5.5	3.6	2.1	1.0	-	-	
5" x 7-ga x 35'	35	7	G	11"	0.75	3.2	2.2	1.2	-	-	-	-	-	-	
5" x 7-ga x 35'	35	7	G	12"	0.75	4.4	3.2	2.2	0.5	-	-	-	-	-	
5" x 7-ga x 35'	35	7	G	13"	0.75	5.5	4.2	3.1	1.3	-	-	-	-	-	
5" x 7-ga x 35'	35	7	G	11"	1	6.0	4.8	3.6	1.8	-	-	-	-	-	
5" x 7-ga x 35'	35	7	G	12"	1	7.3	6.0	4.8	2.7	1.1	-	-	-	-	
5" x 7-ga x 35'	35	7	G	13"	1	6.3	5.0	3.8	1.9	-	-	-	-	-	
6" x 7-ga x 24'	24	7	H	11"	1	16.5	14.4	12.6	9.6	7.2	5.3	3.8	2.5	1.4	
6" x 7-ga x 24'	24	7	H	12-1/2"	1	19.8	17.5	15.4	12.0	9.2	7.0	5.3	3.8	2.7	
6" x 7-ga x 24'	24	7	H	14"	1	23.0	20.5	18.0	14.3	11.2	8.9	6.9	5.3	3.8	
6" x 7-ga x 26'	26	7	H	11"	1	13.7	11.8	10.2	7.5	5.3	3.6	2.1	1.0	-	
6" x 7-ga x 26'	26	7	H	12-1/2"	1	16.5	14.6	12.6	9.6	7.0	5.2	3.6	2.2	1.1	
6" x 7-ga x 26'	26	7	H	14"	1	19.6	17.3	15.2	11.7	8.9	6.7	5.0	3.5	2.2	
6" x 7-ga x 28'	28	7	H	11"	1	11.0	9.3	7.8	5.5	3.5	1.9	0.6	-	-	
6" x 7-ga x 28'	28	7	H	12-1/2"	1	13.8	12.0	10.2	7.5	5.2	3.4	1.9	0.7	-	
6" x 7-ga x 28'	28	7	H	14"	1	16.4	14.5	12.5	9.4	6.9	4.7	3.2	1.8	0.7	
6" x 7-ga x 30'	30	7	H	11"	1	9.0	7.3	6.0	3.6	1.9	0.5	-	-	-	
6" x 7-ga x 30'	30	7	H	12-1/2"	1	11.4	9.6	8.0	5.5	3.4	1.7	-	-	-	
6" x 7-ga x 30'	30	7	H	14"	1	14.0	12.0	10.0	7.2	5.0	3.2	1.6	-	-	
6" x 7-ga x 32'	32	7	H	11"	1	7.0	5.5	4.2	2.0	-	-	-	-	-	
6" x 7-ga x 32'	32	7	H	12-1/2"	1	9.2	7.6	6.0	3.8	1.8	-	-	-	-	
6" x 7-ga x 32'	32	7	H	14"	1	11.4	9.7	8.0	5.4	3.2	1.6	-	-	-	
6" x 7-ga x 34'	34	7	H	11"	1	5.1	3.7	2.5	0.6	-	-	-	-	-	
6" x 7-ga x 34'	34	7	H	12-1/2"	1	7.2	5.6	4.4	2.2	-	-	-	-	-	
6" x 7-ga x 34'	34	7	H	14"	1	9.3	7.6	6.2	3.6	1.7	-	-	-	-	
6" x 7-ga x 35'	35	7	H	11"	1	4.2	3.0	1.8	-	-	-	-	-	-	
6" x 7-ga x 35'	35	7	H	12-1/2"	1	6.2	4.8	3.6	1.4	-	-	-	-	-	
6" x 7-ga x 35'	35	7	H	14"	1	8.2	6.6	5.2	2.9	1.0	-	-	-	-	
6" x 7-ga x 39'	39	7	H	11"	1	1.0	-	-	-	-	-	-	-	-	
6" x 7-ga x 39'	39	7	H	12-1/2"	1	3.0	1.6	0.5	-	-	-	-	-	-	
6" x 7-ga x 39'	39	7	H	14"	1	4.6	3.3	2.0	-	-	-	-	-	-	

All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.

CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

Note:

1- Poles shorter than these listed here in for each gauge have EPA rating equal to or greater than what is provided in this table. To Confirm EPA ratings on shorter poles, contact LSI Industries.

2- LSI Industries recommends a vibration damper be ordered with this length.



Stormwater Calculations

Blind Tiger, LLC
58 Jady Hill Avenue (Site)
Exeter, NH 03833

January 24, 2023
Revised: April 25, 2023
Revised: May 23, 2023

Prepared for: Blind Tiger, LLC
3 Wright Lane
Exeter, NH 03833

Prepared by: Emanuel Engineering, Inc.
JJ MacBride, PE
118 Portsmouth Avenue, Suite A202
Stratham, NH 03885
EEI Project # 21-157



TABLE OF CONTENTS

1. Drainage Narrative
2. Extreme Precipitation Tables
3. Pre-development Drainage Areas
4. Post-development Drainage Areas
5. Summary table of the peak discharge rates & volumes
6. Web Soil Survey Report
7. Ksat Values for New Hampshire Soils
8. SW1 – Predevelopment Subcatchments
9. Pre-development drainage analysis
 - a. Drainage diagram
 - b. Rainfall Listing
 - c. Area Listing and Soil Listing
 - d. Ground Cover and Pipe Listing
 - e. Full summary of the 10-year storm event
 - f. 1-inch,
 - g. 2-year,
 - h. 10-year,
 - i. 25-year, and
 - j. 50-year
10. SW2 – Postdevelopment Subcatchments
11. Post-development drainage analysis
 - a. Drainage diagram
 - b. Rainfall Listing
 - c. Area Listing and Soil Listing
 - d. Ground Cover and Pipe Listing
 - e. Full summary of the 10-year storm event
 - f. 1-inch,
 - g. 2-year,
 - h. 10-year,
 - i. 25-year, and
 - j. 50-year
12. NHDES Simple Method Pollutant Loading Spreadsheet Model
13. University of New Hampshire Stormwater Center Data Report
14. Pipe Protection Calculations

EXISTING CONDITIONS

The Exeter Country Club/Blind Tiger, LLC site is shown on Exeter Tax Map 52 Lot 1. Site access is located on the west side of Jady Hill Avenue in Exeter, New Hampshire. The existing lot has an area of 73.25 acres (3,190,717 square feet). For storm-water modeling purposes, only a portion of the existing lot was modeled, of which storm-water runoff is affected by the proposed improvements; totaling an area of 5.372 acres (234,005 square feet). The existing site is currently used as a 9-hole golf course with a 3,000 square-foot clubhouse that includes a restaurant/bar, function room, and pro shop. The site also has a parking lot for 65 cars and cart storage. The intent of this project is to replace the existing clubhouse with a new 68'x94' club house with attached 20'x79' deck, construct additional parking for cars and golf carts, and provide associated drainage and utilities for the improvements. The clubhouse is to include a restaurant/bar, golf simulators, a pro shop, locker rooms, and function room. The parcel is bounded northerly by the Squamscott River and land owned by the Town of Exeter (vacant). Easterly, it is bounded by Jady Hill Avenue and various residential lots. It is bounded southerly by Hayes Mobile Home Park, and bounded westerly by the Squamscott River.

Approximately 30% of the modeled site has been cleared and is grass on the northern portion of the site, near the 1st hole tee boxes and the 9th hole green. Most of the undisturbed portion of the lot is woods along the southern boundary line and on the western portion of the modeled area, attributing to approximately 50% of the area. The final 20% is comprised of the impervious developed portion (building, pavement, and gravel) which is primarily in the southeast portion of the modeled area. The modeled existing site's percent of impervious cover is 20.5%.

The existing combined site has 4 points of discharge for storm-water: flowing north along the golf course (eventually to a pond on the 9th hole), flowing east to the catch basin on Jady Hill Avenue, flowing south to Hayes Park, and flowing west towards Squamscott River. Storm water from the existing clubhouse, parking lot, and 1st hole tee boxes generally flow east to the catch basin on Jady Hill Avenue. Stormwater on the 9th hole, practice green, and area to the north of the existing clubhouse generally flows north along the golf course. Storm water within the woods to the south of the parking lot and 9th green generally flows south, and storm water within the woods to the east of the 9th green generally flows west.

Chatfield-Hollis-Canton Complex was found to be the only soil on site, which was delineated via the USDA – NRCS Web Soil Survey on August 23, 2022. Wetlands only being found near the pond on the 9th hole were delineated by Gove Environmental Services, Inc. in Spring 2022.

PROPOSED DEVELOPMENT

Proposed improvements for Exeter Tax Map 52 Lot 1 include the razing the existing 3,000 square foot club house, and the construction of a 68’x94’ clubhouse with attached 20’x79’ deck, additional parking for cars and golf carts, and providing associated drainage and utilities for the improvements. There is a proposed net increase of +/-13,010 square feet of new traditional pavement, +/- 1,800 square foot gravel area of cart storage, +/-2,150 square feet of stone storage under the proposed deck to collect half of the stormwater from the roof, one 2,970 square-foot bioretention pond south of the proposed parking lot, a catch basin along Jady Hill Avenue, a small 185 square foot rock infiltration area with dry well along Jady Hill Avenue, two drain holes to convey stormwater to the detention pond on the 9th hole, and associated utilities to service the building. The modeled proposed site impervious area is 25.5% of the site.

DRAINAGE ANALYSIS AND DESIGN

The purpose of the drainage analysis is two-fold:

- The first is to analyze the pre-development runoff flows through the site.
- The second purpose is to evaluate the impact of the proposed development on drainage patterns and flows.

The goal of the drainage design is to:

- Design a storm-water and treatment system to adequately handle the post-development runoff peak and volume.
- Minimize or eliminate erosion and sedimentation during construction and after development.

METHOD

The storm-water runoff analysis for the site was based on the Town of Exeter’s regulations which require a 2-year, 10-year, 25-year, and 50-year 24-hour storm events to be

modeled. Additionally, the 1” water quality storm was also monitored. The analysis was performed as required by the State of New Hampshire Department of Environmental Services using the U.S. Soil Conservation Service’s TR-20 runoff procedure from which the TR-55 method was developed. As described in the TR-55 manual, it is a “...procedure to calculate storm runoff, peak rate of discharge, hydrographs and storage volumes required for floodwater reservoirs. The model begins with a rainfall amount uniformly imposed on the watershed over a specified time distribution. Mass rainfall is converted to mass runoff using a runoff curve number (CN). CN is based on soils, plant cover, impervious area, interception, and surface storage. Runoff is then transformed into a hydrograph (a graph showing the properties of runoff flow with respect to time)¹ by using the unit hydrograph theory (a given one-day rainfall produces a 1-inch depth of runoff over the given drainage area) and routing procedures that depend on runoff travel time through segments of the watershed” (subcatchments). Modeling calculations were performed with a HydroCAD software package.

PRE-DEVELOPMENT RUNOFF

The pre-development work site was modeled as a 5.372-acre area, where stormwater modeling and calculations for Exeter Tax Map 52 Lot 1 were performed.

The subject area was divided into four separate subcatchment areas to model the stormwater flows most accurately, and are shown on sheet SW1 included in this report.

Subcatchment ES1 represents the northern portion of the 9th green and north of the existing clubhouse. This area is comprised of grass, gravel, building, and pavement cover.

Subcatchment ES1 flows north along the surface of the golf course ultimately into the pond near the 9th hole tee boxes (Link L101).

Subcatchment ES2 represents the existing parking lot, clubhouse, and 1st hole tee boxes. This area is comprised of grass, woods, gravel, building, and pavement cover.

Subcatchment ES2 flows generally east towards Jady Hill Avenue, off-site, and ultimately into the catch basin at the Jady Hill Avenue – Webster Avenue intersection (Link L102).

Subcatchment ES3 represents the woods to the south of the 9th green and practice green, and the woods south of the existing parking lot. This area is comprised of grass and woods cover.

¹ Introduction to Hydrology, Viessman ET. Al. Second Edition, 1972 New York, IEP.

Subcatchment ES3 generally sheet flows south off-site towards to Hayes Park (Link L103).

Subcatchment ES4 represents the woods to the west of the 9th green. This area is comprised of grass and woods cover.

Subcatchment ES4 flows west along the surface, and ultimately into the Squamscott River (Link L104).

The storm-water calculations were modeled with good grass cover, good woodlands, gravel areas, roof/building, and impervious asphalt cover. Only areas on site in the vicinity of proposed site improvements have been modeled. The attached HydroCAD worksheets outline specific details on the flows, volumes, times, and flow conditions.

POST-DEVELOPMENT RUNOFF

The post-development site was also modeled as a 5.372-acre site which has been divided into nine subcatchment areas, and are shown on sheet SW2 – Post development Drainage Plan included in this report.

Subcatchment PS25A represents the northside of the proposed clubhouse and drip edge area. This area is comprised of grass, building, and pavement cover.

Subcatchment PS25A flows into the proposed stone storage under the proposed deck north of the proposed clubhouse (Pond PP50). Stormwater infiltrates into the groundwater, and in larger events, stormwater will overtop the stone storage and sheet flow north along the golf course to the 9th hole detention pond (Link L101).

Subcatchment PS25B represents the southside of the proposed clubhouse and drip edge area. This area is comprised of grass, and building cover.

Subcatchment PS25B flows through gutters or sheet flows into a catch basin adjacent to the clubhouse to the south within the landscaped area (Pond PP51). From there, stormwater flows through a 8-inch diameter pipe into the proposed bioretention area south of the proposed parking lot (Pond PP55 & PP56). Stormwater infiltrates and is treated through the 21-inch-thick bioretention media and is stored within the 15-inch-thick reservoir layer below. From there, stormwater will either infiltrate into the groundwater, or will back up into the 4-inch diameter underdrain within the reservoir area and be guided into the proposed catch basin within the bioretention area. In larger storm events (25-year and 50-year storm events), stormwater will

pond in the bioretention area and flow into the three (3) 4" x 12" knockouts of the aforementioned catch basin. From the catch basin, stormwater flows east in an 8-inch diameter pipe to the proposed swale south of the existing parking lot (Reach PR75), where it is conveyed into the proposed catch basin along Jady Hill Avenue (Pond PP54). Stormwater then flows north along Jady Hill Avenue within a 12-inch pipe into the dry well within the proposed rock infiltration area (Pond PP53), where it will either infiltrate into the groundwater, or will continue to flow north within a 12-inch pipe to a series of drain manholes (Ponds PP52A & PP52B), and ultimately into the 9th hole detention pond (Link L101).

Subcatchment PS26 represents the northern portion of the 9th green and the area north of the clubhouse. This area is comprised of grass, gravel, and pavement cover.

Subcatchment PS26 sheet flows north along the golf course to the 9th hole detention pond (Link L101).

Subcatchment PS27 represents the area in the 1st hole tee boxes, the northern existing parking (upper parking lot), and the northern half of the southern existing parking (lower parking lot). This area is comprised of grass, woods, gravel, and pavement cover.

Subcatchment PS27 sheet flows east to Jady Hill Avenue, and ultimately into the existing catch basin at the intersection of Jady Hill Avenue and Webster Avenue (Link L102).

Subcatchment PS28 represents the middle strip of the southern existing parking (lower parking lot). This area is comprised of grass and pavement cover.

Subcatchment PS28 flows into the dry well within the proposed rock infiltration area along Jady Hill Avenue (Pond PP53), where it will either infiltrate into the groundwater, or will continue to flow north within a 12-inch pipe to a series of drain manholes (Ponds PP52A & PP52B), and ultimately into the 9th hole detention pond (Link L101).

Subcatchment PS29 represents the southern portion of the southern existing parking lot (lower parking lot), and the swale to the south of it. This area is comprised of grass and pavement cover.

Subcatchment PS29 flows into the proposed catch basin along Jady Hill Avenue (Pond PP54). Stormwater then flows north along Jady Hill Avenue within a 12-inch pipe into the dry well within the proposed rock infiltration area (Pond PP53), where it will either infiltrate into the groundwater, or will continue to flow north within a 12-inch pipe to a series of drain manholes (Ponds PP52A & PP52B), and ultimately into the 9th hole detention pond (Link L101).

Subcatchment PS30 represents the woods to the south of the 9th hole green and west of the proposed parking lot & cart storage. This area is comprised of grass, and woods cover.

Subcatchment PS30 sheet flows south to Hayes Park (Link L103).

Subcatchment PS31 represents woods to the west of the 9th hole green. This area is comprised of grass, and woods cover.

Subcatchment PS31 sheet flows west into the woods and ultimately into the Squamscott River (Link L104).

Subcatchment PS32 represents the proposed parking lot west of the existing parking lot, and the proposed gravel golf cart storage area to the west of that. This area is comprised of grass, gravel, and pavement cover.

Subcatchment PS32 sheet flows into the proposed bioretention area south of the proposed parking lot (Pond PP55 & PP56). Stormwater infiltrates and is treated through the 21-inch-thick bioretention media and is stored within the 15-inch-thick reservoir layer below. From there, stormwater will either infiltrate into the groundwater, or will back up into the 4-inch diameter underdrain within the reservoir area and be guided into the proposed catch basin within the bioretention area. In larger storm events (25-year and 50-year storm events), stormwater will pond in the bioretention area and flow into the three (3) 4" x 12" knockouts of the aforementioned catch basin. From the catch basin, stormwater flows east in an 8-inch diameter pipe to the proposed swale south of the existing parking lot (Reach PR75), where it is conveyed into the proposed catch basin along Jady Hill Avenue (Pond PP54). Stormwater then flows north along Jady Hill Avenue within a 12-inch pipe into the dry well within the proposed rock infiltration area (Pond PP53), where it will either infiltrate into the groundwater, or will continue to flow north within a 12-inch pipe to a series of drain manholes (Ponds PP52A & PP52B), and ultimately into the 9th hole detention pond (Link L101).

The storm-water calculations for the proposed site were modeled with good grass cover, good woodlands, impervious gravel cover, and impervious paved parking lot and roof cover. The HydroCAD worksheets outline specific details on the flows and flow conditions.

For exfiltration under the bioretention system, and other proposed infiltration areas on site, the infiltration rate was determined using the Default Values method as described in Env-Wq 1504.14(c). A safety factor of two was used. In each of the areas of infiltration into the groundwater, Chatfield-Hollis-Canton complex soils were found. Chatfield and Hollis had the

lowest infiltration rates (0.6 inches/hour) for both the B and C horizon, and this was used. After a factor of safety of two, the infiltration rate used was 0.3 inches/hour. The Canton soil for the B horizon is 2.0 inches/hour, however this was not used because it is less conservative than the Chatfield and Hollis soils.

The proposed development on the site increased the impervious area by +/-11,530 square feet from predevelopment.

The 1-inch Water Quality Volume (WQV), 2-year, 10-year, 25-year, and 50-year twenty four-hour storm events have been modeled to verify the operability of the storm-water management system, to meet state and local regulations, and to ensure adequate freeboard on the storm-water management structures.

The post-development HydroCAD storm-water flow calculations show an overall net decrease in stormwater peak flows for the 1-inch, 2-year, 10-year, 25-year, and 50-year storm events for the site. However, the calculations show an increase for each of the storm events at Link L101. Links L102, L103, and L104 also show decreases in stormwater volume for the 1-inch, 2-year, 10-year, 25-year, and 50-year storm events for the site. Link L101 shows an increase in volume for each of the storm events. See the “Peak Flow and Volume Increases in Link L101” section below.

The stormwater flow summaries are detailed in the HydroCAD calculations showing the net decrease or increase in runoff at each point of discharge. Each point of discharge has been subtotaled to compare the pre-development and post-development discharges from the same geographical areas of the parcel and shown on the Stormwater/Drainage Summary sheet as Link L101 (north along golf course to the 9th hole detention pond), Link L102 (east to the catch basin at the Jady Hill Avenue – Webster Avenue intersection), Link L103 (south to Hayes Park), and Link L104 (west to the woods and ultimately into the Squamscott River).

TREATED/UNTREATED IMPERVIOUS AREA

The lone storm water treatment on site is within the proposed bioretention area south of the proposed parking at the top of the hill. A small stone infiltration area is also included along Jady Hill Avenue, which stores and infiltrates some stormwater, but does not provide treatment. Only one area of storm water treatment is provided because this is the area with the majority of the proposed impervious area. The proposed bioretention basin will treat storm water from

proposed impervious surfaces as well as some existing impervious areas. There is a small amount of storm water from proposed impervious areas that will be untreated before being piped to the detention pond on the 9th hole, but there is a net decrease of 8,955 square feet of untreated impervious area on site despite there being a net increase of 11,530 square feet of total impervious area.

PEAK FLOW AND VOLUME INCREASES IN LINK L101

The pond on the 9th hole is the source for watering the golf course. This pond sometimes runs dry, and water needs to be pumped into the pond from a nearby well in order to provide enough water within the pond. There are peak flow and volume increases into this pond (Link L101), but per the HydroCAD calculations, the pond (Pond EP10) has ample storage to take on the increase in water. In fact, there is a benefit for increasing the volume to this pond because water will not need to be pumped into the pond as often or at all. Per the HydroCAD calculations, the peak elevation for EP10 during a 50-year storm is 39.52' while the flood elevation of the pond is 44.00'.

POLLUTANT LOAD REMOVAL

Within this transmittal, pre-development and post-development pollutant load calculations were performed for Total Suspended Solids (TSS), Total Phosphorous (TP), and Total Nitrogen (TN). Calculations for pollutant load removals were done per "The Simple Method" via a Microsoft Excel spreadsheet provided by NHDES. Pollutant load removal rates were provided by the University of New Hampshire Stormwater Center (UNHSC). Per UNHSC, the removal rates for a Bioretention System (as designed in this project), there is a TSS removal rate of 97%, a TP removal rate of 99%, and a TN removal rate of 44%. Per the Town of Exeter's Site Plan Regulations, the required TSS removal rate is 80%, whereas the TP and TN required removal rates are both 60%. Further pollutant load calculations were made, particularly to examine the TN removal rate that is 16% lower than what is required.

Per the pollutant load calculations, there is an estimated decrease in TSS of 138.2 lbs/year (27.8% removal). There was an estimated pre-development amount of 497.2 lbs/year in TSS, and a post-development amount of 359.0 lbs/year. There was also an estimated decrease in TP of 0.5 lbs/year (13.1% removal). There was an estimated pre-development amount of 3.4 lbs/year in

TP, and a post-development amount of 3.0 lbs/year (rounding the math makes these numbers appear to not add up). Conversely, there is an increase in TN of 0.9 lbs/year (3.0% increase). There was an estimated pre-development amount of 29.3 lbs/year in TN, and a post-development amount of 30.2 lbs/year.

With the use of the 9th hole pond as the supply for watering the golf course, we do not see an issue with this small increase in TN. Nitrogen is used in fertilizers that is used for maintaining the golf course. Since the supply water contains nitrogen, less fertilizer will be required on the golf course. We do not expect that the small increase of TN in the post-development conditions to have much of an effect on the environment compared to the TN in the pre-development conditions. A waiver has been submitted within this transmittal to seek relief from Section 9.3.1.6 requiring the removal of 60% TN.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New Hampshire
Location	
Longitude	70.941 degrees West
Latitude	42.991 degrees North
Elevation	0 feet
Date/Time	Tue, 23 Aug 2022 16:21:56 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.41	0.50	0.67	0.82	1.01	1yr	0.71	0.99	1.14	1.57	2.00	2.68	2.91	1yr	2.37	2.80	3.21	3.92	4.54	1yr
2yr	0.32	0.50	0.61	0.83	1.02	1.21	2yr	0.88	1.18	1.40	1.85	2.39	3.22	3.57	2yr	2.85	3.43	3.94	4.68	5.33	2yr
5yr	0.37	0.58	0.72	0.99	1.25	1.50	5yr	1.08	1.47	1.73	2.30	2.93	4.09	4.59	5yr	3.62	4.41	5.05	5.97	6.74	5yr
10yr	0.42	0.65	0.81	1.13	1.46	1.77	10yr	1.26	1.73	2.04	2.70	3.42	4.91	5.56	10yr	4.34	5.34	6.09	7.18	8.06	10yr
25yr	0.50	0.77	0.95	1.36	1.79	2.20	25yr	1.55	2.15	2.53	3.35	4.20	6.24	7.15	25yr	5.52	6.88	7.80	9.18	10.21	25yr
50yr	0.57	0.87	1.08	1.56	2.10	2.60	50yr	1.81	2.54	2.98	3.94	4.91	7.49	8.66	50yr	6.63	8.33	9.42	11.05	12.22	50yr
100yr	0.66	0.99	1.24	1.79	2.45	3.07	100yr	2.12	3.00	3.52	4.64	5.74	9.00	10.49	100yr	7.96	10.09	11.37	13.32	14.63	100yr
200yr	0.75	1.12	1.42	2.06	2.87	3.63	200yr	2.48	3.55	4.15	5.47	6.71	10.81	12.71	200yr	9.56	12.23	13.73	16.06	17.53	200yr
500yr	0.90	1.33	1.72	2.49	3.55	4.53	500yr	3.06	4.43	5.17	6.80	8.27	13.77	16.39	500yr	12.19	15.76	17.62	20.57	22.27	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.89	1yr	0.64	0.87	0.95	1.26	1.55	2.28	2.54	1yr	2.02	2.44	2.89	3.40	4.00	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.19	2yr	0.87	1.16	1.37	1.82	2.33	3.11	3.50	2yr	2.75	3.36	3.85	4.57	5.13	2yr
5yr	0.36	0.55	0.68	0.93	1.19	1.42	5yr	1.03	1.39	1.62	2.12	2.74	3.82	4.28	5yr	3.38	4.11	4.72	5.62	6.33	5yr
10yr	0.39	0.61	0.75	1.05	1.35	1.63	10yr	1.17	1.59	1.82	2.40	3.07	4.41	4.97	10yr	3.90	4.78	5.49	6.53	7.28	10yr
25yr	0.45	0.69	0.86	1.23	1.61	1.95	25yr	1.39	1.90	2.12	2.78	3.58	4.90	6.06	25yr	4.34	5.82	6.68	7.94	8.88	25yr
50yr	0.50	0.77	0.95	1.37	1.85	2.24	50yr	1.59	2.19	2.36	3.12	4.01	5.54	7.02	50yr	4.91	6.75	7.76	9.22	10.25	50yr
100yr	0.57	0.85	1.07	1.55	2.12	2.57	100yr	1.83	2.51	2.65	3.48	4.48	6.25	8.12	100yr	5.53	7.81	9.00	10.67	11.80	100yr
200yr	0.63	0.95	1.20	1.74	2.43	2.95	200yr	2.10	2.88	2.95	3.88	4.99	7.01	9.65	200yr	6.21	9.28	10.45	12.36	13.62	200yr
500yr	0.74	1.11	1.42	2.07	2.94	3.56	500yr	2.54	3.48	3.42	4.48	5.80	8.14	11.77	500yr	7.20	11.32	12.71	14.95	16.42	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	1yr	0.76	1.06	1.26	1.71	2.17	2.97	3.10	1yr	2.63	2.98	3.57	4.30	5.00	1yr
2yr	0.33	0.51	0.63	0.86	1.05	1.26	2yr	0.91	1.23	1.48	1.95	2.49	3.40	3.66	2yr	3.01	3.52	4.05	4.84	5.63	2yr
5yr	0.40	0.62	0.77	1.05	1.34	1.61	5yr	1.16	1.58	1.87	2.49	3.17	4.37	4.92	5yr	3.87	4.73	5.40	6.34	7.18	5yr
10yr	0.47	0.73	0.90	1.26	1.63	1.97	10yr	1.41	1.93	2.26	3.03	3.82	5.44	6.16	10yr	4.81	5.92	6.76	7.88	8.84	10yr
25yr	0.59	0.89	1.11	1.58	2.08	2.56	25yr	1.80	2.50	2.93	3.93	4.90	7.66	8.32	25yr	6.78	8.00	9.07	10.50	11.53	25yr
50yr	0.68	1.04	1.30	1.86	2.51	3.11	50yr	2.17	3.04	3.56	4.79	5.94	9.60	10.45	50yr	8.49	10.05	11.36	13.06	14.18	50yr
100yr	0.81	1.22	1.53	2.21	3.02	3.78	100yr	2.61	3.69	4.33	5.86	7.21	12.03	13.14	100yr	10.65	12.64	14.21	16.30	17.46	100yr
200yr	0.95	1.42	1.80	2.61	3.64	4.60	200yr	3.14	4.50	5.28	7.17	8.73	15.14	16.17	200yr	13.40	15.55	17.81	20.32	21.50	200yr
500yr	1.18	1.75	2.25	3.27	4.65	5.96	500yr	4.01	5.83	6.86	9.37	11.28	20.53	21.82	500yr	18.17	20.98	23.97	27.23	28.39	500yr



STORMWATER ANALYSIS AREA WORKSHEET

EMANUEL ENGINEERING INC.

JOB: 21-157 Blind Tiger - Exeter Country Club
 DATE: 4/12/2023
 ENGINEER: JJM

PRE DEVELOPMENT DRAINAGE AREAS:

<i>SOIL TYPE</i>	<i>SOIL GROUP</i>	<i>CN#</i>	<i>SUBCAT ES1 Area (SF)</i>	<i>SUBCAT ES2 Area (SF)</i>	<i>SUBCAT ES3 Area (SF)</i>	<i>SUBCAT ES4 Area (SF)</i>	<i>TOTAL AREA (SF)</i>
Grass	B	61	36,930	21,270	3,555	8,395	70,150
Woods	B	55	0	4,535	36,680	74,625	115,840
Gravel	B	85	1,695	8,690	50	0	10,435
Building	B	98	195	3,905	0	0	4,100
Pavement	B	98	570	32,910	0	0	33,480
Total Area (SF)			39,390	71,310	40,285	83,020	234,005
Area (Acres)			0.90	1.64	0.92	1.91	5.37
Total Impervious (SF)			2,460	45,505	50	0	48,015
Impervious (Acres)			0.06	1.04	0.00	0.00	1.10

STORMWATER ANALYSIS AREA WORKSHEET

EMANUEL ENGINEERING INC.

JOB: 21-157 Blind Tiger - Exeter Country Club

DATE: 4/12/2023

ENGINEER: JJM

POST DEVELOPMENT DRAINAGE AREAS:

SOIL TYPE	SOIL GROUP	CN#	SUBCAT PS25A	SUBCAT PS25B	SUBCAT PS26	SUBCAT PS27	SUBCAT PS28	SUBCAT PS29	SUBCAT PS30	SUBCAT PS31	SUBCAT PS32	TOTAL AREA (SF)
			Area (SF)	Area (SF)	Area (SF)	Area (SF)	Area (SF)	Area (SF)	Area (SF)	Area (SF)	Area (SF)	
Grass	B	61	1,430	400	32,900	15,285	475	1,455	6,820	8,395	8,840	76,000
Woods	B	55	0	0	0	1,365	0	0	22,470	74,625	0	98,460
Gravel	B	85	0	0	1,265	1,775	0	0	0	0	1,800	4,840
Building	B	98	4,960	3,255	0	0	0	0	0	0	0	8,215
Pavement	B	98	270	0	525	21,060	6,895	2,580	0	0	15,160	46,490
Total Area (SF)			6,660	3,655	34,690	39,485	7,370	4,035	29,290	83,020	25,800	234,005
Area (Acres)			0.15	0.08	0.80	0.91	0.17	0.09	0.67	1.91	0.59	5.37
Total Impervious (SF)			5,230	3,255	1,790	22,835	6,895	2,580	0	0	16,960	59,545
Impervious (Acres)			0.12	0.07	0.04	0.52	0.16	0.06	0.00	0.00	0.39	1.37

STORMWATER/DRAINAGE SUMMARY

EMANUEL ENGINEERING, INC.

JOB: 21-157 Blind Tiger - Exeter Country Club
 DATE: 5/23/2023
 ENGINEER: JJM

PEAK FLOWS FROM HYDROCAD

Subcatchment Area	Storm Quality 1"		2-Year Storm 3.22"		10-Year Storm 4.91"		25-Year Storm 6.24"		50-Year Storm 7.49"	
	Pre (CFS)	Post (CFS)	Pre (CFS)	Post (CFS)	Pre (CFS)	Post (CFS)	Pre (CFS)	Post (CFS)	Pre (CFS)	Post (CFS)
POINTS OF DISCHARGE										
LINK L101	0.00	0.13	0.33	0.92	1.09	1.98	1.77	2.82	2.41	3.61
LINK L102	0.13	0.05	3.13	1.65	5.18	2.79	6.74	3.65	8.11	4.41
LINK L103	0.00	0.00	0.07	0.05	0.73	0.53	1.39	1.01	2.04	1.48
LINK L104	0.00	0.00	0.14	0.14	1.32	1.32	2.52	2.52	3.73	3.73
FLOW TOTALS (CFS)	0.13	0.18	3.67	2.76	8.32	6.62	12.42	10.00	16.29	13.23
Net Increase/(Decrease) (CFS)		0.05		(0.91)		(1.70)		(2.42)		(3.06)

VOLUMES FROM HYDROCAD

Subcatchment Area	Storm Quality 1"		2-Year Storm 3.22"		10-Year Storm 4.91"		25-Year Storm 6.24"		50-Year Storm 7.49"	
	Pre (AF)	Post (AF)	Pre (AF)	Post (AF)	Pre (AF)	Post (AF)	Pre (AF)	Post (AF)	Pre (AF)	Post (AF)
POINTS OF DISCHARGE										
LINK L101	0.000	0.009	0.040	0.154	0.109	0.331	0.177	0.484	0.247	0.636
LINK L102	0.018	0.009	0.222	0.117	0.422	0.227	0.589	0.318	0.749	0.406
LINK L103	0.000	0.000	0.022	0.016	0.077	0.056	0.134	0.098	0.196	0.142
LINK L104	0.000	0.000	0.045	0.045	0.158	0.158	0.276	0.276	0.404	0.404
Voume TOTALS (CFS)	0.018	0.018	0.329	0.332	0.766	0.772	1.176	1.176	1.596	1.588
Net Increase/(Decrease) (CFS)		0.000		0.003		0.006		0.000		(0.008)



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Rockingham County, New Hampshire



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Rockingham County, New Hampshire.....	13
38B—Eldridge fine sandy loam, 3 to 8 percent slopes.....	13
62B—Charlton fine sandy loam, 3 to 8 percent slopes.....	14
140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky.....	15
299—Udorthents, smoothed.....	19
799—Urban land-Canton complex, 3 to 15 percent slopes.....	19
References	22

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

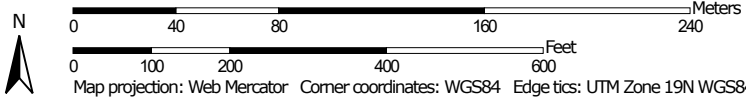
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:2,940 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
 Survey Area Data: Version 24, Aug 31, 2021

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

Date(s) aerial images were photographed: May 22, 2020—Nov 1, 2021

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38B	Eldridge fine sandy loam, 3 to 8 percent slopes	5.3	25.6%
62B	Charlton fine sandy loam, 3 to 8 percent slopes	1.0	5.0%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	12.1	58.7%
299	Udorthents, smoothed	0.3	1.4%
799	Urban land-Canton complex, 3 to 15 percent slopes	1.9	9.4%
Totals for Area of Interest		20.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

38B—Eldridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9cnb
Elevation: 90 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Eldridge and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eldridge

Setting

Parent material: Outwash over glaciolacustrine

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 23 inches: loamy fine sand
H3 - 23 to 62 inches: loamy very fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Boxford

Percent of map unit: 5 percent
Hydric soil rating: No

Well drained inclusion

Percent of map unit: 5 percent
Hydric soil rating: No

Scitico

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

62B—Charlton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wh0n
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Charlton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 8 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 1 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82s

Custom Soil Resource Report

Elevation: 0 to 980 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
B_w - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (K_{sat}): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest

Custom Soil Resource Report

Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent

Landform: Marshes, depressions, bogs, kettles, swamps

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent

Landform: Moraines, ground moraines, hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 3 percent

Landform: Depressions, outwash terraces, drainageways, outwash deltas

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave, linear

Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent

Landform: Ridges, hills

Hydric soil rating: Unranked

299—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9cmt
Elevation: 0 to 840 feet
Mean annual precipitation: 44 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam

H2 - 5 to 21 inches: gravelly fine sandy loam

H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent

Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent

Landform: Marine terraces

Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent

Landform: Depressions

Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent

Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent

Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent

Hydric soil rating: No

Custom Soil Resource Report

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

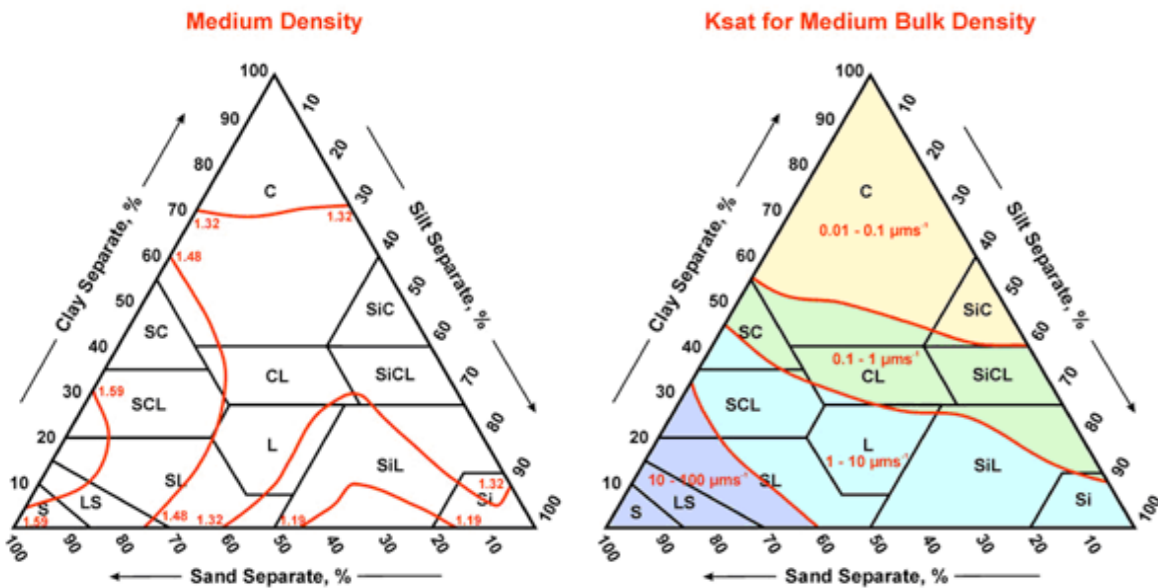
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

K_{sat} VALUES

FOR

NEW HAMPSHIRE SOILS

(Including Hydrologic and DES Soil Lot Sizing Groups)



From: Guide for Estimating Ksat from Soil Properties (Exhibit 618-9). (<http://soils.usda.gov/technical/handbook/contents/part618ex.html>)

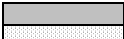
Sponsored by the Society of Soil Scientists of Northern New England
 SSSNNE Special Publication No. 5
 September, 2009

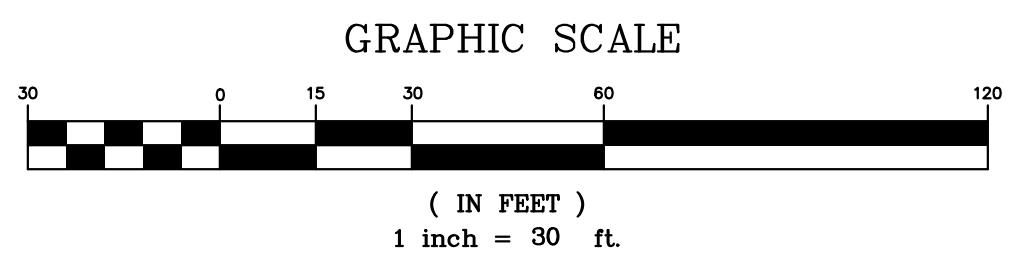
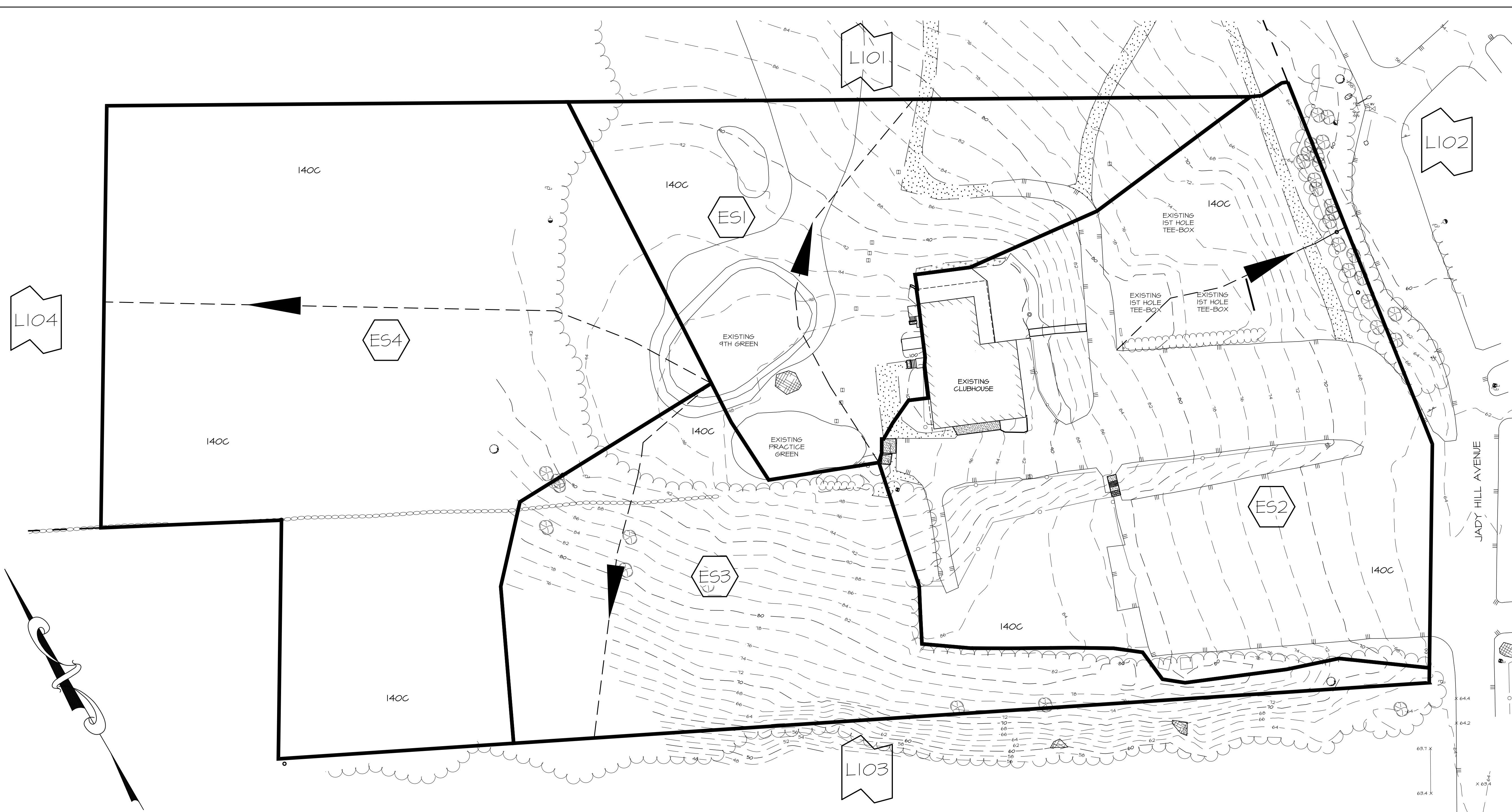
Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channeery silt loam in Cd
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channeery
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquel	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravelly loamy sand in C
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravely sandy loam in Cd
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Ricker	674	2.0	6.0	2.00	6.0	A	4	Organic over bedrock (up to 4" of mineral)	crylic	fibric to hemic	no	well drained, less than 20 in. deep
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	crylic	loamy	yes	less than 20 in. deep
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravely sand in 2C
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Sheepsfoot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravely coarse sand
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	crylic	loamy	yes	sandy loam in Cd
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrodept
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep

 no longer recognized
 organic materials



- NOTES:**
- OWNER OF RECORD:
TAX MAP 52, LOT 1
EXETER COUNTRY CLUB
P.O. BOX 1088
EXETER, NH 03833
RCRD BK1406 PG0290
 - THE INTENT OF THIS PLAN IS TO CALCULATE PRE-DEVELOPMENT SUBCATCHMENT AREAS AND FLOW PATHS FOR MODELING VARIOUS STORM EVENTS IN PREPARATION FOR SITE IMPROVEMENTS.
 - PRE-DEVELOPMENT DRAINAGE AREA CALC:
DRAINAGE ANALYSIS TOTAL AREA = 234,005 SF
DRAINAGE ANALYSIS IMPERVIOUS = 48,015 SF
DRAINAGE ANALYSIS % IMPERVIOUS = 20.5%

SOIL LEGEND	
MAP UNIT SYMBOL	MAP UNIT NAME
140C	CHATFIELD-HOLLIS-CANTON COMPLEX, 8 TO 15 PERCENT SLOPES, ROCKY
NOTE: SOIL INFORMATION ON THIS PLAN WAS DELINEATED VIA THE USDA - NRCS WEB SOIL SURVEY ON AUGUST 25, 2022.	

2	APR 25, 2023	FOR APPROVAL	
1	JAN 24, 2023	FOR APPROVAL	
ISS. DATE:	DESCRIPTION OF ISSUE:		CHK:
DRAWN: JJM	DESIGN: JJM		
CHECKED: BDS	CHECKED: BDS		

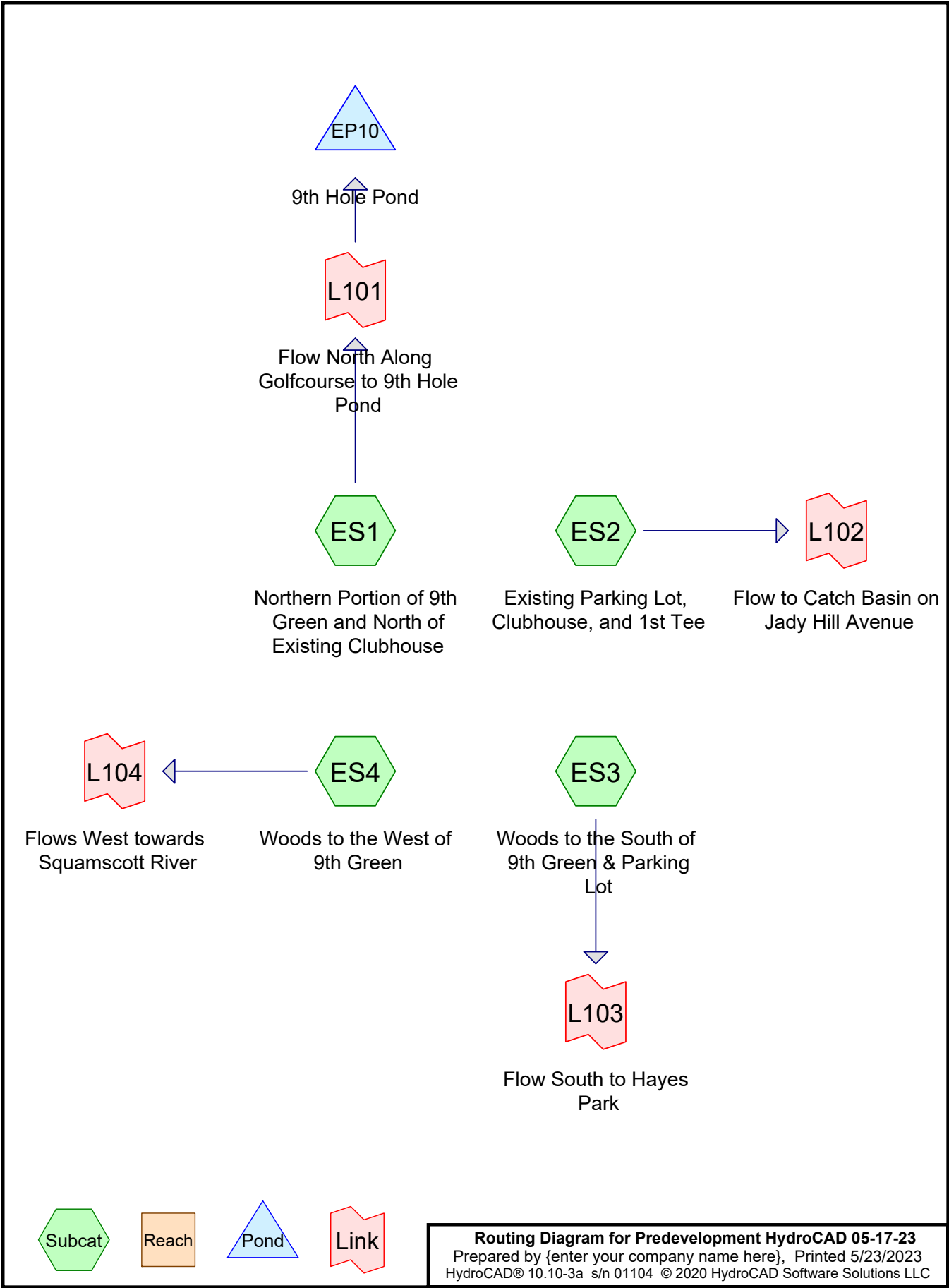
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A202
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

CLIENT:
BLIND TIGER, LLC
3 WRIGHT LANE
EXETER, NH 03833

SEAL:

TITLE:
**PREDEVELOPMENT
SUBCATCHMENTS
FOR
EXETER COUNTRY CLUB
58 JADY HILL AVENUE (SITE)
EXETER, NH 03833**

PROJECT: 21-157	SCALE: 1"=30'	SHEET: SW1
--------------------	------------------	---------------



Predevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 48

Project Notes

Copied 9 events from NH-Exeter 08-23-22 24-hr S1 storm

Predevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 49

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-inch	NH-Exeter 08-23-22 24-hr S1	1-yr	Default	24.00	1	1.00	2
2	1-yr	NH-Exeter 08-23-22 24-hr S1	1-yr	Default	24.00	1	2.68	2
3	2-yr	NH-Exeter 08-23-22 24-hr S1	2-yr	Default	24.00	1	3.22	2
4	5-yr	NH-Exeter 08-23-22 24-hr S1	5-yr	Default	24.00	1	4.09	2
5	10-yr	NH-Exeter 08-23-22 24-hr S1	10-yr	Default	24.00	1	4.91	2
6	25-yr	NH-Exeter 08-23-22 24-hr S1	25-yr	Default	24.00	1	6.24	2
7	50-yr	NH-Exeter 08-23-22 24-hr S1	50-yr	Default	24.00	1	7.49	2
8	100-yr	NH-Exeter 08-23-22 24-hr S1	100-yr	Default	24.00	1	9.00	2
9	200-yr	NH-Exeter 08-23-22 24-hr S1	200-yr	Default	24.00	1	10.81	2
10	500-yr	NH-Exeter 08-23-22 24-hr S1	500-yr	Default	24.00	1	13.77	2

Predevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 50

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.610	61	>75% Grass cover, Good, HSG B (ES1, ES2, ES3, ES4)
0.240	85	Gravel roads, HSG B (ES1, ES2, ES3)
0.769	98	Paved parking, HSG B (ES1, ES2)
0.094	98	Roofs, HSG B (ES1, ES2)
2.659	55	Woods, Good, HSG B (ES2, ES3, ES4)
5.372	65	TOTAL AREA

Predevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 51

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.372	HSG B	ES1, ES2, ES3, ES4
0.000	HSG C	
0.000	HSG D	
0.000	Other	
5.372		TOTAL AREA

Predevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 52

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.610	0.000	0.000	0.000	1.610	>75% Grass cover, Good	ES1, ES2, ES3, ES4
0.000	0.240	0.000	0.000	0.000	0.240	Gravel roads	ES1, ES2, ES3
0.000	0.769	0.000	0.000	0.000	0.769	Paved parking	ES1, ES2
0.000	0.094	0.000	0.000	0.000	0.094	Roofs	ES1, ES2
0.000	2.659	0.000	0.000	0.000	2.659	Woods, Good	ES2, ES3, ES4
0.000	5.372	0.000	0.000	0.000	5.372	TOTAL AREA	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=1.45"
 Flow Length=235' Tc=7.1 min CN=63 Runoff=1.09 cfs 0.109 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=3.09"
 Tc=5.0 min CN=83 Runoff=5.18 cfs 0.422 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=1.00"
 Tc=5.0 min CN=56 Runoff=0.73 cfs 0.077 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.00"
 Flow Length=345' Tc=7.4 min CN=56 Runoff=1.32 cfs 0.158 af

Pond EP10: 9th Hole Pond Peak Elev=37.33' Storage=4,767 cf Inflow=1.09 cfs 0.109 af
 Outflow=0.00 cfs 0.000 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=1.09 cfs 0.109 af
 Primary=1.09 cfs 0.109 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=5.18 cfs 0.422 af
 Primary=5.18 cfs 0.422 af

Link L103: Flow South to Hayes Park Inflow=0.73 cfs 0.077 af
 Primary=0.73 cfs 0.077 af

Link L104: Flows West towards Squamscott River Inflow=1.32 cfs 0.158 af
 Primary=1.32 cfs 0.158 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.766 af Average Runoff Depth = 1.71"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac

Summary for Subcatchment ES1: Northern Portion of 9th Green and North of Existing Clubhouse

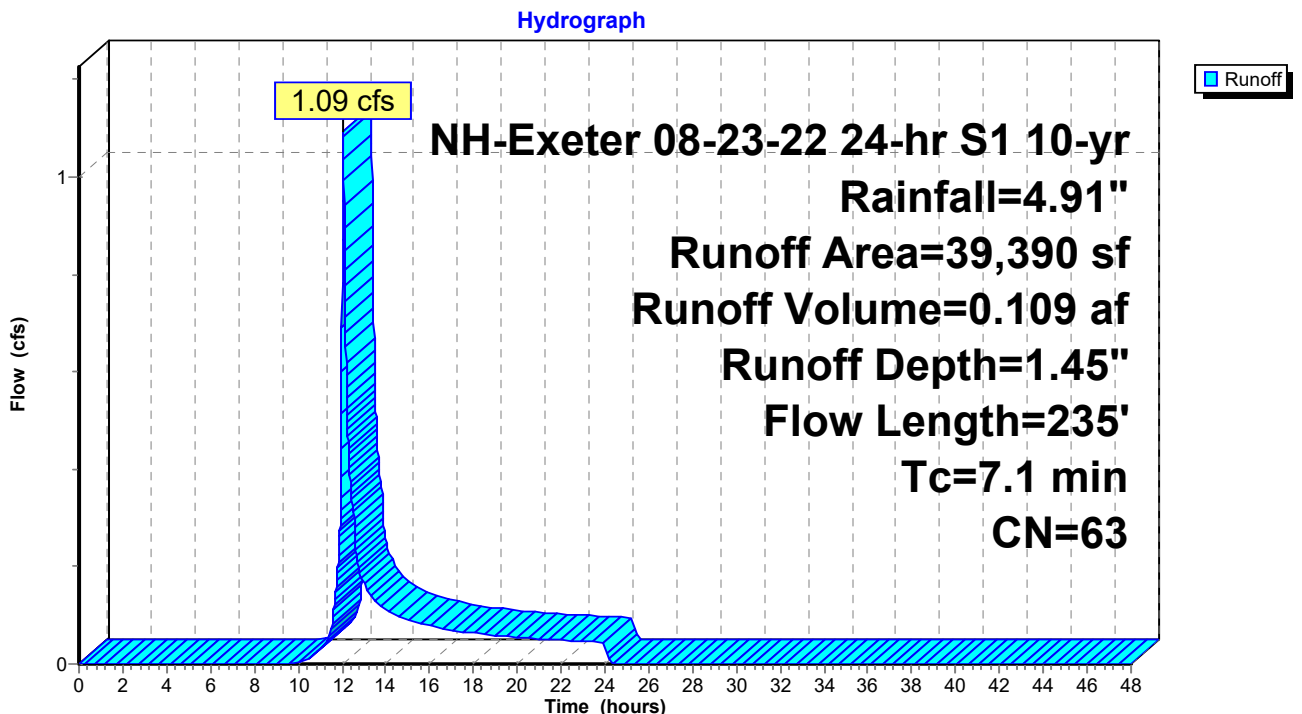
Runoff = 1.09 cfs @ 12.06 hrs, Volume= 0.109 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
36,930	61	>75% Grass cover, Good, HSG B
1,695	85	Gravel roads, HSG B
195	98	Roofs, HSG B
570	98	Paved parking, HSG B
39,390	63	Weighted Average
38,625		98.06% Pervious Area
765		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, Grass Grass: Short n= 0.150 P2= 3.22"
0.6	55	0.0550	1.64		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
0.9	130	0.1100	2.32		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
7.1	235	Total			

Subcatchment ES1: Northern Portion of 9th Green and North of Existing Clubhouse



Summary for Subcatchment ES2: Existing Parking Lot, Clubhouse, and 1st Tee

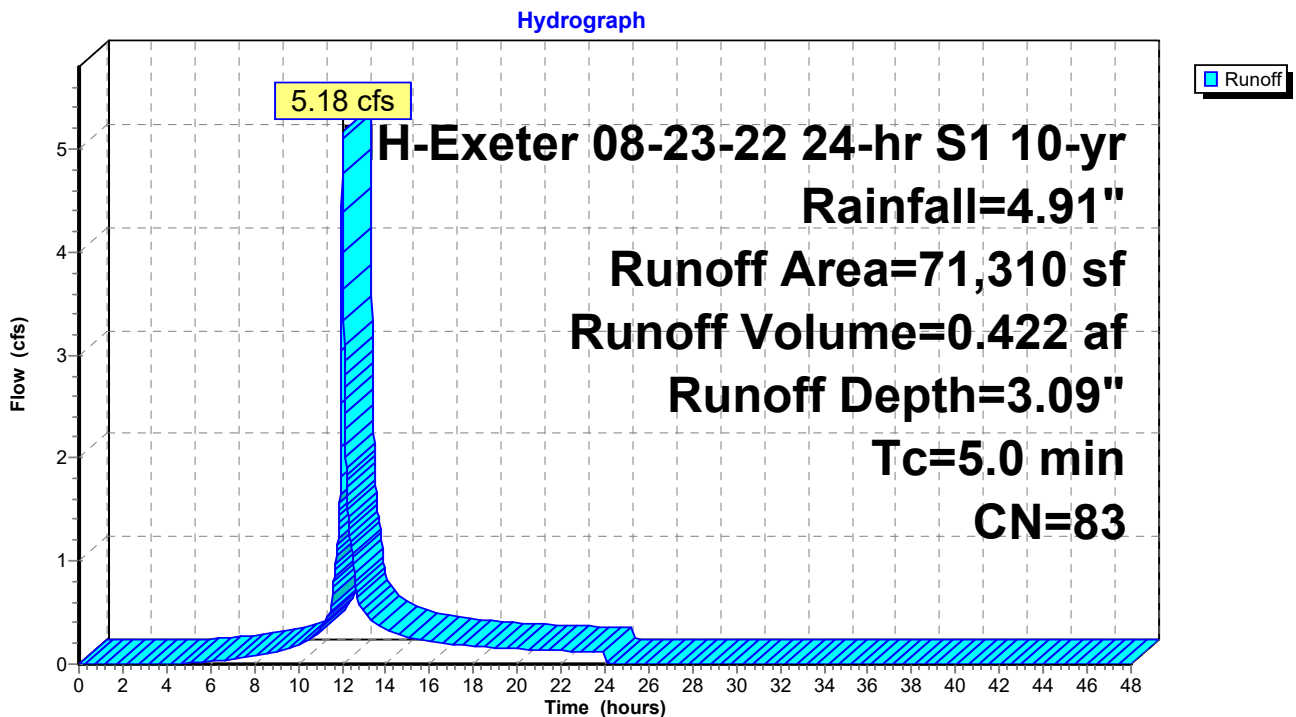
Runoff = 5.18 cfs @ 12.03 hrs, Volume= 0.422 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
21,270	61	>75% Grass cover, Good, HSG B
4,535	55	Woods, Good, HSG B
8,690	85	Gravel roads, HSG B
3,905	98	Roofs, HSG B
32,910	98	Paved parking, HSG B
71,310	83	Weighted Average
34,495		48.37% Pervious Area
36,815		51.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment ES2: Existing Parking Lot, Clubhouse, and 1st Tee



Summary for Subcatchment ES3: Woods to the South of 9th Green & Parking Lot

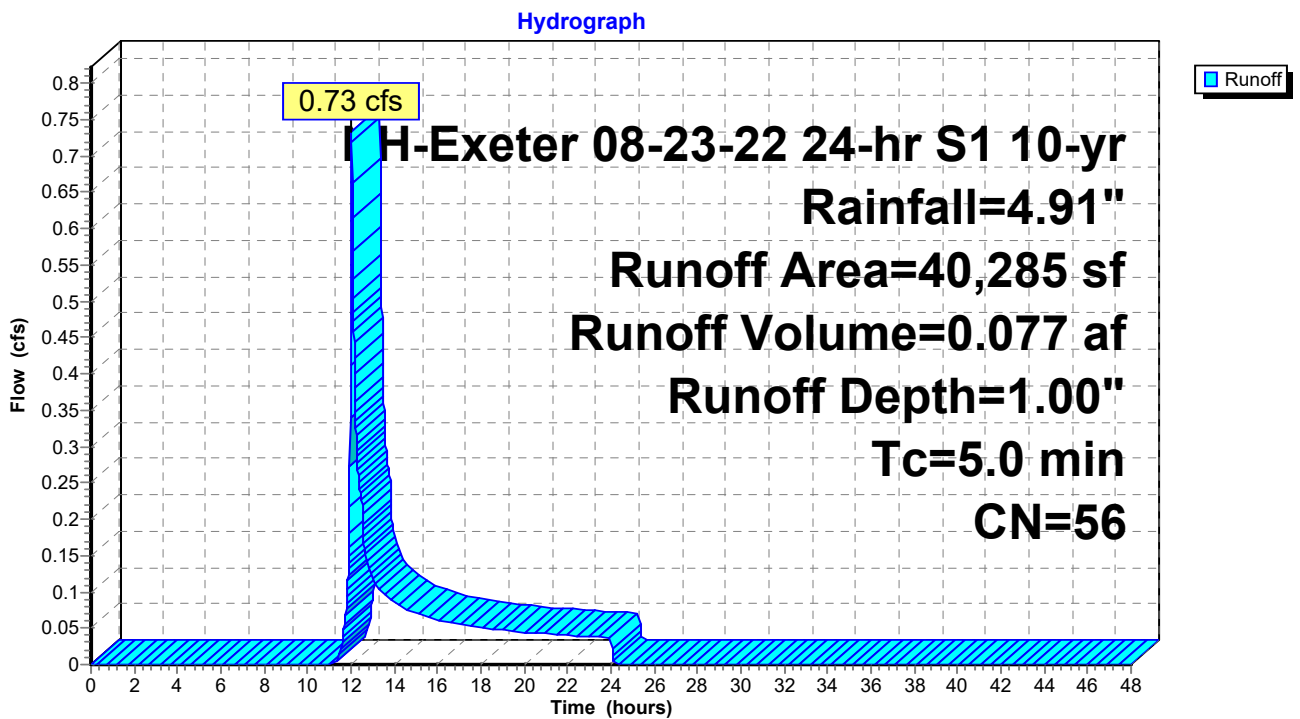
Runoff = 0.73 cfs @ 12.04 hrs, Volume= 0.077 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
3,555	61	>75% Grass cover, Good, HSG B
36,680	55	Woods, Good, HSG B
50	85	Gravel roads, HSG B
40,285	56	Weighted Average
40,285		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment ES3: Woods to the South of 9th Green & Parking Lot



Summary for Subcatchment ES4: Woods to the West of 9th Green

Runoff = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af, Depth= 1.00"

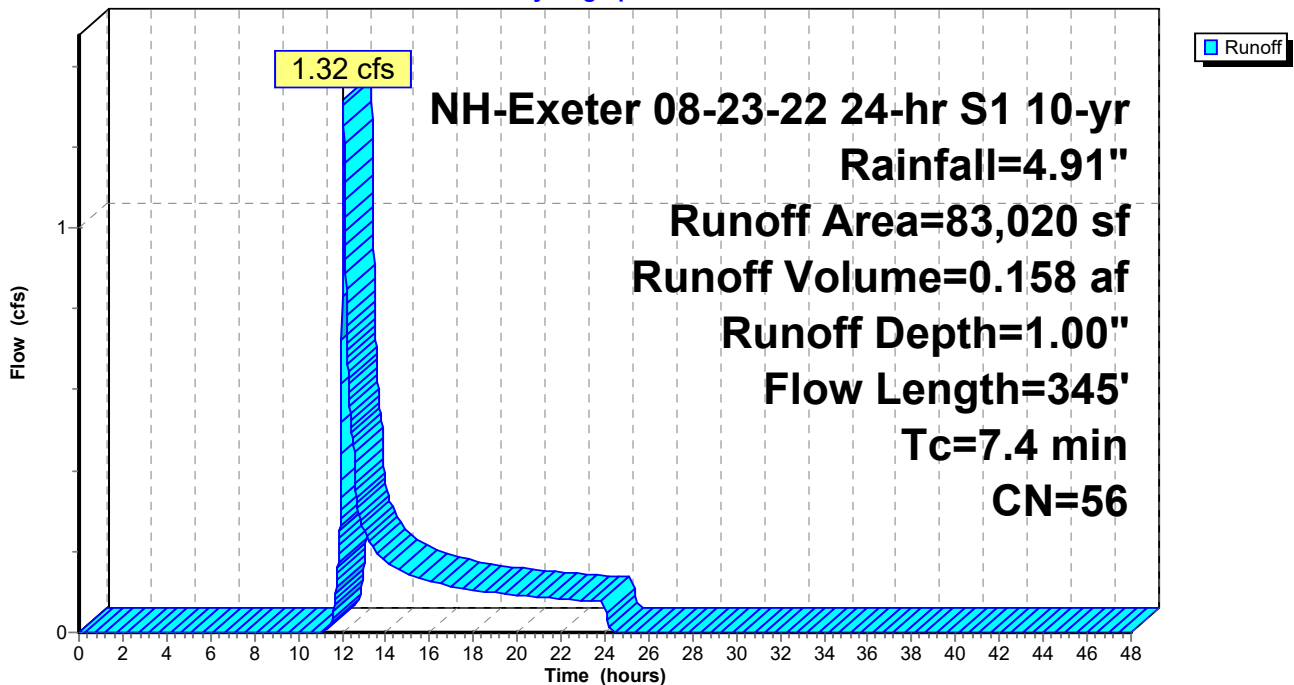
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
8,395	61	>75% Grass cover, Good, HSG B
74,625	55	Woods, Good, HSG B
83,020	56	Weighted Average
83,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		Sheet Flow, Grass Grass: Short n= 0.150 P2= 3.22"
0.5	45	0.0400	1.40		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
2.6	250	0.1000	1.58		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
7.4	345	Total			

Subcatchment ES4: Woods to the West of 9th Green

Hydrograph



Summary for Pond EP10: 9th Hole Pond

Inflow Area = 0.904 ac, 1.94% Impervious, Inflow Depth = 1.45" for 10-yr event
 Inflow = 1.09 cfs @ 12.06 hrs, Volume= 0.109 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 37.33' @ 24.42 hrs Surf.Area= 6,310 sf Storage= 4,767 cf
 Flood Elev= 44.00' Surf.Area= 28,470 sf Storage= 127,940 cf

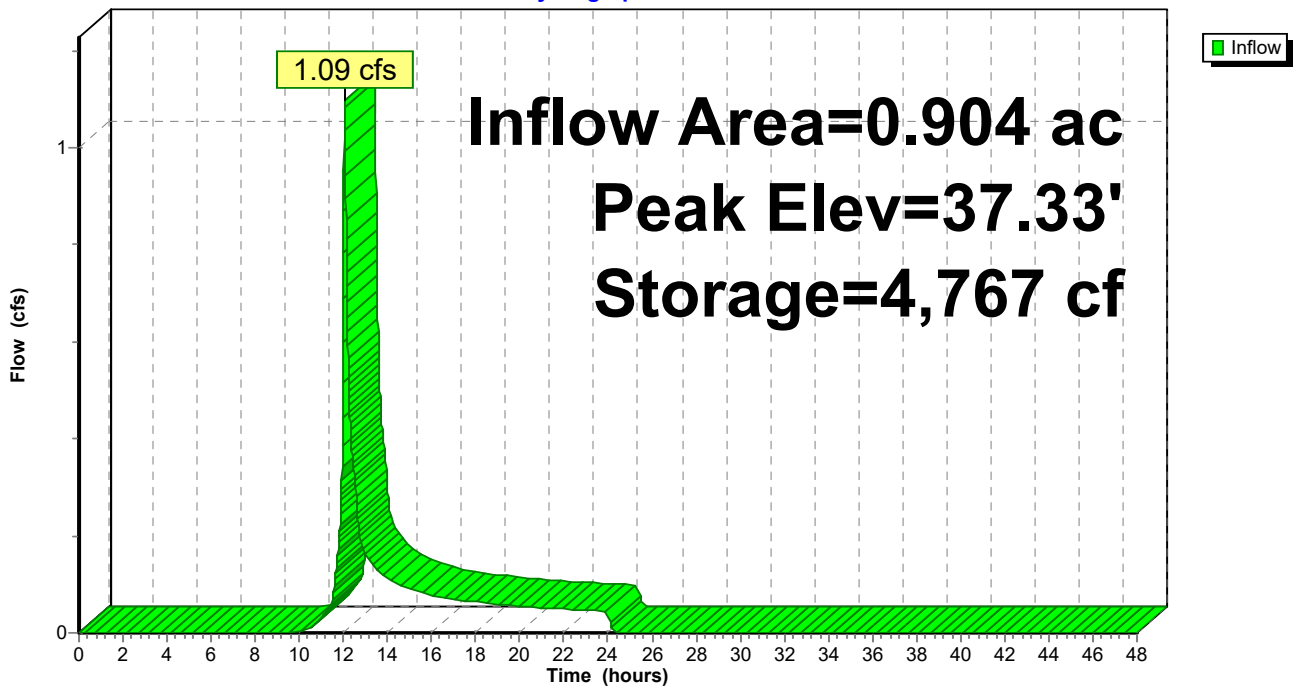
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	127,940 cf	Pond by 9th Hole Tee Boxes (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	850	0	0
38.00	9,050	9,900	9,900
40.00	17,350	26,400	36,300
44.00	28,470	91,640	127,940

Pond EP10: 9th Hole Pond

Hydrograph

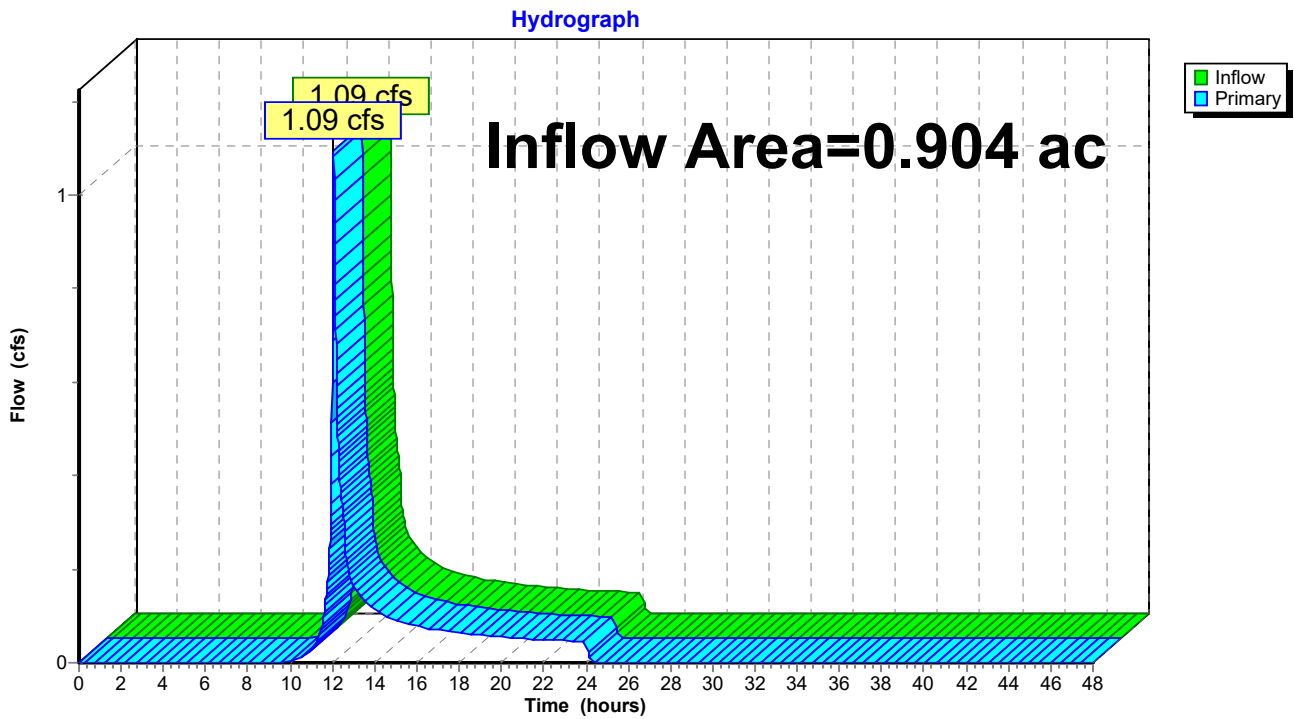


Summary for Link L101: Flow North Along Golfcourse to 9th Hole Pond

Inflow Area = 0.904 ac, 1.94% Impervious, Inflow Depth = 1.45" for 10-yr event
Inflow = 1.09 cfs @ 12.06 hrs, Volume= 0.109 af
Primary = 1.09 cfs @ 12.06 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L101: Flow North Along Golfcourse to 9th Hole Pond

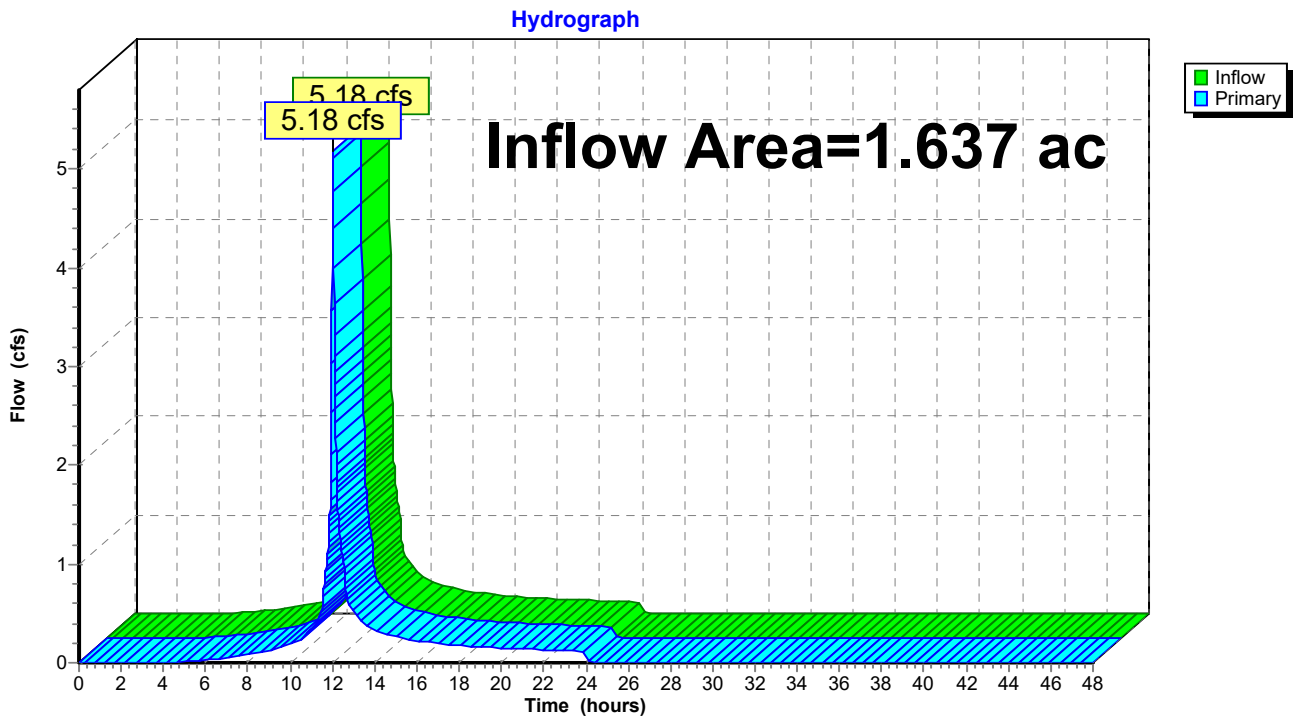


Summary for Link L102: Flow to Catch Basin on Jady Hill Avenue

Inflow Area = 1.637 ac, 51.63% Impervious, Inflow Depth = 3.09" for 10-yr event
Inflow = 5.18 cfs @ 12.03 hrs, Volume= 0.422 af
Primary = 5.18 cfs @ 12.03 hrs, Volume= 0.422 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L102: Flow to Catch Basin on Jady Hill Avenue



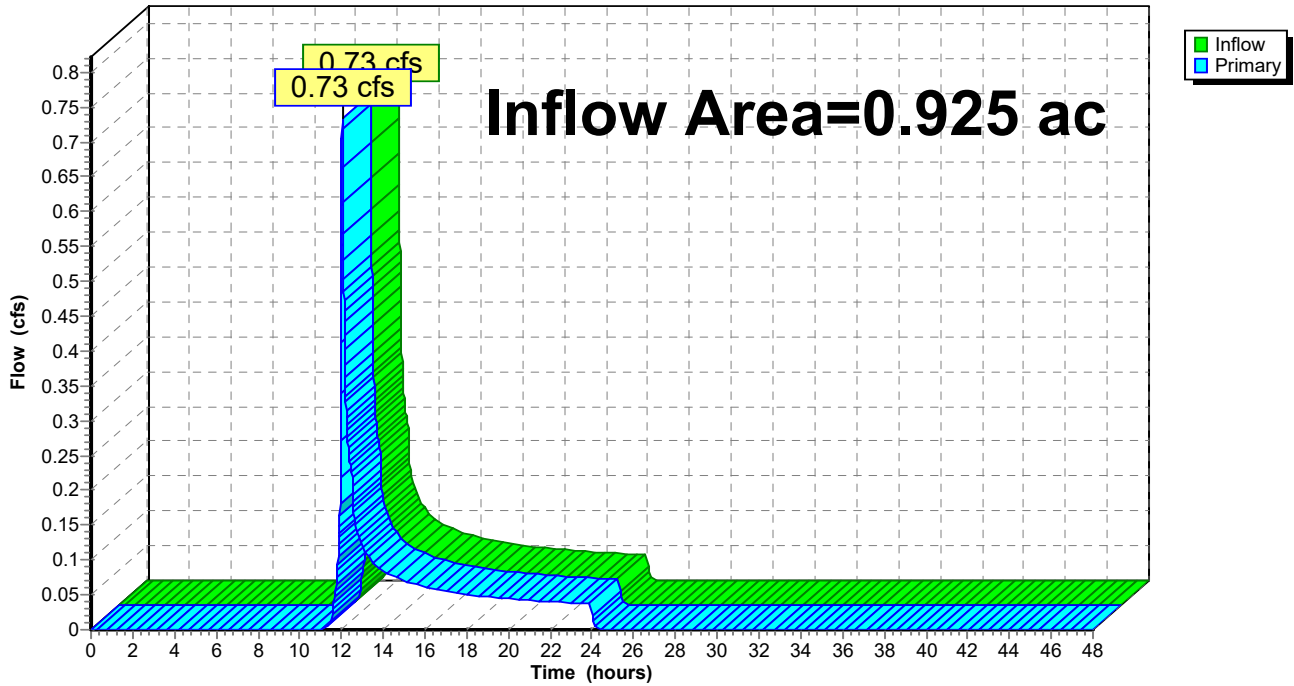
Summary for Link L103: Flow South to Hayes Park

Inflow Area = 0.925 ac, 0.00% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 0.73 cfs @ 12.04 hrs, Volume= 0.077 af
Primary = 0.73 cfs @ 12.04 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L103: Flow South to Hayes Park

Hydrograph

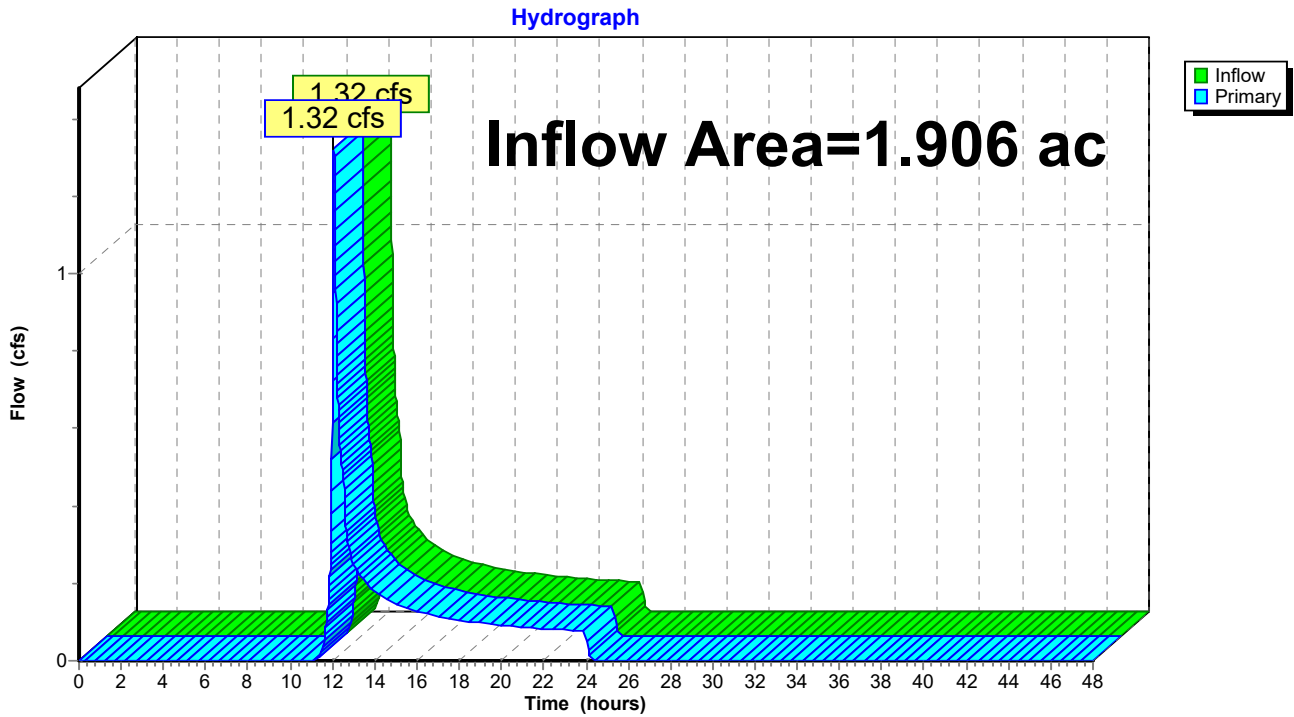


Summary for Link L104: Flows West towards Squamscott River

Inflow Area = 1.906 ac, 0.00% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af
Primary = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L104: Flows West towards Squamscott River



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=0.00"
Flow Length=235' Tc=7.1 min CN=63 Runoff=0.00 cfs 0.000 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=0.13"
Tc=5.0 min CN=83 Runoff=0.13 cfs 0.018 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=56 Runoff=0.00 cfs 0.000 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=345' Tc=7.4 min CN=56 Runoff=0.00 cfs 0.000 af

Pond EP10: 9th Hole Pond Peak Elev=36.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=0.13 cfs 0.018 af
Primary=0.13 cfs 0.018 af

Link L103: Flow South to Hayes Park Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link L104: Flows West towards Squamscott River Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.018 af Average Runoff Depth = 0.04"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=0.53"
Flow Length=235' Tc=7.1 min CN=63 Runoff=0.33 cfs 0.040 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=1.63"
Tc=5.0 min CN=83 Runoff=3.13 cfs 0.222 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=0.29"
Tc=5.0 min CN=56 Runoff=0.07 cfs 0.022 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=345' Tc=7.4 min CN=56 Runoff=0.14 cfs 0.045 af

Pond EP10: 9th Hole Pond Peak Elev=36.74' Storage=1,734 cf Inflow=0.33 cfs 0.040 af
Outflow=0.00 cfs 0.000 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=0.33 cfs 0.040 af
Primary=0.33 cfs 0.040 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=3.13 cfs 0.222 af
Primary=3.13 cfs 0.222 af

Link L103: Flow South to Hayes Park Inflow=0.07 cfs 0.022 af
Primary=0.07 cfs 0.022 af

Link L104: Flows West towards Squamscott River Inflow=0.14 cfs 0.045 af
Primary=0.14 cfs 0.045 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.329 af Average Runoff Depth = 0.73"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=1.45"
Flow Length=235' Tc=7.1 min CN=63 Runoff=1.09 cfs 0.109 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=3.09"
Tc=5.0 min CN=83 Runoff=5.18 cfs 0.422 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=1.00"
Tc=5.0 min CN=56 Runoff=0.73 cfs 0.077 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=345' Tc=7.4 min CN=56 Runoff=1.32 cfs 0.158 af

Pond EP10: 9th Hole Pond Peak Elev=37.33' Storage=4,767 cf Inflow=1.09 cfs 0.109 af
Outflow=0.00 cfs 0.000 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=1.09 cfs 0.109 af
Primary=1.09 cfs 0.109 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=5.18 cfs 0.422 af
Primary=5.18 cfs 0.422 af

Link L103: Flow South to Hayes Park Inflow=0.73 cfs 0.077 af
Primary=0.73 cfs 0.077 af

Link L104: Flows West towards Squamscott River Inflow=1.32 cfs 0.158 af
Primary=1.32 cfs 0.158 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.766 af Average Runoff Depth = 1.71"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=2.35"
 Flow Length=235' Tc=7.1 min CN=63 Runoff=1.77 cfs 0.177 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=4.31"
 Tc=5.0 min CN=83 Runoff=6.74 cfs 0.589 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=1.74"
 Tc=5.0 min CN=56 Runoff=1.39 cfs 0.134 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.74"
 Flow Length=345' Tc=7.4 min CN=56 Runoff=2.52 cfs 0.276 af

Pond EP10: 9th Hole Pond Peak Elev=37.74' Storage=7,700 cf Inflow=1.77 cfs 0.177 af
 Outflow=0.00 cfs 0.000 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=1.77 cfs 0.177 af
 Primary=1.77 cfs 0.177 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=6.74 cfs 0.589 af
 Primary=6.74 cfs 0.589 af

Link L103: Flow South to Hayes Park Inflow=1.39 cfs 0.134 af
 Primary=1.39 cfs 0.134 af

Link L104: Flows West towards Squamscott River Inflow=2.52 cfs 0.276 af
 Primary=2.52 cfs 0.276 af

Total Runoff Area = 5.372 ac Runoff Volume = 1.176 af Average Runoff Depth = 2.63"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Northern Portion of 9th Runoff Area=39,390 sf 1.94% Impervious Runoff Depth=3.27"
 Flow Length=235' Tc=7.1 min CN=63 Runoff=2.41 cfs 0.247 af

Subcatchment ES2: Existing Parking Lot, Runoff Area=71,310 sf 51.63% Impervious Runoff Depth=5.49"
 Tc=5.0 min CN=83 Runoff=8.11 cfs 0.749 af

Subcatchment ES3: Woods to the South of Runoff Area=40,285 sf 0.00% Impervious Runoff Depth=2.54"
 Tc=5.0 min CN=56 Runoff=2.04 cfs 0.196 af

Subcatchment ES4: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=2.54"
 Flow Length=345' Tc=7.4 min CN=56 Runoff=3.73 cfs 0.404 af

Pond EP10: 9th Hole Pond Peak Elev=38.09' Storage=10,741 cf Inflow=2.41 cfs 0.247 af
 Outflow=0.00 cfs 0.000 af

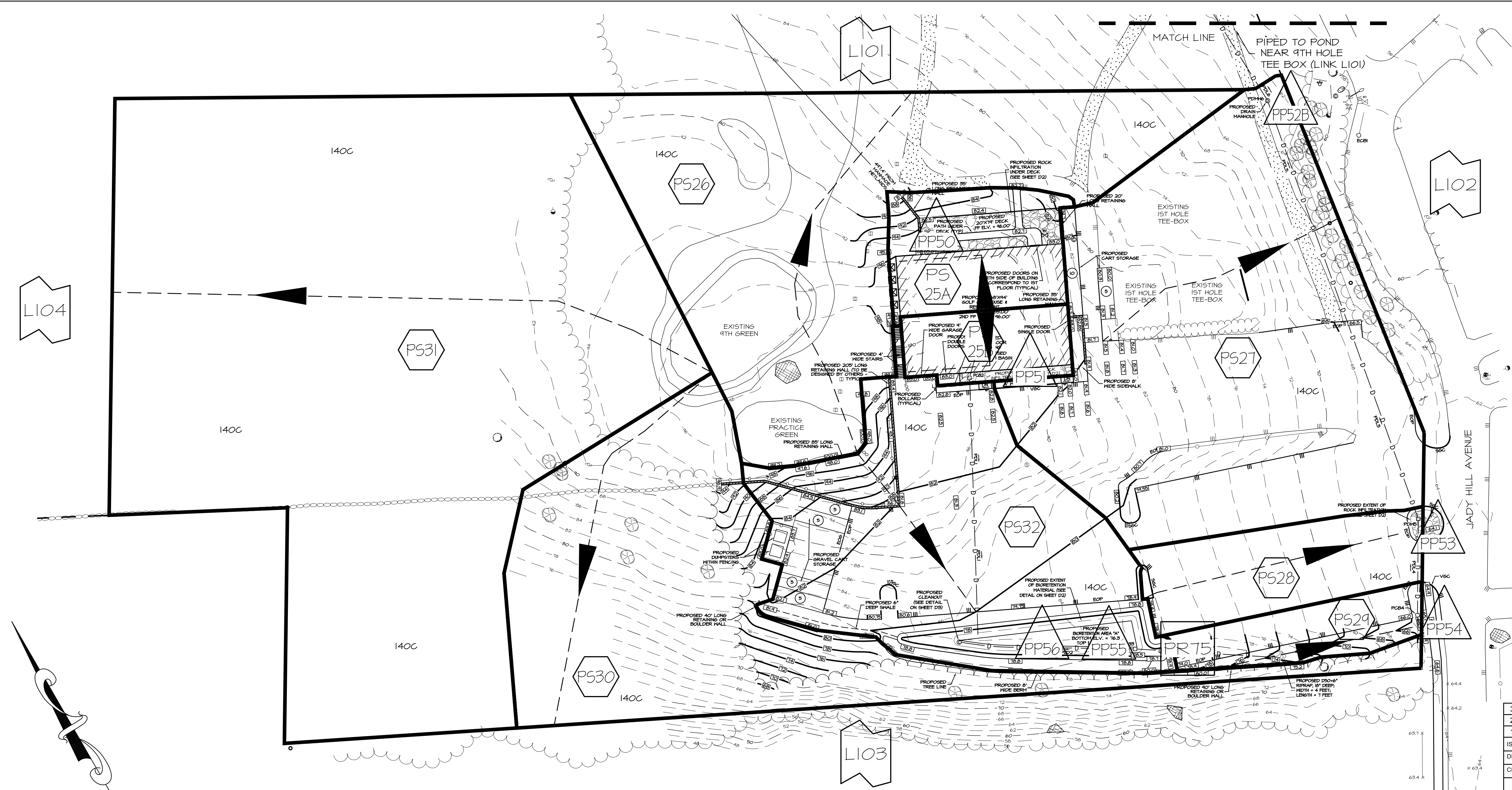
Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=2.41 cfs 0.247 af
 Primary=2.41 cfs 0.247 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=8.11 cfs 0.749 af
 Primary=8.11 cfs 0.749 af

Link L103: Flow South to Hayes Park Inflow=2.04 cfs 0.196 af
 Primary=2.04 cfs 0.196 af

Link L104: Flows West towards Squamscott River Inflow=3.73 cfs 0.404 af
 Primary=3.73 cfs 0.404 af

Total Runoff Area = 5.372 ac Runoff Volume = 1.596 af Average Runoff Depth = 3.56"
83.94% Pervious = 4.509 ac 16.06% Impervious = 0.863 ac



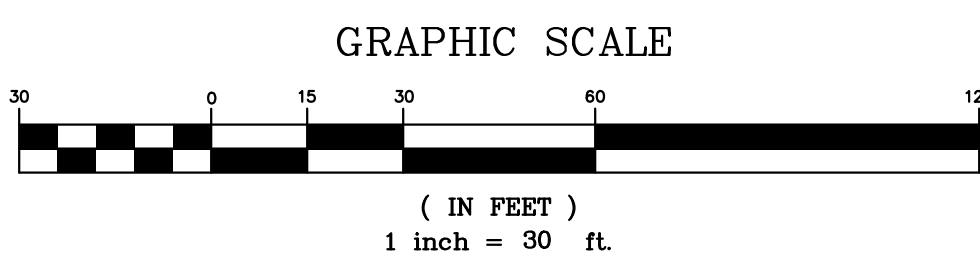
3	MAY 23, 2023	FOR APPROVAL	
2	APR 25, 2023	FOR APPROVAL	
1	JAN 24, 2023	FOR APPROVAL	
ISS. DATE:	DESCRIPTION OF ISSUE:		CHK.
DRAWN:	JJM	DESIGN:	JJM
CHECKED:	BDS	CHECKED:	BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
 118 PORTSMOUTH AVENUE, A202
 STRATHAM, NH 03885
 P: 603-772-4400 F: 603-772-4487
 WWW.EMANUELENGINEERING.COM

CLIENT:
BLIND TIGER, LLC
 3 WRIGHT LANE
 EXETER, NH 03833

TITLE:
**POSTDEVELOPMENT
 SUBCATCHMENTS
 FOR
 EXETER COUNTRY CLUB
 58 JADY HILL AVENUE (SITE)
 EXETER, NH 03833**

PROJECT:	SCALE:	SHEET:
21-157	1"=30'	SW2

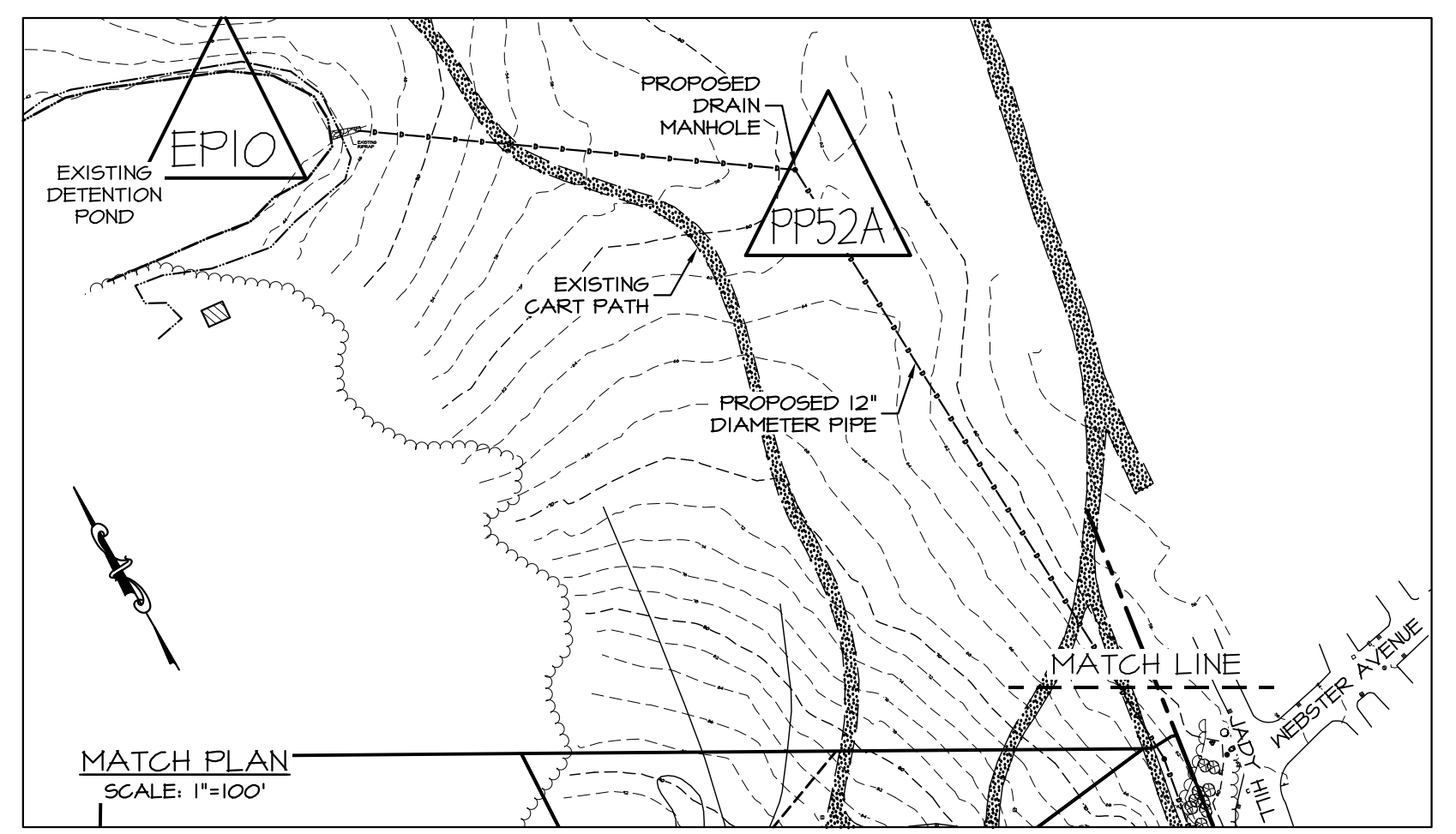


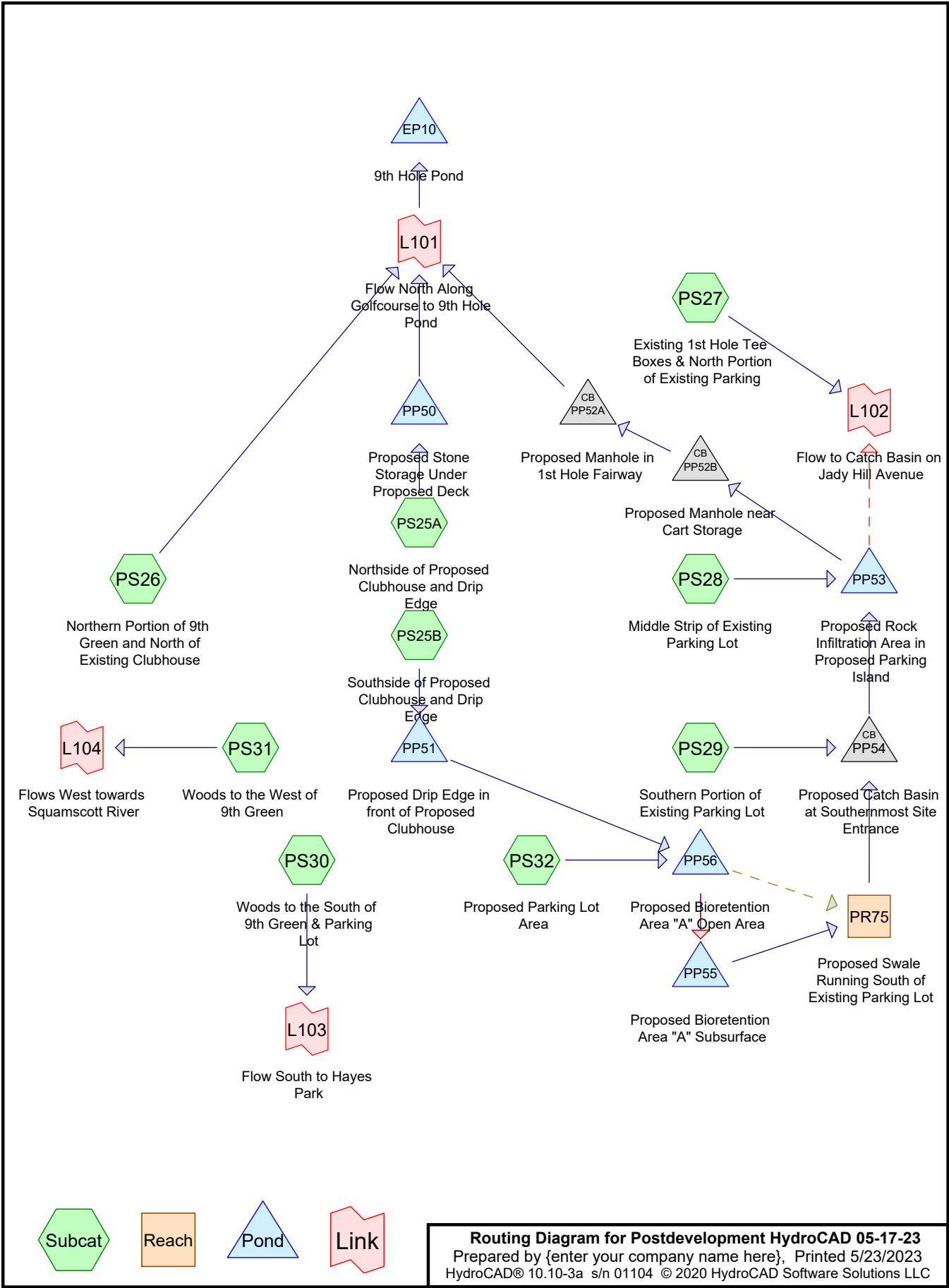
- NOTES:**
- OWNER OF RECORD:
 TAX MAP 52, LOT 1
 EXETER COUNTRY CLUB
 P.O. BOX 1088
 EXETER, NH 03833
 RCRD BK1406 P60240
 - THE INTENT OF THIS PLAN IS TO CALCULATE POST-DEVELOPMENT SUBCATCHMENT AREAS AND FLOW PATHS FOR MODELING VARIOUS STORM EVENTS IN PREPARATION FOR SITE IMPROVEMENTS.

IMPERVIOUS CALCULATIONS			
TOTAL AREA OF DRAINAGE ANALYSIS = 234,005 SF			
ITEM	EXISTING	PROPOSED	DIFFERENCE
TOTAL IMPERVIOUS AREA	48,015 SF	54,545 SF	11,530 SF (INCREASE)
TOTAL IMPERVIOUS %	20.5%	25.5%	5.0% (INCREASE)
UNTREATED IMPERVIOUS AREA	48,015 SF	34,060 SF	9,155 SF (DECREASE)
UNTREATED IMPERVIOUS %	20.5%	16.7%	3.8% (DECREASE)

SOIL LEGEND	
MAP UNIT SYMBOL	MAP UNIT NAME
140C	CHATFIELD-HOLLIS-CANTON COMPLEX, 8 TO 15 PERCENT SLOPES, ROCKY

NOTE: SOIL INFORMATION ON THIS PLAN WAS DELINEATED VIA THE USDA - NRCS WEB SOIL SURVEY ON AUGUST 23, 2022.





Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 70

Project Notes

Copied 9 events from NH-Exeter 08-23-22 24-hr S1 storm

Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 71

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-inch	NH-Exeter 08-23-22 24-hr S1	1-yr	Default	24.00	1	1.00	2
2	1-yr	NH-Exeter 08-23-22 24-hr S1	1-yr	Default	24.00	1	2.68	2
3	2-yr	NH-Exeter 08-23-22 24-hr S1	2-yr	Default	24.00	1	3.22	2
4	5-yr	NH-Exeter 08-23-22 24-hr S1	5-yr	Default	24.00	1	4.09	2
5	10-yr	NH-Exeter 08-23-22 24-hr S1	10-yr	Default	24.00	1	4.91	2
6	25-yr	NH-Exeter 08-23-22 24-hr S1	25-yr	Default	24.00	1	6.24	2
7	50-yr	NH-Exeter 08-23-22 24-hr S1	50-yr	Default	24.00	1	7.49	2
8	100-yr	NH-Exeter 08-23-22 24-hr S1	100-yr	Default	24.00	1	9.00	2
9	200-yr	NH-Exeter 08-23-22 24-hr S1	200-yr	Default	24.00	1	10.81	2
10	500-yr	NH-Exeter 08-23-22 24-hr S1	500-yr	Default	24.00	1	13.77	2

Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 72

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.745	61	>75% Grass cover, Good, HSG B (PS25A, PS25B, PS26, PS27, PS28, PS29, PS30, PS31, PS32)
0.111	85	Gravel roads, HSG B (PS26, PS27, PS32)
1.067	98	Paved parking, HSG B (PS25A, PS26, PS27, PS28, PS29, PS32)
0.189	98	Roofs, HSG B (PS25A, PS25B)
2.260	55	Woods, Good, HSG B (PS27, PS30, PS31)
5.372	68	TOTAL AREA

Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 73

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.372	HSG B	PS25A, PS25B, PS26, PS27, PS28, PS29, PS30, PS31, PS32
0.000	HSG C	
0.000	HSG D	
0.000	Other	
5.372		TOTAL AREA

Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 74

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.745	0.000	0.000	0.000	1.745	>75% Grass cover, Good	PS25A, PS25B, PS26, PS27, PS28, PS29, PS30, PS31, PS32
0.000	0.111	0.000	0.000	0.000	0.111	Gravel roads	PS26, PS27, PS32
0.000	1.067	0.000	0.000	0.000	1.067	Paved parking	PS25A, PS26, PS27, PS28, PS29, PS32
0.000	0.189	0.000	0.000	0.000	0.189	Roofs	PS25A, PS25B
0.000	2.260	0.000	0.000	0.000	2.260	Woods, Good	PS27, PS30, PS31
0.000	5.372	0.000	0.000	0.000	5.372	TOTAL AREA	

Postdevelopment HydroCAD 05-17-23

Prepared by {enter your company name here}

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Printed 5/23/2023

Page 75

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	PP51	80.00	77.00	145.0	0.0207	0.010	8.0	0.0	0.0
2	PP52A	58.40	46.10	265.0	0.0464	0.010	12.0	0.0	0.0
3	PP52B	60.25	58.50	420.0	0.0042	0.012	12.0	0.0	0.0
4	PP53	61.00	60.35	245.0	0.0027	0.012	12.0	0.0	0.0
5	PP54	63.00	61.10	50.0	0.0380	0.010	12.0	0.0	0.0
6	PP55	74.05	73.90	75.0	0.0020	0.010	8.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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

- Subcatchment PS25A: Northside of** Runoff Area=6,660 sf 78.53% Impervious Runoff Depth=3.79"
Tc=5.0 min CN=90 Runoff=0.58 cfs 0.048 af
- Subcatchment PS25B: Southside of** Runoff Area=3,655 sf 89.06% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=94 Runoff=0.34 cfs 0.030 af
- Subcatchment PS26: Northern Portion of** Runoff Area=34,690 sf 1.51% Impervious Runoff Depth=1.38"
Flow Length=235' Tc=7.1 min CN=62 Runoff=0.90 cfs 0.092 af
- Subcatchment PS27: Existing 1st Hole Tee** Runoff Area=39,485 sf 53.34% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=82 Runoff=2.79 cfs 0.227 af
- Subcatchment PS28: Middle Strip of** Runoff Area=7,370 sf 93.55% Impervious Runoff Depth=4.44"
Tc=5.0 min CN=96 Runoff=0.70 cfs 0.063 af
- Subcatchment PS29: Southern Portion of** Runoff Area=4,035 sf 63.94% Impervious Runoff Depth=3.28"
Tc=5.0 min CN=85 Runoff=0.31 cfs 0.025 af
- Subcatchment PS30: Woods to the South of** Runoff Area=29,290 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=233' Tc=5.0 min CN=56 Runoff=0.53 cfs 0.056 af
- Subcatchment PS31: Woods to the West of** Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=345' Tc=7.4 min CN=56 Runoff=1.32 cfs 0.158 af
- Subcatchment PS32: Proposed Parking** Runoff Area=25,800 sf 58.76% Impervious Runoff Depth=3.19"
Tc=5.0 min CN=84 Runoff=1.93 cfs 0.157 af
- Reach PR75: Proposed Swale Running** Avg. Flow Depth=0.14' Max Vel=3.40 fps Inflow=0.20 cfs 0.152 af
n=0.022 L=90.0' S=0.0944 '/' Capacity=37.88 cfs Outflow=0.20 cfs 0.152 af
- Pond EP10: 9th Hole Pond** Peak Elev=38.45' Storage=14,399 cf Inflow=1.98 cfs 0.331 af
Outflow=0.00 cfs 0.000 af
- Pond PP50: Proposed Stone Storage Under** Peak Elev=78.30' Storage=1,119 cf Inflow=0.58 cfs 0.048 af
Discarded=0.02 cfs 0.048 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.048 af
- Pond PP51: Proposed Drip Edge in front of** Peak Elev=80.32' Storage=51 cf Inflow=0.34 cfs 0.030 af
Discarded=0.00 cfs 0.005 af Primary=0.31 cfs 0.024 af Outflow=0.32 cfs 0.030 af
- Pond PP52A: Proposed Manhole in 1st Hole Fairway** Peak Elev=58.95' Inflow=1.12 cfs 0.239 af
12.0" Round Culvert n=0.010 L=265.0' S=0.0464 '/' Outflow=1.12 cfs 0.239 af
- Pond PP52B: Proposed Manhole near Cart Storage** Peak Elev=60.88' Inflow=1.12 cfs 0.239 af
12.0" Round Culvert n=0.012 L=420.0' S=0.0042 '/' Outflow=1.12 cfs 0.239 af
- Pond PP53: Proposed Rock Infiltration Area in** Peak Elev=61.71' Storage=41 cf Inflow=1.12 cfs 0.240 af
Discarded=0.00 cfs 0.002 af Primary=1.12 cfs 0.239 af Outflow=1.12 cfs 0.240 af

Pond PP54: Proposed Catch Basin at Southernmost Site Peak Elev=63.32' Inflow=0.42 cfs 0.178 af
 12.0" Round Culvert n=0.010 L=50.0' S=0.0380 '/' Outflow=0.42 cfs 0.178 af

Pond PP55: Proposed Bioretention Area "A" Peak Elev=74.37' Storage=637 cf Inflow=0.21 cfs 0.182 af
 Discarded=0.01 cfs 0.029 af Primary=0.20 cfs 0.152 af Outflow=0.21 cfs 0.182 af

Pond PP56: Proposed Bioretention Area "A" Peak Elev=78.11' Storage=2,667 cf Inflow=2.23 cfs 0.182 af
 Primary=0.21 cfs 0.182 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.182 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=1.98 cfs 0.331 af
 Primary=1.98 cfs 0.331 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=2.79 cfs 0.227 af
 Primary=2.79 cfs 0.227 af

Link L103: Flow South to Hayes Park Inflow=0.53 cfs 0.056 af
 Primary=0.53 cfs 0.056 af

Link L104: Flows West towards Squamscott River Inflow=1.32 cfs 0.158 af
 Primary=1.32 cfs 0.158 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.855 af Average Runoff Depth = 1.91"
76.62% Pervious = 4.116 ac 23.38% Impervious = 1.256 ac

Summary for Subcatchment PS25A: Northside of Proposed Clubhouse and Drip Edge

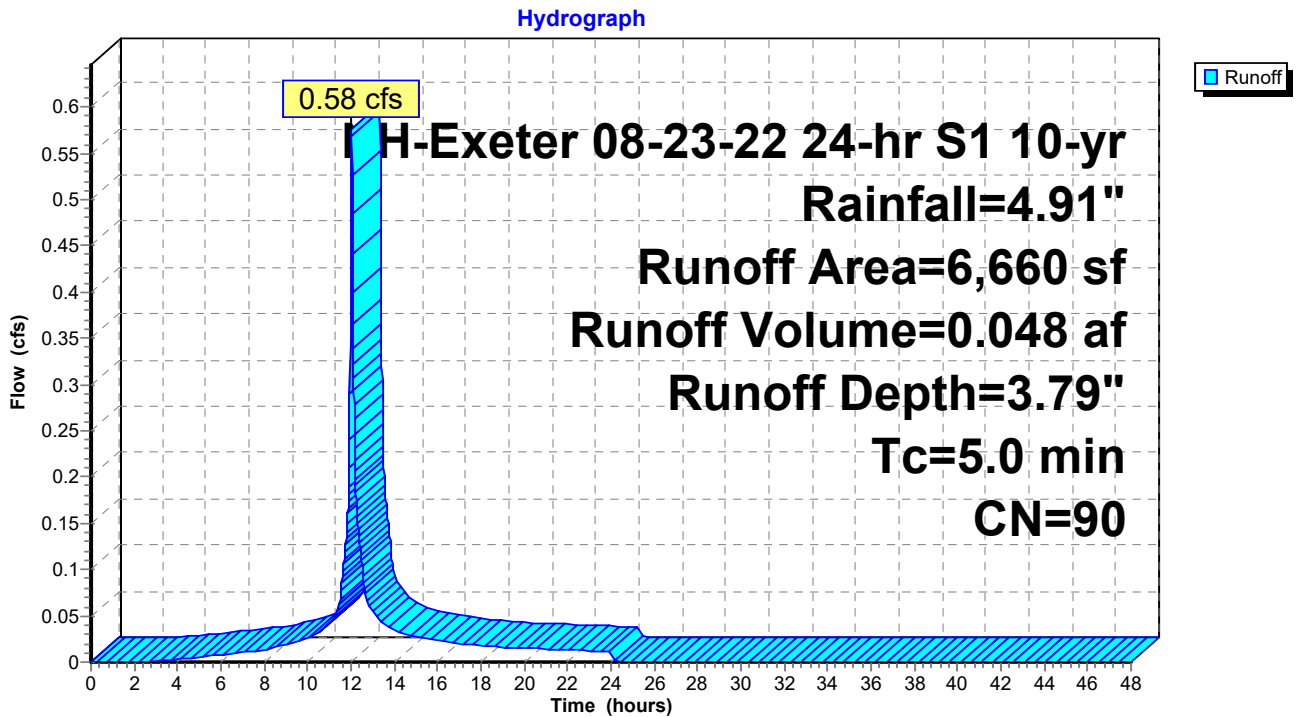
Runoff = 0.58 cfs @ 12.03 hrs, Volume= 0.048 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
1,430	61	>75% Grass cover, Good, HSG B
4,960	98	Roofs, HSG B
270	98	Paved parking, HSG B
6,660	90	Weighted Average
1,430		21.47% Pervious Area
5,230		78.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS25A: Northside of Proposed Clubhouse and Drip Edge



Summary for Subcatchment PS25B: Southside of Proposed Clubhouse and Drip Edge

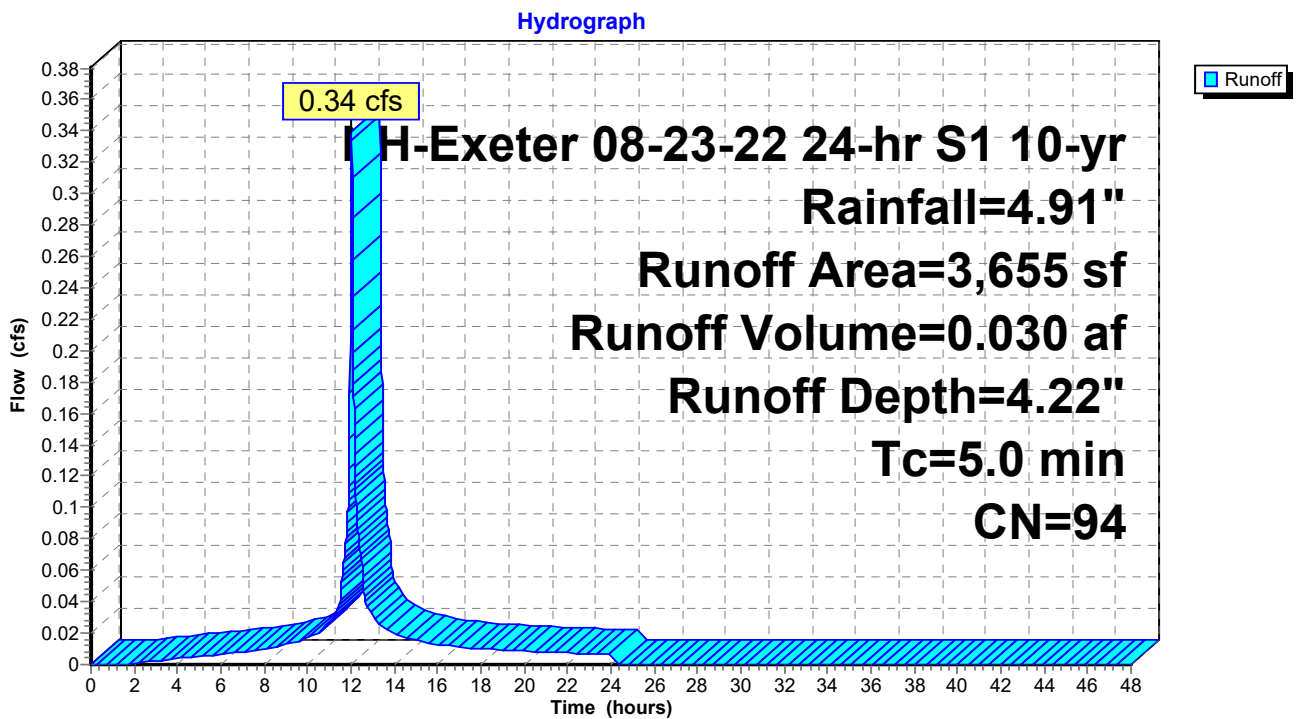
Runoff = 0.34 cfs @ 12.03 hrs, Volume= 0.030 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
400	61	>75% Grass cover, Good, HSG B
3,255	98	Roofs, HSG B
3,655	94	Weighted Average
400		10.94% Pervious Area
3,255		89.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS25B: Southside of Proposed Clubhouse and Drip Edge



Summary for Subcatchment PS26: Northern Portion of 9th Green and North of Existing Clubhouse

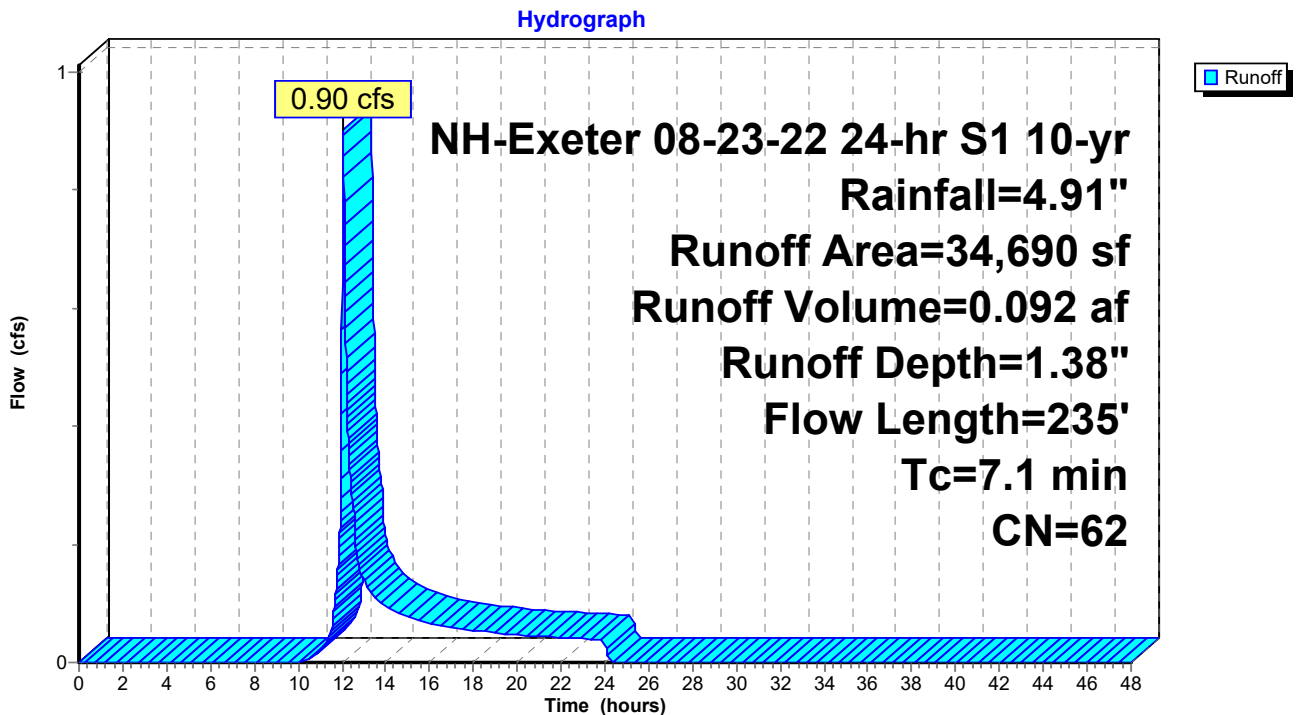
Runoff = 0.90 cfs @ 12.06 hrs, Volume= 0.092 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
32,900	61	>75% Grass cover, Good, HSG B
1,265	85	Gravel roads, HSG B
525	98	Paved parking, HSG B
34,690	62	Weighted Average
34,165		98.49% Pervious Area
525		1.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, Grass Grass: Short n= 0.150 P2= 3.22"
0.6	55	0.0550	1.64		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
0.9	130	0.1100	2.32		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
7.1	235	Total			

Subcatchment PS26: Northern Portion of 9th Green and North of Existing Clubhouse



Summary for Subcatchment PS27: Existing 1st Hole Tee Boxes & North Portion of Existing Parking

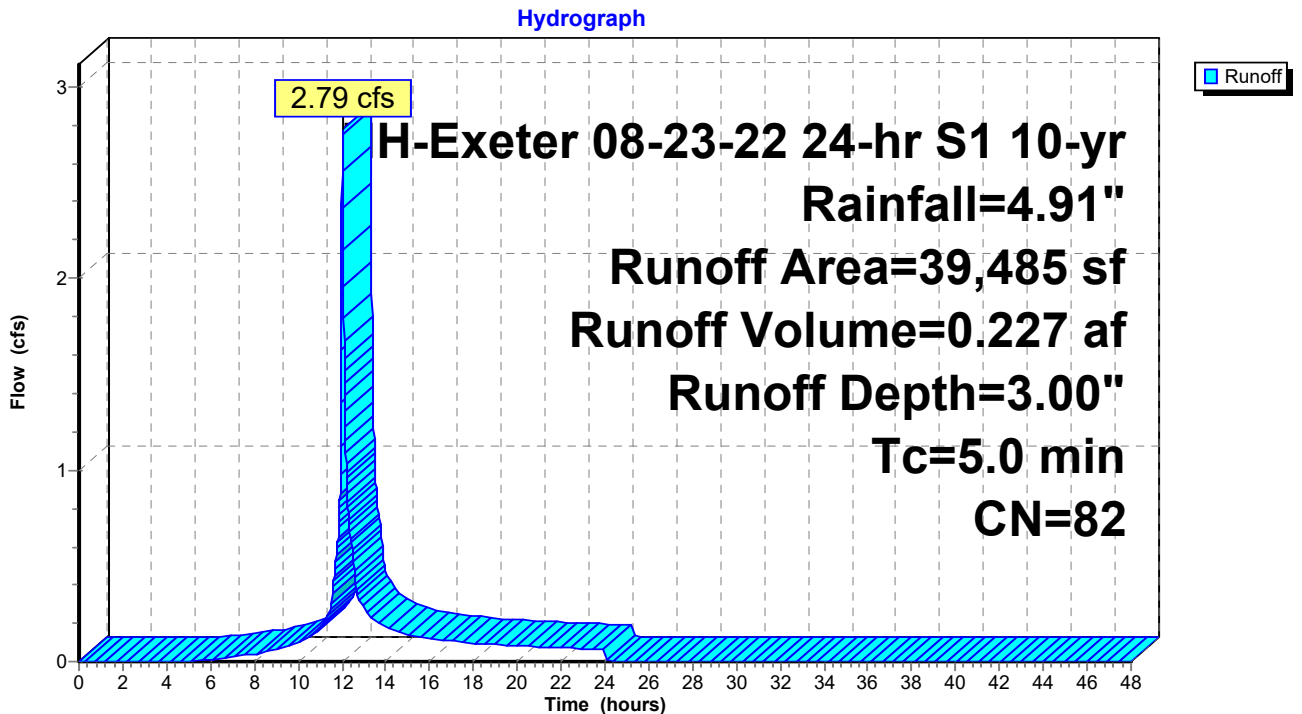
Runoff = 2.79 cfs @ 12.03 hrs, Volume= 0.227 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
15,285	61	>75% Grass cover, Good, HSG B
1,365	55	Woods, Good, HSG B
1,775	85	Gravel roads, HSG B
21,060	98	Paved parking, HSG B
39,485	82	Weighted Average
18,425		46.66% Pervious Area
21,060		53.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS27: Existing 1st Hole Tee Boxes & North Portion of Existing Parking



Summary for Subcatchment PS28: Middle Strip of Existing Parking Lot

Runoff = 0.70 cfs @ 12.03 hrs, Volume= 0.063 af, Depth= 4.44"

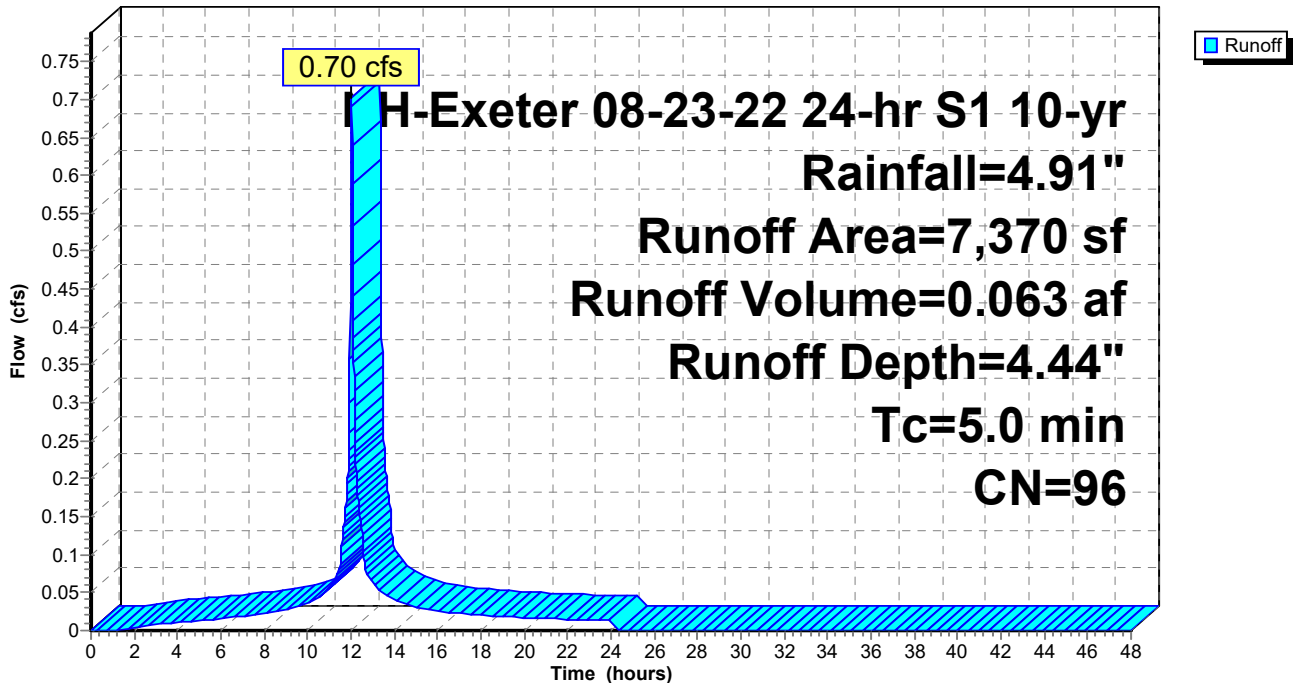
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
475	61	>75% Grass cover, Good, HSG B
6,895	98	Paved parking, HSG B
7,370	96	Weighted Average
475		6.45% Pervious Area
6,895		93.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS28: Middle Strip of Existing Parking Lot

Hydrograph



Summary for Subcatchment PS29: Southern Portion of Existing Parking Lot

Runoff = 0.31 cfs @ 12.03 hrs, Volume= 0.025 af, Depth= 3.28"

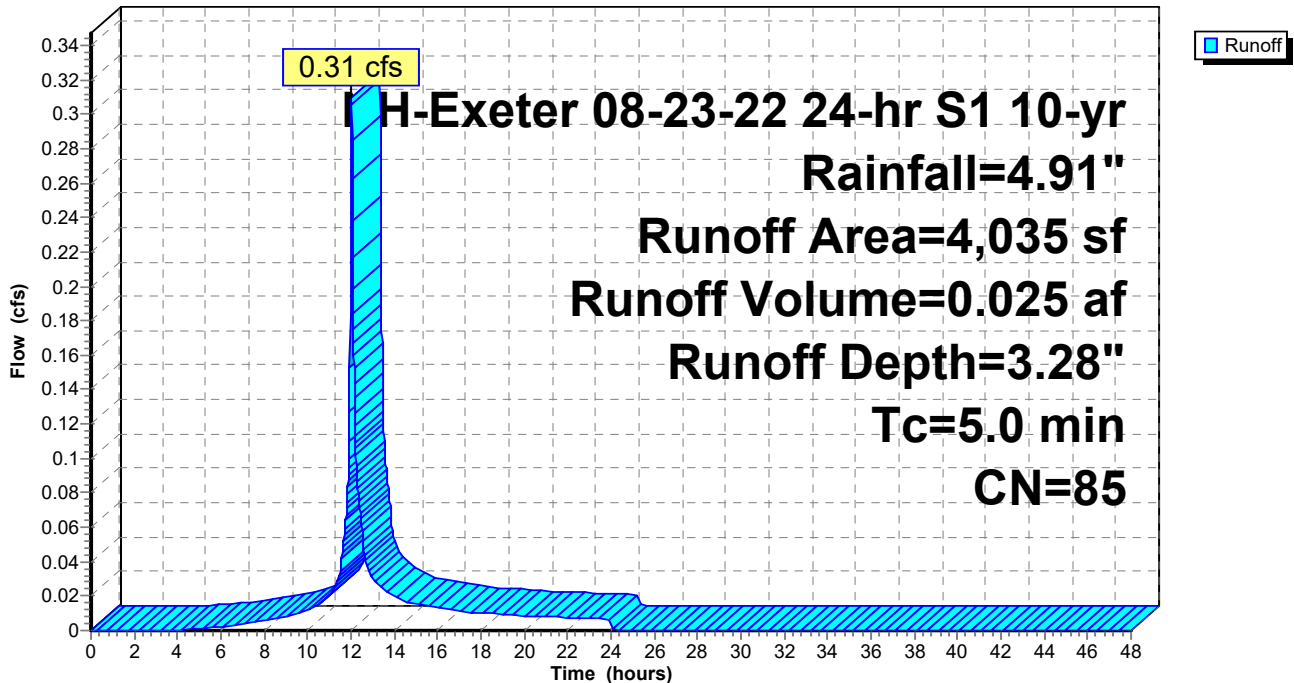
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
1,455	61	>75% Grass cover, Good, HSG B
2,580	98	Paved parking, HSG B
4,035	85	Weighted Average
1,455		36.06% Pervious Area
2,580		63.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS29: Southern Portion of Existing Parking Lot

Hydrograph



Summary for Subcatchment PS30: Woods to the South of 9th Green & Parking Lot

Runoff = 0.53 cfs @ 12.04 hrs, Volume= 0.056 af, Depth= 1.00"

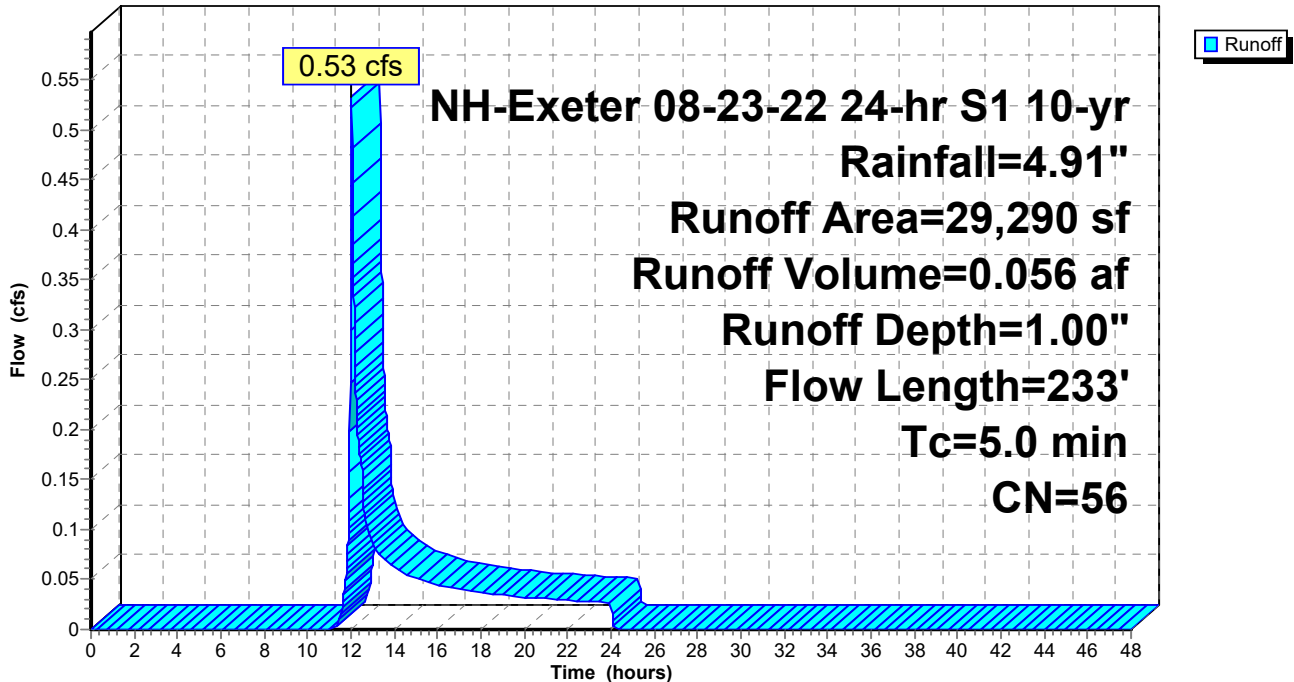
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
6,820	61	>75% Grass cover, Good, HSG B
22,470	55	Woods, Good, HSG B
29,290	56	Weighted Average
29,290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		Sheet Flow, Grass Grass: Short n= 0.150 P2= 3.22"
0.1	15	0.1200	2.42		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0200	0.71		Shallow Concentrated Flow, Gravel Woodland Kv= 5.0 fps
0.1	8	0.1200	2.42		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
1.0	150	0.2500	2.50		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
5.0	233	Total			

Subcatchment PS30: Woods to the South of 9th Green & Parking Lot

Hydrograph



Summary for Subcatchment PS31: Woods to the West of 9th Green

Runoff = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af, Depth= 1.00"

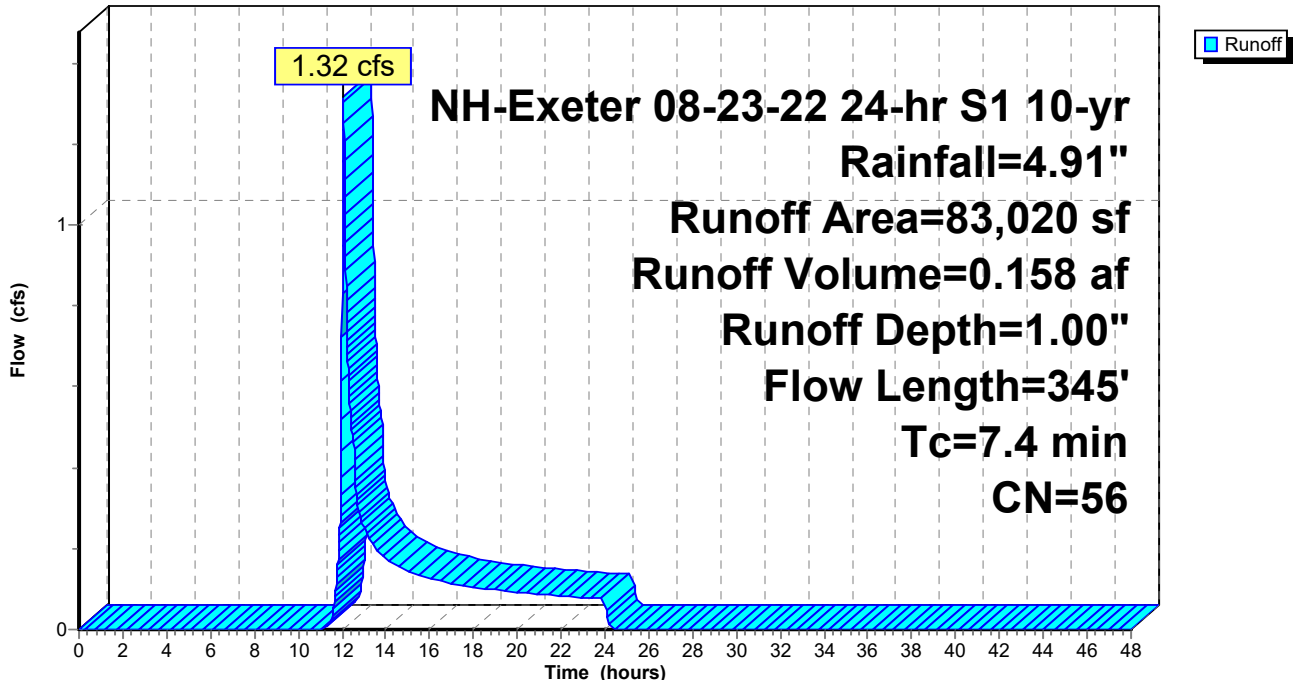
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
8,395	61	>75% Grass cover, Good, HSG B
74,625	55	Woods, Good, HSG B
83,020	56	Weighted Average
83,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		Sheet Flow, Grass Grass: Short n= 0.150 P2= 3.22"
0.3	22	0.0400	1.40		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
0.1	11	0.0200	2.28		Shallow Concentrated Flow, Gravel Unpaved Kv= 16.1 fps
0.1	12	0.0400	1.40		Shallow Concentrated Flow, Grass Short Grass Pasture Kv= 7.0 fps
2.6	250	0.1000	1.58		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
7.4	345	Total			

Subcatchment PS31: Woods to the West of 9th Green

Hydrograph



Summary for Subcatchment PS32: Proposed Parking Lot Area

Runoff = 1.93 cfs @ 12.03 hrs, Volume= 0.157 af, Depth= 3.19"

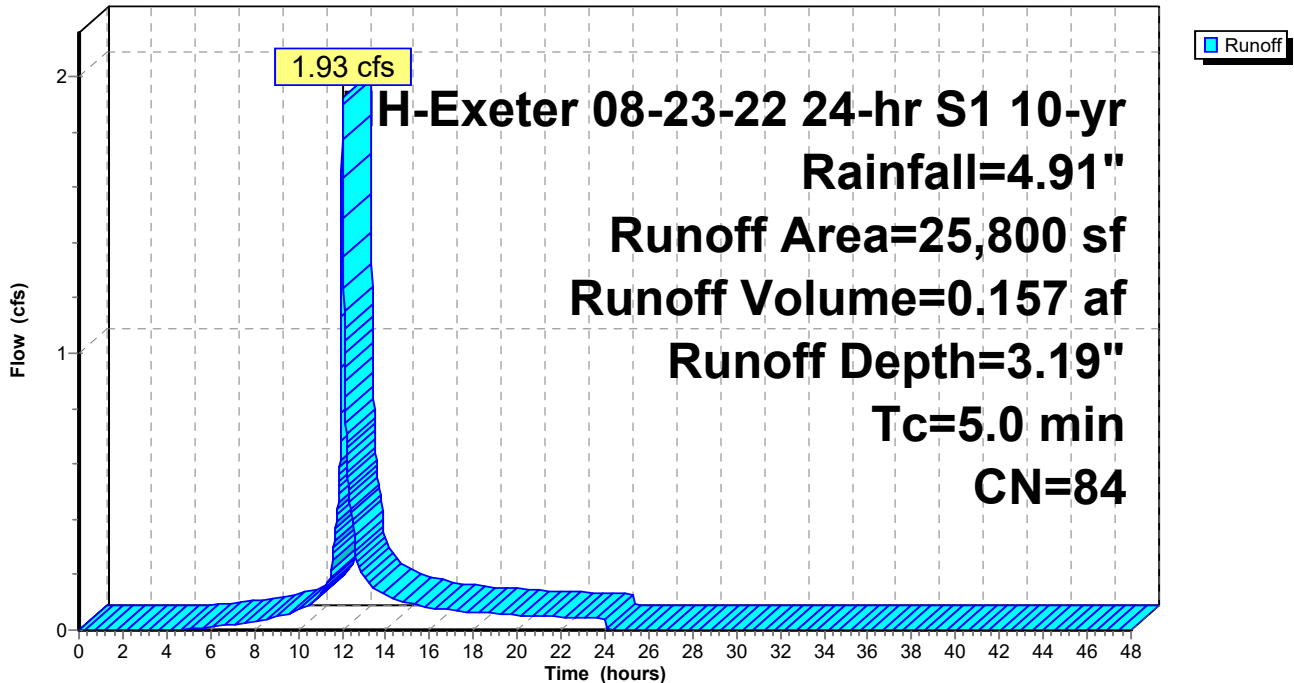
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NH-Exeter 08-23-22 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
8,840	61	>75% Grass cover, Good, HSG B
1,800	85	Gravel roads, HSG B
15,160	98	Paved parking, HSG B
25,800	84	Weighted Average
10,640		41.24% Pervious Area
15,160		58.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum Tc

Subcatchment PS32: Proposed Parking Lot Area

Hydrograph



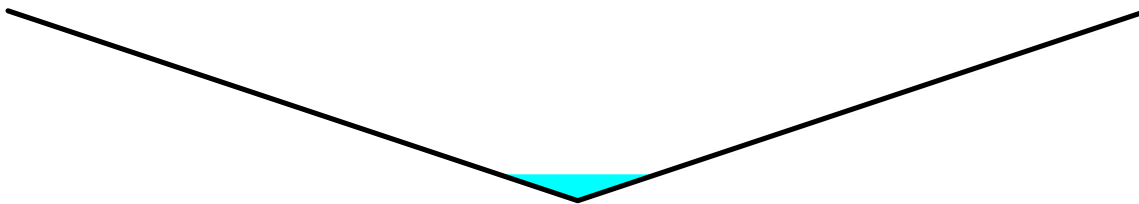
Summary for Reach PR75: Proposed Swale Running South of Existing Parking Lot

Inflow Area = 0.676 ac, 62.52% Impervious, Inflow Depth = 2.70" for 10-yr event
 Inflow = 0.20 cfs @ 13.23 hrs, Volume= 0.152 af
 Outflow = 0.20 cfs @ 13.24 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 3.40 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 2.84 fps, Avg. Travel Time= 0.5 min

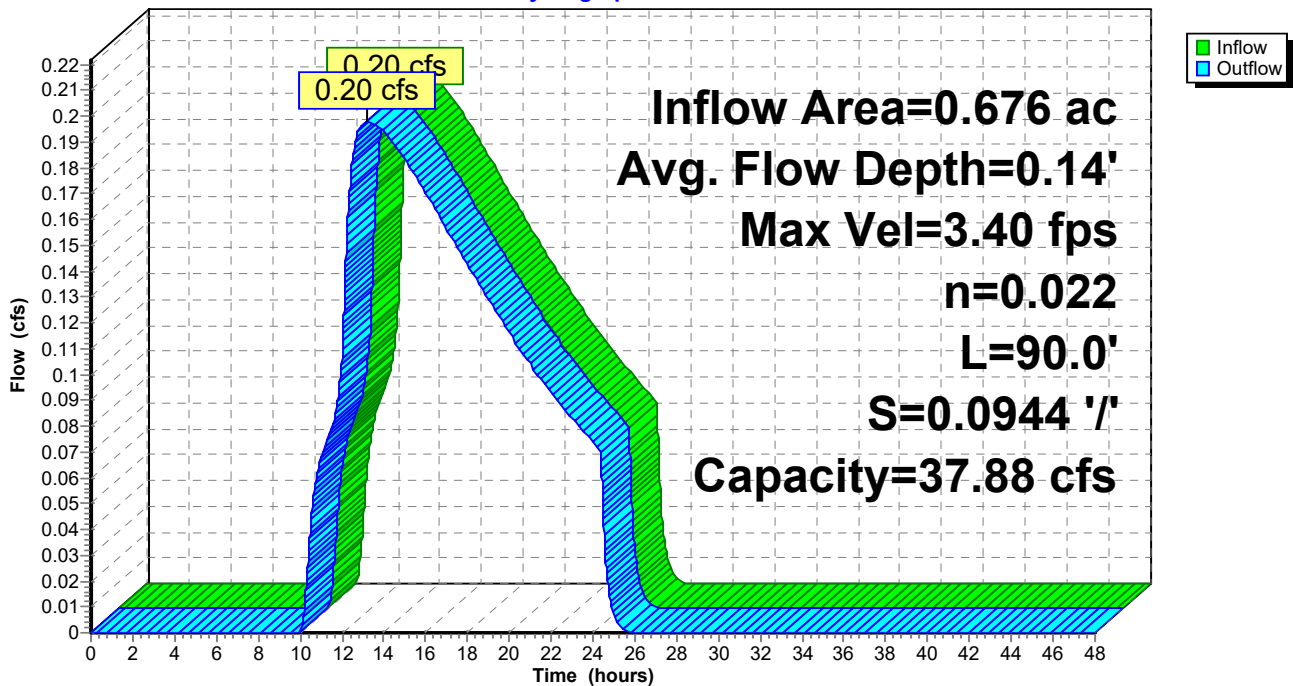
Peak Storage= 5 cf @ 13.24 hrs
 Average Depth at Peak Storage= 0.14' , Surface Width= 0.84'
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 37.88 cfs

0.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
 Side Slope Z-value= 3.0 '/' Top Width= 6.00'
 Length= 90.0' Slope= 0.0944 '/'
 Inlet Invert= 74.00', Outlet Invert= 65.50'



Reach PR75: Proposed Swale Running South of Existing Parking Lot

Hydrograph



Summary for Pond EP10: 9th Hole Pond

Inflow Area = 1.887 ac, 40.93% Impervious, Inflow Depth = 2.10" for 10-yr event
 Inflow = 1.98 cfs @ 12.04 hrs, Volume= 0.331 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

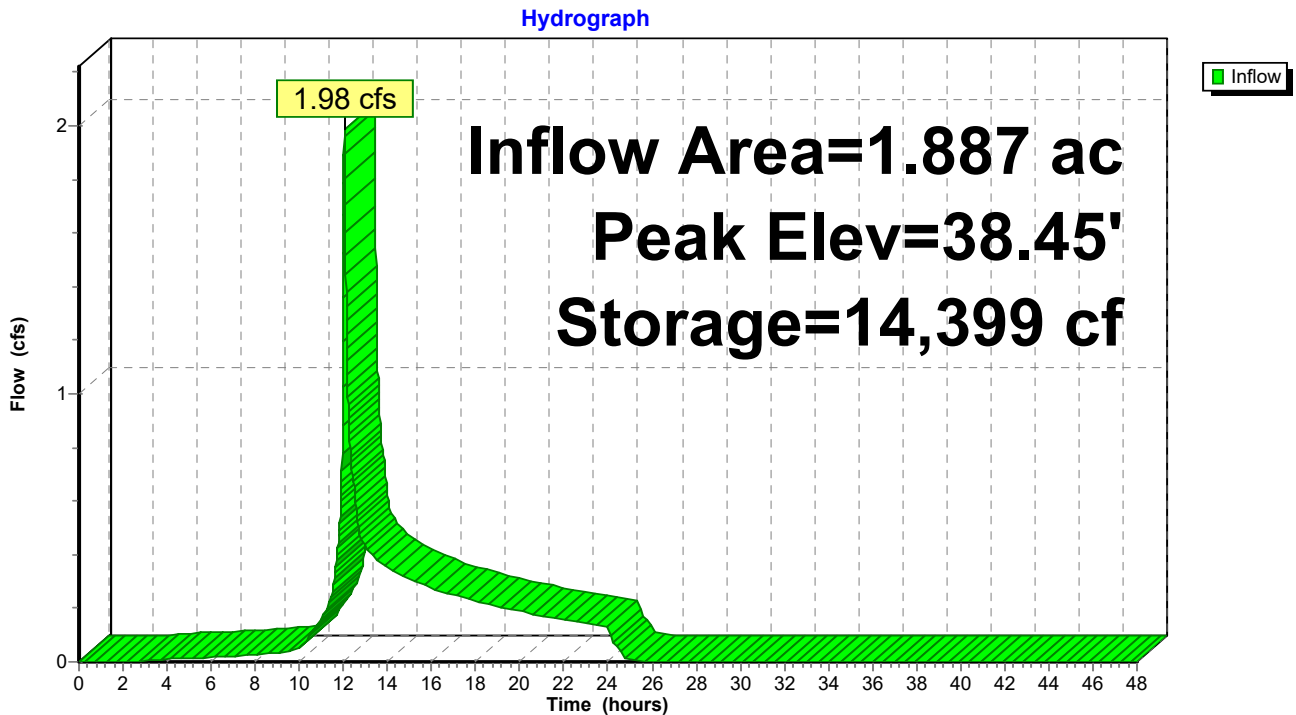
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 38.45' @ 25.91 hrs Surf.Area= 10,920 sf Storage= 14,399 cf
 Flood Elev= 44.00' Surf.Area= 28,470 sf Storage= 127,940 cf

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	36.00'	127,940 cf	Pond by 9th Hole Tee Boxes (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	850	0	0
38.00	9,050	9,900	9,900
40.00	17,350	26,400	36,300
44.00	28,470	91,640	127,940

Pond EP10: 9th Hole Pond



Summary for Pond PP50: Proposed Stone Storage Under Proposed Deck

Inflow Area = 0.153 ac, 78.53% Impervious, Inflow Depth = 3.79" for 10-yr event
 Inflow = 0.58 cfs @ 12.03 hrs, Volume= 0.048 af
 Outflow = 0.02 cfs @ 18.81 hrs, Volume= 0.048 af, Atten= 97%, Lag= 407.0 min
 Discarded = 0.02 cfs @ 18.81 hrs, Volume= 0.048 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 78.30' @ 18.81 hrs Surf.Area= 2,150 sf Storage= 1,119 cf
 Flood Elev= 80.00' Surf.Area= 2,150 sf Storage= 2,580 cf

Plug-Flow detention time= 657.0 min calculated for 0.048 af (100% of inflow)
 Center-of-Mass det. time= 656.9 min (1,463.7 - 806.8)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	2,580 cf	Stone Storage (Conic) Listed below (Recalc) 6,450 cf Overall x 40.0% Voids

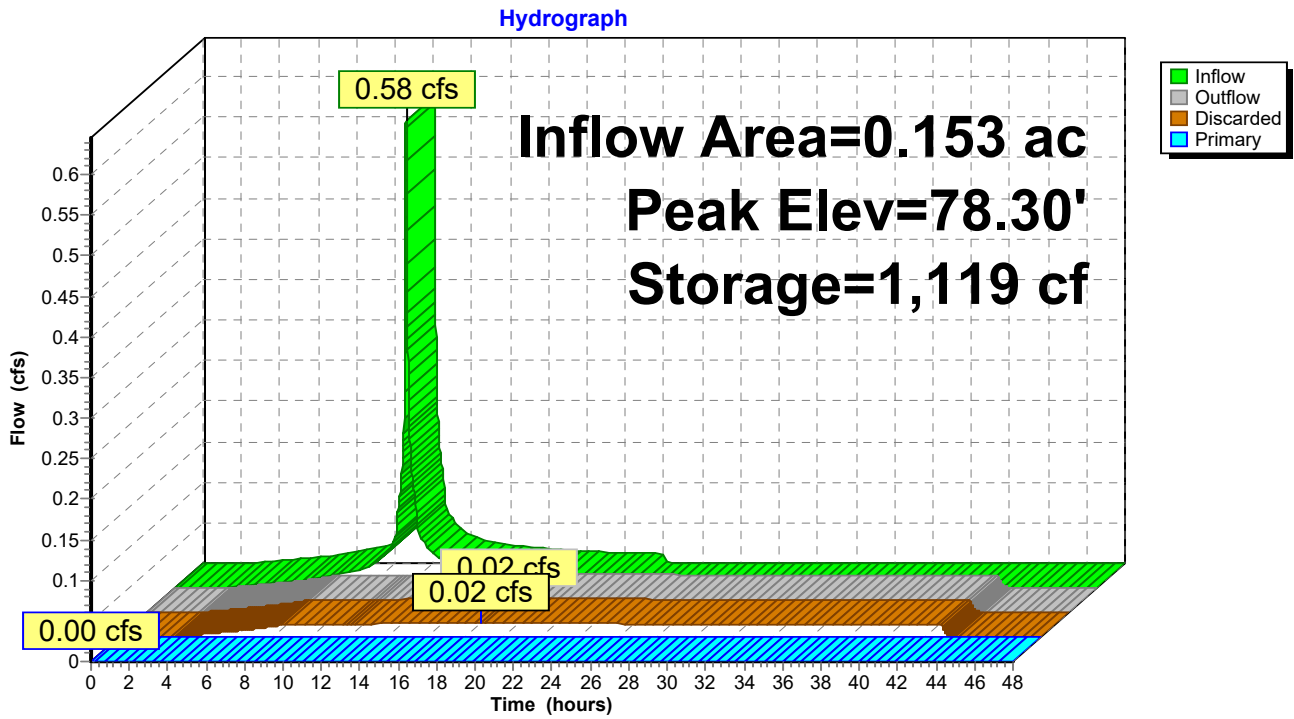
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	2,150	0	0	2,150
80.00	2,150	6,450	6,450	2,643

Device	Routing	Invert	Outlet Devices
#1	Primary	79.90'	15.0' long x 135.0' breadth Overflow Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	77.00'	0.300 in/hr Exfiltration into Groundwater over Wetted area Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 18.81 hrs HW=78.30' (Free Discharge)
 ↳**2=Exfiltration into Groundwater** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=0.00' (Dynamic Tailwater)
 ↳**1=Overflow** (Controls 0.00 cfs)

Pond PP50: Proposed Stone Storage Under Proposed Deck



Summary for Pond PP51: Proposed Drip Edge in front of Proposed Clubhouse

Inflow Area = 0.084 ac, 89.06% Impervious, Inflow Depth = 4.22" for 10-yr event
 Inflow = 0.34 cfs @ 12.03 hrs, Volume= 0.030 af
 Outflow = 0.32 cfs @ 12.05 hrs, Volume= 0.030 af, Atten= 7%, Lag= 1.3 min
 Discarded = 0.00 cfs @ 12.05 hrs, Volume= 0.005 af
 Primary = 0.31 cfs @ 12.05 hrs, Volume= 0.024 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 80.32' @ 12.05 hrs Surf.Area= 400 sf Storage= 51 cf

Flood Elev= 83.00' Surf.Area= 400 sf Storage= 480 cf

Plug-Flow detention time= 8.2 min calculated for 0.029 af (100% of inflow)

Center-of-Mass det. time= 8.2 min (790.9 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	480 cf	Stone Storage (Conic) Listed below (Recalc) 1,200 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	400	0	0	400
83.00	400	1,200	1,200	613

Device	Routing	Invert	Outlet Devices
#1	Primary	80.00'	8.0" Round 8" SDR-35 Pipe L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 80.00' / 77.00' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	80.00'	0.300 in/hr Exfiltration into Groundwater over Wetted area

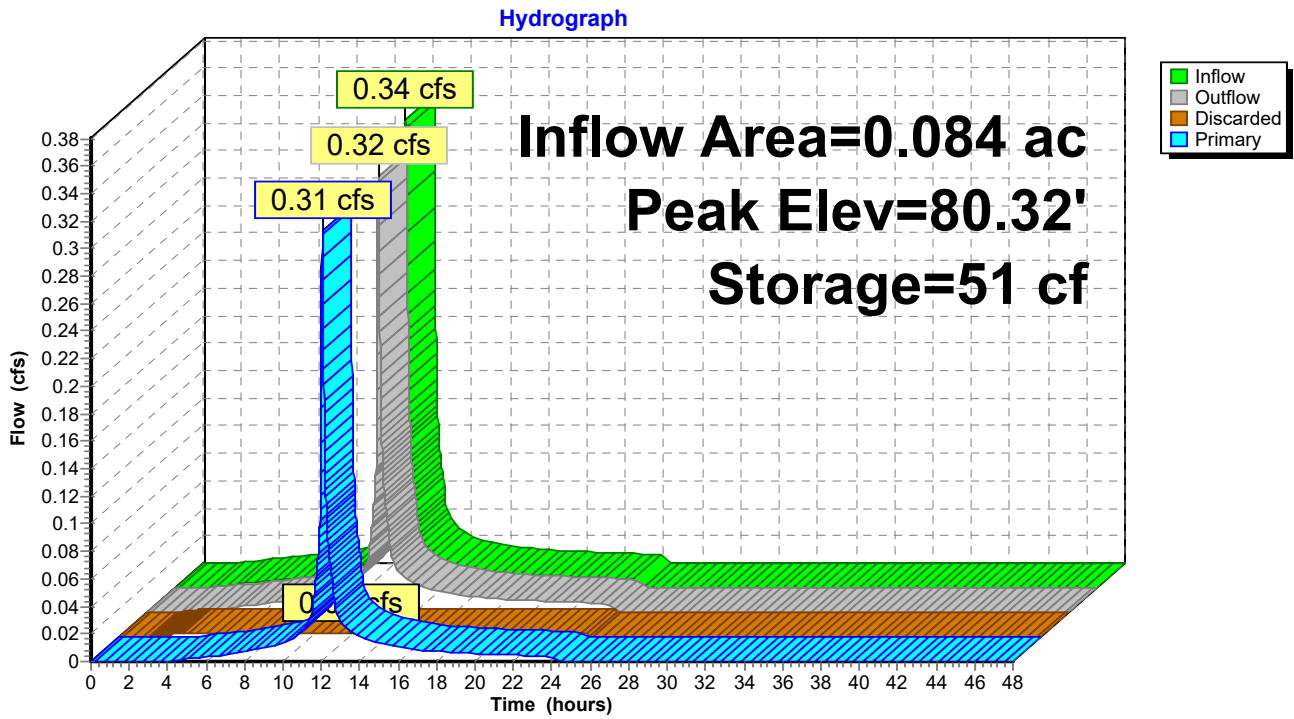
Discarded OutFlow Max=0.00 cfs @ 12.05 hrs HW=80.32' (Free Discharge)

↑**2=Exfiltration into Groundwater** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.31 cfs @ 12.05 hrs HW=80.32' TW=77.50' (Dynamic Tailwater)

↑**1=8" SDR-35 Pipe** (Inlet Controls 0.31 cfs @ 1.92 fps)

Pond PP51: Proposed Drip Edge in front of Proposed Clubhouse



Summary for Pond PP52A: Proposed Manhole in 1st Hole Fairway

[57] Hint: Peaked at 58.95' (Flood elevation advised)

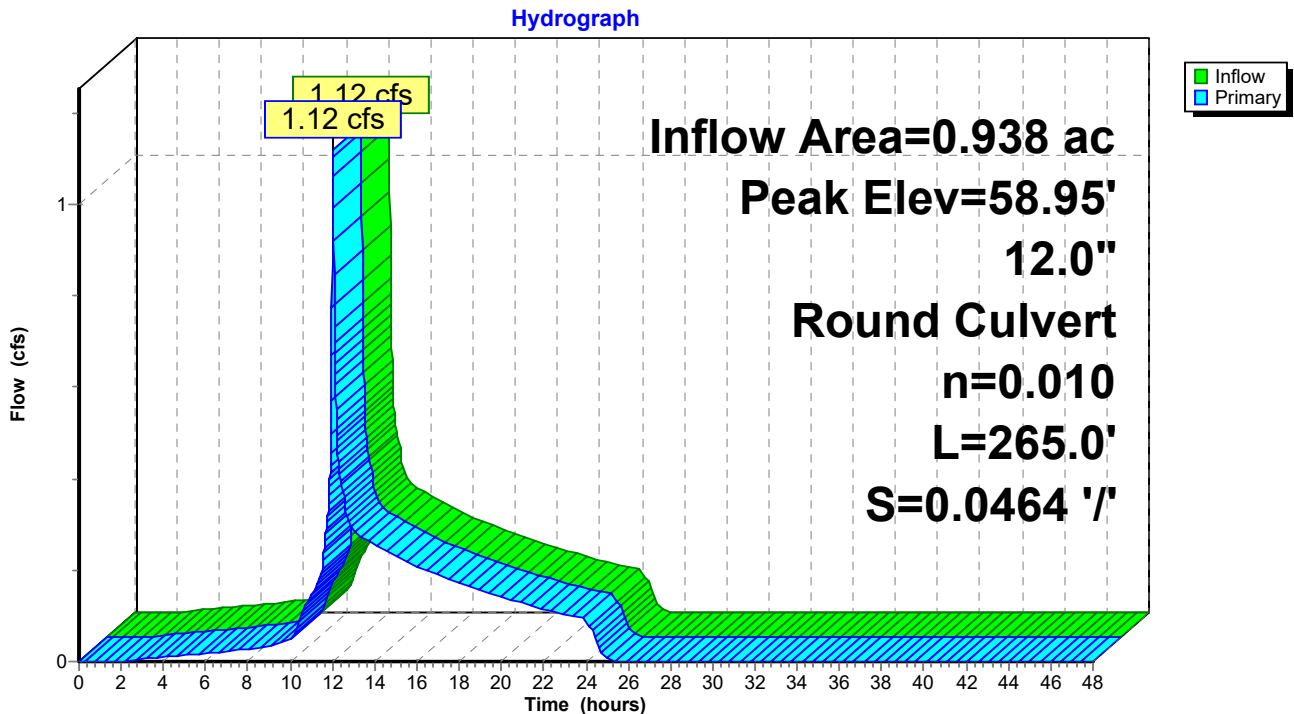
Inflow Area = 0.938 ac, 68.26% Impervious, Inflow Depth = 3.05" for 10-yr event
 Inflow = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af
 Outflow = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 58.95' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	58.40'	12.0" Round 12" HDPE Pipe L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.40' / 46.10' S= 0.0464 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.03 hrs HW=58.95' TW=0.00' (Dynamic Tailwater)
 ↳ 1=12" HDPE Pipe (Inlet Controls 1.12 cfs @ 2.53 fps)

Pond PP52A: Proposed Manhole in 1st Hole Fairway



Summary for Pond PP52B: Proposed Manhole near Cart Storage

Inflow Area = 0.938 ac, 68.26% Impervious, Inflow Depth = 3.05" for 10-yr event
 Inflow = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af
 Outflow = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af

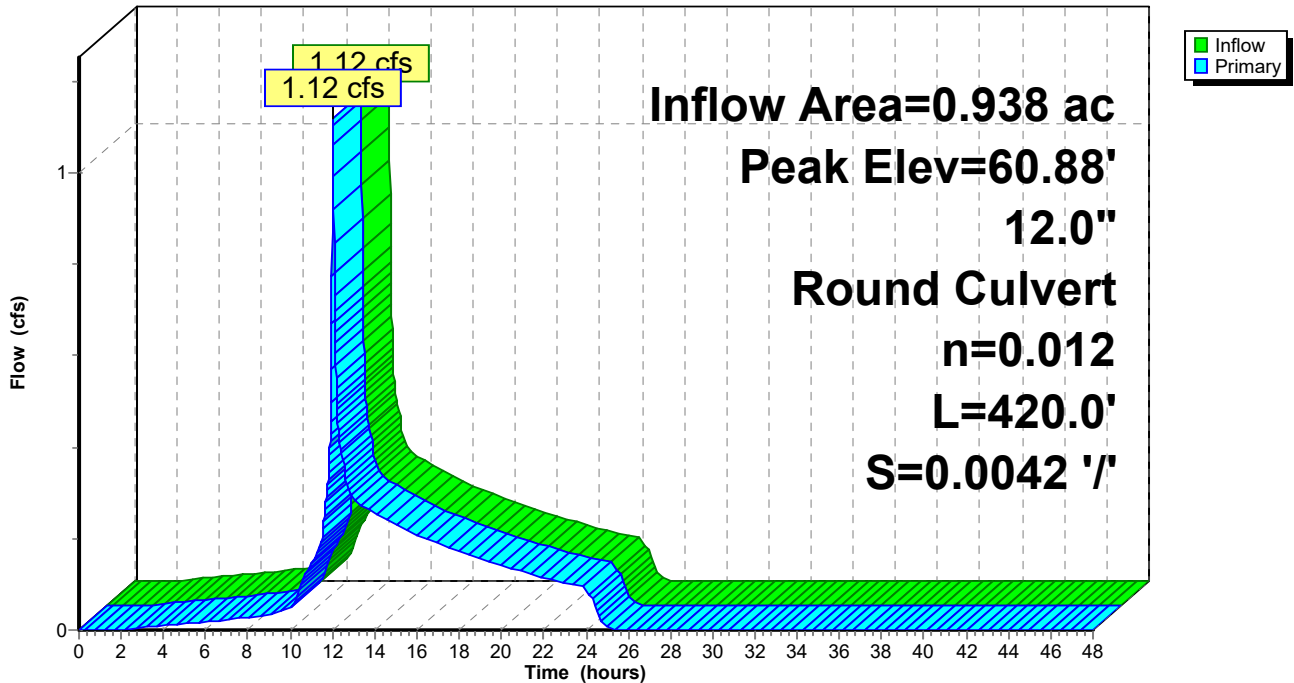
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 60.88' @ 12.03 hrs
 Flood Elev= 64.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.25'	12.0" Round 12" HDPE Pipe L= 420.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.25' / 58.50' S= 0.0042 '/ Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.03 hrs HW=60.88' TW=58.95' (Dynamic Tailwater)
 ↳ 1=12" HDPE Pipe (Barrel Controls 1.12 cfs @ 3.05 fps)

Pond PP52B: Proposed Manhole near Cart Storage

Hydrograph



Summary for Pond PP53: Proposed Rock Infiltration Area in Proposed Parking Island

Inflow Area = 0.938 ac, 68.26% Impervious, Inflow Depth = 3.07" for 10-yr event
 Inflow = 1.12 cfs @ 12.03 hrs, Volume= 0.240 af
 Outflow = 1.12 cfs @ 12.03 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.2 min
 Discarded = 0.00 cfs @ 12.03 hrs, Volume= 0.002 af
 Primary = 1.12 cfs @ 12.03 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 61.71' @ 12.03 hrs Surf.Area= 88 sf Storage= 41 cf
 Flood Elev= 64.00' Surf.Area= 100 sf Storage= 108 cf

Plug-Flow detention time= 3.4 min calculated for 0.240 af (100% of inflow)
 Center-of-Mass det. time= 3.5 min (933.3 - 929.8)

Volume	Invert	Avail.Storage	Storage Description
#1	60.50'	108 cf	Stone Storage (Prismatic) Listed below (Recalc) 270 cf Overall x 40.0% Voids

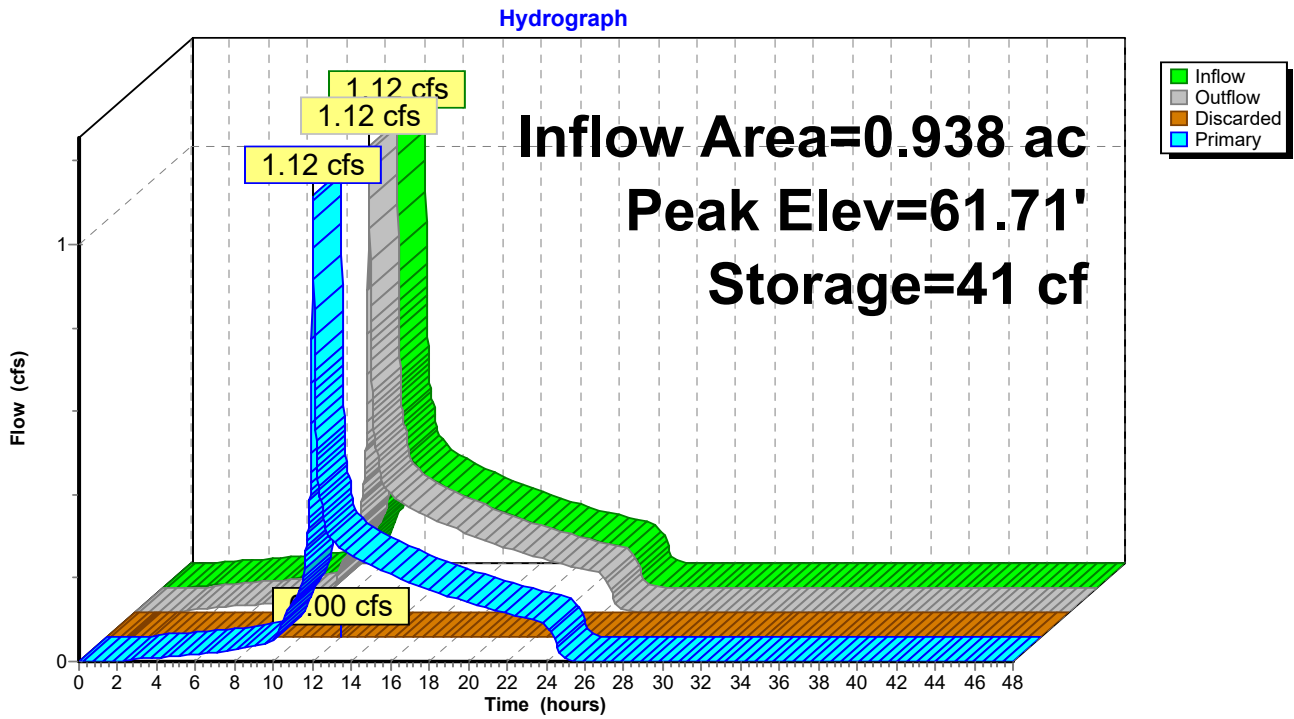
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.50	80	0	0
63.50	100	270	270

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	12.0" Round 12" HDPE Pipe L= 245.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 60.35' S= 0.0027 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Discarded	60.50'	0.300 in/hr Exfiltration into Groundwater over Surface area

Discarded OutFlow Max=0.00 cfs @ 12.03 hrs HW=61.71' (Free Discharge)
 ↳ **2=Exfiltration into Groundwater** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.12 cfs @ 12.03 hrs HW=61.71' TW=60.88' (Dynamic Tailwater)
 ↳ **1=12" HDPE Pipe** (Barrel Controls 1.12 cfs @ 2.63 fps)

Pond PP53: Proposed Rock Infiltration Area in Proposed Parking Island



Summary for Pond PP54: Proposed Catch Basin at Southernmost Site Entrance

Inflow Area = 0.769 ac, 62.69% Impervious, Inflow Depth = 2.77" for 10-yr event
 Inflow = 0.42 cfs @ 12.03 hrs, Volume= 0.178 af
 Outflow = 0.42 cfs @ 12.03 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.42 cfs @ 12.03 hrs, Volume= 0.178 af

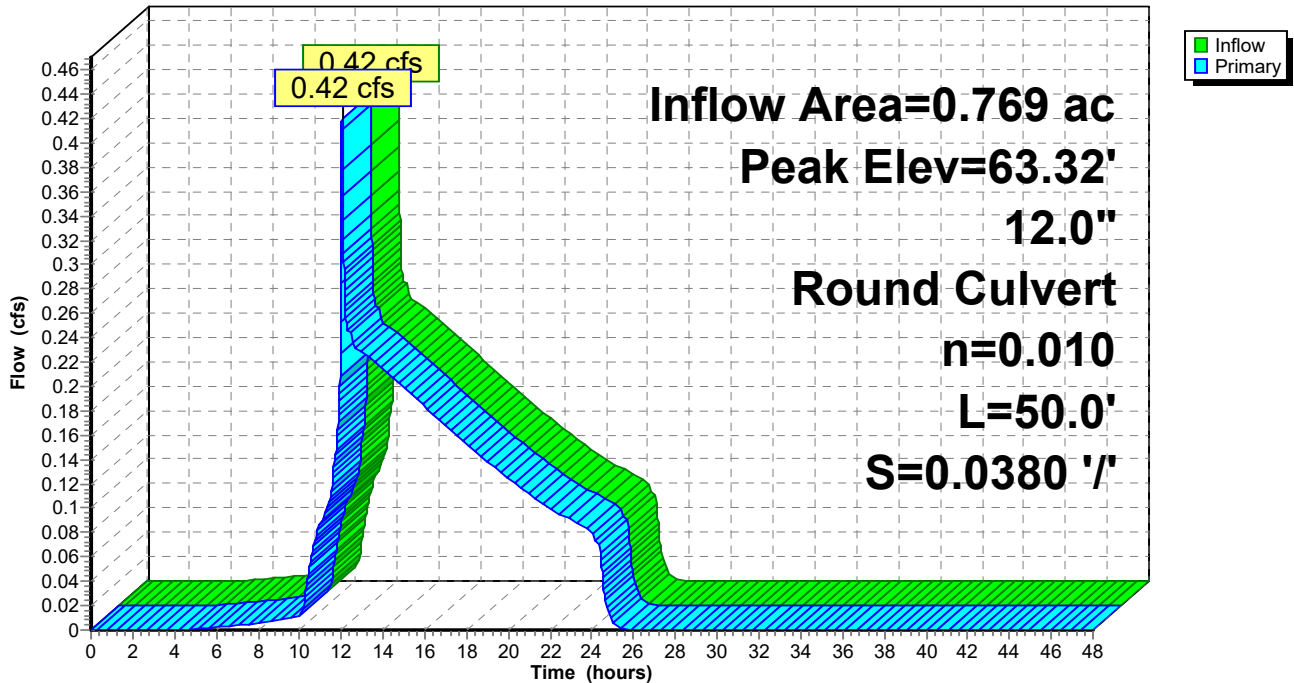
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 63.32' @ 12.03 hrs
 Flood Elev= 65.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	12.0" Round 12" HDPE Pipe L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 63.00' / 61.10' S= 0.0380 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.42 cfs @ 12.03 hrs HW=63.32' TW=61.71' (Dynamic Tailwater)
 ↳ 1=12" HDPE Pipe (Inlet Controls 0.42 cfs @ 1.93 fps)

Pond PP54: Proposed Catch Basin at Southernmost Site Entrance

Hydrograph



Summary for Pond PP55: Proposed Bioretention Area "A" Subsurface

Inflow Area = 0.676 ac, 62.52% Impervious, Inflow Depth = 3.23" for 10-yr event
 Inflow = 0.21 cfs @ 13.08 hrs, Volume= 0.182 af
 Outflow = 0.21 cfs @ 13.23 hrs, Volume= 0.182 af, Atten= 0%, Lag= 9.3 min
 Discarded = 0.01 cfs @ 13.23 hrs, Volume= 0.029 af
 Primary = 0.20 cfs @ 13.23 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 74.37' @ 13.23 hrs Surf.Area= 1,490 sf Storage= 637 cf

Plug-Flow detention time= 95.0 min calculated for 0.182 af (100% of inflow)
 Center-of-Mass det. time= 95.2 min (1,054.4 - 959.2)

Volume	Invert	Avail.Storage	Storage Description
#1	74.55'	522 cf	Bioretention Filter Layers (Conic) Listed below 2,608 cf Overall x 20.0% Voids
#2	73.30'	745 cf	Bioretention Storage Layers (Conic) Listed below (Recalc) 1,863 cf Overall x 40.0% Voids
		1,267 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.55	1,490	0	0	1,490
76.30	1,490	2,608	2,608	1,729

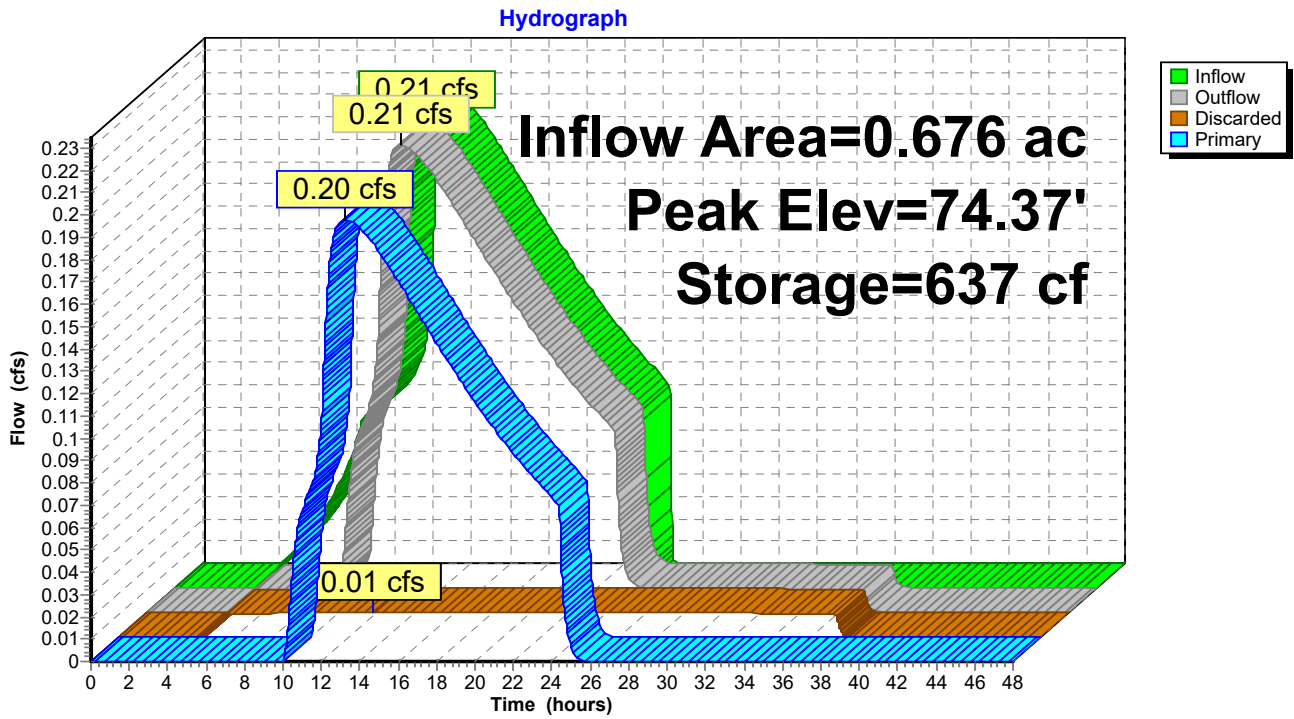
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.30	1,490	0	0	1,490
74.55	1,490	1,863	1,863	1,661

Device	Routing	Invert	Outlet Devices
#1	Primary	74.05'	8.0" Round 8" SDR-35 Pipe L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.05' / 73.90' S= 0.0020 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	73.30'	0.300 in/hr Exfiltration into Groundwater over Wetted area Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 13.23 hrs HW=74.37' (Free Discharge)
 ↑2=Exfiltration into Groundwater (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.20 cfs @ 13.23 hrs HW=74.37' TW=74.14' (Dynamic Tailwater)
 ↑1=8" SDR-35 Pipe (Outlet Controls 0.20 cfs @ 1.76 fps)

Pond PP55: Proposed Bioretention Area "A" Subsurface



Summary for Pond PP56: Proposed Bioretention Area "A" Open Area

Inflow Area = 0.676 ac, 62.52% Impervious, Inflow Depth = 3.23" for 10-yr event
 Inflow = 2.23 cfs @ 12.03 hrs, Volume= 0.182 af
 Outflow = 0.21 cfs @ 13.08 hrs, Volume= 0.182 af, Atten= 91%, Lag= 62.8 min
 Primary = 0.21 cfs @ 13.08 hrs, Volume= 0.182 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 78.11' @ 13.08 hrs Surf.Area= 2,242 sf Storage= 2,667 cf
 Flood Elev= 78.80' Surf.Area= 2,970 sf Storage= 4,467 cf

Plug-Flow detention time= 130.3 min calculated for 0.182 af (100% of inflow)
 Center-of-Mass det. time= 130.3 min (959.2 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	76.30'	4,467 cf	Bioretention Area "A" (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.30	825	0	0	825
78.80	2,970	4,467	4,467	3,001

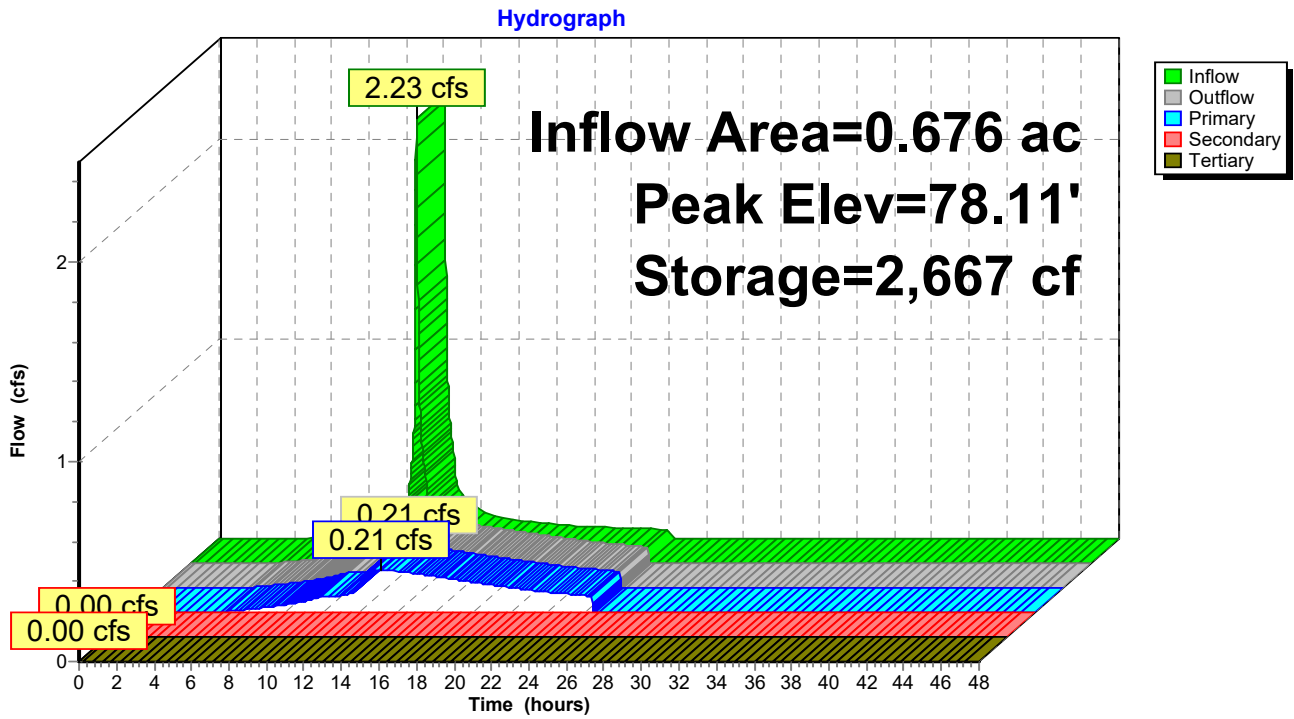
Device	Routing	Invert	Outlet Devices
#1	Primary	76.30'	4.000 in/hr Exfiltration through Bioretention Mix over Wetted area Phase-In= 0.01'
#2	Secondary	78.20'	12.0" W x 4.0" H Vert. (3) 4"x12" Knockouts X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Tertiary	78.50'	5.0' long x 5.0' breadth Overflow Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.21 cfs @ 13.08 hrs HW=78.11' TW=74.37' (Dynamic Tailwater)
 ↑1=Exfiltration through Bioretention Mix (Exfiltration Controls 0.21 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.30' TW=73.30' (Dynamic Tailwater)
 ↑2=(3) 4"x12" Knockouts (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.30' TW=74.00' (Dynamic Tailwater)
 ↑3=Overflow (Controls 0.00 cfs)

Pond PP56: Proposed Bioretention Area "A" Open Area

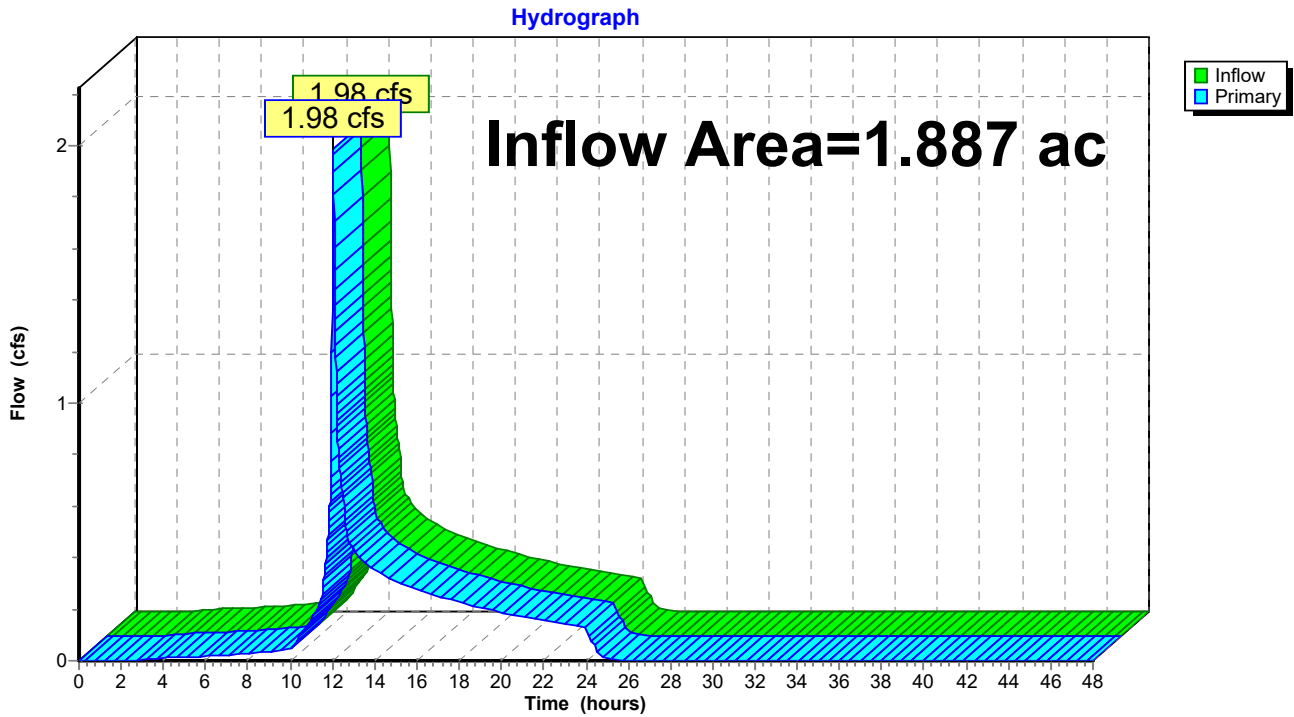


Summary for Link L101: Flow North Along Golfcourse to 9th Hole Pond

Inflow Area = 1.887 ac, 40.93% Impervious, Inflow Depth = 2.10" for 10-yr event
Inflow = 1.98 cfs @ 12.04 hrs, Volume= 0.331 af
Primary = 1.98 cfs @ 12.04 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L101: Flow North Along Golfcourse to 9th Hole Pond

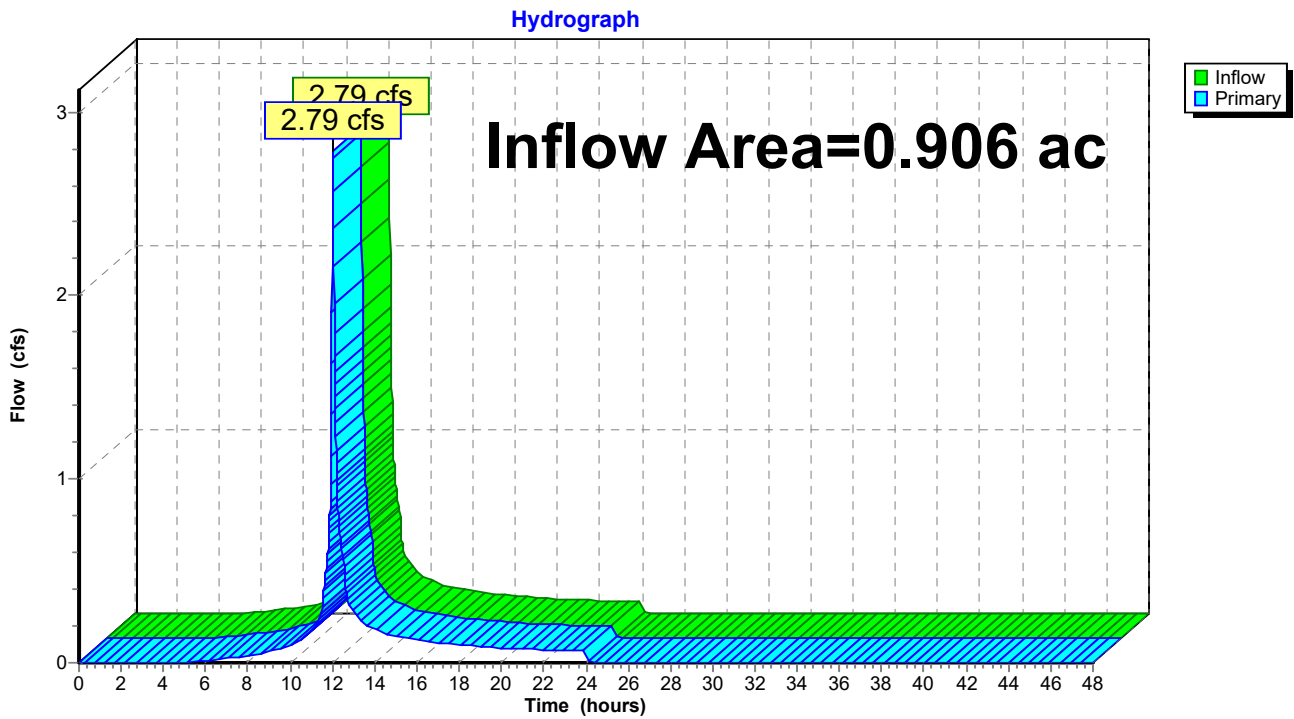


Summary for Link L102: Flow to Catch Basin on Jady Hill Avenue

Inflow Area = 0.906 ac, 53.34% Impervious, Inflow Depth = 3.00" for 10-yr event
Inflow = 2.79 cfs @ 12.03 hrs, Volume= 0.227 af
Primary = 2.79 cfs @ 12.03 hrs, Volume= 0.227 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L102: Flow to Catch Basin on Jady Hill Avenue

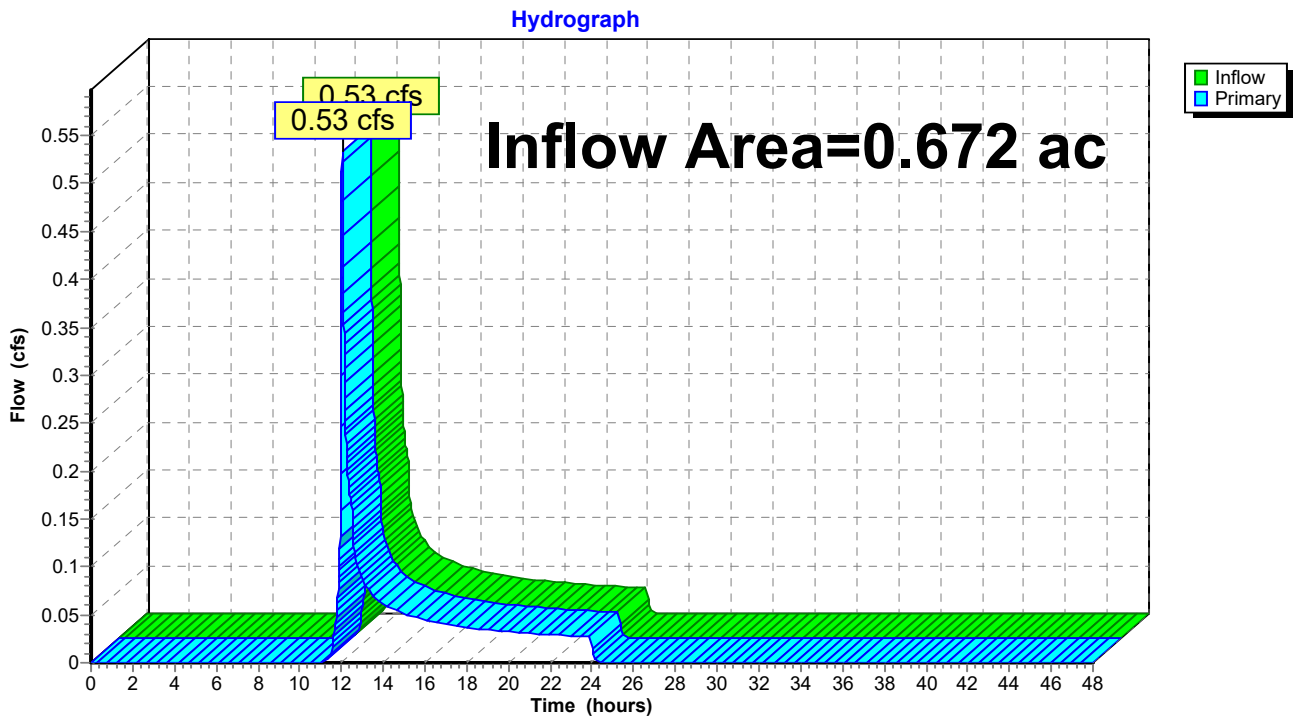


Summary for Link L103: Flow South to Hayes Park

Inflow Area = 0.672 ac, 0.00% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 0.53 cfs @ 12.04 hrs, Volume= 0.056 af
Primary = 0.53 cfs @ 12.04 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L103: Flow South to Hayes Park

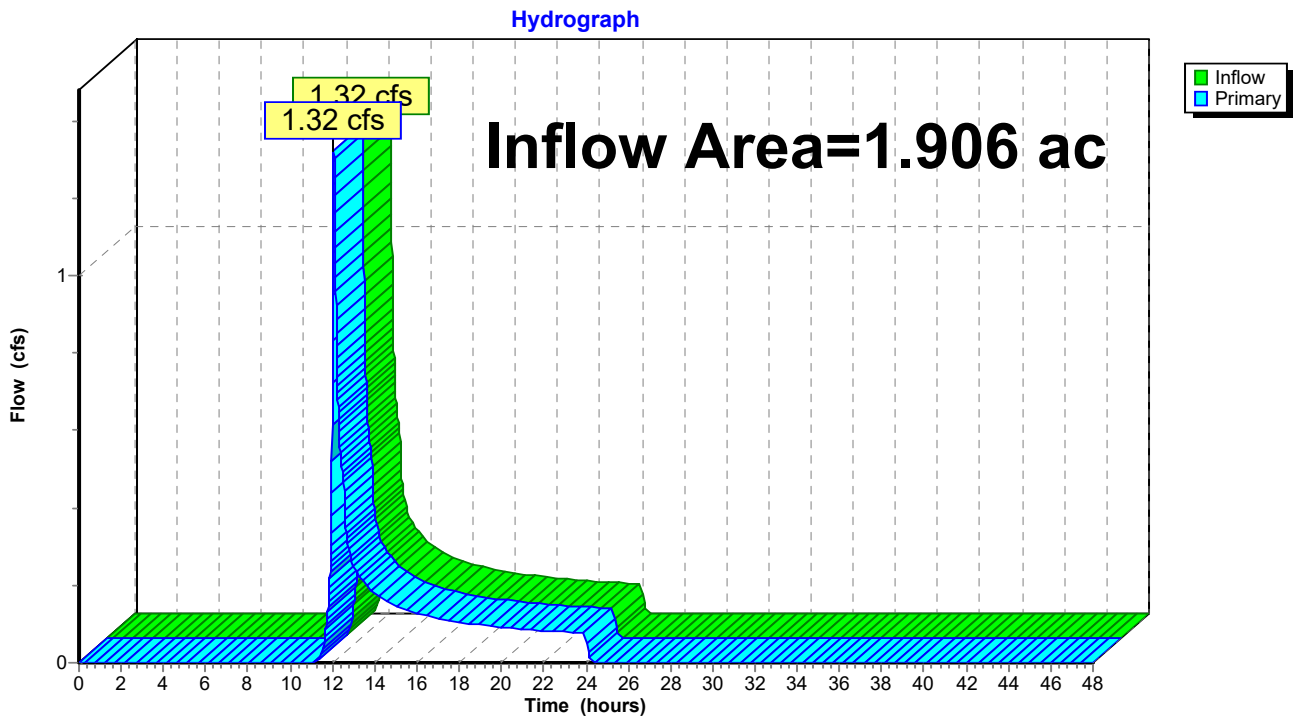


Summary for Link L104: Flows West towards Squamscott River

Inflow Area = 1.906 ac, 0.00% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af
Primary = 1.32 cfs @ 12.06 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link L104: Flows West towards Squamscott River



Postdevelopment HydroCAD 05-17- NH-Exeter 08-23-22 24-hr S1 1-yr 1-inch Rainfall=1.00"

Prepared by {enter your company name here}

Printed 5/23/2023

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Page 106

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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

Subcatchment PS25A: Northside of Runoff Area=6,660 sf 78.53% Impervious Runoff Depth=0.32"
Tc=5.0 min CN=90 Runoff=0.05 cfs 0.004 af

Subcatchment PS25B: Southside of Runoff Area=3,655 sf 89.06% Impervious Runoff Depth=0.50"
Tc=5.0 min CN=94 Runoff=0.05 cfs 0.004 af

Subcatchment PS26: Northern Portion of Runoff Area=34,690 sf 1.51% Impervious Runoff Depth=0.00"
Flow Length=235' Tc=7.1 min CN=62 Runoff=0.00 cfs 0.000 af

Subcatchment PS27: Existing 1st Hole Tee Runoff Area=39,485 sf 53.34% Impervious Runoff Depth=0.11"
Tc=5.0 min CN=82 Runoff=0.05 cfs 0.009 af

Subcatchment PS28: Middle Strip of Runoff Area=7,370 sf 93.55% Impervious Runoff Depth=0.63"
Tc=5.0 min CN=96 Runoff=0.12 cfs 0.009 af

Subcatchment PS29: Southern Portion of Runoff Area=4,035 sf 63.94% Impervious Runoff Depth=0.17"
Tc=5.0 min CN=85 Runoff=0.01 cfs 0.001 af

Subcatchment PS30: Woods to the South of Runoff Area=29,290 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=233' Tc=5.0 min CN=56 Runoff=0.00 cfs 0.000 af

Subcatchment PS31: Woods to the West of Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=345' Tc=7.4 min CN=56 Runoff=0.00 cfs 0.000 af

Subcatchment PS32: Proposed Parking Runoff Area=25,800 sf 58.76% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=84 Runoff=0.06 cfs 0.007 af

Reach PR75: Proposed Swale Running Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.022 L=90.0' S=0.0944 '/' Capacity=37.88 cfs Outflow=0.00 cfs 0.000 af

Pond EP10: 9th Hole Pond Peak Elev=36.28' Storage=390 cf Inflow=0.13 cfs 0.009 af
Outflow=0.00 cfs 0.000 af

Pond PP50: Proposed Stone Storage Under Peak Elev=77.03' Storage=24 cf Inflow=0.05 cfs 0.004 af
Discarded=0.01 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.004 af

Pond PP51: Proposed Drip Edge in front of Peak Elev=80.09' Storage=15 cf Inflow=0.05 cfs 0.004 af
Discarded=0.00 cfs 0.002 af Primary=0.03 cfs 0.001 af Outflow=0.03 cfs 0.004 af

Pond PP52A: Proposed Manhole in 1st Hole Fairway Peak Elev=58.58' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.010 L=265.0' S=0.0464 '/' Outflow=0.13 cfs 0.009 af

Pond PP52B: Proposed Manhole near Cart Storage Peak Elev=60.46' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.012 L=420.0' S=0.0042 '/' Outflow=0.13 cfs 0.009 af

Pond PP53: Proposed Rock Infiltration Area in Peak Elev=61.23' Storage=24 cf Inflow=0.14 cfs 0.010 af
Discarded=0.00 cfs 0.001 af Primary=0.13 cfs 0.009 af Outflow=0.13 cfs 0.010 af

Postdevelopment HydroCAD 05-17- NH-Exeter 08-23-22 24-hr S1 1-yr 1-inch Rainfall=1.00"

Prepared by {enter your company name here}

Printed 5/23/2023

HydroCAD® 10.10-3a s/n 01104 © 2020 HydroCAD Software Solutions LLC

Page 107

Pond PP54: Proposed Catch Basin at Southernmost Site Peak Elev=63.05' Inflow=0.01 cfs 0.001 af
12.0" Round Culvert n=0.010 L=50.0' S=0.0380 '/' Outflow=0.01 cfs 0.001 af

Pond PP55: Proposed Bioretention Area "A" Peak Elev=73.47' Storage=104 cf Inflow=0.08 cfs 0.009 af
Discarded=0.01 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

Pond PP56: Proposed Bioretention Area "A" Peak Elev=76.31' Storage=9 cf Inflow=0.09 cfs 0.009 af
Primary=0.08 cfs 0.009 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.009 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=0.13 cfs 0.009 af
Primary=0.13 cfs 0.009 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=0.05 cfs 0.009 af
Primary=0.05 cfs 0.009 af

Link L103: Flow South to Hayes Park Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link L104: Flows West towards Squamscott River Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.034 af Average Runoff Depth = 0.08"
76.62% Pervious = 4.116 ac 23.38% Impervious = 1.256 ac

Pond PP54: Proposed Catch Basin at Southernmost Site Peak Elev=63.21' Inflow=0.19 cfs 0.084 af
12.0" Round Culvert n=0.010 L=50.0' S=0.0380 '/' Outflow=0.19 cfs 0.084 af

Pond PP55: Proposed Bioretention Area "A" Peak Elev=74.32' Storage=607 cf Inflow=0.15 cfs 0.097 af
Discarded=0.01 cfs 0.026 af Primary=0.14 cfs 0.071 af Outflow=0.15 cfs 0.097 af

Pond PP56: Proposed Bioretention Area "A" Peak Elev=77.38' Storage=1,273 cf Inflow=1.39 cfs 0.097 af
Primary=0.15 cfs 0.097 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.097 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=0.92 cfs 0.154 af
Primary=0.92 cfs 0.154 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=1.65 cfs 0.117 af
Primary=1.65 cfs 0.117 af

Link L103: Flow South to Hayes Park Inflow=0.05 cfs 0.016 af
Primary=0.05 cfs 0.016 af

Link L104: Flows West towards Squamscott River Inflow=0.14 cfs 0.045 af
Primary=0.14 cfs 0.045 af

Total Runoff Area = 5.372 ac Runoff Volume = 0.394 af Average Runoff Depth = 0.88"
76.62% Pervious = 4.116 ac 23.38% Impervious = 1.256 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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

- Subcatchment PS25A: Northside of** Runoff Area=6,660 sf 78.53% Impervious Runoff Depth=3.79"
Tc=5.0 min CN=90 Runoff=0.58 cfs 0.048 af
- Subcatchment PS25B: Southside of** Runoff Area=3,655 sf 89.06% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=94 Runoff=0.34 cfs 0.030 af
- Subcatchment PS26: Northern Portion of** Runoff Area=34,690 sf 1.51% Impervious Runoff Depth=1.38"
Flow Length=235' Tc=7.1 min CN=62 Runoff=0.90 cfs 0.092 af
- Subcatchment PS27: Existing 1st Hole Tee** Runoff Area=39,485 sf 53.34% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=82 Runoff=2.79 cfs 0.227 af
- Subcatchment PS28: Middle Strip of** Runoff Area=7,370 sf 93.55% Impervious Runoff Depth=4.44"
Tc=5.0 min CN=96 Runoff=0.70 cfs 0.063 af
- Subcatchment PS29: Southern Portion of** Runoff Area=4,035 sf 63.94% Impervious Runoff Depth=3.28"
Tc=5.0 min CN=85 Runoff=0.31 cfs 0.025 af
- Subcatchment PS30: Woods to the South of** Runoff Area=29,290 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=233' Tc=5.0 min CN=56 Runoff=0.53 cfs 0.056 af
- Subcatchment PS31: Woods to the West of** Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=345' Tc=7.4 min CN=56 Runoff=1.32 cfs 0.158 af
- Subcatchment PS32: Proposed Parking** Runoff Area=25,800 sf 58.76% Impervious Runoff Depth=3.19"
Tc=5.0 min CN=84 Runoff=1.93 cfs 0.157 af
- Reach PR75: Proposed Swale Running** Avg. Flow Depth=0.14' Max Vel=3.40 fps Inflow=0.20 cfs 0.152 af
n=0.022 L=90.0' S=0.0944 '/' Capacity=37.88 cfs Outflow=0.20 cfs 0.152 af
- Pond EP10: 9th Hole Pond** Peak Elev=38.45' Storage=14,399 cf Inflow=1.98 cfs 0.331 af
Outflow=0.00 cfs 0.000 af
- Pond PP50: Proposed Stone Storage Under** Peak Elev=78.30' Storage=1,119 cf Inflow=0.58 cfs 0.048 af
Discarded=0.02 cfs 0.048 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.048 af
- Pond PP51: Proposed Drip Edge in front of** Peak Elev=80.32' Storage=51 cf Inflow=0.34 cfs 0.030 af
Discarded=0.00 cfs 0.005 af Primary=0.31 cfs 0.024 af Outflow=0.32 cfs 0.030 af
- Pond PP52A: Proposed Manhole in 1st Hole Fairway** Peak Elev=58.95' Inflow=1.12 cfs 0.239 af
12.0" Round Culvert n=0.010 L=265.0' S=0.0464 '/' Outflow=1.12 cfs 0.239 af
- Pond PP52B: Proposed Manhole near Cart Storage** Peak Elev=60.88' Inflow=1.12 cfs 0.239 af
12.0" Round Culvert n=0.012 L=420.0' S=0.0042 '/' Outflow=1.12 cfs 0.239 af
- Pond PP53: Proposed Rock Infiltration Area in** Peak Elev=61.71' Storage=41 cf Inflow=1.12 cfs 0.240 af
Discarded=0.00 cfs 0.002 af Primary=1.12 cfs 0.239 af Outflow=1.12 cfs 0.240 af

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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

- Subcatchment PS25A: Northside of** Runoff Area=6,660 sf 78.53% Impervious Runoff Depth=5.08"
 Tc=5.0 min CN=90 Runoff=0.72 cfs 0.065 af
- Subcatchment PS25B: Southside of** Runoff Area=3,655 sf 89.06% Impervious Runoff Depth=5.53"
 Tc=5.0 min CN=94 Runoff=0.41 cfs 0.039 af
- Subcatchment PS26: Northern Portion of** Runoff Area=34,690 sf 1.51% Impervious Runoff Depth=2.26"
 Flow Length=235' Tc=7.1 min CN=62 Runoff=1.49 cfs 0.150 af
- Subcatchment PS27: Existing 1st Hole Tee** Runoff Area=39,485 sf 53.34% Impervious Runoff Depth=4.21"
 Tc=5.0 min CN=82 Runoff=3.65 cfs 0.318 af
- Subcatchment PS28: Middle Strip of** Runoff Area=7,370 sf 93.55% Impervious Runoff Depth=5.77"
 Tc=5.0 min CN=96 Runoff=0.85 cfs 0.081 af
- Subcatchment PS29: Southern Portion of** Runoff Area=4,035 sf 63.94% Impervious Runoff Depth=4.53"
 Tc=5.0 min CN=85 Runoff=0.40 cfs 0.035 af
- Subcatchment PS30: Woods to the South of** Runoff Area=29,290 sf 0.00% Impervious Runoff Depth=1.74"
 Flow Length=233' Tc=5.0 min CN=56 Runoff=1.01 cfs 0.098 af
- Subcatchment PS31: Woods to the West of** Runoff Area=83,020 sf 0.00% Impervious Runoff Depth=1.74"
 Flow Length=345' Tc=7.4 min CN=56 Runoff=2.52 cfs 0.276 af
- Subcatchment PS32: Proposed Parking** Runoff Area=25,800 sf 58.76% Impervious Runoff Depth=4.42"
 Tc=5.0 min CN=84 Runoff=2.49 cfs 0.218 af
- Reach PR75: Proposed Swale Running** Avg. Flow Depth=0.22' Max Vel=4.58 fps Inflow=0.66 cfs 0.220 af
 n=0.022 L=90.0' S=0.0944 '/' Capacity=37.88 cfs Outflow=0.66 cfs 0.220 af
- Pond EP10: 9th Hole Pond** Peak Elev=39.00' Storage=21,078 cf Inflow=2.82 cfs 0.484 af
 Outflow=0.00 cfs 0.000 af
- Pond PP50: Proposed Stone Storage Under** Peak Elev=78.96' Storage=1,683 cf Inflow=0.72 cfs 0.065 af
 Discarded=0.02 cfs 0.058 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.058 af
- Pond PP51: Proposed Drip Edge in front of** Peak Elev=80.36' Storage=57 cf Inflow=0.41 cfs 0.039 af
 Discarded=0.00 cfs 0.005 af Primary=0.39 cfs 0.033 af Outflow=0.39 cfs 0.039 af
- Pond PP52A: Proposed Manhole in 1st Hole Fairway** Peak Elev=59.02' Inflow=1.38 cfs 0.334 af
 12.0" Round Culvert n=0.010 L=265.0' S=0.0464 '/' Outflow=1.38 cfs 0.334 af
- Pond PP52B: Proposed Manhole near Cart Storage** Peak Elev=60.97' Inflow=1.38 cfs 0.334 af
 12.0" Round Culvert n=0.012 L=420.0' S=0.0042 '/' Outflow=1.38 cfs 0.334 af
- Pond PP53: Proposed Rock Infiltration Area in** Peak Elev=61.81' Storage=44 cf Inflow=1.39 cfs 0.336 af
 Discarded=0.00 cfs 0.002 af Primary=1.38 cfs 0.334 af Outflow=1.38 cfs 0.336 af

Pond PP54: Proposed Catch Basin at Southernmost Site Peak Elev=63.44' Inflow=0.74 cfs 0.255 af
12.0" Round Culvert n=0.010 L=50.0' S=0.0380 '/' Outflow=0.74 cfs 0.255 af

Pond PP55: Proposed Bioretention Area "A" Peak Elev=74.69' Storage=787 cf Inflow=0.70 cfs 0.252 af
Discarded=0.02 cfs 0.032 af Primary=0.66 cfs 0.220 af Outflow=0.68 cfs 0.252 af

Pond PP56: Proposed Bioretention Area "A" Peak Elev=78.33' Storage=3,202 cf Inflow=2.86 cfs 0.252 af
Primary=0.23 cfs 0.227 af Secondary=0.47 cfs 0.025 af Tertiary=0.00 cfs 0.000 af Outflow=0.70 cfs 0.252 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=2.82 cfs 0.484 af
Primary=2.82 cfs 0.484 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=3.65 cfs 0.318 af
Primary=3.65 cfs 0.318 af

Link L103: Flow South to Hayes Park Inflow=1.01 cfs 0.098 af
Primary=1.01 cfs 0.098 af

Link L104: Flows West towards Squamscott River Inflow=2.52 cfs 0.276 af
Primary=2.52 cfs 0.276 af

Total Runoff Area = 5.372 ac Runoff Volume = 1.279 af Average Runoff Depth = 2.86"
76.62% Pervious = 4.116 ac 23.38% Impervious = 1.256 ac

Pond PP54: Proposed Catch Basin at Southernmost Site Peak Elev=63.63' Inflow=1.41 cfs 0.329 af
 12.0" Round Culvert n=0.010 L=50.0' S=0.0380 '/' Outflow=1.41 cfs 0.329 af

Pond PP55: Proposed Bioretention Area "A" Peak Elev=75.36' Storage=987 cf Inflow=1.52 cfs 0.319 af
 Discarded=0.02 cfs 0.034 af Primary=1.27 cfs 0.285 af Outflow=1.29 cfs 0.319 af

Pond PP56: Proposed Bioretention Area "A" Peak Elev=78.46' Storage=3,522 cf Inflow=3.41 cfs 0.319 af
 Primary=0.24 cfs 0.259 af Secondary=1.28 cfs 0.060 af Tertiary=0.00 cfs 0.000 af Outflow=1.52 cfs 0.319 af

Link L101: Flow North Along Golfcourse to 9th Hole Pond Inflow=3.61 cfs 0.636 af
 Primary=3.61 cfs 0.636 af

Link L102: Flow to Catch Basin on Jady Hill Avenue Inflow=4.41 cfs 0.406 af
 Primary=4.41 cfs 0.406 af

Link L103: Flow South to Hayes Park Inflow=1.48 cfs 0.142 af
 Primary=1.48 cfs 0.142 af

Link L104: Flows West towards Squamscott River Inflow=3.73 cfs 0.404 af
 Primary=3.73 cfs 0.404 af

Total Runoff Area = 5.372 ac Runoff Volume = 1.710 af Average Runoff Depth = 3.82"
76.62% Pervious = 4.116 ac 23.38% Impervious = 1.256 ac

Condition	Point of Analysis (PoA) Number	Sub-Area Number	Area Description	Land Use	BMP	Is the Impervious Area Disconnected in accordance with Chapter 6, Volume 1 of the NH Stormwater Manual or is the BMP an Infiltration BMP designed in accordance with Alteration of Terrain regulations (Env-Wq 1500)?	Pervious Undisturbed (i.e. forest, meadow, etc.)	Pervious Disturbed (i.e. lawn or other area that will be fertilized regularly)	Pervious Pavement that filters and infiltrates all stormwater (no underdrains)	Pervious Disturbed Other
							Acres	Acres	Acres	Acres
Pre-Development	Link L101	Subcatchment ES1	Northern Portion of 9th Green and North of Existing Clubhouse	Commercial (general)	None	NO	0.00	0.85	0.00	0.00
Pre-Development	Link L102	Subcatchment ES2	Existing Parking Lot, Clubhouse, and 1st Tee	Commercial (general)	None	NO	0.10	0.49	0.00	0.00
Pre-Development	Link L103	Subcatchment ES3	Woods to the South of 9th Green & Parking Lot	Commercial (general)	None	NO	0.84	0.08	0.00	0.00
Pre-Development	Link L104	Subcatchment ES4	Woods to the West of 9th Green	Commercial (general)	None	NO	1.71	0.19	0.00	0.00

2020-03-02

(603) 271-2304
 PO Box 95, Concord, NH 03302-0095
www.des.nh.gov

Tab 2 of 9

Description of Pervious Disturbed Other	Pervious Total	Pervious Pavement that filters but does not infiltrate all stormwater (has underdrains)	Impervious Roof	Impervious Road	Impervious Parking and Drives	Impervious Sidewalks	Impervious Surface Water	Impervious Other	Description of Impervious Other	Impervious Total (prior to Disconnection or Infiltration BMP Credit)	Total Area	Composite % Impervious (without disconnection or Infiltration credit)	Composite % Impervious (with disconnection or Infiltration credit)
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres		Acres	Acres		
	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.04	Gravel	0.06	0.90	6.25%	6.25%
	0.59	0.00	0.09	0.00	0.76	0.00	0.00	0.20	Gravel	1.04	1.64	63.81%	63.81%
	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Gravel	0.00	0.92	0.12%	0.12%
	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	1.91	0.00%	0.00%

Condition	Point of Analysis (PoA) Number	Sub-Area Number	Area Description	Land Use	BMP	Is the Impervious Area Disconnected in accordance with Chapter 6, Volume 1 of the NH Stormwater Manual or is the BMP an Infiltration BMP designed in accordance with Alteration of Terrain regulations (Env-Wq 1500)?	Pervious Undisturbed (i.e., forest, meadow, etc.)	Pervious Disturbed (i.e. lawn or other area that will be fertilized annually)	Pervious Pavement that filters and infiltrates all stormwater (no underdrains)	Pervious Disturbed Other
							Acres	Acres	Acres	Acres
Post-Development	Link L101	Subcatchment PS25A	Northside of Proposed Clubhouse and Drip Edge	Commercial (general)	None	NO	0.00	0.03	0.00	0.00
Post-Development	Link L101	Subcatchment PS25B	Southside of Proposed Clubhouse and Drip Edge	Commercial (general)	Bioretention System	YES	0.00	0.01	0.00	0.00
Post-Development	Link L101	Subcatchment PS26	Northern Portion of 9th Green and North of Existing Clubhouse	Commercial (general)	None	NO	0.00	0.76	0.00	0.00
Post-Development	Link L102	Subcatchment PS27	Existing 1st Hole Tee Boxes & North Portion of Existing Parking	Commercial (general)	None	NO	0.03	0.35	0.00	0.00
Post-Development	Link L101	Subcatchment PS28	Middle Strip of Existing Parking Lot	Commercial (general)	None	NO	0.00	0.01	0.00	0.00
Post-Development	Link L101	Subcatchment PS29	Southern Portion of Existing Parking Lot	Commercial (general)	None	NO	0.00	0.03	0.00	0.00
Post-Development	Link L103	Subcatchment PS30	Woods to the South of 9th Green & Parking Lot	Commercial (general)	None	NO	0.52	0.16	0.00	0.00
Post-Development	Link L104	Subcatchment PS31	Woods to the West of 9th Green	Commercial (general)	None	NO	1.71	0.19	0.00	0.00
Post-Development	Link L101	Subcatchment PS32	Proposed Parking Lot Area	Commercial (general)	Bioretention System	YES	0.00	0.20	0.00	0.00

Description of Pervious Disturbed Other	Pervious Total	Pervious Pavement that filters but does not infiltrate all stormwater (has underdrains)	Impervious Roof	Impervious Road	Impervious Parking and Drives	Impervious Sidewalks	Impervious Surface Water	Impervious Other	Description of Impervious Other	Impervious Total (Prior to Disconnection or Infiltration BMP Credit)	Total Area	Composite % Impervious (without disconnection or Infiltration credit)	Composite % Impervious (with disconnection or Infiltration credit)	Percent that is Pervious Disturbed (i.e. lawn or other area that will be fertilized annually)
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres		Acres	Acres			%
	0.03	0.00	0.11	0.00	0.01	0.00	0.00	0.00		0.12	0.15	78.53%	78.53%	21.5%
	0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.00		0.07	0.08	89.06%	0.00%	10.9%
	0.76	0.00	0.00	0.00	0.01	0.00	0.00	0.03	Gravel	0.04	0.80	5.16%	5.16%	94.8%
	0.38	0.00	0.00	0.00	0.48	0.00	0.00	0.04	Gravel	0.52	0.91	57.83%	57.83%	38.7%
	0.01	0.00	0.00	0.00	0.16	0.00	0.00	0.00		0.16	0.17	93.55%	93.55%	6.4%
	0.03	0.00	0.00	0.00	0.06	0.00	0.00	0.00		0.06	0.09	63.94%	63.94%	36.1%
	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.67	0.00%	0.00%	23.3%
	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	1.91	0.00%	0.00%	10.1%
	0.20	0.00	0.00	0.00	0.35	0.00	0.00	0.04	Gravel	0.39	0.59	65.74%	0.00%	34.3%

Date (MM/DD/YYYY):	4/7/2023
Project Name:	Blind Tiger, LLC - Exeter Country Club
Town/City:	Exeter, NH
Impacted Surface Waters:	
Applicant:	Blind Tiger, LLC
DES File #:	

Average Annual Precipitation P	48.11	inches	ONLY INPUT VALUES IN BLUE SHADED CELLS
Fraction of Annual Runoff events that produce runoff	9.99	(usually 0.9)	

Credit for Using Low Nutrient Fertilizer: If there are managed turf areas under post development conditions that are to be fertilized annually, reductions in post development nutrient (TP and TN) loadings can be realized by providing enforceable documents (i.e., deed restrictions) requiring land owners to use low nutrient fertilizer. To get low nutrient fertilizer pollutant reductions input the proposed reduced fertilizer application rates for post development by development for TP and TN in the table below. Low nutrient fertilizers must have application rates less than the standard fertilizer application rate shown in the table. Then input the percent of each land use in each post development sub-area that is managed turf that is fertilized annually.

Fertilizer Reduction Calculator	
TP	TN
15.0	150.0
15.0	150.0
0.0%	0.0%
50%	50%
10%	10%
0.0%	0.0%
0.11	1.74

Used to reduce EMCs for Post TP and Post TN for each land use in each Sub Area depending on percent of area that is managed turf that is fertilized annually

STANDARD FERTILIZER APPLICATION RATE (lb/acre/year)
PROPOSED REDUCED FERTILIZER APPLICATION RATES FOR POST-DEVELOPMENT (lb/acre/year)
 INITIAL PERCENT REDUCTION
 PERCENT OF CITIZENS THAT WILL COMPLY WITH REDUCED APPLICATION RATES
 PERCENT OF APPLIED FERTILIZER THAT IS LOST TO RUNOFF OR PERCOLATION
FINAL PERCENT FERTILIZER REDUCTION WITH COMPLIANCE AND RUNOFF RATES APPLIED (%/FR)
 MINIMUM ASSUMED EMC = EMC_{std} (mg/L)

PRE-DEVELOPMENT CONDITIONS **POST-DEVELOPMENT CONDITIONS**

Area	Impervious Area	Area	Impervious Area	Area Fertilized Annually
Total Area (All Sub-Areas) (acres)	5.37	1.10	5.37	1.34

Insert information for 1st sub-area below

Sub_Area_ID	Subcatchment ES1	Sub_Area_ID	Subcatchment PS25A
Point of Analysis (PoA) Number	Link L101	Point of Analysis (PoA) Number	Link L101
Total Area for Sub-Area (acres)	0.90	0.06	0.15
			0.12
			0.00

Land Use	Area	Ia	Land Use	Area	Ia	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
From HWG			From HWG					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	100.00%	Commercial Roof	0.11	100.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.01	100.00%	Commercial/Res Parking	0.01	100.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.85	0.00%	Lawns	0.03	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.04	100.00%	Commercial (general)	0.00	100.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM			From CDM					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.00	0.00%	Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 2nd sub-area below

Sub_Area_ID	Subcatchment ES2	Sub_Area_ID	Subcatchment PS26B
Point of Analysis (PoA) Number	Link L102	Point of Analysis (PoA) Number	Link L101
Total Area for Sub-Area (acres)	1.64	1.04	0.06
			0.07
			0.00

Land Use	Area	Ia	Land Use	Area	Ia	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
From HWG			From HWG					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	100.00%	Commercial Roof	0.07	100.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.76	100.00%	Commercial/Res Parking	0.00	100.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.49	0.00%	Lawns	0.01	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.20	100.00%	Commercial (general)	0.00	100.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM			From CDM					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.10	0.00%	Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 3rd sub-area below

Sub_Area_ID	Subcatchment ES3	Sub_Area_ID	Subcatchment PS26
Point of Analysis (PoA) Number	Link L103	Point of Analysis (PoA) Number	Link L101
Total Area for Sub-Area (acres)	0.92	0.00	0.90
			0.04
			0.76

Land Use	Area	Ia	Land Use	Area	Ia	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
From HWG			From HWG					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	100.00%	Commercial Roof	0.00	100.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	100.00%	Commercial/Res Parking	0.01	100.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.08	0.00%	Lawns	0.76	0.00%	100.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	100.00%	Commercial (general)	0.03	100.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM			From CDM					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.84	0.00%	Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 4th sub-area below

Sub_Area_ID	Subcatchment ES4	Sub_Area_ID	Subcatchment PS27
Point of Analysis (PoA) Number	Link L104	Point of Analysis (PoA) Number	Link L102
Total Area for Sub-Area (acres)	1.91	0.00	0.91
			0.52
			0.32

Land Use	Area	Ia	Land Use	Area	Ia	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
From HWG			From HWG					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	100.00%	Commercial Roof	0.00	100.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	100.00%	Commercial/Res Parking	0.48	100.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.19	0.00%	Lawns	0.35	0.00%	90.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	100.00%	Commercial (general)	0.04	100.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM			From CDM					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

ONLY CHANGE VALUES SHADED IN BLUE

PRE DEVELOPMENT		INPUT BMP DESCRIPTIONS	INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS OF CONCERN		
Sub-Area			TSS	TP	TN
Subcatchment ES1	None		0%	0%	0%
Subcatchment ES2	None		0%	0%	0%
Subcatchment ES3	None		0%	0%	0%
Subcatchment ES4	None		0%	0%	0%
5-PRE			0%	0%	0%
6-PRE			0%	0%	0%
7-PRE			0%	0%	0%
8-PRE			0%	0%	0%
9-PRE			0%	0%	0%
10-PRE			0%	0%	0%
11-PRE			0%	0%	0%
12-PRE			0%	0%	0%
13-PRE			0%	0%	0%
14-PRE			0%	0%	0%
15-PRE			0%	0%	0%
16-PRE			0%	0%	0%
17-PRE			0%	0%	0%
18-PRE			0%	0%	0%
19-PRE			0%	0%	0%
20-PRE			0%	0%	0%
21-PRE			0%	0%	0%
22-PRE			0%	0%	0%
23-PRE			0%	0%	0%
24-PRE			0%	0%	0%
25-PRE			0%	0%	0%

POST DEVELOPMENT		INPUT BMP DESCRIPTIONS	INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS OF CONCERN		
Sub-Area			TSS	TP	TN
Subcatchment PS25A	None		0%	0%	0%
Subcatchment PS25B	Bioretention System		97%	99%	44%
Subcatchment PS26	None		0%	0%	0%
Subcatchment PS27	None		0%	0%	0%
Subcatchment PS28	None		0%	0%	0%
Subcatchment PS29	None		0%	0%	0%
Subcatchment PS30	None		0%	0%	0%
Subcatchment PS31	None		0%	0%	0%
Subcatchment PS32	Bioretention System		97%	99%	44%
10-POST			0%	0%	0%
11-POST			0%	0%	0%
12-POST			0%	0%	0%
13-POST			0%	0%	0%
14-POST			0%	0%	0%
15-POST			0%	0%	0%
16-POST			0%	0%	0%
17-POST			0%	0%	0%
18-POST			0%	0%	0%
19-POST			0%	0%	0%
20-POST			0%	0%	0%
21-POST			0%	0%	0%
22-POST			0%	0%	0%
23-POST			0%	0%	0%
24-POST			0%	0%	0%
25-POST			0%	0%	0%

(603) 271-2304
 PO Box 95, Concord, NH 03302-0095
 www.des.nh.gov

Pollutant Removal Calculations 04-07-23.xls
 OVERALL SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

TOTAL PRE -DEVELOPMENT (PRE-DEV) AREA (ACRES) =	5.37
TOTAL PRE-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	1.10
TOTAL PRE-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	20.5%
TOTAL POST DEVELOPMENT (POST-DEV) AREA (ACRES) =	5.37
TOTAL POST-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	1.37
TOTAL POST-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	25.4%
TOTAL POST-DEV AREA THAT IS FERTILIZED ANNUALLY (ACRES) =	1.34
TOTAL POST-DEV PERCENT OF AREA THAT IS FERTILIZED ANNUALLY (%) =	25.0%

	TSS (LBS/YR)	TP (LBS/YR)	TN (LBS/YR)
PRE DEVELOPMENT LOADS (NO BMPS)	497.2	3.4	29.3
PRE DEVELOPMENT LOADS (WITH BMPS)	497.2	3.4	29.3
PRE DEVELOPMENT LOAD REDUCTION DUE TO BMPS	0.0	0.0	0.0
PROPOSED PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	NA	0.0%	0.0%
POST DEVELOPMENT LOADS (NO BMPS)	485.8	3.9	34.3
POST DEVELOPMENT LOADS (WITH BMPS)	359.0	3.0	30.2
POST DEVELOPMENT LOAD REDUCTION DUE TO BMPS	126.8	0.9	4.1
POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE)	-138.2	-0.5	0.9
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-27.8%	-13.1%	3.0%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-2.3%	10.8%	14.6%

Pollutant Removal Calculations 04-07-23.xls
TSS SUB_AREA SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-138.2
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-27.8%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	
	-2.3%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	26.1%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-28.4%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Subcatchment ES1	Link L101	0.90	0.06	NA	TSS	NA	None	64.0	64.0	0.0	0.0%
PRE	Subcatchment ES2	Link L102	1.64	1.04	NA	TSS	NA	None	357.9	357.9	0.0	0.0%
PRE	Subcatchment ES3	Link L103	0.92	0.00	NA	TSS	NA	None	25.0	25.0	0.0	0.0%
PRE	Subcatchment ES4	Link L104	1.91	0.00	NA	TSS	NA	None	50.3	50.3	0.0	0.0%
PRE	5-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	6-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	7-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	8-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	9-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	10-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	11-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
TOTAL			5.37	1.10				TOTAL	497.2	497.2	0.0	0.0%

Pollutant Removal Calculations 04-07-23.xls
TSS SUB_AREA SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-138.2
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-27.8%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-2.3%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	26.1%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-28.4%

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Subcatchment PS25A	Link L101	0.15	0.12	0.00	TSS	NA	None	12.4	12.4	0.0	0.0%
POST	Subcatchment PS25B	Link L101	0.08	0.07	0.00	TSS	NA	Bioretention System	6.6	0.2	6.4	97.0%
POST	Subcatchment PS26	Link L101	0.80	0.04	0.76	TSS	NA	None	52.8	52.8	0.0	0.0%
POST	Subcatchment PS27	Link L102	0.91	0.52	0.32	TSS	NA	None	164.3	164.3	0.0	0.0%
POST	Subcatchment PS28	Link L101	0.17	0.16	0.00	TSS	NA	None	40.2	40.2	0.0	0.0%
POST	Subcatchment PS29	Link L101	0.09	0.06	0.00	TSS	NA	None	16.2	16.2	0.0	0.0%
POST	Subcatchment PS30	Link L103	0.67	0.00	0.08	TSS	NA	None	19.0	19.0	0.0	0.0%
POST	Subcatchment PS31	Link L104	1.91	0.00	0.19	TSS	NA	None	50.3	50.3	0.0	0.0%
POST	Subcatchment PS32	Link L101	0.59	0.39	0.00	TSS	NA	Bioretention System	124.1	3.7	120.4	97.0%
POST	10-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	11-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	12-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	13-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	14-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	15-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	16-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	17-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	18-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	19-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	20-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	21-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	22-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	23-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	24-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	25-POST		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
	TOTAL		5.37	1.37	1.34			TOTAL	485.8	359.0	126.8	26.1%

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-0.5
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-13.1%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	10.8%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	22.5%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-11.7%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Subcatchment ES1	Link L101	0.90	0.06	NA	TP	NA	None	1.0	1.0	0.0	0.0%
PRE	Subcatchment ES2	Link L102	1.64	1.04	NA	TP	NA	None	2.0	2.0	0.0	0.0%
PRE	Subcatchment ES3	Link L103	0.92	0.00	NA	TP	NA	None	0.1	0.1	0.0	0.0%
PRE	Subcatchment ES4	Link L104	1.91	0.00	NA	TP	NA	None	0.3	0.3	0.0	0.0%
PRE	5-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	6-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	7-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	8-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	9-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	10-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	11-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
		TOTAL	5.37	1.10				TOTAL	3.4	3.4	0.0	0.0%

Pollutant Removal Calculations 04-07-23.xls
 TP SUB_AREA SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Subcatchment PS25A	Link L101	0.15	0.12	0.00	TP	0.0%	None	0.2	0.2	0.0	0.0%
POST	Subcatchment PS25B	Link L101	0.08	0.07	0.00	TP	0.0%	Bioretention System	0.1	0.0	0.1	99.0%
POST	Subcatchment PS26	Link L101	0.80	0.04	0.76	TP	0.0%	None	0.8	0.8	0.0	0.0%
POST	Subcatchment PS27	Link L102	0.91	0.52	0.32	TP	0.0%	None	1.1	1.1	0.0	0.0%
POST	Subcatchment PS28	Link L101	0.17	0.16	0.00	TP	0.0%	None	0.2	0.2	0.0	0.0%
POST	Subcatchment PS29	Link L101	0.09	0.06	0.00	TP	0.0%	None	0.1	0.1	0.0	0.0%
POST	Subcatchment PS30	Link L103	0.67	0.00	0.08	TP	0.0%	None	0.2	0.2	0.0	0.0%
POST	Subcatchment PS31	Link L104	1.91	0.00	0.19	TP	0.0%	None	0.3	0.3	0.0	0.0%
POST	Subcatchment PS32	Link L101	0.59	0.39	0.00	TP	0.0%	Bioretention System	0.8	0.0	0.8	99.0%
POST	10-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	11-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	12-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	13-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	14-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	15-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	16-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	17-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	18-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	19-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	20-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	21-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	22-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	23-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	24-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	25-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
TOTAL			5.37	1.37	1.34			TOTAL	3.9	3.0	0.9	22.5%

Pollutant Removal Calculations 04-07-23.xls
 TN SUB_AREA SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	0.9
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	3.0%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	14.6%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	12.0%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	2.6%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Subcatchment ES1	Link L101	0.90	0.06	NA	TN	NA	None	4.8	4.8	0.0	0.0%
PRE	Subcatchment ES2	Link L102	1.64	1.04	NA	TN	NA	None	21.1	21.1	0.0	0.0%
PRE	Subcatchment ES3	Link L103	0.92	0.00	NA	TN	NA	None	1.1	1.1	0.0	0.0%
PRE	Subcatchment ES4	Link L104	1.91	0.00	NA	TN	NA	None	2.3	2.3	0.0	0.0%
PRE	5-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	6-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	7-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	8-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	9-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	10-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	11-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
TOTAL			5.37	1.10				TOTAL	29.3	29.3	0.0	0.0%

Pollutant Removal Calculations 04-07-23.xls
 TN SUB_AREA SUMMARY

4/12/2023

Date (MM/DD/YYYY): 4/7/2023
 Project Name: Blind Tiger, LLC - Exeter Country Club
 Town/City: Exeter, NH
 Impacted Surface Waters:
 Applicant: Blind Tiger, LLC
 DES File #:

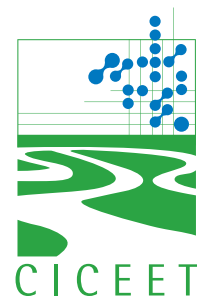
POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Subcatchment PS25A	Link L101	0.15	0.12	0.00	TN	0.0%	None	2.5	2.5	0.0	0.0%
POST	Subcatchment PS25B	Link L101	0.08	0.07	0.00	TN	0.0%	Bioretention System	1.5	0.8	0.7	44.0%
POST	Subcatchment PS26	Link L101	0.80	0.04	0.76	TN	0.0%	None	4.1	4.1	0.0	0.0%
POST	Subcatchment PS27	Link L102	0.91	0.52	0.32	TN	0.0%	None	10.9	10.9	0.0	0.0%
POST	Subcatchment PS28	Link L101	0.17	0.16	0.00	TN	0.0%	None	2.8	2.8	0.0	0.0%
POST	Subcatchment PS29	Link L101	0.09	0.06	0.00	TN	0.0%	None	1.2	1.2	0.0	0.0%
POST	Subcatchment PS30	Link L103	0.67	0.00	0.08	TN	0.0%	None	1.1	1.1	0.0	0.0%
POST	Subcatchment PS31	Link L104	1.91	0.00	0.19	TN	0.0%	None	2.3	2.3	0.0	0.0%
POST	Subcatchment PS32	Link L101	0.59	0.39	0.00	TN	0.0%	Bioretention System	7.8	4.4	3.4	44.0%
POST	10-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	11-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	12-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	13-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	14-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	15-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	16-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	17-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	18-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	19-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	20-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	21-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	22-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	23-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	24-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	25-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
TOTAL			5.37	1.37	1.34			TOTAL	34.3	30.2	4.1	12.0%

2005 Data Report

University of New Hampshire Stormwater Center

Dedicated to the protection of water resources through effective stormwater management



About this Report

In 1998, Phase II of the Clean Water Act broke over U.S. towns and cities a bit like a storm. The purpose of the new regulations was to reduce the impact of nonpoint source pollution carried by stormwater runoff—the single greatest threat to water quality nationwide. Under Phase II, governments of communities under 100,000, as well as commercial enterprises, are required to develop stormwater programs to improve water quality and reduce the volume of runoff.

To create the infrastructure for these programs, there is no lack of stormwater treatments from which to choose—from long, winding swales that sweep along roads and highways to manufactured systems that fit neatly in a manhole. The challenge that land use decision makers face is choosing an approach that will do the best job of protecting local water quality, is within their budgets, has a proven operations and maintenance record, and will meet regulatory requirements.

The information needed to make these decisions is not readily available, particularly for emerging stormwater treatments. Unfamiliar with new technologies, and lacking access to performance data, engineers, planners, and regulators are often slow to adopt them.

At the same time, the reliability of traditional approaches is in question. A three-year study of nine New Hampshire sites in the 1990's found that using conventional stormwater treatment practices degraded water quality with regard to at least one contaminant at least two-thirds of the time. When it comes to manufactured stormwater treatments, end users must rely on vendor claims about product performance—much of which is based on data collected in the laboratory, not the field.

The University of New Hampshire Stormwater Center was created to address this critical lack of information. This inaugural report is a compilation of data from our first year of monitoring the effectiveness of stormwater treatment systems in addressing water quality and the volume of runoff. We hope that it will become a valued resource for those who must comply with Phase II rules. It is, however, only the beginning. We will continue to refine our methods and broaden the scope of our evaluation to meet both the needs of stormwater managers and the rigorous scrutiny of the research community.

UNH Stormwater Center

The University of New Hampshire (UNH) Stormwater Center was established in 2004 to help land use decision makers develop stormwater management programs to protect water quality. The Center is supported by the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a partnership of UNH and the National Oceanic and Atmospheric Administration (NOAA). It is housed within the University's Environmental Research Group.

Center researchers operate a field facility that evaluates the effectiveness of different stormwater treatments in a side-by-side setting, under strictly controlled conditions. It is the only testing facility of its kind in the nation. Alongside evaluation of conventional treatment systems, researchers are also examining innovative stormwater management approaches such as a gravel wetland and an all-porous asphalt parking lot.



Dr. Thomas P. Ballestero
Lead Scientist
38 Gregg Hall
Durham, NH 03824
603.862.1405
tom.ballestero@unh.edu



Dr. Robert Roseen
Center Director
242 Gregg Hall
Durham, NH 03824
603.862.4024
robert.roseen@unh.edu



James Houle
Research Facility Manager
153 Gregg Hall
Durham, NH 03824
603.767.7091
jjhoule@unh.edu

Bioretention System



Performance evaluations indicated that several Low Impact Development (LID) designs, such as this bioretention system [left] have high pollutant removal efficiencies, ranging from 80 to 99 percent. In contrast, the riprap swale, the most common treatment system, performed poorly for most evaluation criteria.

Retention Pond



Second only to swales, ponds are a popular stormwater treatment choice. Their greatest drawback is seasonal. During warm summer months, ponds elevate the temperature of already heated surface runoff before it flows into small receiving streams. Thermal pollution negatively impacts the health of macro invertebrates and cold water fish. The retention pond [left] performed moderately well for most evaluation criteria.



In Cold Climates

Stormwater runoff in colder regions may have flow and mass loading characteristics different from warmer climates. Stormwater treatment design criteria needs to account for cold weather performance issues such as increased seasonal sediment loading and the impact of chloride from salting roads.

Melting snow can significantly increase peak flows and runoff quantities during warm winter rains. Our evaluations indicate that LIDs function well during winter months. Frost depth monitoring consistently demonstrated that melt water readily thaws filter media. Trends in chloride treatment are complex, and will be the subject of future study.

The field site's conglomeration of stormwater treatments makes it an ideal location for technology demonstrations, workshops, and training exercises. Last year, 15 demonstration workshops drew more than 500 participants from around the Northeast.

The Center engages the advice and experience of representatives from every sector involved in stormwater management. Its Technical Advisory Board includes industry representatives, state and federal regulators, academic scientists and engineers, and local government officials. Researchers also solicit comment from stormwater treatment vendors, manufacturers, regulatory agencies, system designers, and those required to comply with Phase II of the Clean Water Act.

Field Test Site

The UNH Stormwater Center's field site is adjacent to a nine-acre commuter parking lot in Durham, New Hampshire. The contributing drainage area—curbed and almost completely impervious—generates stormwater runoff typical of developed urban and suburban subcatchments. Installed in 1996, the lot is composed of standard, dense-mix asphalt. For nine months every year, it is used near capacity by a combination of passenger vehicles and bus traffic. The pavement is frequently plowed, salted, and sanded during the winter.

Literature review indicates that the lot's contaminant concentrations are above, or equal to, national norms for parking lot runoff. The runoff time of concentration is 22 minutes, with slopes ranging from 1.5 to 2.5 percent. Local climate is coastal, cool temperate forest. Average annual precipitation is 48 inches, uniformly distributed throughout the year with monthly averages

of 4.1 (+/- 0.5) inches. The mean annual temperature is 48°F, with an average low of 15.8°F in January, and an average high of 82°F in July.

The adjacent field site contains three classes of stormwater treatments: conventional Best Management Practices (BMPs) such as swales and retention ponds; Low Impact Development (LID) designs such as treatment wetlands, and filtration and infiltration designs; and manufactured BMPs such as filtration and infiltration units, and hydrodynamic separators.

Since prior research has demonstrated that stormwater treatment performance varies widely in response to site-specific contaminant loading, the site was designed to test treatments under similar conditions. The parallel but separate configuration normalizes the stormwater treatment processes for rain event and watershed-loading variations. Each treatment is uniformly sized to address a Water Quality Volume (WQV) that targets a rainfall-runoff depth equivalent to 90 percent of annual volume of rainfall, or one inch of rainfall.

Rainfall runoff from the lot is channeled into a distribution box with a floor that rests slightly higher than the outlet invert elevations. This insures that runoff will scour the floor, thereby preventing sedimentation. From the distribution box, runoff flows into a network of pipes that distribute an equal quantity into each stormwater treatment. Effluent from the treatments is then piped into a centralized sampling gallery. There, automated samplers are programmed to test water quality and monitor flow volume from each treatment. A detailed quality assurance project protocol governs all analyses.

Manufactured Devices



Removal efficiencies of manufactured systems varied widely and were dependent on design, removal mechanism, and the pollutant of concern. This subsurface infiltration system was a top performer, exhibiting 99 percent removal efficiency for all pollutants except nitrate.

Field Test Site



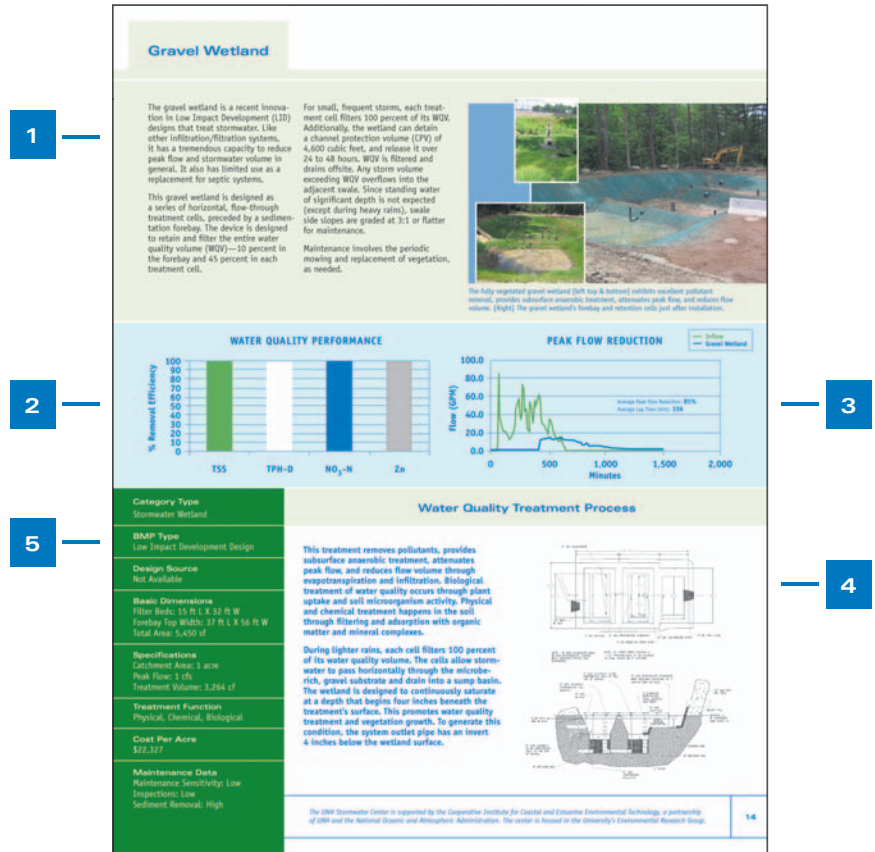
The UNH Stormwater Center's nine-acre field site is designed to test the effectiveness of different stormwater treatments in addressing water quality under similar conditions. The site's conglomeration of stormwater treatments in one setting makes it an ideal location for workshops, technology demonstrations, and training exercises.

How to Read this Report

Between September 2004 and August 2005, researchers evaluated 12 stormwater treatments for water quality performance and storm volume reduction during 11 rainfall-runoff events with a range of characteristics. This analysis assessed water quality parameters such as pH, temperature, dissolved oxygen, specific conductivity, and turbidity, as well as pollutant removal, peak flow reduction, maintenance, cost of installation, and materials.

The evaluation revealed distinctive trends. Several LID designs exhibited pollutant removal efficiencies of 80 to 99 percent. In contrast, traditional approaches did poorly to moderately. Manufactured system performance varied—systems with storage volumes were the most effective, those without, the least. The treatment of total suspended solids (TSS) depends largely on the size of particles and their concentration in influent. A TSS annual event mean concentration of 37 milligrams per liter was observed with particle sizes (D50) suspected to be less than 100 microns. This will be the subject of further research. Certain design elements, regardless of the treatment, promoted pollutant removal. These included increased hydraulic residence time, infiltration and filtration mechanisms, low turbulence, and using dense root mats and herbaceous plants.

We have summarized the analysis for each stormwater treatment in the following pages. However, this data should not be interpreted to mean that there is one treatment that is appropriate for all situations. Treatment size, site constraints, cost, operations, maintenance, and performance all must be taken into account.



Key

1. Overview

Describes the stormwater treatment application, its structure, general process, and maintenance requirements.

2. Pollutant Removal

Charts the treatment's efficiency in removing four common pollutants: total suspended solids (TSS), total petroleum hydrocarbons-diesel (TPH-D), nitrate (NO₃-N), and total zinc (Zn).

3. Flow Reduction

Traces the treatment's peak flow reduction—the percent difference

between the maximum influent and the maximum effluent flow rates in gallons per minute (GPM). The green line charts influent, the blue line traces effluent.

4. Water Quality Treatment Process

Describes the principal mechanisms by which the treatment addresses water quality and offers a diagram of its structure.

5. Fast Facts

Offers a quick rundown on each stormwater treatment's design details.

- **Category:** Type of stormwater treatment
- **BMP Type:** Refers to whether the treatment is a conventional, structural Best Management Practice (BMP), a Low Impact Development (LID) design, or a manufactured device.
- **Design Source:** Cites manufacturer or design manual that provided the treatment's design.
- **Dimensions:** Details the stormwater treatment size in feet (ft) or square feet (sf).
- **Specifications:** Describes catchment area in acres, peak flow in cubic feet

per second (cfs), and the treatment volume in cubic feet (cf).

- **Treatment Function:** Describes whether the treatment's process is physical, chemical, biological, or a combination of these.
- **Cost:** Presents total material and installation costs as cost per acre of treated watershed. These costs do not include the expense of lifecycle maintenance and inspection, which will be the subject of future study.
- ***Maintenance Data:** Each system was ranked for its maintenance sensitivity, a measure

of how well the treatment performed when not maintained as recommended. Rankings were adapted from the Connecticut Department of Environmental Protection's 2004 Stormwater Quality Manual.

* Regular maintenance is required for the successful long-term operation of any stormwater treatment system. Accumulated sediment and floating debris can reduce pollutant removal efficiency, increase the potential for sediment resuspension, and impact optimal flow reduction. This will be an area of further study in the coming year.

Summary Table

This chart offers an overview of the water quality treatment and runoff volume reduction of the 12 stormwater treatments analyzed in this report. It includes percent pollutant removal efficiencies expressed as median values; percent average peak flow reduction; and the average lag time for each treatment. (Lag time is the difference in minutes between the influent and effluent volume center of mass.) Blue bars present data from the UNH Stormwater Center; white bars show comparative data on the same, or similar treatments, from alternate sources. "N/T" signifies "no treatment," indicating that the stormwater treatment did not remove the pollutant(s) in question.

Treatment Unit Description	Reference	TSS (%)	NO ₃ -N (%)	Zn (%)	TPH-D (%)	Average Peak Flow Reduction (%)	Average Lag Time (Min.)
ADS Water Quality Unit	UNH	66	N/T	74	47	N/T	N/T
	www.ads-pipe.com	80	N/T	N/T			
ADS Infiltration Unit	UNH	99	N/T	99	99	83	364
Surface Sand Filter	UNH	49	6	81	94	60	220
	EPA: Sand Filters	70	N/T	45			
Sand Filter	Clayton & Schueler, 1996	85	N/T	71			
	Bell, W., et al, 1995	61–70	N/T	> 82			
Retention Pond	UNH	81	64	92	61	85	554
	EPA: Wet Detention Ponds	50–90	N/T	40–50			
	Winer, 2000	80 ± 27	43 ± 38				
Bioretention System	UNH	97	44	99	99	85	615
	EPA: Bioretention	90	N/T	N/T			
	Davis, et al, 1998	81	38				
	Winogradoff, 2001	N/T	N/T	87–99			
Aqua-Swirl and Aqua-Filter	UNH	66	10	61	42	N/T	N/T
	EPA website	84	N/T	N/T			
VortSentry	UNH	29	37	42	53	N/T	N/T
	Technical Bulletin 1	80	N/T	N/T			
V2B1 Structural System	UNH	38	-43	35	40	N/T	N/T
	www.env21.com	80					
Continuous Deflective Separation Unit	UNH	41	N/T	26	26	N/T	N/T
	various	52–84					
Gravel Wetland	UNH	99	99	99	99	85	336
	Clayton & Schueler, 1996	80–93	75–87	55–90			
Stone (Riprap) Swale	UNH	52	-74	66	33	N/T	N/T
Vegetated Swale	EPA: Vegetated Swales	81	38	71			
	Clayton & Scheuler, 1996	30–90	0–80	N/T			

Advanced Drainage Systems (ADS) Water Quality & Underground Detention/Infiltration Units

This treatment is commonly used beneath parking lots. Like other infiltration/detention treatments, it has a tremendous capacity to reduce peak flow. Since it does not require an associated retention pond, more land is available for parking. It can be used for detention and infiltration, depending on subbase and groundwater characteristics.

It is comprised of two units in series: a water quality unit (WQU) and a larger detention/infiltration unit (DIU). Both are made of high-density polyethylene pipe. The WQU is a series of weirs constructed from 60-inch diameter pipe. The DIU consists of three, 40-foot sections of 48-inch diameter perforated pipe, connected by headers. The top

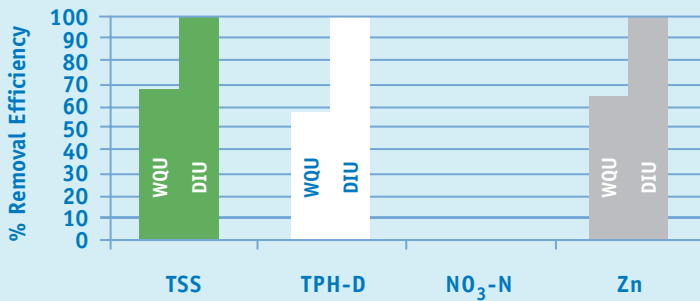
and sides of the excavation basin are wrapped in geotextile. Stormwater flows of 1 cubic foot per second (cfs) go first through the WQU and then into the DIU. Flows exceeding 1 cfs bypass the WQU through a pipe leading into the DIU. This prevents re-suspension of solids. From the DIU, stormwater infiltrates into the sandy subbase.

The WQU has two manholes for access and cleanout. Its maintenance includes removal of accumulated solids and floatables. DIU maintenance is minimal as pretreatment occurs in the WQU. Proper maintenance of the WQU prevents costly maintenance of the larger DIU.

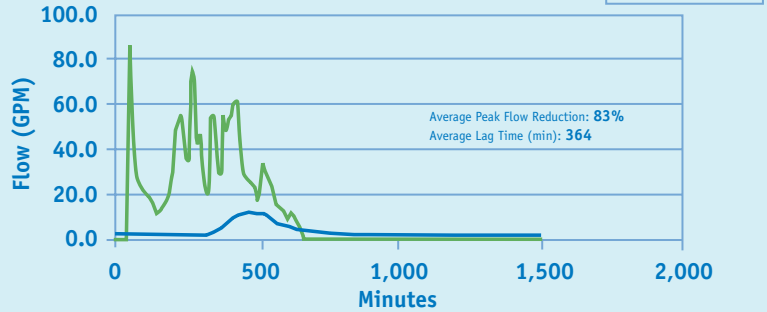


The ADS treatment system during [left] and after installation [right]. Stormwater is pretreated for sediment and floatables in the black HDPE pipes, and then flows into the adjacent storage infiltration unit, where a sandy subbase is critical to pollutant removal.

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Category Type
Underground Storage & Infiltration

BMP Type
Manufactured Device

Design Source
Advanced Drainage Systems (ADS)

Basic Dimensions
Water Quality Unit: 5 ft x 20 ft
Infiltration Unit: 22 ft x 40 ft

Specifications
Catchment Area: 1 acre
Peak Flow: 1 cfs
Treatment Volume: 3,264 cf

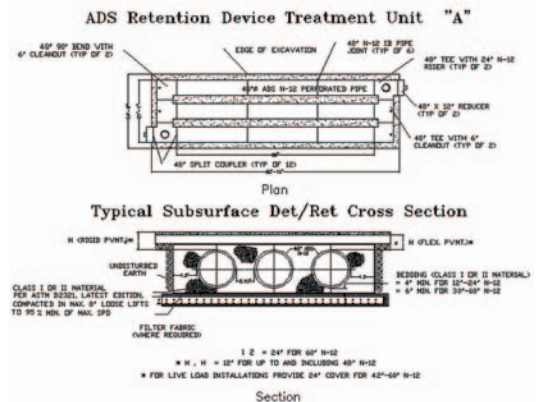
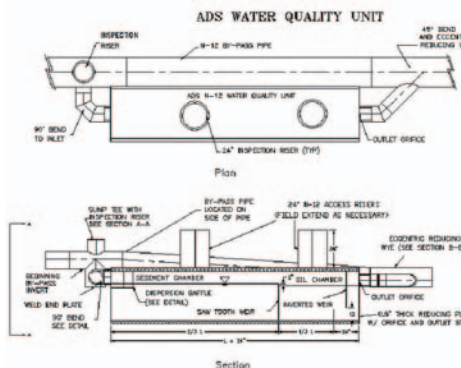
Treatment Function
Physical (1)
Physical / Chemical (2)

Cost Per Acre
\$50,008.57

Maintenance Data
Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Water Quality Treatment Process

The WQU pretreats stormwater by allowing solids to settle in a large chamber and overflow weir, and by skimming floatables with an inverted weir. Predominant treatment occurs during infiltration from the DIU. Adequate separation from groundwater and a proper sandy subbase is essential in preventing groundwater contamination. During heavy rains, stormwater bypasses the WQU and fills the DIU's detention chamber. This unit filters and stores water up to the chamber volume, and then releases it over 24 to 48 hours.



Surface Sand Filter



The coarse sand [center] used in this surface sand filter [left] provides physical and chemical water quality treatment. Erosion control matting protects the treatment after installation [right] until surrounding slopes are vegetated.

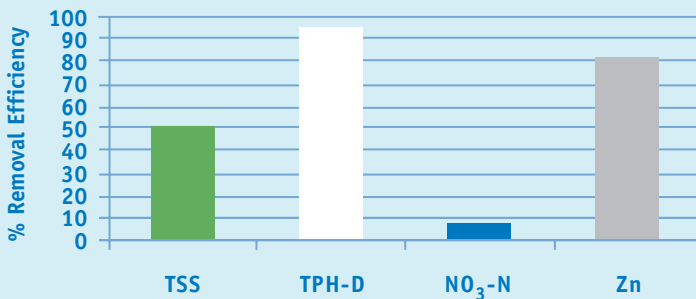
Surface sand filters, like other infiltration/filtration systems, have a tremendous capacity to reduce peak flow. This treatment is a Low Impact Development (LID) design comprised of a sedimentation forebay and an adjacent filter basin. The bottom of the basin is lined with two feet of sand that acts as a filter.

Stormwater flows into the forebay, which holds 25 percent of the water quality volume (WQV), and serves to remove solids that may clog the filter basin. Water then drains through a standpipe into the adjacent sand filter basin, which holds the remaining 75 percent WQV. When the forebay reaches capacity,

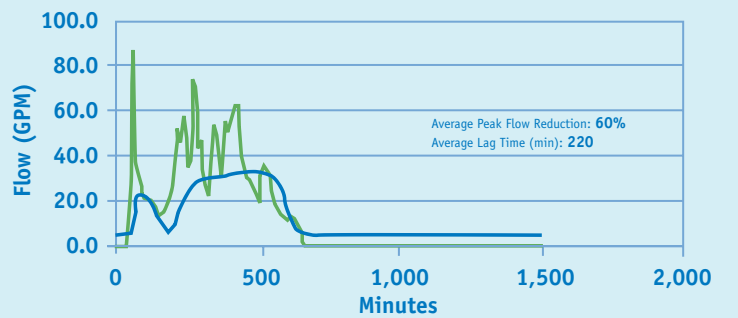
overflow spills across a weir and into the filter basin. Heavier rains may saturate the subsurface and cause temporary ponding. The system is designed to drain within 24 to 48 hours. Influent exceeding the design volume overflows into a nearby swale.

Maintenance typically involves removing up to one inch of clogged sand from the surface of the filter bed, and fine particles from the pretreatment forebay. After repeated maintenance, sand may need to be added to the filter bed to maintain two feet of media. Depending on the size of the basin, sediment removal can be done by hand or with heavy machinery.

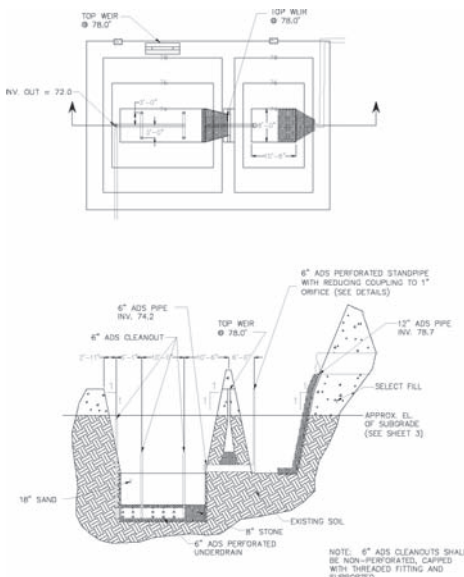
WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Water Quality Treatment Process



The surface sand filter uses coarse to medium grain sand to provide physical and chemical filtration of stormwater. As with many stormwater management approaches, pretreatment is important to prevent clogging of the filter media.

Physical settling of particles occurs in the sedimentation forebay. This is facilitated by slow stormwater drainage through a standpipe and into the sand filter basin.

Physical and chemical water quality treatment occurs in the basin. As stormwater infiltrates the pores of the sand filter bed, it is physically filtered by the sand particles and chemically adsorbed to particle surfaces.

Over time, the sand clogs and reduced rates of infiltration are observed. Typically, sand filters are very good water quality performers. The factors that most impact their performance are the depth and thickness of the filter media, the drainage to filter area ratio, and proper maintenance.

Category Type
Filtration

BMP Type
Low Impact Development Design

Design Source
New York State Stormwater Management Design Manual

Basic Dimensions
Filter Bed: 8 ft X 20 ft
Top Width: 31 ft X 41 ft

Specifications
Catchment Area: 1 acre
Peak Flow: 1 cfs
Treatment Volume: 3,264 cf

Treatment Function
Physical / Chemical

Cost Per Acre
\$12,417.14

Maintenance Data
Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Retention Pond

The retention pond (or wet pond) is among the most common stormwater treatments used for flood control in the world. These ponds are generally comprised of a sedimentation forebay and a larger basin sized to hold the water quality volume (WQV). They retain larger storm volumes for 24 to 48 hours, which protects the channels (streams, etc.) that receive the effluent. They also can be designed to retain larger volumes generated by 10- to 100-year rain events.

Treatment occurs when particles settle along the flow path between the pond's inlet and outlet, and between storms

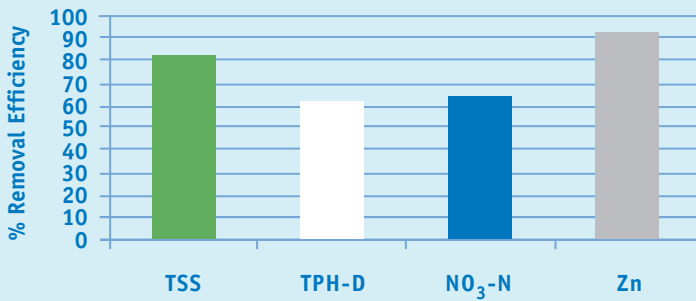
when additional settling occurs. Nutrient removal occurs between storms via plant uptake. Rain events provide a fresh influx of stormwater runoff, which forces standing water out of the system.

Maintenance requirements include the periodic removal of sediment and vegetation to restore storage capacity. Sediment removal occurs primarily in the forebay, which can be designed for easy equipment access.

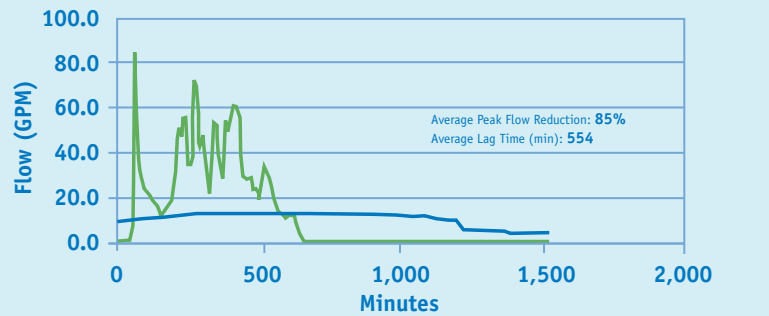


A pond's [left] water quality performance is a function of storage volume and retention time. Erosion control matting [center] protects slopes with a grade of 2:1 or steeper. Green water [right] is a sign of eutrophication, a water quality issue associated with retention ponds.

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Category Type
Stormwater Pond

BMP Type
Structural Conventional

Design Source
New York State Stormwater Management Design Manual

Basic Dimensions
Overall: 46 ft X 70 ft (varies)

Specifications
Catchment Area: 1 acre
Peak Flow: 1 cfs
Treatment Volume: 3,264 cf

Treatment Function
Physical Settling/Biological

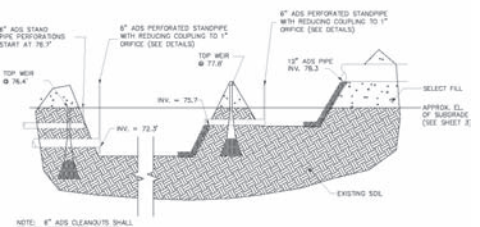
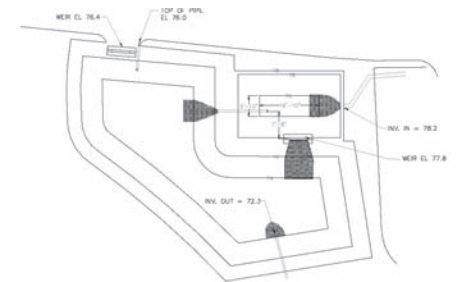
Cost Per Acre
\$13,662.48

Maintenance Data
Maintenance Sensitivity: Low
Inspections: Low
Sediment Removal: Low

Water Quality Treatment Process

A retention pond's water quality treatment is a function of its large volume and high retention time, which allows for the physical settling of sediment. There are significant questions regarding the impact of retention ponds on water quality. Its ability to remove sediments—and nutrients when properly vegetated—is well documented. However, a pond may also present problems.

The human health risks associated with standing water include drowning and the creation of a habitat for mosquitoes that may carry disease. Nutrient-rich ponds also appear to be prime habitat for disease-causing bacteria, and elevated bacterial concentrations have been observed in retention ponds. In hot weather, ponds can superheat already warm parking lot runoff. Superheated effluent from retention ponds can impact small receiving streams, aquatic habitats, and fisheries that depend on cooler temperatures. Some innovative retention pond outlet designs include the use of gravel under-drains as a cooling mechanism.





Hydroseeding and erosion control matting protect this system after installation [center]. Native species were planted along the installed system's [left] forebay and bioretention cell. Vegetation and appropriate soil media combine for effective water quality treatment [right].

This bioretention system is the most common Low Impact Development (LID) stormwater treatment strategy. Like other infiltration/filtration systems, it has a tremendous capacity to reduce peak flow.

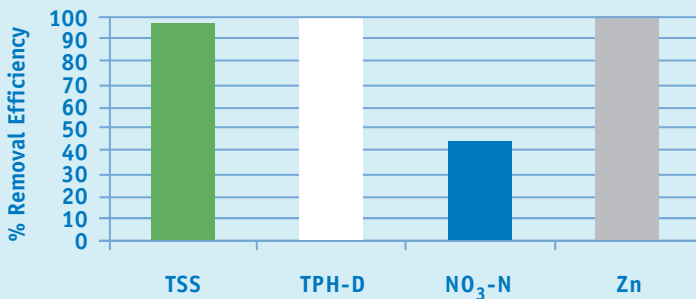
It is comprised of a sedimentation forebay and a bioretention basin. The filter media, also known as bioretention soil mix (BSM), typically ranges from two-and-one-half to five feet in thickness, and consists of sand, compost, and native soils. The treatment is well vegetated to provide a thick root mat for contaminant removal.

The forebay holds 25 percent of the water quality volume (WQV), and

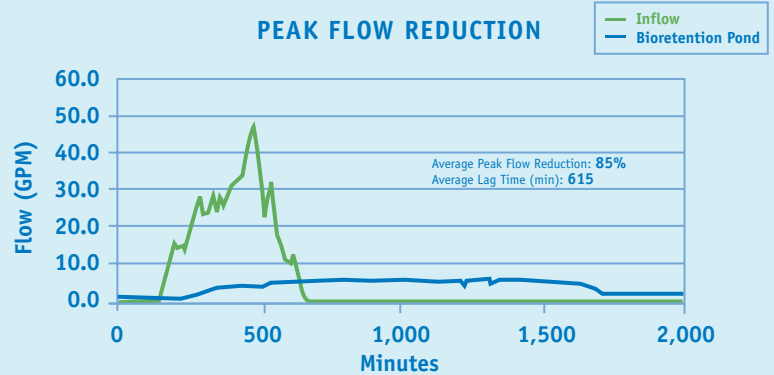
drains slowly through a standpipe into the bioretention basin, which holds the remaining 75 percent of the WQV. When forebay capacity is reached, overflow spills across a weir into the basin. The basin's filter media is designed to accommodate a moderately high infiltration rate of one cubic foot per day. The system allows for eight inches of above-ground ponding. The BSM and the vegetation remove nutrients and pollutants. Vegetation also reduces stormwater volume through evapotranspiration.

Maintenance involves the periodic mowing and replacement of vegetation, as needed.

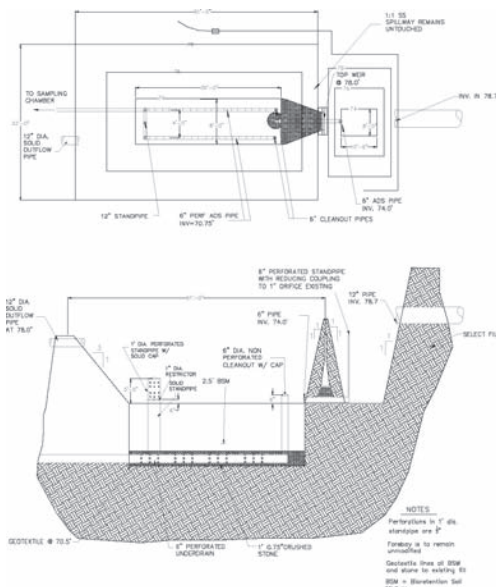
WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Water Quality Treatment Process



A recent innovation in stormwater management, this system removes pollutants, attenuates peak flow, and reduces flow volume through evapotranspiration and infiltration.

Biological treatment occurs through the uptake of pollutants by vegetation and soil microorganisms. Physical and chemical treatment, which occur in the soil media, includes filtering and adsorption with organic matter and mineral complexes.

Water quality treatment performance is high, however, the treatment's hydraulic efficiency and tendency to fail by clogging may be problematic. Early designs with bioretention soil mix (BSM) clay content as high as five percent, and geotextile filter fabrics between the BSM and subdrains, would fail prematurely due to "blinding," or filter fabric clogging. Modern designs have clay contents of less than one percent and do not use fabric beneath the unit, or between the BSM and the subdrain. This reduces clogging and maintains high water quality treatment efficiency.

Category Type

Filtration

BMP Type

Low Impact Development Design

Design Source

New York State Stormwater Management Design Manual

Basic Dimensions

Bioretention Cell: 67 ft L X 35 ft W
Forebay Top Width: 71 ft L X 46 ft W
Total Area: 4,100 sf

Specifications

Catchment Area: 1 acre
Peak Flow: 1 cfs
Treatment Volume: 3,264 cf

Treatment Function

Physical, Chemical, Biological

Cost Per Acre

\$25,104

Maintenance Data

Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Aqua-Swirl™ and Aqua-Filter™ System

This compact subsurface treatment is well suited for space-constrained sites, where a larger, surface treatment is impractical. Depending on regulations, these devices are used by themselves, or as pretreatments with other stormwater systems. The system is comprised of two devices in series. The first, Aqua-Swirl, is a four-foot diameter hydrodynamic separator. The second, Aqua-Filter, is a larger chamber with 24, one-cubic foot, nylon bags filled with perlite beads that act as a filter. Both are made from recycled high-density polyethylene pipe.

The Aqua-Swirl uses vortex settling to remove sediment, trap debris and trash, and separate floating oil

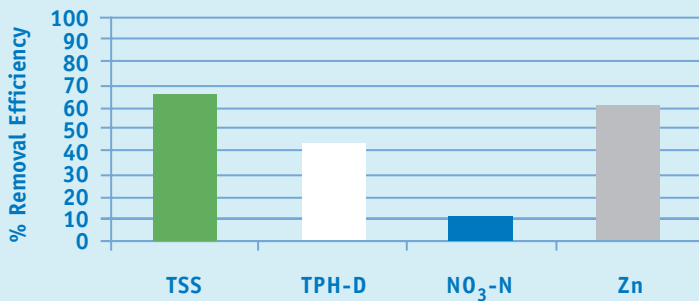
and grease. The Aqua-Filter has internal spillways that direct influent across a suspended platform and through its filter media. Stormwater collects in the lower half of the Aqua-Filter chamber, and then exits when water levels reach outlet elevation. Presumably, the manufacturer can alter the filter to target specific contaminants.

Unobstructed access to the Aqua-Swirl and lack of moving parts enable easy maintenance. In the Aqua-Filter, frequency of filter replacement depends on site contaminant loading characteristics. Maintenance includes the periodic removal of solids by a vacuum truck.

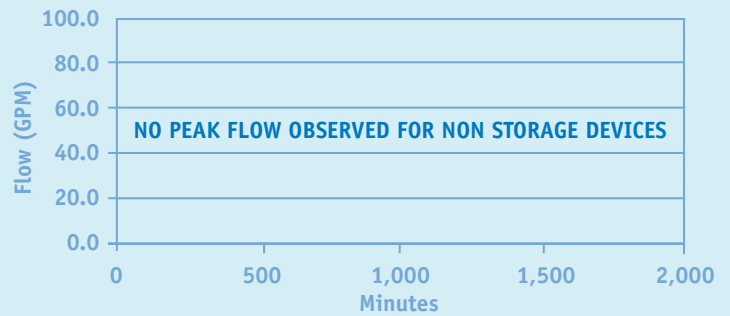


The Aqua-Swirl [right] uses a vortex and baffle to remove sediment, oils, and trash. The Aqua-Filter [top left] uses a physical and chemical process to remove sediment and other pollutants. These units can be used independently, or combined as a system [bottom left].

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Category Type
Manhole Retrofit and Filtration

BMP Type
Manufactured Device

Design Source
AquaShield, Inc.

Basic Dimensions
AF-4.2 Component Sizes
Aqua-Swirl (vertical):
4.5 ft diameter, 8 ft tall
Aqua-Filter (horizontal):
6.75 ft diameter, 12 ft long

Specifications
Catchment Area: 1 acre
Peak Flow: 1 cfs

Treatment Function
Physical (Aqua-Swirl)
Physical / Chemical (Aqua-Filter)

Cost Per Acre
\$31,322.08

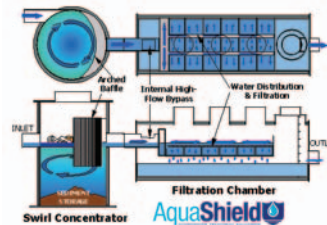
Maintenance Data
Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Water Quality Treatment Process

These devices function in series to remove coarse and fine particles from stormwater. The Aqua-Swirl relies on vortex separation and an internal baffle to settle out particles. The filter media in the Aqua-Filter provides physical and chemical treatment to remove suspended sediments and other contaminants. The filter system has enhanced pollutant removal capacity, and in some cases, nearly doubles that of a lone hydrodynamic separator.

The primary contaminant addressed by hydrodynamic separators is sediment. However, comparable reductions are observed for zinc and total petroleum hydrocarbons-diesel, presumably as a result of binding to trapped sediments. The filter also demonstrates minimal nitrate removal. This treatment does not have a storage volume and therefore has no peak flow or volume reduction. Influent and effluent hydrographs are the same. These devices must receive frequent inspection and cleaning to maintain effectiveness.

AquaShield™
STORMWATER TREATMENT SOLUTIONS
www.AquaShieldInc.com



VortSentry™ Hydrodynamic Separator (VS40)



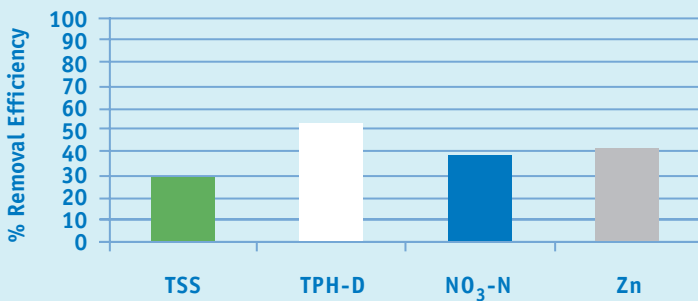
The VortSentry is a hydrodynamic separator that uses vortex settling to remove sediment, trap debris and trash, and separate floatable oil and grease. Its compact design is well suited for space constrained and urban sites, where the installation of a larger stormwater treatment is impractical. Depending on state regulations, these devices are either used by themselves, or as a pretreatment system in conjunction with other stormwater treatments.

This prefabricated system is on-line with an internal bypass. It is composed of a weir and a baffle mounted internally in a four-foot diameter concrete storm drain.

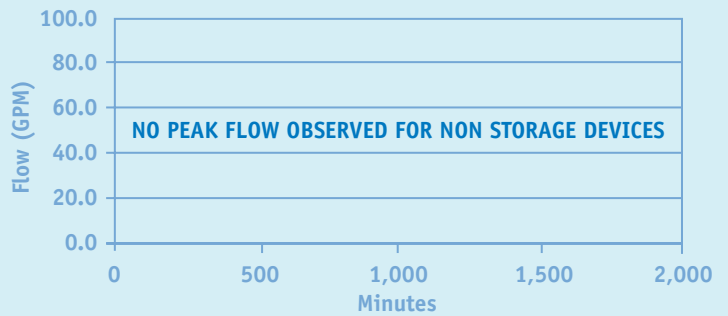
This treatment's unobstructed access and lack of moving parts enables easy maintenance. Maintenance requirements are similar to other hydrodynamic separators, and include the periodic removal of solids by a vacuum truck.

The VortSentry hydrodynamic separator is composed of a weir and baffle [above] encased in a concrete storm drain [insert]. It primarily addresses sediment, but also exhibits comparable reduction of zinc and total petroleum hydrocarbons-diesel.

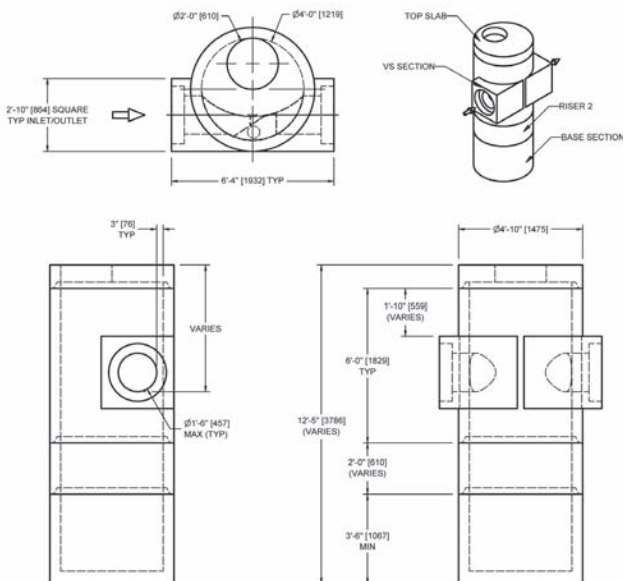
WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Water Quality Treatment Process



VortSentry treats water quality through the hydrodynamic separation of solids from liquids. It is configured for tangential flow, which creates a hydraulic vortex that settles out particles. It contains a flow partition, designed to minimize sediment resuspension for flow rates that exceed the targeted design.

The primary contaminant addressed by hydrodynamic separators is sediment. However, comparable reductions are observed for zinc and total petroleum hydrocarbons-diesel, presumably as a result of binding to trapped sediments. This treatment does not have a storage volume and therefore has no peak flow or volume reduction. Influent and effluent hydrographs are the same. These devices must receive frequent inspection and cleaning to maintain effectiveness.

Category Type

Manhole Retrofit

BMP Type

Manufactured Device

Design Source

Vortech, Inc.

Basic Dimensions

Diameter: 4 ft
Depth Below Invert: 6.5 ft

Specifications

Catchment Area: 1/3 acre
Peak Flow: 1/3 cfs
Volume: 327 cf

Treatment Function

Physical, Hydrodynamic Separation

Cost Per Acre

\$18,000

Maintenance Data

Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

V2B1 Structural Stormwater Treatment System

The V2B1's compact design is well-suited for space constrained and urban sites, where the installation of a larger stormwater treatment is impractical. Depending on state regulations, these devices are used by themselves, or as a pretreatment system in conjunction with other stormwater treatments.

The V2B1 is a two-chambered system encased in two, shallow, pre-cast concrete storm drains in series. Each drain measures four feet in diameter. Stormwater enters the first drain, where a tangential inlet pipe creates a vortex and hydrodynamic separation for sediment removal. A four- to five-foot deep sump provides sediment storage.

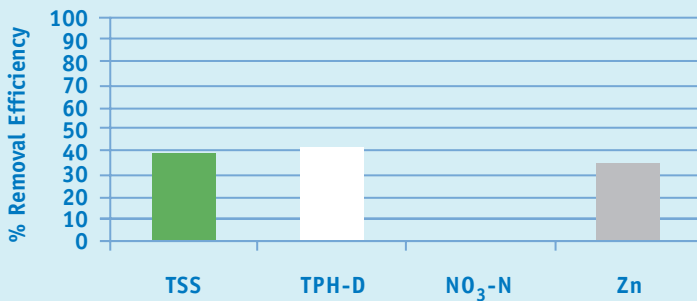
Stormwater then enters the second drain, where a floatables chamber containing a baffle wall traps floating oil and organic debris. An underflow opening beneath the baffle wall directs water to the outlet pipe.

Maintenance requirements are similar to other hydrodynamic separators and include the periodic removal of solids by a vacuum truck. The unobstructed access and lack of moving parts enables easy maintenance.

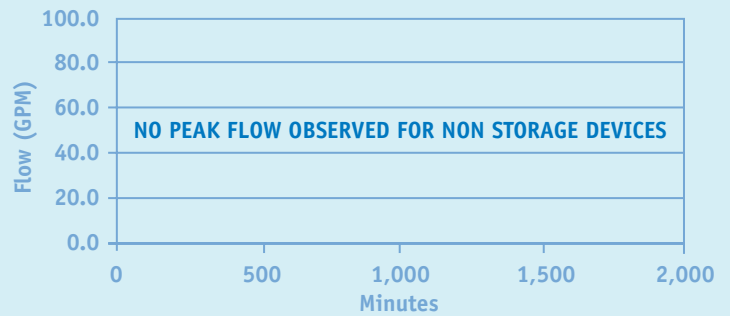


The V2B1's first chamber [right] uses a hydraulic vortex to settle out particles, and then allows clarified water to exit through a central drain into the second chamber [left], where a baffle traps oil and organic debris.

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Category Type
Manhole Retrofit

BMP Type
Manufactured Device

Design Source
Environment 21, LLC

Basic Dimensions
2 Manholes, Each 4 ft in Diameter
Depth Below Invert: 5.1 ft

Specifications
Catchment Area: 1/3 acre
Peak Flow: 1/3 cfs
Volume: 577 cf

Treatment Function
Physical

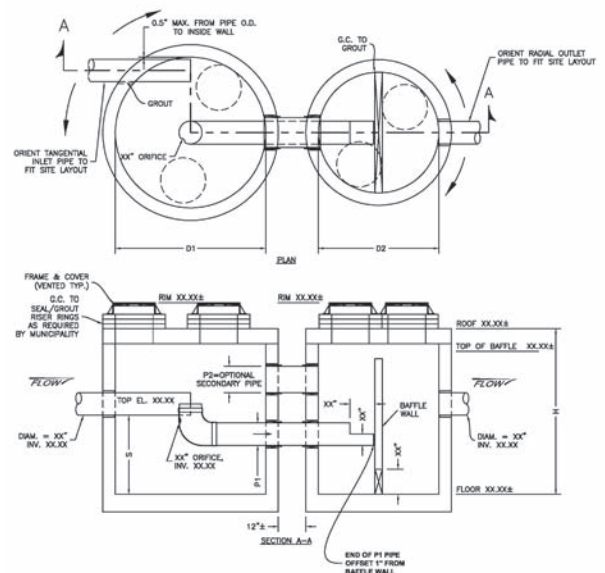
Cost Per Acre
\$20,000

Maintenance Data
Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Water Quality Treatment Process

The V2B1 treats stormwater through the hydrodynamic removal of sediment, followed by the skimming of floatables such as oil, grease, trash, and debris. In the first chamber, a hydraulic vortex settles out particles, and clarified stormwater exits through a central drain. In the second chamber, a baffle wall traps floatables such as trash and organic debris. (It can capture small volumes of oil or fuel spills when outfitted with a top-mounted baffle.)

The primary contaminant addressed by hydrodynamic separators is sediment. However, comparable reductions are observed for zinc and total petroleum hydrocarbons-diesel, presumably as a result of binding to trapped sediments. This treatment does not have a storage volume and therefore has no peak flow or volume reduction. Influent and effluent hydrographs are the same. These devices must receive frequent inspection and cleaning to maintain effectiveness.



Continuous Deflective Separation Unit (Models 20-15)



The CDS unit has a filter screen that can be sized by the vendor to accommodate a range of particle sizes.

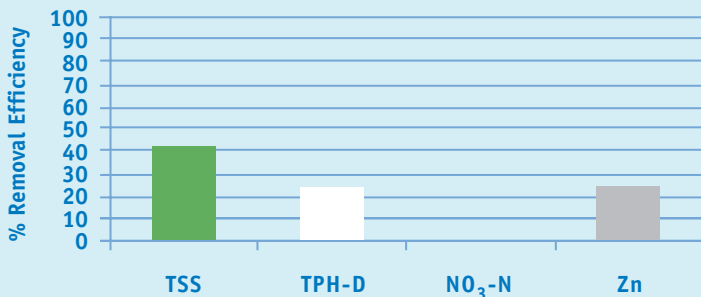
The Continuous Deflective Separation (CDS) units are mainly used to manage stormwater, but they also have wastewater, water supply, and industrial applications. The compact design is well suited for space constrained and urban sites, where the installation of a larger stormwater treatment is impractical. Depending on state regulations, these devices are either used by themselves, or as a pretreatment system in conjunction with other stormwater treatments.

The CDS unit is a hydrodynamic separator that uses vortex settling to remove sediment, trap debris and trash, and separate floatables such as oil and grease.

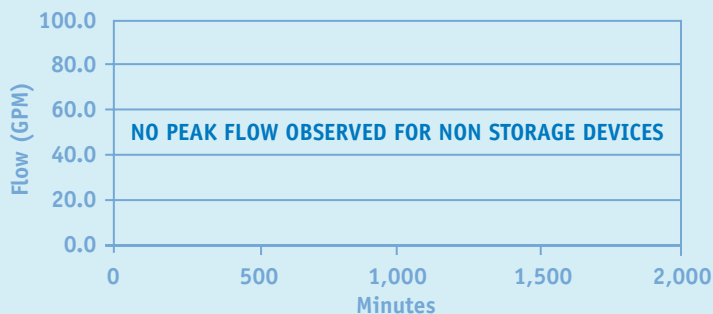
A CDS unit can be made from precast or *in situ* cast concrete, stainless steel, or fiberglass. It is composed of a sophisticated insert with a filter screen with openings that can be sized during manufacture. The insert is mounted internally in a four-foot diameter concrete manhole. This prefabricated system is on-line with an internal bypass.

This treatment's insert can obstruct cleaning. Maintenance requirements are similar to other hydrodynamic separators, and include periodic removal of solids by a vacuum truck.

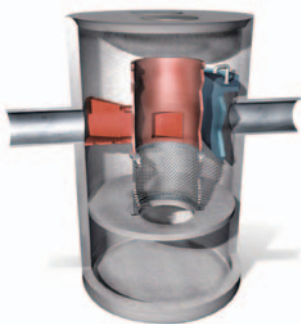
WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Water Quality Treatment Process



The CDS unit has a cylindrical fine screen that separates solids by indirect filtration. Strong tangential velocity around the screen keeps it free of debris, while a small secondary hydraulic head across the screen surface promotes a weak flow through it. Buoyant solids float to the surface. Suspended particles deflect from the screen, move to the stagnant core of the screen chamber, and settle into the sump. The sump has a narrow opening to separate trapped solids from flow and prevent re-suspension. The baffle captures oil and grease in a storage chamber between the inlet invert and baffle bottom.

The primary contaminant addressed by hydrodynamic separators is sediment. However, comparable reductions are observed for zinc and total petroleum hydrocarbons-diesel, presumably as a result of binding to trapped sediments. This treatment does not have a storage volume and therefore no peak flow or volume reduction. Influent and effluent hydrographs are the same. These devices need frequent inspection and cleaning to maintain effectiveness.

Category Type
Manhole Retrofit and Filtration

BMP Type
Manufactured Device

Design Source
CDS Technologies

Basic Dimensions
Diameter: 6 ft, Height: 9 ft

Specifications
Catchment Area: 1/3 acre
Peak Flow: 1/3 cfs
Volume: 327 cf

Treatment Function
Physical: Settling and Filtration

Cost Per Acre
\$20,000

Maintenance Data
Maintenance Sensitivity: High
Inspections: High
Sediment Removal: High

Gravel Wetland

The gravel wetland is a recent innovation in Low Impact Development (LID) designs that treat stormwater. Like other infiltration/filtration systems, it has a tremendous capacity to reduce peak flow and stormwater volume in general. It also has limited use as a replacement for septic systems.

This gravel wetland is designed as a series of horizontal, flow-through treatment cells, preceded by a sedimentation forebay. The device is designed to retain and filter the entire water quality volume (WQV)—10 percent in the forebay and 45 percent in each treatment cell.

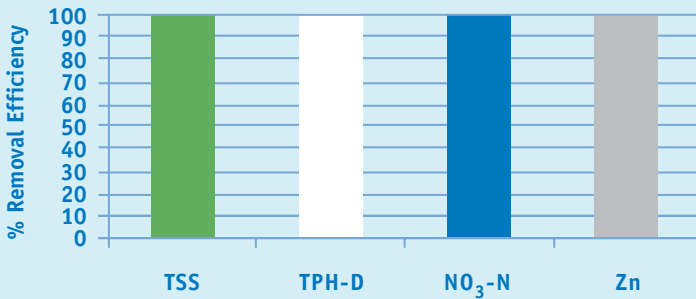
For small, frequent storms, each treatment cell filters 100 percent of its WQV. Additionally, the wetland can detain a channel protection volume (CPV) of 4,600 cubic feet, and release it over 24 to 48 hours. WQV is filtered and drains offsite. Any storm volume exceeding WQV overflows into the adjacent swale. Since standing water of significant depth is not expected (except during heavy rains), swale side slopes are graded at 3:1 or flatter for maintenance.

Maintenance involves the periodic mowing and replacement of vegetation, as needed.

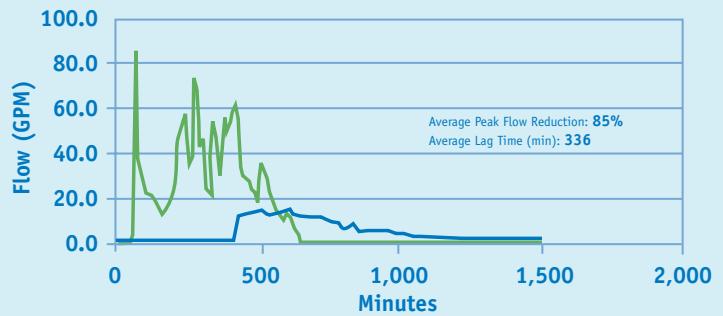


The fully vegetated gravel wetland [left top & bottom] exhibits excellent pollutant removal, provides subsurface anaerobic treatment, attenuates peak flow, and reduces flow volume. [Right] The gravel wetland's forebay and retention cells just after installation.

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Category Type
Stormwater Wetland

BMP Type
Low Impact Development Design

Design Source
Not Available

Basic Dimensions
Filter Beds: 15 ft L X 32 ft W
Forebay Top Width: 37 ft L X 56 ft W
Total Area: 5,450 sf

Specifications
Catchment Area: 1 acre
Peak Flow: 1 cfs
Treatment Volume: 3,264 cf

Treatment Function
Physical, Chemical, Biological

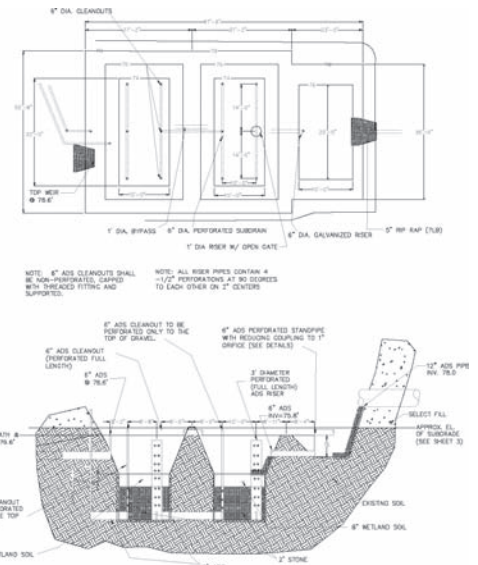
Cost Per Acre
\$22,327

Maintenance Data
Maintenance Sensitivity: Low
Inspections: Low
Sediment Removal: High

Water Quality Treatment Process

This treatment removes pollutants, provides subsurface anaerobic treatment, attenuates peak flow, and reduces flow volume through evapotranspiration and infiltration. Biological treatment of water quality occurs through plant uptake and soil microorganism activity. Physical and chemical treatment happens in the soil through filtering and adsorption with organic matter and mineral complexes.

During lighter rains, each cell filters 100 percent of its water quality volume. The cells allow stormwater to pass horizontally through the microbe-rich, gravel substrate and drain into a sump basin. The wetland is designed to continuously saturate at a depth that begins four inches beneath the treatment's surface. This promotes water quality treatment and vegetation growth. To generate this condition, the system outlet pipe has an invert 4 inches below the wetland surface.





The stone swale [right] is designed to mimic a natural stream channel. Its combination of rock and fabric [left] helps trap sediment and promote vegetation. This treatment performed poorly for most evaluation criteria.

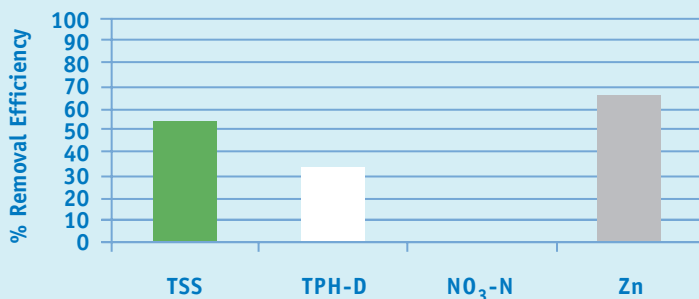
The most common stormwater treatment, swales range from irrigation ditches to engineered systems. Similar in form to a natural stream channel, swales are commonly protected from erosion by a layer of riprap (stone), and underlain with a geotextile filter fabric.

The swale tested here is not to be confused with engineered systems known as water quality swales, which are designed with internal drainage or check dams. State design criteria specify slopes of typically less than one percent, and flow velocities of less than one foot per second for a 10-year storm.

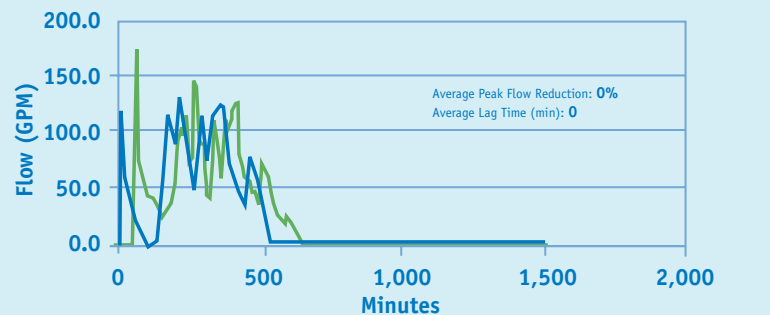
Maintenance demands involve standard landscaping, primarily periodic mowing. Many swales are designed to function as dry systems. Often, however, they collect water due to vegetation and lack of proper maintenance.

Our first year of testing this approach focused on a stone-lined swale; in year two we will examine a vegetated swale; and in year three, a vegetated swale retrofitted with engineered filter berms.

WATER QUALITY PERFORMANCE



PEAK FLOW REDUCTION



Water Quality Treatment Process

Stormwater enters the swale and experiences limited filtration through the spaces between the large stones lining the pathway. If the swale is composed of an appropriate subbase and flow is of low velocity, infiltration can be expected. Slower, non-erosive, flow velocities allow pollutants to fall out of suspension and into the spaces in the riprap.

The combination of rock and fabric help trap additional sediment and develop vegetation over time. In some cases, vegetation is planted during or after

the swale's installation. Commonly, swales are left to passively re-vegetate.

Because of demanding staging requirements in adjacent construction areas, stormwater is commonly directed into swales prior to robust root growth of vegetation. The reported water quality treatment effectiveness of vegetated swales and engineered water quality swales is higher than non-vegetated treatments.

Category Type

Open Channel System

BMP Type

Conventional Structural

Design Source

New York State Stormwater Management Design Manual

Basic Dimensions

Length: 280 ft Width: ~10 ft

Specifications

Catchment Area: 2 acres
Peak Flow: 2 cfs

Treatment Function

Physical

Cost Per Acre

\$11,951.31

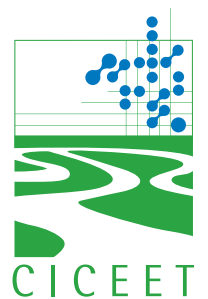
Maintenance Data

Maintenance Sensitivity: Low
Inspections: Low
Sediment Removal: Low


University of New Hampshire Stormwater Center

Gregg Hall, 35 Colovos Road, University of New Hampshire, Durham, NH 03824 www.unh.edu/erg/cstev

This publication was printed on recycled paper.



PIPE OUTLET PROTECTION APRON DESIGN & d₅₀ RIPRAP SIZING


**EMANUEL
ENGINEERING, INC.**
 CIVIL & STRUCTURAL CONSULTANTS
 118 PORTSMOUTH AVE.
 STRATHAM, NH 03885
 Tel: (603) 772-4400
 Fax: (603) 772-4487

	Pond PP52A
PROJECT NAME :	Blind Tiger - Exeter Country Club
PROJECT # :	21-157
BY :	JJM
CHECKED BY :	BDS
DATE :	4/18/2023
DATE :	4/18/2023

DOWNSTREAM CHANNEL (OR SPREADER) HYDRAULICS

Peak Discharge Required =	1.5	cfs
Channel Bottom Width =	3.0	Feet
Hydraulic Gradient =	0.25000	Feet/Feet
Left Side Slope =	3.0	:1(h:v)
Right Side Slope =	3.0	:1(h:v)
Depth of Flow =	1.000	Feet
Manning's "n" =	0.0400	
Area =	6.00	Square Feet
Wetted Perimeter =	9.32	Feet
Hydraulic Radius =	0.64	Feet
Top Width =	9.00	Feet
Velocity =	13.84	Feet/Second
Peak Discharge Determined =	83.1	cfs

La AND W CALCULATIONS:

Culvert Diameter (Do) =	12.0	Inches	Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.
Tail Water Depth (TW)* =	0.20	Feet	
Length of Apron (La) =	10	Feet	
Width of Apron @ D.S End (W) =	13	Feet	
Width of D.S. Apron if Channel (W) =	3.0	Feet	

*If outletting to flat area use TW depth = 0.2 x Do

ROCK RIPRAP SIZE

	d ₅₀ =	0.17	Feet or	2.04	Inches
		Use d50 = 0.5 feet or 6"			

d₅₀ = (0.02 x Q^{4/3})/(TW x Do)

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches
100	3.1 to 4.1
85	2.7 to 3.7
50	2.0 to 3.1
15	0.6 to 1.0

Minimum Rock Riprap Blanket Thickness = 6.1 Inches


Use 12"

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

- Manning's Uniform Channel Flow - $Q = (A \times 1.486 \times R^{(2/3)} \times S^{(1/2)}) / n$
- Length of Apron (La) TW < Do/2 - $La = (1.8 \times Q / Do^{1.5}) + 7 \times Do$
- Length of Apron (La) TW ≥ Do/2 - $La = 3.0 \times Q / Do^{1.5} + 7 \times Do$
- Width of Apron @ D.S End TW < Do/2 - $W = 3xDo + La$
- Width of Apron @ D.S End TW ≥ Do/2 - $W = 3xDo + 0.4 \times La$
- Width of D.S. Apron if in Channel - $W = \text{Channel Bottom Width}$
- Width of Apron @ Culvert - $Wc = 3 \times Do$

PIPE OUTLET PROTECTION APRON DESIGN & d₅₀ RIPRAP SIZING


**EMANUEL
ENGINEERING, INC.**
 CIVIL & STRUCTURAL CONSULTANTS
 118 PORTSMOUTH AVE.
 STRATHAM, NH 03885
 Tel: (603) 772-4400
 Fax: (603) 772-4487

PROJECT NAME : Blind Tiger - Exeter Country Club
 PROJECT # :
 BY : CHECKED BY :
 DATE : DATE :

DOWNSTREAM CHANNEL (OR SPREADER) HYDRAULICS

Peak Discharge Required =	<input type="text" value="0.7"/>	cfs
Channel Bottom Width =	<input type="text" value="0.0"/>	Feet
Hydraulic Gradient =	<input type="text" value="0.10000"/>	Feet/Feet
Left Side Slope =	<input type="text" value="3.0"/>	:1(h:v)
Right Side Slope =	<input type="text" value="3.0"/>	:1(h:v)
Depth of Flow =	<input type="text" value="0.667"/>	Feet
Manning's "n" =	<input type="text" value="0.0400"/>	
Area =	<input type="text" value="1.33"/>	Square Feet
Wetted Perimeter =	<input type="text" value="4.22"/>	Feet
Hydraulic Radius =	<input type="text" value="0.32"/>	Feet
Top Width =	<input type="text" value="4.00"/>	Feet
Velocity =	<input type="text" value="5.45"/>	Feet/Second
Peak Discharge Determined =	<input type="text" value="7.3"/>	cfs

La AND W CALCULATIONS:

Culvert Diameter (Do) =	<input type="text" value="8.0"/>	Inches	Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.
Tail Water Depth (TW)* =	<input type="text" value="0.13"/>	Feet	
Length of Apron (La) =	<input type="text" value="7"/>	Feet	
Width of Apron @ D.S End (W) =	<input type="text" value="9"/>	Feet	
Width of D.S. Apron if Channel (W) =	<input type="text" value="0.0"/>	Feet	

*If outletting to flat area use TW depth = 0.2 x Do

ROCK RIPRAP SIZE

d ₅₀ =	<input type="text" value="0.13"/>	Feet or	<input type="text" value="1.52"/>	Inches
$d_{50} = (0.02 \times Q^{4/3}) / (TW \times Do)$				
Use d50 = 0.5 feet or 6"				

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches
100	2.3 to 3.0
85	2.0 to 2.7
50	1.5 to 2.3
15	0.5 to 0.8

Minimum Rock Riprap Blanket Thickness = Inches

Use 12"

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow - $Q = (A \times 1.486 \times R^{(2/3)} \times S^{(1/2)}) / n$
 Length of Apron (La) TW < Do/2 - $La = (1.8 \times Q / Do^{1.5}) + 7 \times Do$
 Length of Apron (La) TW >= Do/2 - $La = 3.0 \times Q / Do^{1.5} + 7 \times Do$
 Width of Apron @ D.S End TW < Do/2 - $W = 3xDo + La$
 Width of Apron @ D.S End TW >= Do/2 - $W = 3xDo + 0.4 \times La$
 Width of D.S. Apron if in Channel - $W = \text{Channel Bottom Width}$
 Width of Apron @ Culvert - $Wc = 3 \times Do$



TOWN OF EXETER

Planning and Building Department

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

www.exeternh.gov

Date: May 31, 2023
To: Planning Board
From: Dave Sharples, Town Planner
Re: Meniscus Financial Holdings LLC PB Case #23-7

The Applicant is requesting a Preliminary Conceptual Consultation with the Planning Board to discuss the proposed phased development of the property located at 127 Portsmouth Avenue. The subject property is a 6.24-acre parcel located in the C-2, Highway Commercial zoning district and is identified as Tax Map Parcel #52-112.2.

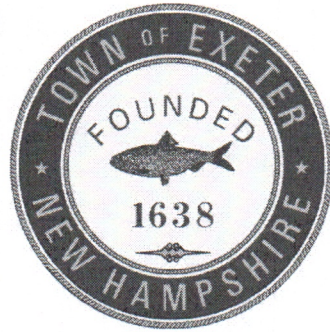
Attached please find a letter of explanation, application, conceptual site plan and supporting documents provided by Beals Associates, PLLC, dated May 18th, 2023 for your review.

Please note that the applicant is requesting a Preliminary Conceptual Consultation and not a formal application. As such, abutters have not been notified and the discussion of the Planning Board and applicant can be “in conception form only and in general terms such as the desirability of types of development and proposals under the Master Plan.” I have enclosed the relevant section of our regulations and the state statute pertaining to this type of review.

Thank You.

enc (2)

Town of Exeter



Planning Board Application for Site Plan Review

October 2019

70 Portsmouth Avenue
3rd Floor, Suite 2
Stratham, N.H. 03885
603 – 583 - 4860
Fax: 583 - 4863

May 17, 2023

Chairman
Town of Exeter Planning Board
10 Front Street
Exeter, NH 03833

RE: Letter of Explanation
Foss Motors
Proposed Vehicle Storage area
Tax Map 0052 Lot #: 112.2

Members of the Board:

A preliminary consultation is requested to review build-out of the referenced parcel. The applicant is proposing a commercial vehicle storage area to increase inventory at 127 Portsmouth Avenue, with a connecting driveway to the existing Foss Motors vehicle display lot. A potential Phase 2 is also depicted which would include an office building on the parcel to be served by municipal water & sewer. The parcel consists of 6.24-acres which is encumbered by 150' and 300' municipal Shoreland Protection District buffers adjacent to the Exeter Reservoir. Areas of wetland fill are proposed (all of which are man-made wetlands). The total wetland fill proposed is 4,228 s.f., the 150' SPD impact area proposed = 21,000 +/-, and the 300'SPD impact area = 87,700s.f. +/- . We understand that should the project move to a formal application Conditional use permits are required for both the Wetlands Conservation Overlay District and Shoreland Protection District. We will be appearing before the Conservation Commission in June to review the conceptual plan as well before embarking on full engineering design. We appreciate your time and input.

Thank you for your consideration.

Very truly yours,
BEALS ASSOCIATES, PLLC

Christian O Smith

Christian O. Smith P.E.
Principal



SITE PLAN REVIEW APPLICATION CHECKLIST

A COMPLETED APPLICATION FOR SITE PLAN REVIEW MUST CONTAIN THE FOLLOWING

1. Application for Hearing (✓)
2. Abutter's List Keyed to Tax Map (✓)
(including the name and business address of every engineer, architect, land surveyor, or soils scientist whose professional seal appears on any plan submitted to the Board)
3. Completed- "Checklist for Site Plan Review" (N/A)
4. Letter of Explanation (✓)
5. Written Request for Waiver (s) from "Site Plan Review and Subdivision Regulations" (if applicable) (N/A)
6. Completed "Preliminary Application to Connect and /or Discharge to Town of Exeter- Sewer, Water or Storm Water Drainage System(s)"(if applicable) (N/A)
7. Planning Board Fees (✓)
8. Seven (7) full-sized copies of Site Plan (✓)
9. Fifteen (15) 11"x17" copies of the final plan to be submitted **TEN DAYS PRIOR** to the public hearing date. (✓)
10. Three (3) pre-printed 1"x 2 5/8" labels for each abutter, the applicant and all consultants. (N/A)

NOTES: All required submittals must be presented to the Planning Department office for distribution to other Town departments. Any material submitted directly to other departments will not be considered.



TOWN OF EXETER, NH APPLICATION FOR SITE PLAN REVIEW

OFFICE USE ONLY

THIS IS AN APPLICATION FOR:
 Preliminary Conceptual
 COMMERCIAL SITE PLAN REVIEW
 INDUSTRIAL SITE PLAN REVIEW
 MULTI-FAMILY SITE PLAN REVIEW
 MINOR SITE PLAN REVIEW
 INSTITUTIONAL/NON-PROFIT SPR

_____ APPLICATION #
 _____ DATE RECEIVED
 _____ APPLICATION FEE
 _____ PLAN REVIEW FEE
 _____ ABUTTERS FEE
 _____ LEGAL NOTICE FEE
 _____ TOTAL FEES

_____ INSPECTION FEE
 _____ INSPECTION COST
 _____ REFUND (IF ANY)

1. NAME OF LEGAL OWNER OF RECORD: Meniscus Financial Holdings, LLC

_____ TELEPHONE: (603) 475-4339

ADDRESS: 133 Portsmouth Avenue, Exeter, NH 03833

2. NAME OF APPLICANT: Same as owner

ADDRESS: _____

_____ TELEPHONE: () _____

3. RELATIONSHIP OF APPLICANT TO PROPERTY IF OTHER THAN OWNER: N/A

(Written permission from Owner is required, please attach.)

4. DESCRIPTION OF PROPERTY: Vacant with drive to 131 Ports Ave. (access easement)

ADDRESS: 127 Portsmouth Avenue (131 listed on deed)

TAX MAP: 52 PARCEL #: 112.2 ZONING DISTRICT: C-2

AREA OF ENTIRE TRACT: 6.24 acres PORTION BEING DEVELOPED: 2.72 acres



5. ESTIMATED TOTAL SITE DEVELOPMENT COST \$ _____

6. EXPLANATION OF PROPOSAL: Preliminary consultation with the Planning board to review a proposed vehicle storage/display area (paved), with a potential 2nd phase including an office.

7. ARE MUNICIPAL SERVICES AVAILABLE? (YES/NO) yes

If yes, Water and Sewer Superintendent must grant written approval for connection.
If no, septic system must comply with W.S.P.C.C. requirements.

8. LIST ALL MAPS, PLANS AND OTHER ACCOMPANYING MATERIAL SUBMITTED WITH THIS APPLICATION:

	<u>ITEM:</u>	<u>NUMBER OF COPIES</u>
A.	<u>Concept plan (full size)</u>	<u>7</u>
B.	<u>Concept Plan (11x17)</u>	<u>15</u>
C.	<u>Letter of Explanation</u>	<u>15</u>
D.	<u>Check for application fee</u>	<u>1</u>
E.	_____	_____
F.	_____	_____

9. ANY DEED RESTRICTIONS AND COVENANTS THAT APPLY OR ARE CONTEMPLATED (YES/NO) No IF YES, ATTACH COPY.

10. NAME AND PROFESSION OF PERSON DESIGNING PLAN:

NAME: Christian O Smith, P.E. - Beals Associates, PLLC

ADDRESS: 70 Portsmouth Ave., Stratham, NH 03885

PROFESSION: Civil Engineer TELEPHONE: (603) 583-4860

11. LIST ALL IMPROVEMENTS AND UTILITIES TO BE INSTALLED:

Proposed paved vehicle storage area with a potential second phase including a new office building. Stormwater collection and treatment area & connection to existing Foss Motors vehicle storage/display area.



12. HAVE ANY SPECIAL EXCEPTIONS OR VARIANCES BEEN GRANTED BY THE ZONING BOARD OF ADJUSTMENT TO THIS PROPERTY PREVIOUSLY?

IF YES, DESCRIBE BELOW. (Please check with the Planning Department Office to verify)

No

13. WILL THE PROPOSED PROJECT INVOLVE DEMOLITION OF ANY EXISTING BUILDINGS OR APPURTENANCES? IF YES, DESCRIBE BELOW.

(Please note that any proposed demolition may require review by the Exeter Heritage Commission in accordance with Article 5, Section 5.3.5 of the Exeter Zoning Ordinance).

No

14. WILL THE PROPOSED PROJECT REQUIRE A "NOTICE OF INTENT TO EXCAVATE" (State of NH Form PA-38)? IF YES, DESCRIBE BELOW.

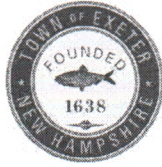
No

NOTICE: I CERTIFY THAT THIS APPLICATION AND THE ACCOMPANYING PLANS AND SUPPORTING INFORMATION HAVE BEEN PREPARED IN CONFORMANCE WITH ALL APPLICABLE REGULATIONS; INCLUDING BUT NOT LIMITED TO THE "SITE PLAN REVIEW AND SUBDIVISION REGULATIONS" AND THE ZONING ORDINANCE. FURTHERMORE, IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 15.2 OF THE "SITE PLAN REVIEW AND SUBDIVISION REGULATIONS", I AGREE TO PAY ALL COSTS ASSOCIATED WITH THE REVIEW OF THIS APPLICATION.

DATE 5-18-23

OWNER'S SIGNATURE

ACCORDING TO RSA 676.4.I (c), THE PLANNING BOARD MUST DETERMINE WHETHER THE APPLICATION IS COMPLETE WITHIN 30 DAYS OF SUBMISSION. THE PLANNING BOARD MUST ACT TO APPROVE, CONDITIONALLY APPROVE, OR DENY AN APPLICATION WITHIN SIXTY FIVE (65) DAYS OF ITS ACCEPTANCE BY THE BOARD AS A COMPLETE APPLICATION. A SEPARATE FORM ALLOWING AN EXTENSION OR WAIVER TO THIS REQUIREMENT MAY BE SUBMITTED BY THE APPLICANT.



ABUTTERS: PLEASE LIST ALL PERSONS WHOSE PROPERTY IS LOCATED IN NEW HAMPSHIRE AND ADJOINS OR IS DIRECTLY ACROSS THE STREET OR STREAM FROM THE LAND UNDER CONSIDERATION BY THE BOARD. THIS LIST SHALL BE COMPILED FROM THE EXETER TAX ASSESSOR'S RECORDS.

See attached

TAX MAP _____
NAME _____
ADDRESS _____

TAXMAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAXMAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

TAX MAP _____
NAME _____
ADDRESS _____

Please attach additional sheets, if needed



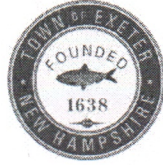
CHECKLIST FOR SITE PLAN REVIEW

The checklist on the following page has been prepared to assist you in the preparation of your site plan. The checklist items listed correspond to the site plan requirements set forth in Section 7 of the “Site Plan Review and Subdivision Regulations”. Unless otherwise indicated, all section references within this checklist refer to these regulations. Each of the items listed on this checklist must be addressed by the applicant prior to technical review of the site plan by the Technical Review Committee (TRC) See section 6.5. of the “Site Plan Review and Subdivision Regulations”. This checklist **DOES NOT** include all of the detailed information required for site plan preparation and therefore should not be the sole basis for the preparation of these plans. For a complete listing of site plan requirements, please refer to Section 7 of the “Site Plan Review and Subdivision Regulations”. In addition to these required plan items, the Planning Board will review site plans based upon the standards set forth in Sections 8 and 9 of the “Site Plan Review and Subdivision Regulations”. As the applicant, it is **YOUR RESPONSIBILITY** to familiarize yourself with these standards and to prepare your plans in conformance with them.

Please complete this checklist by marking each item in the column labeled “Applicant” with one of the following: “X: (information provided); “NA” (not applicable); “W: (waiver requested). For all checklist items marked “NA”, a final determination regarding applicability will be made by the TRC. For all items marked “W”, please refer to Section 13 of the “Site Plan Review and Subdivision Regulations” for the proper request procedure to be followed. If waivers are requested, a justification letter for requested waivers is strongly suggested. All waiver requests will be acted upon by the Planning Board at a public hearing. Please contact the Planning Department office if you have any questions concerning the proper completion of this checklist.

All of the required information for the plans listed in the checklist must be provided on separate sheets, unless otherwise approved by the TRC.

NOTE: AN INCOMPLETE CHECKLIST WILL BE GROUNDS FOR REJECTION OF YOUR APPLICATION.

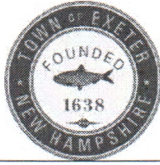


SITE PLAN REQUIREMENTS

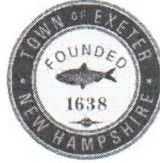
7.4 Existing Site Conditions Plan

Submission of this plan will not be applicable in all cases. The applicability of such a plan will be considered by the TRC during its review process as outlined in Section 6.5 Technical Review Committee (TRC) of these regulations. The purpose of this plan is to provide general information on the site, its existing conditions, and to provide the base data from which the site plan or subdivision will be designed. The plan shall show the following:

APPLICANT	TRC	REQUIRED EXHIBITS
<input type="checkbox"/>	<input type="checkbox"/>	7.4.1 Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.2 Location of the site under consideration, together with the current names and addresses of owners of record, of abutting properties and their existing land use.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.3 Title, date, north arrow, scale, and Planning Board Case Number.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.4 Tax map reference for the site under consideration, together with those of abutting properties.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.5 Zoning (including overlay) district references.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.6 A vicinity sketch or aerial photo showing the location of the land/site in relation to the surrounding public street system and other pertinent location features within a distance of 2,000-feet, or larger area if deemed necessary by the Town Planner.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.7 Natural features including watercourses and water bodies, tree lines, significant trees (20-inches or greater in diameter at breast height) and other significant vegetative cover, topographic features, and any other environmental features that are important to the site design process.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.8 Man-made features such as, but not limited to, existing roads, structures, and stone walls. The plan shall also indicate which features are to be retained and which are to be removed or altered.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.9 Existing contours at intervals not to exceed 2-feet with spot elevations provided when the grade is less than 5%. All datum provided shall reference the latest applicable US Coast and Geodetic Survey datum and should be noted on the plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.10 A High Intensity Soil Survey (HISS) of the entire site, or appropriate portion thereof. Such soil surveys shall be prepared by a certified soil scientist in accordance with the standards established by the Rockingham County Conservation District. Any cover letters or explanatory data provided by the certified soil scientist shall also be submitted.



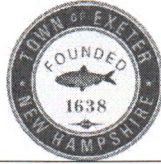
<input type="checkbox"/>	<input type="checkbox"/>	7.4.11 State and Federally designated wetlands, setback information, total wetlands proposed to be filled, other pertinent information and the following wetlands note: "The landowner is responsible for complying with all applicable local, state, and federal wetlands regulations, including any permitting and setback requirements required under these regulations."
<input type="checkbox"/>	<input type="checkbox"/>	7.4.12 Surveyed property lines including angles and bearings, distances, monument locations, and size of the entire parcel. A professional land surveyor licensed in New Hampshire must attest to said plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.13 The lines of existing abutting streets and driveway locations within 200-feet of the site.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.14 The location, elevation, and layout of existing catch basins and other surface drainage features.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.15 The shape, size, height, location, and use of all existing structures on the site and approximate location of structures within 200-feet of the site.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.16 The size and location of all existing public and private utilities, including off-site utilities to which connection is planned.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.17 The location of all existing easements, rights-of-way, and other encumbrances.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.18 All floodplain information, including the contours of the 100-year flood elevation, based upon the Flood Insurance Rate Map for Exeter, as prepared by the Federal Emergency Management Agency, dated May 17, 1982.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.19 All other features which would fully explain the existing conditions of the site.
<input type="checkbox"/>	<input type="checkbox"/>	7.4.20 Name of the site plan or subdivision.



7.5 Proposed Site Conditions Plan (Pertains to Site Plans Only)

The purpose of this plan is to illustrate and fully explain the proposed changes taking place within the site. The proposed site conditions plan shall depict the following:

APPLICANT	TRC	REQUIRED EXHIBITS
<input type="checkbox"/>	<input type="checkbox"/>	7.5.1 Proposed grades and topographic contours at intervals not to exceed 2-feet with spot elevations where grade is less than 5%. All datum provided shall reference the latest applicable US Coast and Geodetic Survey datum and should be noted on the plan.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.2 The location and layout of proposed drainage systems and structures including elevations for catch basins.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.3 The shape, size, height, and location of all proposed structures, including expansion of existing structures on the site and first floor elevation(s). Building elevation(s) and a rendering of the proposed structure(s).
<input type="checkbox"/>	<input type="checkbox"/>	7.5.4 High Intensity Soil Survey (HISS) information for the site, including the total area of wetlands proposed to be filled.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.5 State and Federally designated wetlands, setback information, total wetlands proposed to be filled, other pertinent information and the following wetlands note: "The landowner is responsible for complying with all applicable local, state, and federal wetlands regulations, including any permitting and setback requirements required under these regulations."
<input type="checkbox"/>	<input type="checkbox"/>	7.5.6 Location and timing patterns of proposed traffic control devices.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.7 The location, width, curbing and paving of all existing and proposed streets, street rights-of-way, easements, alleys, driveways, sidewalks and other public ways. The plan shall indicate the direction of travel for one-way streets. See Section 9.14 – Roadways, Access Points, and Fire Lanes for further guidance.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.8 The location, size and layout of off-street parking, including loading zones. The plan shall indicate the calculations used to determine the number of parking spaces required and provided. See Section 9.13 – Parking Areas for further guidance.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.9 The size and location of all proposed public and private utilities, including but not limited to: water lines, sewage disposal facilities, gas lines, power lines, telephone lines, cable lines, fire alarm connection, and other utilities.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.10 The location, type, and size of all proposed landscaping, screening, green space, and open space areas.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.11 The location and type of all site lighting, including the cone(s) of illumination to a measurement of 0.5-foot-candle.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.12 The location, size, and exterior design of all proposed signs to be located on the site.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.13 The type and location of all solid waste disposal facilities and accompanying screening.



<input type="checkbox"/>	<input type="checkbox"/>	7.5.14 Location of proposed on-site snow storage.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.15 Location and description of all existing and proposed easement(s) and/or right-of-way.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.16 A note indicating that: "All water, sewer, road (including parking lot), and drainage work shall be constructed in accordance with Section 9.5 Grading, Drainage, and Erosion & Sediment Control and the Standard Specifications for Construction of Public Utilities in Exeter, New Hampshire". See Section 9.14 Roadways, Access Points, and Fire Lanes and Section 9.13 Parking Areas for exceptions.
<input type="checkbox"/>	<input type="checkbox"/>	7.5.17 Signature block for Board approval

OTHER PLAN REQUIREMENTS (See Section indicated)

- 7.7 Construction plan
- 7.8 Utilities plan
- 7.9 Grading, drainage and erosion & sediment control plan
- 7.10 Landscape plan
- 7.11 Drainage Improvements and Storm Water Management Plan
- 7.12 Natural Resources Plan
- 7.13 Yield Plan

Return to:

Stebbins, Lazos & Van Der Beken PLLC
889 Elm Street, 6th Floor
Manchester, NH 03101



LCHIP	ROA635344	25.00
TRANSFER TAX	RO119448	9,000.00
RECORDING		22.00
SURCHARGE		2.00

QUITCLAIM DEED

October 28, 2022

The Grantor, **131 Portsmouth Ave LLC**, a New Hampshire limited liability company, having a mailing address of 1359 Hooksett Road, Hooksett, NH 03106, for consideration paid, grants to **Meniscus Financial Holdings LLC**, a New Hampshire limited liability company, with an address of 131 Portsmouth Ave, Exeter, NH 03833, **WITH QUITCLAIM COVENANTS**, the land consisting of approximately 6.24 acres of land located at 131 Portsmouth Avenue, Town of Exeter, Rockingham County, New Hampshire, as more particularly described in Exhibit A attached hereto.


Being a portion of the property described in Release Deed from Osram Sylvania Inc. f/k/a Sylvania Electric Products Inc. to the within Grantor dated June 30, 2021 and recorded on June 30, 2021 in the Rockingham County Registry of Deeds at Book 6297, Page 2866.

The foregoing conveyance is subject to any and all restrictions, conditions, encumbrances and other matters of record. This is not homestead property of the grantor.

[remainder of page left intentionally blank; signature page follows]

EXECUTED as of the date first set forth above.

131 Portsmouth Ave LLC,
a New Hampshire limited liability company

By: 
Name: Jennifer Stebbins Thomas
Title: Manager

STATE OF NEW HAMPSHIRE
Merriamack, ss.

On this the 24 day of October, 2022, personally appeared the above-named Jennifer Stebbins Thomas, as the Manager of 131 Portsmouth Ave LLC, on behalf of 131 Portsmouth Ave LLC, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same for the purposes therein contained, before me.





Print Name: Elizabeth Pettigrew
Notary Public/Justice of the Peace
My Commission Expires: 2/6/24

EXHIBIT A
(Legal Description)

MAP 52 LOT 112B

Located in the Town of Exeter, County of Rockingham, State of New Hampshire. Beginning at a granite bound on the southeasterly side of Route 108 (Portsmouth Avenue) in the town of Exeter, County of Rockingham, State of New Hampshire, said bound being the westerly-most corner of the area herein described and the northerly-most corner of land now or formerly of the Town of Exeter;

Thence along Route 108 (Portsmouth Avenue) the following two courses;
Along a curve to the left having a radius of 1959.86', a distance of 111.90' to a point;

Thence N 34° 59' 24" E, a distance of 189.08' to a 4"x4" granite bound at land now or formerly of Laurence D. Foss;

Thence along said land of Laurence D. Foss the following two courses;
S 61° 16' 46" E, a distance of 393.85' to a 4"x4" concrete bound;

Thence N 81° 12' 51" E, a distance of 250.74' to a 5/8" rebar at the northwesterly corner of the Lot 112A as shown on the hereinafter referenced plan;

Thence along said Lot 112A the following three courses;
S 01° 26' 53" W, a distance of 191.78' to a 5/8" rebar;

Thence S 52° 10' 27" W, a distance of 163.45' to a 5/8" rebar;

Thence S 40° 18' 54" E, a distance of 292.44' to a 5/8" rebar at land now or formerly of Osram Sylvania, Inc., said rebar also being the southeasterly corner of said Lot 112A;

Thence S 52° 02' 42" W, along said land of Osram Sylvania Inc., a distance of 197.28' to a 5/8" rebar at land now or formerly of the Town of Exeter;

Thence along said land of the Town of Exeter the following three courses;
N 38° 15' 32" W, a distance of 190.46' to a point;

Thence N 40° 48' 00" W, a distance of 230.12' to a 8"x12" granite bound;

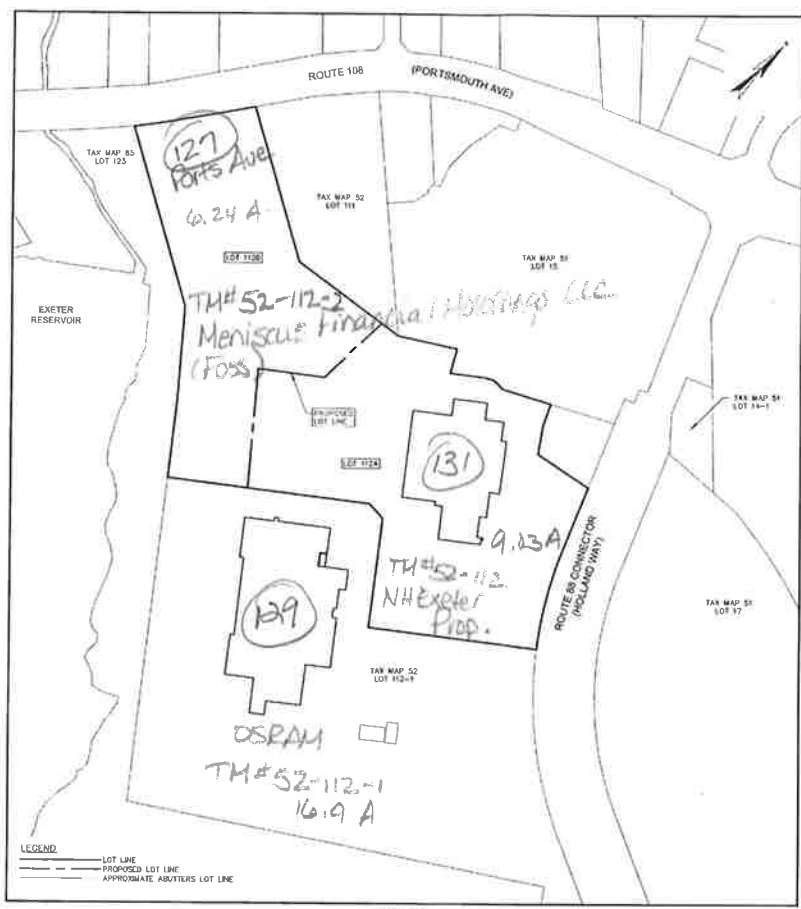
Thence N 61° 18' 32" W, a distance of 455.72' to the point of beginning.

Said area contains 271,768 square feet or 6.24 acres and is shown as "Tax Map 52 Lot 112B" on a plan entitled "Subdivision Plan for 131 Portsmouth Ave, LLC of Tax Map.52 Lot 112 131 Portsmouth Avenue Route 108 (Portsmouth Avenue) & Route 88 Connector (Holland Way) Exeter, New Hampshire" Dated October 4, 2022 by Doucet Survey, LLC, recorded in the Rockingham County Registry of Deeds as Plan #43579.

Subject to the terms and provisions set forth in the Declaration and Grant of Easements and Covenants dated October 21, 2022 recorded with the Rockingham County Registry of Deeds on October 21, 2022 at Book 6447, Page 2696.

D-43579 10/18/2022 11:40:14 AM
 Register of Deeds, Rockingham County
 LCP# PLAN 7400A 25.00
 PLAN 7400A 25.00

- NOTES:
1. REFERENCE: TAX MAP 52, LOT 112 HOLLAND WAY D.B. PROJECT NO. 7400
 2. TOTAL PARCEL AREA: 62,24 A. TAX MAP 52, LOT 112 PARCEL AREA: 62,24 SQ. FT. OR 1.26 AC. LOT 112A AREA: 393,194 SQ. FT. OR 9.03 AC. LOT 112B AREA: 271,786 SQ. FT. OR 6.24 AC.
 3. ZONE: C-2 & CT.
 4. OWNER OF RECORD: 131 PORTSMOUTH AVE, LLC 131 PORTSMOUTH AVE, LLC SUITE 300 PORTSMOUTH NH 03803 R.C.D. BOOK 6297, PAGE 2008
 5. FIELD SURVEY PERFORMED BY R.C.B. & S.J.L. DURING SEPTEMBER 2019 USING A TRIMBLE S8/57 TOTAL STATION AND A TRIMBLE RAINBOW SURVEY GRADE GPS WITH A TRIMBLE 1253 DATA COLLECTOR AND A (CORNIA 2X/2TRIMBLE DGN DIGITAL) AUTO LEVEL. INVERSE ADJUSTMENT BASED ON LEAST SQUARES ANALYSIS. PLANNING FEATURES LOCATED USING A SA FANUKON 4 PRO LAX. SITE MARK CONDUCTED BY J.R.P. ON 8/14/2022.
 6. HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2008) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE VENTEX GPS WAS NETWORK.
 7. VERTICAL DATUM IS BASED ON APPROXIMATE NAD83(2011) (8.2') DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE VENTEX GPS WAS NETWORK.
 8. JURISDICTIONAL WETLANDS DELINEATED BY STANLEY LOUIS BECKER #16 OF SOBE & BOND ENGINEERS (ENVIRONMENTAL SPECIALISTS) DURING SEPTEMBER 2019 IN ACCORDANCE TO THE "USE WETLANDS OF ENGINEERS WETLAND DELINEATION MANUAL, TECHNICAL REPORT Y-82-1 (LAWANNA, 1987)". WRITING RECORDS SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL, NORTH-CENTRAL AND NORTH-EAST REGION (OCTOBER 2009). "NATURAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTH-EAST REGION (1) U.S. FISH AND WILDLIFE SERVICE (MAY 1988). "CODE OF ADMINISTRATIVE RULES, WETLANDS BOARD, STATE OF NEW HAMPSHIRE (CURRENT) AND THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
 9. FLOOD HAZARD ZONE: "C" PER FIRM MAP #301000406, DATED 5/17/2006.
 10. INTENTIONALLY DELETED.
 11. INTENTIONALLY DELETED.
 12. INTENTIONALLY DELETED.
 13. INTENTIONALLY DELETED.
 14. INTENTIONALLY DELETED.
 15. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH ANY RELATION TO THE EXISTING LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNDIVIDED RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DETACH THE GRANTS OF TITLE.
 16. DUE TO THE COMPLEXITY OF RECORDING ROAD RECORDS AS A RESULT OF INCOMPLETE UNORGANIZED, INCOMPLETE, OBTAINED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENT OF THE RANGE AS DEPICTED HEREON ARE BASED ON RESEARCH CONDUCTED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS, AND THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
 17. INTENTIONALLY DELETED.
 18. ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL, WATER, SEWER DRAIN SERVICES) ARE SHOWN AS INDICATED THEREON. THEIR LOCATIONS ARE NOT PROVED OR NECESSARILY ACCURATE, WHO WORK WHATEVER SHALL BE UNDERSTAND USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE UTILITY PROVIDERS CONCERNING THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING 3" OR 4" CALL (800-454-4547) AT 1-800-800-SAFE.
 19. SEVERAL PORTIONS OF THE PROPERTY ARE COVERED WITH THICK VEGETATION THAT MAY BE OBSCURING ADDITIONAL SITE FEATURES NOT DEPICTED HEREON.
 20. UNDERGROUND UTILITIES NOT SHOWN HEREON REFERENCE IS HEREBY MADE TO REF. PLAN 14 FOR THAT INFORMATION.
 21. THE LANDOWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL WETLANDS REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
 22. INTENTIONALLY DELETED.
 23. INTENTIONALLY DELETED.
 24. PREVIOUS ZONING VARIANCES: FEBRUARY 18, 1989 - ZBA CASE 1027 SPECIAL EXCEPTION AND VARIANCE GRANTED FOR PROPOSED EXPANSION OF A/C USE (ADDITION) AND FOR A PORTION OF THE EXPANSION TO EXCEED THE MAXIMUM HEIGHT REGULATION. JANUARY 18, 1996 - ZBA CASE 1022 SPECIAL EXCEPTION GRANTED FOR EXPANSION OF A/C USE (PROPOSED HEIGHT ADDITION). DECEMBER 21, 2003 - ZBA CASE 1234 VARIANCE GRANTED TO PERMIT APPROXIMATELY 10' ABOVE THE FRONT PORTION OF PARCELS WITH FRONTAGE ON PORTSMOUTH AVENUE OF AN EXISTING 35' HIGH PARCELS TO BE DEVELOPED IN ACCORDANCE WITH THE C-2, HIGHWAY COMMERCIAL ZONING REGULATIONS. OCTOBER 17, 2006 - ZBA CASE 1322 SPECIAL EXCEPTION GRANTED FOR THE EXPANSION OF A/C USE TO PERMIT A PROPOSED 41,173 SQUARE FOOT EXPANSION OF THE EXISTING MANUFACTURING FACILITY.
 25. LOTS 112A & 112B WILL BE SUBJECT TO, AND IN BENEFIT OF, RECIPROCAL EASEMENTS FOR UTILITIES AND ACCESS PRIOR TO CONVEYANCE.



ADJACENT LOTS:

TAX MAP 51 LOT 17 ONE FOUR SIX POST #6, LLC 131 PORTSMOUTH AVE EXETER, NH 03833 R.C.D. BOOK 4238 PAGE 1900	TAX MAP 51 LOT 18 KUMON INC. ENTERPRISES COMPANY, INC. PO BOX 4500 DANVILLE, VA 23813 R.C.D. BOOK 3752 PAGE 479	TAX MAP 52 LOT 123 TOWN OF EXETER 10 FRONT STREET EXETER, NH 03833
TAX MAP 51 LOT 14-1 MORLAND REALTY TRUST 131 PORTSMOUTH AVE EXETER, NH 03833 R.C.D. BOOK 4401, PAGE 502	TAX MAP 52 LOT 111 LAURENCE D. FOSS 20 BRUNNEN HILL AVE STRATHAM, NH 03885 R.C.D. BOOK 2981, PAGE 2700	TAX MAP 52 LOT 112-1 OSRAM SYLVANIA, INC. 200 HOLLAND WAY BRIMINGTON, MA 01867 R.C.D. BOOK 4428 PAGE 2139

- REFERENCE PLANS:
1. "PLAN OF LAND FOR SYLVANIA ELECTRIC PRODUCTS INC. EXETER NEW HAMPSHIRE" DATED DECEMBER 1982 BY G. L. DAVIS & ASSOCIATES R.C.D. PLAN BRANCH 48 SEC. 14, PLAN 51.
 2. "THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY PLANS PROPOSED FEDERAL AID PROJECT 51P-3(153000) NH, PROJECT NO. 100250 NH ROUTE 108 TOWN OF EXETER COUNTY OF ROCKINGHAM" DATED SEPTEMBER 20, 2019 BY THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
 3. "ALTA/RTS LAND TITLE SURVEY FOR TOWN & BOND OF OSRAM SYLVANIA INC. ROUTE 108 (PORTSMOUTH AVENUE), HOLLAND WAY & ROUTE 101 EXETER, NEW HAMPSHIRE" DATED OCTOBER 31, 2019 BY DOUCET SURVEY, LLC.
 4. "SUBDIVISION PLAN OF OSRAM SYLVANIA INC. ROUTE 108 (PORTSMOUTH AVENUE), ROUTE 88 CONNECTOR (HOLLAND WAY) & ROUTE 101 TAX MAP 52 LOT 17 & TAX MAP 51 LOT 12 EXETER, NEW HAMPSHIRE" DATED OCTOBER 20, 2020 BY DOUCET SURVEY, LLC. R.C.D. PLAN D-4255A.
 5. "LOT LINE ADJUSTMENT PLAN OF TAX MAP 51 LOT 112 & TAX MAP 51 LOT 112-1 FOR OSRAM SYLVANIA, INC. ROUTE 108 (PORTSMOUTH AVENUE) & ROUTE 88 CONNECTOR (HOLLAND WAY) EXETER, NEW HAMPSHIRE" DATED MAY 17, 2021 BY DOUCET SURVEY, LLC. R.C.D. PLAN D-4255B.
 6. "CORRECTIVE LOT LINE ADJUSTMENT PLAN (SEC. NOTE 11) OF TAX MAP 51 LOT 112 AND TAX MAP 51 LOT 112-1 FOR OSRAM SYLVANIA, INC. ROUTE 108 (PORTSMOUTH AVENUE) & ROUTE 88 CONNECTOR (HOLLAND WAY) EXETER, NEW HAMPSHIRE" DATED JUNE 25, 2021 BY DOUCET SURVEY, LLC. R.C.D. PLAN D-4255C.
 7. "EASEMENT TO BENEFIT TAX MAP 51 LOT 112 AND TAX MAP 51 LOT 112-1 FOR OSRAM SYLVANIA, INC. ROUTE 108 (PORTSMOUTH AVENUE) & ROUTE 88 CONNECTOR (HOLLAND WAY) EXETER, NEW HAMPSHIRE" DATED JUNE 28, 2021 BY DOUCET SURVEY, LLC. R.C.D. PLAN D-4255D.
- EASEMENT NOTES:
- THE PREMISES ARE SUBJECT TO AND/OR IN BENEFIT OF THE FOLLOWING EASEMENTS, RESERVATIONS, ETC.
1. 12" WATER WORKS PIPELINE SHOWN ON REFERENCE PLAN 1 [AFFECTS THE SUBJECT PREMISES AND IS DEPICTED HEREON]
 2. SLOPE GRADIENT & UTILITY EASEMENTS IN ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 3198, PAGE 2299; BOOK 3198, PAGE 2300; BOOK 3198, PAGE 2301 AND BOOK 3198, PAGE 2302. [AFFECTS THE SUBJECT PREMISES AND ARE DEPICTED HEREON]
 3. INTENTIONALLY DELETED.
 4. WATER PIPELINE RIGHTS IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS BOOK 3198, PAGE 2299. [AFFECTS THE SUBJECT PREMISES BUT CANNOT BE PLOTTED]
 5. INTENTIONALLY DELETED.
 6. ORDER NO. 8540 RE: PETITION FOR APPROVAL OF TRANSFER OF PROPERTIES OF EXETER BRILL POND TO ALBERT L. MCCOULL, JR. AND BY HIM TO THE TOWN OF EXETER DATED JANUARY 18, 1985 AND RECORDED AT BOOK 1521, PAGE 228. [AFFECTS THE SUBJECT PREMISES BUT CANNOT BE PLOTTED]
 7. INTENTIONALLY DELETED.
 8. EASEMENT TO LAURENCE D. FOSS DATED JULY 31, 1987 AND RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 2885, PAGE 194. [AFFECTS THE SUBJECT PREMISES AND IS DEPICTED HEREON]
 9. SLOPE GRADIENT & UTILITY EASEMENT IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 3198, PAGE 2299. [AFFECTS THE SUBJECT PREMISES AND IS DEPICTED HEREON]
 10. EASEMENT FROM WERNERS ENTERPRISES, CO. INC. (A/K/A WING CHEW) TO OSRAM SYLVANIA, INC. AND BONDING EXETER REALTY, LLC TO OSRAM SYLVANIA, INC. DATED SEPTEMBER 8, 2003 AND RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 4226, PAGE 1705. [AFFECTS THE SUBJECT PREMISES AND IS BLANKET IN NATURE, SEE DEED FOR SPECIFICS]
 11. EASEMENT DEED TO UNTIL ENERGY SYSTEMS, INC. DATED MARCH 16, 2016 AND RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 3703, PAGE 716. [AFFECTS THE SUBJECT PREMISES AND IS DEPICTED HEREON]
 12. REFERENCE IS ALSO HEREBY MADE TO R.C.D. BOOK 8297 PAGE 2078 & PLAN D-4255A FOR ADDITIONAL EASEMENTS.



SUBDIVISION PLAN
 FOR
 131 PORTSMOUTH AVE, LLC
 OF
 TAX MAP 52 LOT 112
 131 PORTSMOUTH AVENUE
 ROUTE 108 (PORTSMOUTH AVENUE) &
 ROUTE 88 CONNECTOR (HOLLAND WAY)
 EXETER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

PREPARED BY: J.R.P. DATE: OCTOBER 4, 2022
 CHECKED BY: S.V.M. (R/7400A) 7400A
 JOB NO.: 7400 SHEET 1 OF 2

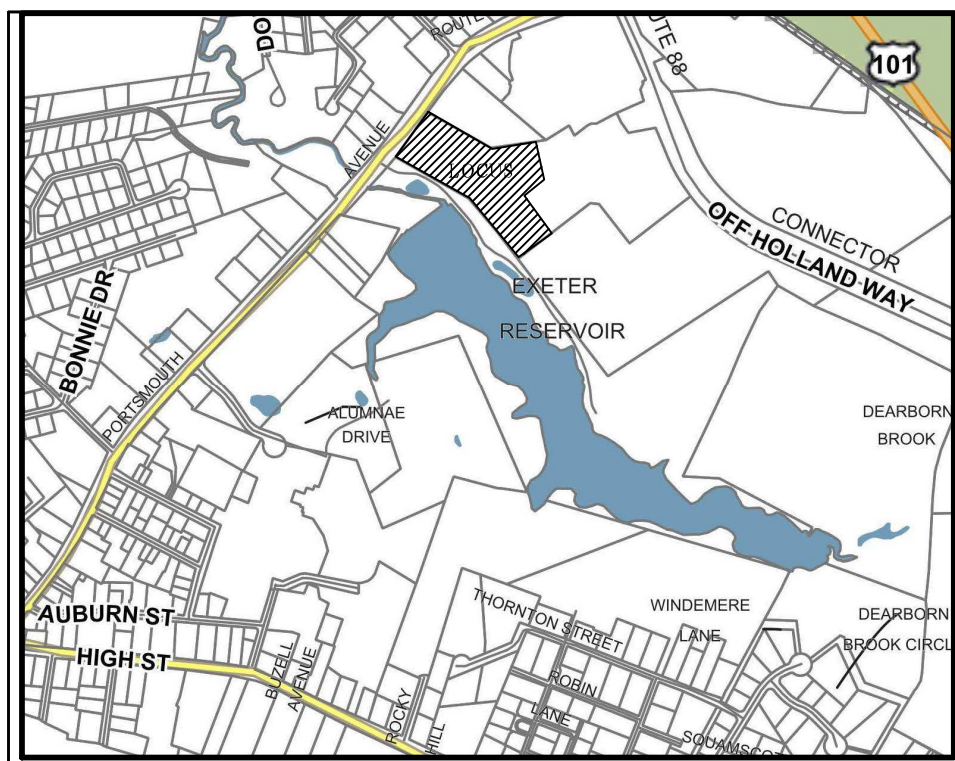
APPROVED BY THE EXETER PLANNING BOARD

 10/11/2022
 DATE



I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF JURISDICTION FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SIGNATURE: MICHAEL S. ... DATE: 10/11/2022

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET THE REQUIREMENTS OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF JURISDICTION FOR LAND SURVEYORS. THESE CERTIFICATIONS ARE SUBJECT TO CURRENT TOWN ASSESSORS RECORDS.



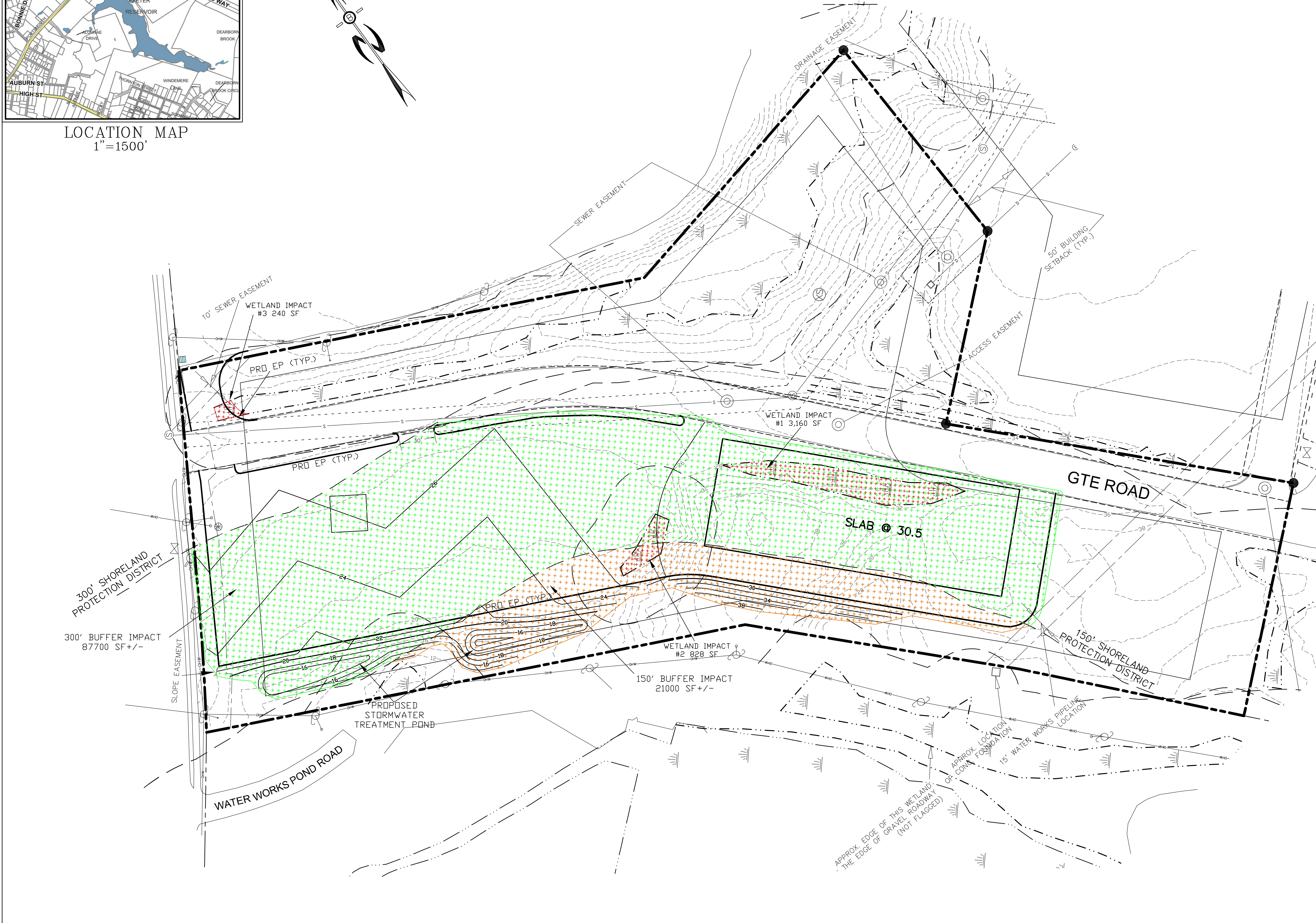
LOCATION MAP
1"=1500'

PREPARED FOR:
FOSS MOTORS
 133 PORTSMOUTH AVE.
 (NH ROUTE 108)
 EXETER, NEW HAMPSHIRE



70 PORTSMOUTH AVE,
 THIRD FLOOR, SUITE 2
 STRATHAM, N.H. 03885
 PHONE: 603-583-4860,
 FAX: 603-583-4863

- NOTES**
1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN LOCATED FROM FIELD OBSERVATIONS AND THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. BEALS ASSOCIATES OR ANY OF THEIR EMPLOYEES TAKE NO RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES OR UTILITIES NOT SHOWN, THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND UTILITIES OR STRUCTURES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 1-888-DIG-SAFE.
 2. THIS PLAN HAS BEEN PREPARED FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
 3. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
 4. ALL ROAD AND DRAINAGE WORK TO CONFORM TO TOWN STANDARD SPECIFICATIONS FOR CONSTRUCTION.
 5. ALL PROPOSED SIGNS SHALL CONFORM TO THE TOWN ZONING REGULATIONS.
 6. PROJECT IS BASED ON USGS DATUM NAVD 1988.
 7. THE LANDOWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
 8. SEE DETAIL SHEET FOR STANDARD CONSTRUCTION NOTES AND DETAILS.
 9. ALTERATION OF TERRIAN PERMIT RSA 485:A-17 IS NOT REQUIRED.
 10. THIS SITE IS NOT LOCATED IN THE 100 YEAR FLOOD ZONE.



REVISIONS:		DATE:
CONCEPTUAL SITE PLAN		
COMMERCIAL DEVELOPMENT ROUTE 108 EXETER, NH TAX MAP 52, LOT 112.2		
DATE:	APRIL 2023	SCALE: 1"=40'
PROJ. NO:	NH-1471	SHEET NO. 3

**TOWN OF EXETER
PLANNING DEPARTMENT MEMORANDUM**

Date: June 1, 2023
To: Dave Sharples and Exeter Planning Board Members
From: Kristen Murphy, Conservation & Sustainability Planner
Subject: Proposed Site Plan Review and Subdivision Regulation Amendment

I. Proposed Amendment:

Strike in its entirety and replace with:

9.9. Wetland and Shoreland Buffers:

Wetland and shoreland setbacks are established to protect a naturally vegetated upland area, or 'buffer' around surface water resources. The vegetation in this buffer area naturally reduces the amount of nutrients and sediment that flows into wetlands thereby affording them greater protection. Applicants shall follow Zoning Ordinance 9.1 and 9.3 for evaluation of impact to wetland and shoreland buffers and setbacks.

II. Purpose and Justification:

On January 9, 2020, the Planning Board discussed a proposed amendment to Article 9 of the Zoning Ordinance for the Wetland Conservation Overlay District (ZO) and an amendment to Section 9.9 of the Site Plan Review and Subdivision Regulations for Wetlands (SS). The purpose was to address a duplicative process existing in both regulations. The zoning ordinance provided for a Wetland Conditional Use Permit process, while the Site Plan Review and Subdivision Regulations provided a Wetland Waiver process. We discussed amending the zoning ordinance, and referring to that amended ordinance within in the Site Plan Regulations, eliminating the wetland waiver process and therefore eliminating the duplicity in regulations.

In March 2020, the amendment to the Zoning Ordinance Article 9 was approved by the voters. It had been our intent to return to the Planning Board amend the Site Plan Review and Subdivision Regulations but with the onset of the pandemic, it was never brought forward. I am requesting the Planning Board reconsider this amendment, as the duplicative process still exists in the regulations.

Thank you.