



# TOWN OF EXETER, NEW HAMPSHIRE

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## LEGAL NOTICE EXETER PLANNING BOARD AGENDA

The Exeter Planning Board will meet on Thursday, November 21, 2024 at 7:00 P.M. in the Nowak Room of the Town Office Building located at 10 Front Street, Exeter, New Hampshire, to consider the following:

**APPROVAL OF MINUTES:** September 12 and September 26, 2024

### **NEW BUSINESS: PUBLIC HEARINGS**

The application of Willey Creek Company for site plan review, lot line adjustment and Wetlands and Shoreland conditional use permits for the proposed relocation of Building D of the Ray Farm Condominium development and associated site improvements off of Ray Farmstead Road. The subject properties are located in the C-3, Epping Road Highway Commercial zoning district and are identified as Tax Map Parcel #47-8 and #47-8.1. PB Case #22-3.

The application of RiverWoods Company at Exeter for site plan review and Wetland CUP application for the demolition of the existing administrative building and the proposed construction of the new supportive living health center along with associated site improvement on the property located at 5 White Oak Drive. The subject property is located in the R-1, Low Density Residential zoning district and are identified as Tax Map Parcel #97-23. PB Case #24-16.

### **OTHER BUSINESS**

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

### **EXETER PLANNING BOARD**

*Langdon J. Plumer, Chairman*

*Posted 11/08/24: Exeter Town Office and Town of Exeter website*





41 Chair Plumer read out loud the Public Hearing Notice and asked Ms. Murphy if the application was ready  
42 for review purposes. Ms. Murphy indicated the application was ready for review purposes.

43 **Ms. English motioned to open Planning Board Case #24-11. Ms. Belanger seconded the motion. A roll**  
44 **call vote was taken, Ms. Belanger voted aye, Ms. English voted aye, Vice-Chair Brown voted aye, Chair**  
45 **Plumer voted aye, Mr. Grueter voted aye, Mr. Cameron voted aye and Ms. Martel voted aye. The**  
46 **motion passed 7-0-0.**

47 Ms. Murphy indicated that application and supporting documents dated July 9<sup>th</sup> were submitted. There  
48 was no TRC review however there was review by staff. Several waivers are being requested and those  
49 letters have been provided.

50 Henry Boyd of Millenium Engineering presented the application on behalf of the owners whom he noted  
51 were present. He noted a large barn is being replaced with a different structure. The property line  
52 which is 4' is now being moved to 10' and they obtained relief from that.

53 Mr. Boyd noted the two-story property will be moved back and showed four spaces with pervious  
54 pavers. He noted the front driveway will be widened to accommodate two parking spaces. Waivers will  
55 be requested for grading within 5' of the property line however the grade change is not significant and  
56 will tie in at the existing grade to the rear. There will be a waiver request for no backing into the street  
57 for the front parking spaces. The septic system will tie into municipal sewer. An easement will be  
58 recorded at the Registry of Deeds.

59 Vice-Chair Brown asked about the parking waiver and existing driveway. Mr. Boyd noted they are  
60 adding gravel and making a true second space. Backing out of the existing space has occurred for quite  
61 some time.

62 Ms. English asked about the Zoning Board of Adjustment notes dated 10/18/23 conditioning there be  
63 seven parking spaces, as she is only seeing six on the plan. Mr. Boyd showed the location of the seventh  
64 space and agreed to amend the plan.

65 Ms. English asked about the difference in square footage shown and Mr. Boyd noted that when DTC  
66 prepared the application to the ZBA they used the tax map instead of the survey which is more accurate.

67 Mr. Boyd noted the neighbors requested screening and the owners met with them and agreed to plant  
68 arborvitaes. He showed the portion where they would be placed which he estimated to be 60' and  
69 noted there would be approximately 10, every 4.'

70 Ms. Martel asked about the pavers being noted for a walkway rather than a driveway. She noted the  
71 significance for vehicular use is important and the pavers should be sized appropriately. Mr. Boyd  
72 agreed to revise the plan detail.

73 Ms. Martel asked about the curb cut for the second parking space out front and if that would be  
74 widened so that cars would not have to back out over the curb. Ms. Belanger agreed. Mr. Boyd will talk  
75 to Jay Perkins at DPW.

76 Vice-Chair Brown noted with regard to the backing onto the street waiver that this has existed for years  
77 and the area is dense.

78 ***Vice-Chair Brown motioned after reviewing the criteria for granting waivers that the request of 107***  
79 ***Ponemah Road LLC., Planning Board Case #24-11 for a waiver from Section 9.13.15 of the site plan***  
80 ***review and subdivision regulations for parking spaces to be arranged so as to not be backing into a***  
81 ***public road, be approved. Mr. Cameron seconded the motion. A roll call vote was taken, Mr. Grueter***  
82 ***voted no, Chair Plumer voted aye, Vice-Chair Brown voted aye. English voted aye, Ms. Belanger voted***  
83 ***no, Ms. Martel voted aye, and Mr. Cameron voted aye. The motion passed 5-2-0.***

84 Vice-Chair Brown noted the waiver for grading within 5' of the property line was common in dense areas  
85 and the applicant is working with trees and sewer connections as well as pulling the property line back.

86 ***Vice-Chair Brown motioned after reviewing the criteria for granting waivers that the request of 107***  
87 ***Ponemah Road LLC., Planning Board Case #24-11, for a waiver from Section 9.3.6.4 of the site plan***  
88 ***review and subdivision regulations for grading within 5' of a property line be approved. Ms. Belanger***  
89 ***seconded the motion. A roll call vote was taken Ms. Belanger voted aye, Ms. English voted aye, Vice-***  
90 ***Chair Brown voted aye, Mr. Grueter voted aye, Ms. Martel voted aye, Mr. Cameron voted aye and***  
91 ***Chair Plumer voted aye. The motion passed 7-0-0.***

92 Vice-Chair Brown asked if a waiver for High Intensity Soil Survey was required and Mr. Boyd indicated it  
93 was not necessary because they are changing from private septic to municipal sewer.

94 ***Ms. English motioned after reviewing the criteria for granting waivers that the request of 107***  
95 ***Ponemah Road LLC., Planning Board Case #24-11 for a waiver from Section 7.4.15 of the site plan***  
96 ***review and subdivision regulations to provide the shape, size, height and location of all existing***  
97 ***structures within 200' of the site, be approved. Ms. Belanger seconded the motion. A roll call vote***  
98 ***was taken, Mr. Cameron voted aye, Ms. Martel voted aye, Mr. Grueter voted aye, Chair Plumer voted***  
99 ***aye, Vice-Chair Brown voted aye, Ms. English voted aye and Ms. Belanger voted aye. The motion***  
100 ***passed 7-0-0.***

101 Vice-Chair Brown asked the change in square footage of the existing building versus post construction.  
102 Mr. Boyd indicated 31,088 now or 24% versus 30,030 SF post construction of 20.8%. He noted a small  
103 reduction in impervious area, an increase in lot coverage and that a stone wall is being removed. Mr.  
104 Boyd noted a silt fencing will be shown on the plan.

105 Ms. Murphy reviewed the regulations for Section 7.7-7.13 of the site plan review and subdivision  
106 regulations

107 ***Ms. English motioned after reviewing the criteria for granting waivers that the request of 107***  
108 ***Ponemah Road LLC., Planning Board Case #24-11 for a waiver from Sections 7.7, 7.8, 7.9, 7.10, 7.11,***  
109 ***7.12 and 7.13 of the site plan review and subdivision regulations be approved. Ms. Belanger seconded***  
110 ***the motion. A roll call vote was taken, Ms. Belanger voted aye, Ms. English voted aye, Vice-Chair***  
111 ***Brown voted aye, Chair Plumer voted aye, Mr. Grueter voted aye, Mr. Cameron voted aye and Ms.***  
112 ***Martel voted aye. The motion passed 7-0-0.***

113 Ms. Murphy read out loud the proposed conditions of approval:

114 1. An electronic as-built plan of the entire property with details acceptable to the Town shall be  
115 provided prior to the issuance of a certificate of occupancy for any unit. This plan must be in a dwg or  
116 dxf file format and in NAD 1983 State Plane New Hampshire FIPS 2800 Feet coordinates;

- 117 2. All monumentation shall be set in accordance with Section 9.25 of the Site Plan Review and  
118 Subdivision Regulations prior to signing the final plans.
- 119 3. The annual operations and maintenance report in the Stormwater Management Operations and  
120 Maintenance Manual shall be completed and submitted to the Town Engineer and Town Planner prior  
121 to signing the final plan and shall be submitted annually on or before January 31<sup>st</sup>. This requirement  
122 shall be an ongoing condition of approval.
- 123 4. All applicable state permit approval numbers shall be noted on the final plans.
- 124 5. All appropriate fees to be paid including but not limited to: sewer/water connection fees, impacts  
125 fees, and inspection fees (including third party inspections) prior to the issuance of a building permit or a  
126 certificate of occupancy for any unit, whichever is applicable, as determined by the Town.
- 127 6. All condominium documents including declaration and by-laws shall be submitted to the Town  
128 Planner for review and approval prior to signing the final plans. In the event the Town Planner deems  
129 that review is needed by the Town Attorney then this review shall be at the applicant's expense.
- 130 7. Final plans will show any significant trees that will be removed to accommodate proposed  
131 development. If any significant trees are identified to be removed, they shall be replaced at a 1:1 ratio  
132 with native deciduous trees with a minimum of 3" caliper and shown on the final plans.
- 133 8. Applicant will plant 10 arborvitaes along every 4' near the new structure to be shown on revised  
134 plans.
- 135 9. Applicant will revise plan detail to specify paver type suitable for vehicular use.
- 136 10. Application will add silt fence on eastern property line to the plans.
- 137 11. Applicant will coordinate with public works and neighbor to the west for public sewer connection.  
138 Ms. Murphy asked about the existing septic system being filled in and Mr. Boyd agreed to modify the  
139 plan to show the final disposition of the existing septic system.
- 140 12. Applicant to modify plan to show disposition of septic in accordance with state regs.
- 141 13. Applicant will realign parking and if necessary coordinate any curb expansion with DPW.
- 142 14. The applicant will provide an additional spot, shown on the plan, for a total of seven spaces in the  
143 area described by Mr. Boyd in the hearing, in accordance with the ZBA condition.
- 144 **Ms. English motioned that the request of 107 Ponemah Road LLC., Planning Board Case #24-11 for a**  
145 **multi-family site plan application be approved with the conditions outlined. Ms. Belanger seconded**  
146 **the motion. A roll call vote was taken, Ms. Belanger voted aye, Ms. English voted aye, Vice-Chair**  
147 **Brown voted aye, Chair Plumer voted aye, Mr. Grueter voted aye, Ms. Martel voted aye. Mr. Cameron**  
148 **abstained. The motion passed 6-0-1.**
- 149 2. The application of Biery Family Trust for a minor subdivision of an existing 4.37-acre parcel into two  
150 (2) single-family residential lots. The subject property is located at 165A Kingston Road  
151 R-1, Low Density Residential zoning district

152 Tax Map Parcel #115-12

153 PB Case #24-9.

154

155 Chair Plumer read out loud the Public Hearing Notice and asked if the case was ready to be heard. Ms.  
156 Murphy indicated the case was ready for review purposes.

157

158 Ms. Belanger recused herself and left the meeting table.

159

160 **Mr. Grueter motioned to open Planning Board Case #24-9. Mr. Cameron seconded the motion. A roll**  
161 **call vote was taken, Mr. Cameron voted aye, Ms. Martel voted aye, Mr. Grueter voted aye, Chair**  
162 **Plumer voted aye, Vice-Chair Brown voted aye, and Ms. English voted aye. The motion passed 6-0-0.**

163

164 Ms. Murphy indicated that the application and supporting documents dated June 25<sup>th</sup> were submitted.  
165 The applicant went before the ZBA on June 18<sup>th</sup> regarding minimum lot frontage. The decision of the  
166 ZBA and their meeting minutes are provided. There was no TRC review however the application was  
167 reviewed by staff. There are no waivers being requested.

168

169 JJ MacBride of Emanuel Engineering presented the application on behalf of his client who he noted was  
170 present. The two-lot subdivision of a 4.4-acre parcel on Kingston Road, Route 111 was previously used  
171 as an excavation business. The parcels have no frontage on Kingston Road but use a 50' wide access  
172 easement. Currently there is a garage, chicken coops, storage bins, concrete pad and various stockpiles  
173 on the parcel. On June 18<sup>th</sup> the ZBA granted a variance for less than required frontage for both lots. The  
174 parcel will be split up the middle with 2.26 acres on the left having 300' of frontage on the private ROW  
175 and the parcel on the right with 2.11 acres and 26' of frontage on the private ROW. Five-bedroom  
176 homes are proposed.

177

178 Chair Plumer opened the hearing to public comment at 8:15 PM.

179

180 Dan Jones of 181 Kingston Road noted he was an abutter to the west and northerly side and has no  
181 issue. He questioned if it is a two-lot subdivision or three. Ms. English referenced a plan dated 6/25  
182 which was the original subdivision in 1993.

183

184 Mr. Grueter asked if the existing garage were staying – yes, the chicken coop will be removed.

185

186 Vice-Chair Brown asked about the shared access and whether there were a written maintenance  
187 agreement – not at this point.

188

189 Vice-Chair Brown noted that shared access can create challenges and the best way to avoid those is to  
190 have a written agreement which he recommended as a condition of approval before the plan is signed,  
191 at the Town Planner's discretion. He noted that not having a written agreement can cause  
192 complications with financing a mortgage.

193

194 Chair Plumer asked about the barn and Mr. MacBride said there would be no change.

195

196 Mr. Grueter questioned if the driveway was wide enough for two-way traffic. Ms. English agreed and  
197 asked how wide it was. The owner indicated 12' but would widen to 16.' Ms. Murphy read the  
198 requirement for a 3-4 lot subdivision which is 16'-18' of pavement. Vice-Chair Brown agreed that 16'  
199 worked in this case. He asked if the easement were official – yes, it is shown on the plan.

200  
201 Ms. Murphy noted the regulation is for paved and Vice-Chair Brown indicated he found gravel to be  
202 sufficient.

203  
204 Mr. Cameron asked where the parcel was located and Mr. MacBride indicated close to the  
205 Exeter/Brentwood line.

206  
207 Ms. English asked about the concrete storage bins – they are being removed.

208  
209 Karen Benson noted she was comfortable with the accessed if widened she would be okay with that.  
210 Chair Plumer noted the Board appreciated that.

211  
212 Chair Plumer closed public comment at 8:33 PM.

213  
214 Vice-Chair Brown reviewed conditions of approval:

- 215  
216 1. Written agreement regarding access to the new lots be added to the deeds  
217 2. Gravel access expanded to minimum of 16' added to plan

218  
219 Ms. Murphy read the standard conditions of approval:

220  
221 3. A dwg file of the subdivision plan shall be provided to the Town Planner showing all property lines  
222 and monumentation prior to signing the final plans. This plan must be in NAD 1983 State Plane New  
223 Hampshire FIPS 2800 Feet coordinates; and

224  
225 4. All monumentation shall be set in accordance with Section 9.25 of the Site Plan Review and  
226 Subdivision Regulations prior to the signing of the final plan.

227  
228 ***Vice-Chair Brown motioned that the request of Biery Family Trust, Planning Board Case #24-9 for a***  
229 ***minor subdivision be approved with the conditions as read. Ms. English seconded the motion. A roll***  
230 ***call vote was taken, Ms. English voted aye, Vice-Chair Brown voted aye, Chair Plumer voted aye, Mr.***  
231 ***Grueter voted aye, Ms. Martel voted aye and Mr. Cameron voted aye. The motion passed 6-0-0.***

232  
233 Ms. Belanger returned to the meeting table.

234  
235 3. The application of Copley Properties LLC for design review of the proposed subdivision of an existing  
236 169.80-acre parcel at 119 Piscassic Road in Newfields (and Exeter).

237 The Exeter portion of the subject property is located in the R-1, Low Density Residential zoning district.  
238 Tax Map Parcels #10-1, 10-2, 10 3, 10-4, 10-5, 10-6, 10-7, 11-11 and 19-16  
239 PB Case #24-10.

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Chair Plumer read out loud the public hearing notice, noted the property was both in Newfields and in Exeter and that town counsel was present.

**Ms. Belanger motioned to go into non-meeting at 8:41 PM. Mr. Grueter seconded the motion.** No vote was taken or required to recess to confer with town counsel.

The meeting room was closed to the public at 8:41 PM.

The meeting room was reopened to the public at 8:57 PM.

Ms. Belanger recused herself.

Chair Plumer reread the Public Hearing Notice for design review.

Ms. Murphy indicated that pursuant to RSA 676:4 this was a non-binding discussion with abutters notified so specific design can be discussed. There was no TRC process. The National Wetlands Inventory was used to show wetlands delineation on the plan and is not what the town requires. When the design review is concluded, the Board should vote to end or table to a date certain. She noted an issue with parcels 11-11, 19-16, 10-1, 10-2, 10-3, 10-5 which are owned by the Town, however the Ruggs claim ownership. Application requires the signature of the owners for final review.

J.J. MacBride of Emanuel Engineering presented the design review on behalf of Olive Rugg Trust who was not present. The applicant, Copley Properties is present.

Mr. MacBride noted there was a presentation last month in Newfields and that no development is proposed in Exeter. He noted there were 122 acres in Newfields and 4 acres in Exeter off Oaklands Road. The property is mostly undeveloped now with the exception of a house in the northern part, barn, supporting buildings and landscaping business on site, field and forest. Wetlands are shown in yellow delineated by Hurley Environmental however the survey is being processed. The preliminary yield plan showed 70 lots with the potential for 77 with 2 acres and 200' of frontage. There will be a conservation open space subdivision with 78 lots shown in case one or more are not buildable. There are three leach fields and the well radius extends into Exeter.

Drew Goddard of Copley Properties noted there is no building in Exeter, subject to change. The landowner is confident in their property rights. A trail system is maintained and he hopes to have trailhead parking.

Chair Plumer noted that where there are property disputes happening the application is not ready to be heard.

**Vice-Chair Brown motioned to end the design review process for Copley Properties and to instruct the Town Planner to notify the applicant in writing that the design review process has ended pursuant to RSA 676:4. Ms. English seconded the motion. A roll call vote was taken, Ms. English voted aye, Vice-**

284 ***Chair Brown voted aye, Chair Plumer voted aye, Mr. Grueter voted aye, Ms. Martel voted aye and Mr.***  
285 ***Cameron voted aye. The motion passed 6-0-0.***

286

287 Ms. Belanger returned to the meeting table.

288

289 **V. OTHER BUSINESS**

290

- 291 • Master Plan Discussion
- 292 • Field Modifications
- 293 • Bond and/or Letter of Credit Reductions and Release

294

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

296 **VIII. CHAIRPERSON'S ITEMS**

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

298 **X. ADJOURN**

299 Ms. Belanger motioned to adjourn the meeting at 9:18 PM.

300 Respectfully submitted.

301 Daniel Hoijer,

302 Recording Secretary (Via Exeter TV)





43 Tax Map Parcel #47-8 and #47-8.1  
44 PB Case #22-3

45  
46 Chair Plumer read out loud the Public Hearing Notice and announced that the applicant requested a  
47 continuance to the November 21<sup>st</sup> meeting at 7 PM.

48  
49 2. Exonian Properties LLC — Request for Extension of Planning Board Conditional Approval  
50 Tax Map Parcel #72-198  
51 43 Front Street  
52 PB Case #22-6

53  
54 Chair Plumer read out loud the Public Hearing Notice and the applicants' letter requesting an extension  
55 until May 26, 2026.

56  
57 **Ms. Belanger motioned that the request of Exonian Properties, LLC for an extension to May 26, 2026**  
58 **be approved. Ms. English seconded the motion. A roll call vote was taken: Ms. Belanger voted aye,**  
59 **Ms. English voted aye, Chair Plumer voted aye, Mr. Grueter voted aye, Ms. Martel voted aye and Mr.**  
60 **Cameron voted aye. The motion passed 6-0-0.**

61  
62 3. The application of IOKA Properties LLC and DAC IV, LLC for a lot line adjustment between the  
63 properties located at 53 Water Street and 45 Water Street.  
64 WC Waterfront Commercial zoning district  
65 Tax Map Parcel #72-34 and #72-35  
66 PB Case #24-14

67 Chair Plumer read out loud the Public Hearing Notice and asked if the application was ready to be heard.  
68 Mr. Sharples indicated yes.

69 **Mr. Cameron motioned to open Planning Board Case #24-14. Mr. Grueter seconded the motion. A roll**  
70 **call vote was taken: Ms. Belanger voted aye, Ms. English voted aye, Mr. Grueter voted aye, Chair**  
71 **Plumer voted aye, Mr. Cameron voted aye and Ms. Martel voted aye. The motion passed 6-0-0.**

72 Mr. Sharples explained that the application was for a lot line adjustment of 75 square feet from 53  
73 Water Street to 45 Water Street to resolve the existing building encroachment. Plans and supporting  
74 documents dated April 26, 2024 were submitted. There was no Technical Review Committee meeting  
75 but the staff did review the application to make sure that it complied with zoning.

76 Mr. Sharples indicated one proposed condition of approval:

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

80 Mr. Sharples noted no need to make monumentation a condition of approval as the building was the  
81 property line in the front and was in the river in the rear.

82 Henry Boyd presented the application on behalf of Dave Cowie. He noted Parcel A was trimmed off and  
83 added to the lot to the east. He noted the location of the alleyway and that the bump shown on the  
84 plan will be gone.

85 Ms. Martel asked why the bump existed and Mr. Boyed guessed that there was no survey and as each  
86 lot was added the deed descriptions carried forward.

87 Chair Plumer opened the hearing to public comment at 7:21 PM and being none closed the hearing to  
88 the public for deliberations.

89 **Mr. Grueter motioned that the request of Ioka Properties and DAC IV, LLC for a lot line adjustment be**  
90 **approved subject to the condition read by the Town Planner. Ms. Belanger seconded the motion. A**  
91 **roll call vote was taken: Ms. Martel voted aye, Mr. Cameron voted aye, Mr. Grueter voted aye, Chair**  
92 **Plumer voted aye, Ms. English voted aye, and Ms. Belanger voted aye. The motion passed 6-0-0.**

93  
94 4. A request by Robin Heim for a waiver from Section 9.6.2., Perimeter Buffer Strip of the Board's Site  
95 Plan Review and Subdivision Regulations to permit the proposed construction of a detached 2-car  
96 garage within the required 50-foot perimeter buffer. The subject property is located at 4 Balsam  
97 Way  
98 R-2, Single Family Residential zoning district  
99 Tax Map Parcel #89-4.4  
100 PB Case #24-15

101  
102 Chair Plumer read out loud the Public Hearing Notice and asked if the case was ready to be heard. Mr.  
103 Sharples indicated yes.

104  
105 **Ms. Belanger motioned to open Planning Board Case #24-15. Ms. English seconded the motion. A roll**  
106 **call vote was taken: Mr. Cameron voted aye, Ms. Martel voted aye, Mr. Grueter voted aye, Chair**  
107 **Plumer voted aye, Ms. English voted aye and Ms. Belanger voted aye. The motion passed 6-0-0.**

108  
109 Mr. Sharples indicated the applicant was looking for a waiver from Section 9.6.2 of the site plan review  
110 and subdivision regulations, for the perimeter buffer strip to construct a two-car detached garage. He  
111 noted the application was unusual as the plans were approved in November of 2009.

112  
113 Robin Heim presented the request for a waiver from Section 9.6.2 to allow for a detached garage with 1  
114 bedroom and 1 bathroom unit, above, to be less than 750 SF, to be constructed. She noted her  
115 daughter and fiancée will live there while saving to purchase a home and then when she retires Ms.  
116 Heim noted she will live in the apartment and her daughter will purchase the home at 4 Balsam Way.

117  
118 Ms. Heim reviewed the criteria of the waiver request noting it was not detrimental to public health,  
119 safety or welfare. She noted the property was unique in that it had a narrow 76.34' wide strip at the  
120 widest point and this was the only location where she could build the garage. She noted a buffer of Pine  
121 Trees along Hampton Road and that two would be removed. She noted if the trees died, she would  
122 replace with arborvitae. She noted she had the support of her neighbors.

123 Mr. Sharples corrected that the existing perimeter buffer was 50' not 35.' Ms. Heim indicated she would  
124 be 12' to 15' closer on the Hampton Road side, or 35.'

125

126 Ms. Belanger asked if all abutters had been notified and Ms. Heim indicated yes.

127

128 Chair Plumer opened the hearing to comments and questions from the public at 7:49 PM and being  
129 none closed the hearing to the public for deliberations.

130

131 ***Ms. Belanger motioned after reviewing the criteria for granting waivers that the request of Robin***  
132 ***Heim, Planning Board Case #24-15 for a waiver from Section 9.6.2 of the site plan review and***  
133 ***subdivision regulations for a 50' perimeter buffer to be reduced to 35' for the proposed construction of***  
134 ***a two-car garage, be approved. Ms. English seconded the motion. A roll call vote was taken: Ms.***  
135 ***Belanger voted aye, Ms. English voted aye, Chair Plumer voted aye, Mr. Grueter voted aye, Mr.***  
136 ***Cameron voted aye and Ms. Martel voted aye. The motion passed 6-0-0.***

137

## 138 V. OTHER BUSINESS

139

- 140 • T.F. Moran, Inc. (for C3I, Inc.) Planning Board Case #23-13, Tax Map Parcel #48-3, 8  
141 Commerce Way, Request for extension of Planning Board Conditional Approval

142

143 Chair Plumer read out loud the Public Hearing Notice. Mr. Sharples read the letter requesting a  
144 one-year extension of the approval. He noted this was the first extension request.

145

146 ***Ms. Belanger motioned to approve the request of T.F. Moran, Inc., Planning Board Case #23-13***  
147 ***for an extension to October 12, 2025. Ms. English seconded the motion. A roll call vote was***  
148 ***taken: Mr. Grueter voted aye, Chair Plumer voted aye, Ms. English voted aye, Ms. Belanger***  
149 ***voted aye, Mr. Cameron voted aye and Ms. Martel voted aye. The motion passed 6-0-0.***

150

- 151 • Master Plan Discussion

152 Mr. Sharples indicated the bike and pedestrian master plan was completed and is waiting to go  
153 before the Select Board. He noted the downtown parking pedestrian flow was also waiting to  
154 go before the Select Board. Mr. Sharples indicated that the complete street study was pulled  
155 back.

- 156 • Field Modifications

157 Mr. Sharples reported that there was a small change made by Unitil to the underground utilities  
158 at 19 Continental Drive.

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

160

## 161 VII. TOWN PLANNER'S ITEMS

162 Mr. Sharples indicated discussions were being had with Doug Eastman, Barbara McEvoy and Kristen  
163 Murphy about cleaning up land use regulations. He noted they would clean up conflicting provisions  
164 and make clear how they apply them.

165 **VIII. CHAIRPERSON'S ITEMS**

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

167 Ms. English and Ms. Belanger announced there would be a hazmat event at the DPW on October 12<sup>th</sup>.

168 **X. ADJOURN**

169 Ms. Belanger motioned to adjourn the meeting at 8:02 PM. Mr. Cameron seconded the  
170 motion.

171 Respectfully submitted.

172 Daniel Hoijer,

173 Recording Secretary (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](http://www.exeternh.gov)

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**Date:** November 14, 2024  
**To:** Planning Board  
**From:** Dave Sharples, Town Planner  
**Re:** Willey Creek Company PB Case #22-3

The Board may recall that the Applicant previously filed this application in May 2022 and subsequently, after several requests for continuance, requested at the August 25, 2022 meeting for the application to be tabled until further notice, noting that the Board had not yet taken jurisdiction to hear the application.

The Applicant re-submitted applications and plans for site plan review, lot line adjustment and Wetlands and Shoreland Conditional Use Permits along with supporting documents, dated 8/13/24, for the proposed relocation of Building D of the Ray Farm Condominium development on Willey Creek Road (off of Ray Farmstead Road). The subject properties are located in the C-3, Epping Road Highway Commercial zoning district and are identified as Tax Map Parcel #47-8-1 and #47-9.

A Technical Review Committee (TRC) meeting was held on Thursday, September 19<sup>th</sup>, 2024 to allow the applicant to ask any questions of staff and to be clear on what will be brought to the Planning Board. There are outstanding design comments but there are also a couple of threshold issues such as the waivers and the Shoreland CUP. At the TRC meeting, we discussed with the applicant how they wanted to proceed and it was mutually agreed to request that the Planning Board discuss the waivers and the Shoreland permit. The result of the waiver request and Shoreland CUP would significantly impact the proposed design and necessitate revisions to the current plan.

I recently received the attached email requesting a continuance. I have no objection to the continuance at this time but at some point the applicant needs to move forward with a hearing or withdraw until they are ready to resubmit and appear before the board.

Thank You.

Enclosures



Barbara Mcevoy <bmcevoy@exeternh.gov>

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**Re: CKT Assoc./Willey Creek -Continuance Planning Board scheduled for 11/21/24**

1 message

Wed, Nov 13, 2024 at 3:07 PM

**David Sharples** <dsharples@exeternh.gov>

To: Tim Phoenix <TPhoenix@hpglaw.com>

Cc: "Barbara Mcevoy (bmcevoy@exeternh.gov)" <bmcevoy@exeternh.gov>, "Jon & Amy Shafmaster (jshafmaster@littlebaylobster.com)" <jshafmaster@littlebaylobster.com>, Bill Blackett <BBlackett@littlebaylobster.com>, "John E. Lyons (jlyons@lyonslaw.net)" <jlyons@lyonslaw.net>, "Russell F. Hilliard" <rhilliard@uptonhatfield.com>, Ed Ford <eford@fordlaw.com>, Michelle Whelan <MWhelan@hpglaw.com>, "Millennium Engineering, Inc. (hboyd@MEI-NH.com)" <hboyd@mei-nh.com>, Kat Morrill <KMorrill@mei-ma.com>, Eric Botterman <ebotterman@mei-ma.com>

Hi Tim,  
Looks good to me. This will suffice so no need to submit anything else.  
Thanks,  
Dave

On Wed, Nov 13, 2024 at 1:59 PM Tim Phoenix <TPhoenix@hpglaw.com> wrote:

Good afternoon, Dave;

As you know, this matter was previously tabled since approximately 2022. It was put back on the agenda for which we had a meeting with you and then with the Technical Review Committee on September 19, 2024. It is presently scheduled on the Planning Board on agenda for Thursday, November 21, 2024.

I believe that you have had meetings or discussions with Eric Botterman of Millennium Engineering concerning a reexamination of the proposed access to Bldg. D, changing it from access via a driveway from Building C, now proposing direct access via a driveway extension from the existing TIF road. Internal review of design and related technical aspects is underway; however, will not be available for review by the Planning Board by November 21, 2024. It is also my understanding, that you had suggested, and we agree, that a meeting with TRC in advance of a formal planning board meeting might be in order.

As a result of the above , we request a continuance of the November 21,2024 Planning Board hearing. Given the workload of Millennium and others involved in the project, we would ask for three(3) months ,

rescheduling us before the Planning Board on its February 27, 2025 agenda. Once we have a better handle on plans and timing, I will work with you to schedule a TRC meeting in advance of the Planning Board meeting.

Please let me know if you need something more formal as a request, and/or whether someone needs to appear on November 21. I'm happy to discuss further by phone or in person if needed.

Respectfully submitted,

Tim

HOEFLE, PHOENIX, GORMLEY & ROBERTS, PLLC  
ATTORNEYS AT LAW

R. Timothy Phoenix, Esq.

Hoefle, Phoenix, Gormley & Roberts, PLLC

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# TOWN OF EXETER

## *Planning and Building Department*

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**Date:** November 13, 2024  
**To:** Planning Board  
**From:** Dave Sharples, Town Planner  
**Re:** RiverWoods Company at Exeter PB Case #24-16

The Applicant is seeking approval of a site plan and Wetlands Conditional Use permit (CUP) application for the demolition of the existing administrative building and the proposed construction of a new supportive living health center along with associated site improvement on the property located at 5 White Oak Drive. The subject property is located in the R-1, Low Density Residential zoning district and is identified as Tax Map Parcel #97-23.

The Applicant submitted applications, plans and supporting documents, dated 9/10/24, for review; these materials are enclosed for your review.

A Technical Review Committee (TRC) meeting was held on October 2, 2024. Subsequently, revised plans and supporting documents were submitted and a second TRC meeting took place on October 31<sup>st</sup>, 2024. A copy of the TRC comment letter, dated 11/6/24 and comment letters from Underwood Engineering (UEI), dated 10/8/24 and 11/4/24 are also enclosed for your review, as well as responses from Altus Engineering.

A site walk was conducted with the Conservation Commission on November 12<sup>th</sup>, 2024. The Applicant subsequently appeared before the Commission at their regular meeting that evening for review of their Wetlands Conditional Use Permit application. The Commission voted unanimously that they had no objection to the application, as proposed, and recommended approval of the Wetland CUP with one condition. Please see attached memo, dated 11/13/24, from Conservation & Sustainability Planner Kristen Murphy.

There are no waivers being requested in conjunction with this application.

Revised plans and supporting documents were submitted to our office on 11/13/24 and are enclosed for your review. Staff is still in the process of reviewing the recent submission; I will provide an update for the Board at the meeting.



At a minimum, I would suggest that the Planning Board accept the plans as complete for review purposes, hold the public hearing to get input from the public and consider scheduling a site walk. Kristen Murphy mentioned that the Conservation Commission site walk was very informative and I would suggest that the Planning Board hold one as well.

**Planning Board Motions:**

**Conditional Use Permit (Wetlands) Motion:** After reviewing the criteria for a Wetlands Conditional Use permit, I move that the request of RiverWoods Company at Exeter (PB Case #24-16) for a Conditional Use Permit be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

**Site Plan Motion:** I move that the request of RiverWoods Company at Exeter (PB #24-16) for Site Plan approval be APPROVED / APPROVED WITH THE FOLLOWING CONDITIONS / TABLED / DENIED.

Thank You.

Enclosures

# **SITE PLAN AND CONDITIONAL USE PERMIT APPLICATION**

**FOR**

## **RiverWoods Supportive Living Health Center**

**5 White Oak Drive  
Exeter, New Hampshire**

**Tax Map 97, Lot 23**

**September 10, 2024  
Revised November 12, 2024**

*Prepared For:*

**RiverWoods Company at Exeter**  
7 Riverwood Drive  
Exeter, NH 03833

*Prepared By:*

**ALTUS ENGINEERING**  
133 Court Street  
Portsmouth, NH 03801  
Phone: (603) 433-2335



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Section 1	Cover Letters, Site, CUP and Water/Sewer Applications, Abutters List
Section 2	Letter of Authorization
Section 3	Property and Easement Deeds
Section 4	USGS Map, Aerial Photo, GIS Map and FIRM
Section 5	Transportation Plan
Section 6	Drainage Analysis (under separate cover in hard copy)
Section 7	Traffic Impact and Access Study (under separate cover in hard copy)
Section 8	Project Plans (under separate cover in hard copy)

# Section 1

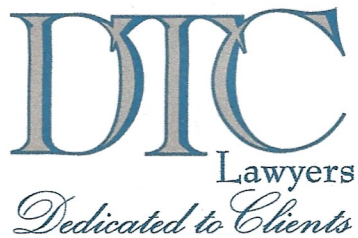
Cover Letters

Site Plan Application

Wetlands Conditional Use Application

Water and Sewer Application

Abutters List



CELEBRATING OVER 35 YEARS OF SERVICE TO OUR CLIENTS

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JOHN J. RATIGAN  
ROBERT M. DEROSIER  
CHRISTOPHER L. BOLDT  
SHARON CUDDY SOMERS  
DOUGLAS M. MANSFIELD  
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OF COUNSEL  
MOLLY C. FERRARA

RETIRED  
MICHAEL J. DONAHUE  
CHARLES F. TUCKER  
ROBERT D. CIANDELLA  
DENISE A. POULOS  
NICHOLAS R. AESCHLIMAN

November 12 2024

Langdon Plumer, Chair  
Exeter Planning Board  
10 Front Street  
Exeter, NH 03833

Re: Riverwoods Centralized Health Care

Dear Chair Plumer and Members of the Board:

This correspondence is submitted to you in anticipation of the November 21, 2024 public hearing of the Planning Board. The purpose of this correspondence is to provide you with an outline of the project and the various exhibits submitted which will provide guidance to you as to how we comply with the site review regulations.

### **Introduction**

This proposal is the culmination of several years of planning and design to provide health care services for RiverWoods residents. The proposal provides spacious and comfortable surroundings for those residents who may have need for nursing care, assisted living, or memory care. The proposal also recognizes the importance of having visitors for the emotional health of the residents, and the proposal is thus designed to welcome such visitors in a variety of common spaces. Finally, the proposal is also designed to provide the highest level of staff care to the residents. When RiverWoods started out thirty years ago, the practice at the time was to have services for assisted living and nursing care in each of the campuses, but as health care has evolved, particularly as it applies to memory care, it is now apparent that one centralized health center which includes memory care as well as nursing care and assisted living will be the best way to provide care for all residents who need health care.

### **Executive Summary**

Riverwoods seeks approval from the Planning Board for site review and for a conditional use permit. The application is for a centralized health center located in the vicinity of the existing

DONAHUE, TUCKER & CIANDELLA, PLLC

16 Acadia Lane, P.O. Box 630, Exeter, NH 03833

111 Maplewood Avenue, Suite D, Portsmouth, NH 03801

Towle House, Unit 2, 164 NH Route 25, Meredith, NH 03253

83 Clinton Street, Concord, NH 03301

Campus Crossing Facility on White Oak Drive. The Campus Crossing building will be dismantled to make room for the new centralized health care center. When completed, the health center will be comprised of a three-story building with a footprint of just over fifty thousand (50,000) square feet and which will serve all of the residents of RiverWoods Exeter. The building will contain underground parking and additional parking will be located on the east side of White Oak Drive. The use and dimensions of the building and improvements are permitted as a matter of right under the Exeter Zoning Ordinance. Extensive evidence, including a traffic study, a drainage study, and a wetland study have been provided. All such evidence, together with the testimony of the project engineer, Erik Saari of Altus Engineering, Wetland Scientist Brendan Quigley of Gove Environmental Services, project landscape architect Robbi Woodburn, project architect AG Architecture, and members of the RiverWoods leadership team and key health care team members will provide the Planning Board with information to substantiate that the application meets all site review regulations and meets the criteria under the Exeter Zoning Ordinance for a conditional use permit. As a result, the applicant seeks site approval for the project and seeks conditional use approval for the project. The applicant acknowledges that the Planning Board may wish to require reasonable conditions as a requirement of the approvals.

### **Scope of Review**

As the Planning Board knows, if a proposal meets the use and dimensional requirements of the zoning ordinance, then the Planning Board must then address a site review application by to determining whether or not the proposal meets the site review regulations. If the proposal meets such regulations, then the Planning Board must grant approval, although the approval can be subject to reasonable conditions. We can certainly appreciate that your work will be made easier if we provide you with background information on the operation and design of the health care center and we intend to share such information. However, the background information is just that and the decision as to whether to grant the site review must be based on compliance with the site regulations and not whether the building use is desirable or whether the decision by RiverWoods to centralize health care is appropriate.

Recently, the scope of planning board review of site plans was clarified even further by the New Hampshire Supreme Court in Mojalaki Holdings, LLC v. City of Franklin (2024 N.H. 17). In this case, the Supreme Court reversed the decision of the Planning Board to deny a site plan application to install a solar panel array and then remanded to allow a builder's remedy. The Court held that the denial of the application was erroneous because site specific technical regulations were met, but the Planning Board denied the application based on its belief that the application did not adhere to the "purpose provisions" of the site review regulations. The Court noted that the Planning Board cannot deny an application merely because it views the application as an inappropriate use of land. Moreover, the Planning Board cannot deny an application merely because they believe that the application does not fit the purpose language of the site review regulations.



### **Site Review Regulations**

To date, the following issues have been identified as issues which come under scrutiny by the Planning Board to determine whether the proposal meets site regulation. There may be further issues and we will respond to each in turn.

- A. Drainage: Erik Saari will present testimony supported by the drainage study which will indicate that the drainage coming from the site following the construction of the building and improvements will meet or be less than existing conditions in accordance with town regulations and state laws and will not detrimentally impact abutting properties. Drainage was part of the review of the TRC and will be subject to further review by the NH DES in connection with the Alteration of Terrain Permit.
- B. Internal Traffic: In response to concerns raised about the need to provide transport to and from existing campuses to the health center and from the health center to existing campuses, RiverWoods submitted a transportation plan which outlines internal transportation that will be provided to residents (see Section 5 of the September 10, 2024 Planning Board submittal).
- C. External Traffic: A traffic study was submitted which focused on impacts to streets outside of the RiverWoods property, particularly, the impact to Route 111. The traffic study concludes that centralizing the health care services currently provided on each of the three campuses will have minimal traffic impact and the current road infrastructure can support the proposed improvement. Further, jurisdiction for approval of any project impacting Route 111 lies with the NH Department of Transportation.

### **Conditional Use Permit**

The Exeter Conservation Commission intends to hold a site walk on November 12 to be followed by a meeting that same day. The Conservation Commission has received a conditional use permit application, and a copy of the dredge and fill application submitted to the NH Department of Environmental Services. The narrative and NH DES Dredge and Fill Application were submitted to the Town on November 1, 2024. The plans which correlate to the submittal were submitted to the Town on October 23, 2024. The Conservation Commission will review and comment on the conditional use permit application and provide the comments to the Planning Board. Similarly, the Conservation Commission will review and comment on the dredge and fill application to the NH Department of Environmental Services.

The Planning Board will then ascertain whether or not the application complies with the criteria set forth in the zoning evidence. Evidence will be presented by Erik Saari and our wetland scientist, Brendan Quigley, that we do comply with the ordinance criteria and will include the following: (1) the prior denial by the ZBA of a proposed location and the constraints imposed by conservation restrictions, easements and buffers required by ordinance means that there are no other locations to site the proposal; (2) the wetlands affected are generally of lower value than

Landgon Plumer, Chair  
Exeter Planning Board  
November 12, 2024  
Page 4

other wetlands on the property; (3) the proposal has been designed so as to minimize detrimental impact to the wetlands through methods such as reducing the amount of impacted area and treating stormwater; (4) we are minimizing stormwater peak rates and the risk of flooding; and (5) we are proposing restoration actions such as a contribution to the ARM fund and placing some of our upland and wetland property into conservation .

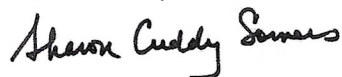
### **Conclusion**

RiverWoods of Exeter proposes to construct a centralized health care center to replace the existing health care facilities located on the three campuses. Extensive evidence will be presented to support a conclusion that we comply with site review regulations and comply with the criteria for a conditional use permit.

We look forward to being before the Board on November 21, 2024. In the meantime, if you have any questions do not hesitate to contact me.

Very truly yours.

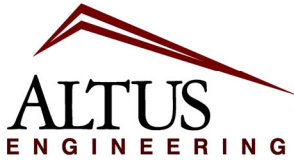
DONAHUE, TUCKER & CIANDELLA, PLLC



Sharon Cuddy Somers  
SCS/sac

cc: Justine Vogel, RiverWoods  
Erik Saari, Altus Engineering  
Brendan Quigley, Gove Environmental





**Civil  
Site Planning  
Environmental  
Engineering**

133 Court Street  
Portsmouth, NH  
03801-4413

November 13, 2024

Dave Sharples, Town Planner  
Town of Exeter  
10 Front Street  
Exeter, NH 03833

**Re: Engineering and Technical Review  
RiverWoods Supportive Living Health Center  
Tax Map 97, Lot 23  
5 White Oak Drive  
Exeter, New Hampshire  
Altus Project No. 5015**

Transmitted via email to: [dsharples@exeternh.gov](mailto:dsharples@exeternh.gov)

Dear Mr. Sharples,

Altus Engineering, Inc. (Altus) is in receipt of the Underwood Engineers (UEI) review comments dated November 4, 2024 and TRC comments dated November 6, 2024. We offer the following in response:

### **Underwood**

#### Utility Plan

16. We have adjusted the Sewer Schedule on Sheet C-8 to state “see detail” for SMH #'s P2A and P3. While vague, this ensures that this citation remains consistent regardless of later adjustments to the plan set.

#### Architectural Plans

23. f. Floor drains are now shown on the Lower Level Floor Plan.

#### New Comments

27. A detail for SMH #P2A and its internal drop has been added to Sheet C-21.
28. Sewer rims and inverts have been added to the profile on Sheet C-9.
29. The missing edge of pavement has been added to the existing conditions plan Sheet 1 of 2.
30. The missing catch basin has been added to the existing conditions plan Sheet 1 of 2. Rim and invert data has also been added to Sheet C-6.
31. We have added additional storage above the rim of the existing catch basin in both the pre- and post- drainage models. Our calculations show that while it does exceed the rim in larger storm event, runoff does not flow over the road.

## TRC

### Fire Department - Architectural

- Architectural elements related to fire suppression are not part of site plan review but will be addressed at the building permit stage of the project.

### Fire Department – Civil/Site

- A hydrant is shown at the back right corner of the site. An additional hydrant has been added near the lower left corner of the building.

### Fire Department – Sprinkler

- Fire sprinklers are not part of site plan review but will be addressed at the building permit stage of the project.

### Fire Department – Fire Alarm

- Items related to fire alarms are not part of site plan review but will be addressed at the building permit stage of the project.

### Fire Department – Elevators

- Elevator related items are not part of site plan review but will be addressed at the building permit stage of the project.

### Fire Department – Ladder Truck

- Sheet C-3 shows the turning motions of a WB-62 tractor trailer, a vehicle significantly larger than the town's ladder truck. It follows that the smaller fire apparatus would have no issues negotiating the site and that no further analysis is warranted.

### Conservation – Site Plan

1. No response required
2. Gove Environmental Services is proceeding with a natural resource plan but it was not complete at press time.
3. The mitigation proposal includes a contribution to the State ARM fund and a 3.53-acre conservation easement on the RiverWoods property abutting an existing conservation area.
4. The raised beds and garden shed have been relocated from their prior position on the Landscape Plan and will now be placed between the pickleball courts and Kingston Road along with the horseshoe pits. The Applicant is open to discussing the prior location of the beds for buffer restoration.
5. We have no objection to a fertilizer restriction.
6. All of the proposed lighting fixtures are Dark Sky approved.
7. Note #9 on Sheet C-7 stipulates that all erosion control blankets and fasteners shall be biodegradable. The erosion control blanket specified on the plans is designed to meet these criteria.
8. There are no known species of concern in the vicinity of the project. The Wildlife Protection Notes on the Cover Sheet are what we expect NHDES to require regardless of the NHB findings.
9. Gove Environmental Services has indicated there was no snow cover at the time of the delineation. It should be noted that the project site has been delineated several times in the past, first in 2003 for the Ridge project followed by Campus Crossing which featured delineations from 2008 and 2010. Similar to the recent flagging, neither of these delineations indicated the presence of potential vernal pools.
10. We have extended sidewalks in several locations to enhance pedestrian connectivity throughout the site.

Conservation – Wetland CUP

- Although we did not fully develop the plan, our original proposal that went before the ZBA showed a larger building and site footprint. That is the only alternate plan that evolved to a point beyond a simple concept and we believe that this would have had greater wetland and buffer impacts than those currently planned. Given the necessary scope of the project and limited area available on the RiverWoods parcel, we do not see a viable alternative to the current design. As for specific site design elements, we have used underground stormwater systems to the extent feasible, but these alone do not meet the required level of treatment required by the Site Plan Regulations and we have no choice but to include bioretention systems as well. As for the patio on the building's north side, this is included as a dedicated space for those in need of memory care. An outdoor area such as this was adamantly requested by residents, particularly those who have loved ones in need of such care. We have also revisited the parking demand, and due to the unique nature of the use, we currently only show six excess spaces. Given that five of the stalls provided are ADA spaces that may not get fully utilized, we expect that the parking areas shown on the plan will be at or near capacity at peak times.
- While the culvert under NH 111 would benefit from an upgrade, its impact would be limited due to the presence of a similar culvert under a private driveway approximately twenty feet upstream.
- The buffer restoration is associated with the removal of an existing paved driveway and underground utilities to 67 Kingston Road. As shown on the Demolition Plan, a driveway culvert is also to be removed and the entire area loamed and seeded.

Altus hopes that the above information satisfies your concerns. Please call me if you have any questions or need any additional information. Thank you for your time and consideration.

Please feel free to contact me directly if you have any questions or require any additional documentation. Thank you for your time and consideration.

Sincerely,

**ALTUS ENGINEERING**



Erik Saari  
Vice President

ebs/5015.01-LTR-PB-111324

## SITE PLAN REVIEW APPLICATION CHECKLIST

A COMPLETED APPLICATION FOR SITE PLAN REVIEW MUST CONTAIN THE FOLLOWING

1. Application for Hearing (X)
2. Abutter's List Keyed to Tax Map (X)  
(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" (X)
4. Letter of Explanation (X)
5. Written Request for Waiver (s) from " Site Plan Review and Subdivision Regulations" (if applicable) (X)
6. Completed "Preliminary Application to Connect and /or Discharge to Town of Exeter- Sewer, Water or Storm Water Drainage System(s)"( if applicable) (X)
7. Planning Board Fees (X)
8. Seven (7) full-sized copies of Site Plan *(5) Submitted per Planning Department* (X)
9. Fifteen (15) 11"x17" copies of the final plan to be submitted **TEN DAYS PRIOR** to the public hearing date. (X)
10. Three (3) pre-printed 1"x 2 5/8" labels for each abutter, the applicant and all consultants. (X)

**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  
 (X) 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:** The Riverwoods Company, at Exeter, New Hampshire  
**TELEPHONE:** (603) 772-4700  
**ADDRESS:** 7 Riverwoods Drive, Exeter, NH 03833

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:** Existing Elderly Congregate Care Facility  
**ADDRESS:** 7 Riverwoods Drive (proposed portion of property for redevelopment limited to the portion of the property shown on the site plan)  
**TAX MAP:** 97 **PARCEL #:** 23 **ZONING DISTRICT:** R-1  
**AREA OF ENTIRE TRACT:** 204.48 acres **PORITION BEING DEVELOPED:** 5.2+/- acres

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

6. EXPLANATION OF PROPOSAL: Demolition of existing administrative building and construct new supportive living health center with associated parking, drive aisles and infrastructure

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>Site Plan Full Size</u>	<u>5</u>
B. <u>Transportation Plan</u>	<u>5</u>
D. <u>Drainage Analysis</u>	<u>3</u>
E. <u>CUP Application</u>	<u>5</u>
F. <u>Maps, Deeds</u>	<u>5</u>
<u>Traffic Impact and Access Study</u>	<u>3</u>

9. ANY DEED RESTRICTIONS AND COVENANTS THAT APPLY OR ARE CONTEMPLATED (YES/NO)

Yes, see enclosed easement deeds which include a gas line easement, a no cut easement and two conservation easement deeds. The restrictions do not affect the portion of the property that is the subject of this application.

10. NAME AND PROFESSION OF PERSON DESIGNING PLAN:

NAME: Altus Engineering

ADDRESS: 133 Court Street, Portsmouth, NH 03801

PROFESSION: Civil Engineer TELEPHONE: (603) 433-2335

11. LIST ALL IMPROVEMENTS AND UTILITIES TO BE INSTALLED:

Water, sewer, gas, electric and communications utilities together with paved parking lots and roads, a building and associated drainage infrastructure.

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)

See attached

**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).

The existing administrative building will be demolished however, Exeter Heritage Commission review is not required pursuant to the criteria contained in Article 5, Section 5.3.5 of the Zoning Ordinance.

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

Yes, the project contemplates utility work within the NH Route 111 right of way.

**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 11/13/24

OWNER’S SIGNATURE



Erik Saari, Altus Engineering (Agent)

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.



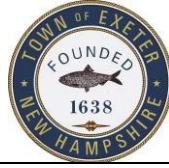
# SITE PLAN REQUIREMENTS

## 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"/>	7.4.1 Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan.
✓	<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"/>	7.4.3 Title, date, north arrow, scale, and Planning Board Case Number.
✓	<input type="checkbox"/>	7.4.4 Tax map reference for the site under consideration, together with those of abutting properties.
✓	<input type="checkbox"/>	7.4.5 Zoning (including overlay) district references.
✓	<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"/>	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"/>	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"/>	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"/>	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.





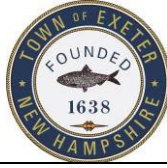
✓	<input type="checkbox"/>	7.4.11 State and Federally designated wetlands, setback information, total wetlands proposed to be filled, other pertinent information and the following wetlands note: "The landowner is responsible for complying with all applicable local, state, and federal wetlands regulations, including any permitting and setback requirements required under these regulations."
✓	<input type="checkbox"/>	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"/>	7.4.13 The lines of existing abutting streets and driveway locations within 200-feet of the site.
✓	<input type="checkbox"/>	7.4.14 The location, elevation, and layout of existing catch basins and other surface drainage features.
✓	<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"/>	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"/>	7.4.17 The location of all existing easements, rights-of-way, and other encumbrances.
✓	<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"/>	7.4.19 All other features which would fully explain the existing conditions of the site.
✓	<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"/>	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"/>	7.5.2 The location and layout of proposed drainage systems and structures including elevations for catch basins.
✓	<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"/>	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"/>	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"/>	7.5.6 Location and timing patterns of proposed traffic control devices.
✓	<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"/>	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"/>	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"/>	7.5.10 The location, type, and size of all proposed landscaping, screening, green space, and open space areas.
✓	<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"/>	7.5.12 The location, size, and exterior design of all proposed signs to be located on the site.
✓	<input type="checkbox"/>	7.5.13 The type and location of all solid waste disposal facilities and accompanying screening.



✓	<input type="checkbox"/>	7.5.14 Location of proposed on-site snow storage.
✓	<input type="checkbox"/>	7.5.15 Location and description of all existing and proposed easement(s) and/or right-of-way.
✓	<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"/>	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
- N/A 7.12 Natural Resources Plan
- N/A 7.13 Yield Plan

4894-5894-8320, v. 1



# Town of Exeter Planning Board Application

## Conditional Use Permit: Wetland Conservation Overlay District in accordance with Zoning Ordinance Article: 9.1

### SUBMITTAL REQUIREMENTS:

1. Refer to the Land Use Board Meeting Schedule and Deadlines for Submission Requirements.
2. Plans Must Include:
  - Existing Conditions
    - a. Property Boundaries
    - b. Edge of Wetland and associated Buffer (Wetlands Conservation Overlay District – WCOD)
      - Prime wetland: 100’
      - Vernal Pool (>200 SF): 75’
      - Exemplary Wetland: 50’
      - Very Poorly Drained: 50’
      - Poorly Drained: 40’
      - Inland Stream: 25’
    - c. Structures, roads/access ways, parking, drainage systems, utilities, wells and wastewater disposal systems and other site improvements
  - Proposed Conditions
    - a. Edge of Wetlands and Wetland Buffers and distances to the following:
      - i. Edge of Disturbance
      - ii. Structures, roads/access ways, parking, drainage systems, utilities, wells and wastewater disposal systems and other site improvements
    - b. Name and phone number of all individuals whose professional seal appears on the plan
3. If applicant and/or agent is not the owner, a letter of authorization must accompany this application
4. Supporting documents i.e. Letters from the Department of Environmental Services, Standard Dredge and Fill Application and Photos of the property
5. A Town of Exeter Assessors list of names and mailing addresses of all abutters

<b>Required Fees:</b> Planning Board Fee: <b>\$50.00</b> Abutter Fee: <b>\$10.00</b> Recording Fee (if applicable): <b>\$25.00</b>
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The Planning Office must receive the completed application, plans and fees on the day indicated on the Planning Board Schedule of Deadlines and Public Hearings.

APPLICANT	Name: The Riverwoods Company, at Exeter, New Hampshire
	Address: 7 Riverwoods Drive, Exeter, NH 03833
	Email Address:
	Phone: 603-772-4700
PROPOSAL	Address: 7 Riverwoods Drive
	Tax Map #97 Lot# 23 Zoning District: R-1
	Owner of Record: same
Person/Business performing work outlined in proposal	Name: Altus Engineering
	Address: 133 Court Street, Portsmouth, NH 03801
	Phone: 603-433-2335
Professional that delineated wetlands	Name: Gove Environmental Services
	Address: 8 Continental Drive, Unit H, Exeter, NH 03833
	Phone: 603-778-0644

**Town of Exeter**  
**Planning Board Application**  
**Conditional Use Permit: Wetland Conservation Overlay District**

Detailed Proposal including intent, project description, and use of property: (Use additional sheet as needed)

See letter of explanation for project details

**Wetland Conservation Overlay District Impact (in square footage):**

Temporary Impact	Wetland: (SQ FT.)	Buffer: (SQ FT.)
	<input type="checkbox"/> Prime Wetlands _____	<input type="checkbox"/> Prime Wetlands _____
	<input type="checkbox"/> Exemplary Wetlands _____	<input type="checkbox"/> Exemplary Wetlands _____
	<input type="checkbox"/> Vernal Pools (>200SF) _____	<input type="checkbox"/> Vernal Pools (>200SF) _____
	<input type="checkbox"/> VPD _____	<input type="checkbox"/> VPD _____
	<input type="checkbox"/> PD _____	<input type="checkbox"/> PD _____
	<input type="checkbox"/> Inland Stream _____	<input type="checkbox"/> Inland Stream _____
Permanent Impact	Wetland: (SQ FT.)	Buffer: (SQ FT.)
	<input type="checkbox"/> Prime Wetlands _____	<input type="checkbox"/> Prime Wetlands _____
	<input type="checkbox"/> Exemplary Wetlands _____	<input type="checkbox"/> Exemplary Wetlands _____
	<input type="checkbox"/> Vernal Pools (>200SF) _____	<input type="checkbox"/> Vernal Pools (>200SF) _____
	<input type="checkbox"/> VPD _____	<input type="checkbox"/> VPD _____
	<input checked="" type="checkbox"/> PD <u>19,453 sf</u>	<input checked="" type="checkbox"/> PD <u>113,694 sf</u>
	<input type="checkbox"/> Inland Stream _____	<input type="checkbox"/> Inland Stream _____

List any variances/special exceptions granted by Zoning Board of Adjustment including dates:

see attached list

Describe how the proposal meets conditions in **Article 9.1.6.B** of the Zoning Ordinance (attached for reference).  
Written justification for each criterion must be provided to be deemed administratively complete.

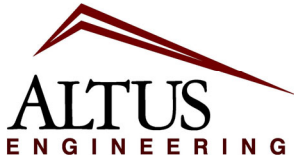
see attached

9.1.6.B. Prior to issuance of a conditional use permit, the Planning Board shall conclude and make a part of the record, compliance with the following criteria:

1. That the proposed use is permitted in the underlying zoning district;
2. No alternative design which does not impact a wetland or wetland buffer or which has less detrimental impact on the wetland or wetland buffer is feasible;
3. A wetland scientist has provided an impact evaluation that includes the “functions and values” of the wetland(s), an assessment of the potential project-related impacts and concluded to the extent feasible, the proposed impact is not detrimental to the value and function of the wetland(s) or the greater hydrologic system.
4. That the design, construction and maintenance of the proposed use will, to the extent feasible, minimize detrimental impact on the wetland or wetland buffer;
5. That the proposed use will not create a hazard to individual or public health, safety and welfare due to the loss of wetland, the contamination of groundwater, or other reasons;
6. The applicant may propose an increase in wetland buffers elsewhere on the site that surround a wetland of equal or greater size, and of equal or greater functional value than the impacted wetland
7. In cases where the proposed use is temporary or where construction activity disturbs areas adjacent to the immediate use, the applicant has included a restoration proposal revegetating any disturbed area within the buffer with the goal to restore the site as nearly as possible to its original grade and condition following construction.
8. That all required permits shall be obtained from the New Hampshire Department of Environmental Services Water Supply and Pollution Control Division under NH RSA §485-A: 17, the New Hampshire Wetlands Board under NH RSA §483-A, and the United States Army Corps of Engineers under Section 404 of the Clean Water Act.;

RIVERWOODS  
SPECIAL EXCEPTIONS OR VARIANCES BY THE ZBA

DATED	RELIEF GRANTED
July 17, 1990	Special Exception for "Continuing Care Retirement Facility" (the "Woods")
September 20, 1990	Amendment to condition of previous SE to increase nursing home beds from 50 to 60
February 20, 1991	Special Exception to allow: chimney exceeding allowable height; ornamental towers exceeding allowable height; construction of bridge over poorly drained soils; construct a portion of the structure on poorly drained soils.
June 19, 1991	Amendment to condition of previous SE to permit a change in the location of the access road
August 6, 2007	Special Exception to permit "Elderly Congregate Care Facility (the "Ridge")
April 17, 2008	Special Exception to permit "Elderly Congregate Care Facility (the "Boulders")
February 18, 2011	Special Exception to permit "Elderly Congregate Care Facility (Admin Building)
July 25, 2011	Amendment to Feb. 2011 Special Exception for slight increase in total square footage of Admin Building
August 22, 2011	Special Exception to permit the construction of an outdoor park and recreation area as an accessory use



**Civil  
Site Planning  
Environmental  
Engineering**

133 Court Street  
Portsmouth, NH  
03801-4413

November 1, 2024

Dave Sharples, Town Planner  
Planning Department, Town of Exeter  
10 Front Street  
Exeter, NH 03833

**Re: Conditional Use Permit Application  
RiverWoods Supportive Living Health Center  
Tax Map 97, Lot 23  
5 White Oak Drive  
Exeter, New Hampshire  
Altus Project No. 5015**

Dear Mr. Sharples:

As you know, we submitted a Conditional Use Permit application on September 10, 2024 which is scheduled to be reviewed by the Conservation Commission on November 12. Since our original submittal, the design has altered somewhat, therefore please accept these revised comments regarding our compliance with the criteria listed under Article 9, Section 9.1.6.B of the Exeter Zoning Ordinance. These revised materials supersede those in the original submission.

Compliance with Criteria of Zoning Ordinance

1. The proposed use of a centralized health center and associated parking for an elderly congregate care facility is permitted in the underlying zoning district since it will occur on a property which was granted a special exception for the same.
2. We have found no feasible alternative design which does not impact the wetland or wetland buffer or which would minimize such impact on the wetland or wetland buffer.

The design of the centralized health center has been constrained from the start by the fact that while RiverWoods owns more than 200 acres of property, very little of that is available for the proposed improvements due to the fact that there are conservation restrictions on large portions of it. Similarly, the existence of a gas line easement also constrains the site. Finally, any land which is not already subject to conservation restrictions or other easements is encumbered by a buffer at the perimeter of the entire property as required by the Exeter Zoning Ordinance.

In addition to the external factors constraining the site, the design also has to account for the underlying purpose of the use and the size of the building required to effectuate this



purpose. Specifically, the objective of the centralized health care facility is not only to consolidate services currently spread out over three campuses, but also to provide additional services which meet today's industry standards including memory care which is not currently offered at RiverWoods. These factors combined mean that the facility needs to be sized properly to be able to achieve these goals.

As a result of these external constraints and the need for a building sized as shown to implement the goals of a central facility, the only location available for the proposed health center is the that shown proposed on the plan.

3. The wetland report from Gove Environmental Services provides evidence showing the functions and values of the wetlands in the area to be developed and shows the impacts to such wetlands. The report also concludes that to the extent feasible, the proposed development is not detrimental to the function and value of the wetlands or the greater hydrologic system. Of particular note is that the wetlands in the area of development are generally of lower value than that of other wetlands on the property (See Section I. IV of Major Impact Dredge and Fill Application, hereinafter "Wetlands Application"; Section 5, Written Narrative; Section 5, Relative Function and Value of Wetlands Delineation Report, Page 2 of 2, copies of which are enclosed).
4. The design and construction of the proposed improvements will to the extent feasible be accomplished in a manner so as to minimize detrimental impact to the wetland and wetland buffer. Where possible, the plans utilize retaining walls and steep slopes to emphasize vertical development and reduce the wetland or wetland buffer area that would otherwise be needed. Reducing the amount of land area needed means that the detrimental impact to the wetland of wetland buffer will be minimized. Further, we intend to use bioretention pond (aka raingardens) as part of the design to appropriately treat stormwater to improve the quality of the runoff.
5. The proposed development of a centralized health care center as designed will not create a hazard to individuals or to the public health, safety or welfare by loss of wetlands because, as noted in the wetland report , the function and value of the subject wetlands is generally of lower value than other wetlands on the property and, to the extent that any of the wetlands do have higher value, then the loss of such wetlands will not result in a hazard to individuals or to the public health safety or welfare because we are minimizing stormwater peak rates and thus minimizing the risk of flooding. Additionally, for the stormwater that does leave the property, no hazard will be created as it will be properly treated in accordance with State and local regulations.
6. The applicant is not proposing an increase in wetland buffers elsewhere on the site as the remainder of it is already developed or protected by existing conservation restrictions. Notwithstanding the applicant's inability to provide expanded buffers, the applicant does propose that a portion of the buffer impact be used for restoration purposes where an existing house, driveway and septic system are being removed. Moreover, the applicant is making a contribution to the States Aquatic Resources Mitigation (ARM) fund and placing 3.73 acres of land into conservation restriction status and which will offset the 2.61 acres of wetland buffer to be disturbed. The proposed area to be conserved is adjacent to an


existing conservation easement held by SELT and the acreage will consist of both upland and wetland.

7. Only a small 84 sf section of temporary wetland impact is proposed in association with the removal of a driveway culvert in the buffer restoration area. There are no other temporary impacts included in the proposal. However, the planned erosion control measures will provide for erosion and sediment control for the duration of the project.
8. The Wetlands Application has been submitted and we expect that the NHDES Alteration of Terrain and Sewer Discharge permits will be filed in the coming weeks.

Please feel free to contact me directly if you have any questions or require any additional documentation. Thank you for your time and consideration.

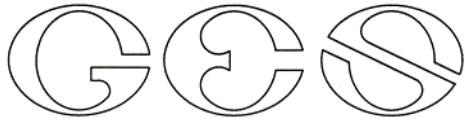
Sincerely,

**ALTUS ENGINEERING**



Erik B. Saari  
Vice President

ebs/5015.01e-LTR-CUP-110124



## GOVE ENVIRONMENTAL SERVICES, INC

September 9, 2024

Erik Saari  
Altus Engineering, Inc.  
133 Court Street  
Portsmouth, NH 03801

Subject: Wetland Delineation & Function-Value Report  
Riverwoods Supportive Living Health Center  
5 White Oak Drive  
Exeter, NH

Dear Mr. Saari:

This wetland report is being submitted in connection with the proposed development of a Supportive Living Health Center at 5 White Oak Drive on the Riverwoods campus in Exeter, NH. This report documents the delineation and functional assessment of wetland resources in the vicinity of the proposed work as well as an evaluation of the proposed work within the context Section 9.1 of the Exeter Zoning Ordinance (Wetland Conservation District).

### **WETLAND DELINEATION**

Resource areas on this property were delineated in January of 2023 by Brendan Quigley, NHCWS #249 utilizing the following standards:

1. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, (Version 2.0) January 2012, U.S. Army Corps of Engineers.
2. *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils*, Version 8.2. United States Department of Agriculture (2018).
3. *New England Hydric Soils Technical Committee. 2019 Version 4, Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.
4. *National Wetland Plant List*, Version 3.2 (2016).

Wetland boundaries were surveyed by James Vera & Associates, Inc. and are depicted on the plans submitted separately for approvals. The identified wetland areas are depicted on the attached figure and have been given unique designations for the purpose of discussion. Several photos of the wetlands have also been included. Five (5) areas of wetland were identified in the project area:

#### Wetlands A, B, C, and D

These four areas consist of three small pockets of wetland and a narrow extension of a larger wetland system associated with Scamen Brook, east of the Site. These areas lie in close proximity to the existing administration building, White Oak Drive, and related developed areas. They are largely isolated from one another but are connected via small culverts and drain east toward Scamen Brook. All four areas are predominantly forested wetland dominated by red maple, and sensitive fern but are densely vegetated with invasive woody species such as common and glossy buckthorn, oriental bittersweet, bush honeysuckle, and autumn olive. Generally, this type of growth is characteristic of long fallow fields and areas around old farms

## Wetland E

Wetland E is a more natural forested wetland, also dominated by red maple, that constitutes the headwaters of Scamen Brook. The main body of the wetland follows the west to east drainage path of Scamen Brook which is carried under White Oak Drive by a pair of 18” culverts. A portion of this wetland is supported by hillside seep hydrology and extends up the hill south of the wetland and toward the proposed project.

## **Function & Value Assessment**

A wetland function and value assessment was conducted using the US Army Corps Highway Methodology guidelines. Functions are self-sustaining properties of wetlands, which exist in the absence of human involvement. Values refers to the benefits gained by society from a given wetland or ecosystem and their inherent functions. Functions and values identified as “primary” have been determined to be significant features of the wetland being evaluated. An important distinction is that the primary functions and values of a particular wetland does not necessarily indicate the wetland supports them at a significant *level* in comparison to other wetlands in the region or even near the site.

The Highway Methodology considers 13 functions and values:

- 1. Groundwater recharge/discharge:** This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where ground water can be discharged to the surface.
- 2. Floodflow Alteration:** This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- 3. Fish and Shellfish Habitat:** This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.
- 4. Sediment/Toxicant/Pathogen Retention:** This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.
- 5. Nutrient Removal/Retention/Transformation:** This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.
- 6. Production Export:** This function relates to the effectiveness of the wetland to produce food or usable products for human, or other living organisms.
- 7. Sediment/Shoreline Stabilization:** This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
- 8. Wildlife Habitat:** This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species must be considered.
- 9. Recreation:** This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals or other resources that are intrinsic to the wetland, whereas non-consumptive opportunities do not.
- 10. Educational/Scientific Value:** This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.



- 11. Uniqueness/Heritage:** This value relates to the effectiveness of the wetland or its associated water bodies to produce certain special values. Special values may include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.
- 12. Visual Quality/Aesthetics:** This value relates to the visual and aesthetic qualities of the wetland.
- 13. Threatened or Endangered Species Habitat:** This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

The functions and values identified in the wetlands are described in the following sections.

#### Wetlands A, B, C, & D

The principal functions of these four wetlands were determined to be Sediment/Toxicant/Pathogen Retention, Flood flow Alteration, and Wildlife Habitat. The water quality and flood flow alteration functions are supported due to their location upstream of Scamen Brook and their restricted flow path. This restricted flow is mainly the result of segmentation but does enable treatment and flood attenuation by storing runoff and slowly releasing it downstream. These functions are supported at a modest level due to the overall small size of the wetlands and limited development within their watershed. The wetlands also support general Wildlife Habitat, mostly by way of dense cover favored by small mammals. Since these wetlands lack surface hydrology, they do not support wetland specific wildlife habitat and the proximity of development greatly limits their habitat value overall.

#### Wetland E

Sediment/Toxicant/Pathogen Retention and Wildlife Habitat were determined to be the principal functions of Wetland E. These are derived from its more significant surface hydrology, closer association with Scamen Brook, and connectivity to larger forested wetland habitat to the west. These attributes enhance the wildlife and Water quality function of the wetland in comparison to wetlands A, B, C, & D. Flood flow alteration was not considered a function of Wetland E since very little storage capacity was noted. Groundwater discharge has also been considered as a secondary function as evidenced by the hillside seep along its southern slope.

## **RELATION TO THE PROPOSED DEVELOPMENT**

A Conditional Use Permit (CUP) is being sought for proposed wetland and wetland buffer impacts within the Wetlands Conservation Overlay District associated with construction of the project. This section provides an assessment of the impacts in accordance with Article 9.1.6.B.3 of the Wetland Conservation District CUP Criteria:

*A wetland scientist has provided an impact evaluation that includes the “functions and values” of the wetland(s), an assessment of the potential project-related impacts and concluded to the extent feasible, the proposed impact is not detrimental to the value and function of the wetland(s) or the greater hydrologic system.*

A functional evaluation of the wetlands is provided in the previous sections of this letter. Direct impacts are proposed to Wetlands A, B, C, and D with wetland B, and C being impacted in their entirety. The principal functions of the water quality and flood flow alteration supported in these areas should be adequately compensated for by the inclusion of comprehensive stormwater management and maintenance

of the overall flow path. These impacts should have no significant effect on Scamen Brook or the larger wetland system. The modest wildlife habitat in these areas will be lost. Considering the existing development and already segmented nature of this habitat, its loss should not have a significant effect on overall habitat. Similar and better quality habitat is readily available in the areas west and east of the Site. The habitat value in the immediate vicinity will also be enhanced by restoration of buffer area to either side of Wetland D which currently consists of a driveway and maintenance/storage area adjacent to a residential structure.

Wetland E will not be directly impacted, impacts in this location are to the buffer only. A significant portion of this impact takes place within White Oak Drive and the immediately adjacent slopes. If proper erosion control is employed during the work this will have no effect on the functions of the wetland. Buffer impacts are also proposed to construct a stormwater basin and a small portion of a parking lot. This impact will occur in naturally wooded buffer which provides vegetated area for water quality and additional screening for wildlife habitat. The loss of forested buffer may result in a small loss of capacity for water quality function, but this will be mitigated by the addition of stormwater management with no significant overall effect on the larger wetland system. The loss of wildlife habitat function resulting from these impacts will be very minimal. The proposed stormwater basin and grading constitute a softer edge than paved surface of which there is only a small amount in the 75-foot buffer. Habitat function loss is also mitigated by the fact that the buffer in this area originates from the hillside seep extension of the wetland. The core wetland habitat to which the buffer provided screening lies well downslope.

This concludes the wetland delineation and wetland functional assessment report. If I can be of further assistance, please feel free to contact me at (603) 778-0644.

Sincerely,



Brendan Quigley, NHCWS  
Gove Environmental Services, Inc.

Wetland Sketch  
Photos





75' PARKING AND STRUCTURE BUFFER - 7,407 S.E.  
 TOTAL BUFFER RESTORATION - 7,032 S.F.  
 DETERMINED BY GOVE ENVIRONMENTAL SERV  
 WITH AID WETLANDS WIRE IDENTITIES. WETLANDS WERE  
 FOLLOWING STANDARDS:

- REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLANDS AND HYDRIC SOILS IN THE UNITED STATES (VERSION 2.0) IN NORTH-CENTRAL AND NORTHEAST REGION.
- FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES AND DELINEATING HYDRIC SOILS, VERSION 8.2, UNITED STATES (VERSION 1998).
- NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE, 2019 INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND (VERSION 1.0).
- U.S. ARMY CORPS OF ENGINEERS NATIONAL WETLAND PLAN CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS (USFV MANUAL FWS/805-79/31 (1979)).

**LEGEND**

- 40' WETLAND SETBACK
- 75' VORINAL POOL BUFFER
- LIMIT OF PROJECT DISTURBANCE
- WETLAND BOUNDARY
- PROPOSED 40' WETLAND BUFFER IMPACT
- PROPOSED 75' WETLAND SETBACK IMPACT
- PROPOSED BUFFER RESTORATION AREA



**A**

**B**

**C**

**D**

**E**

**E**

HOLLY BRAND TRAIL

RIVERWOOD DRIVE

75' WETLAND SETBACK IMPACT #1  
 7,410 S.F.

75' PARKING AND STRUCTURE SETBACK IMPACT (TYP)  
 IMPACT (TYP)  
 40' LIMITED USE BUFFER IMPACT (TYP)  
 IMPACT #2  
 7,407 S.F.

WETLAND IMPACT #3  
 WETLAND IMPACT #4  
 750 S.F. PERMANENT  
 LIMIT OF DISTURBANCE

75' WETLAND SETBACK BUFFER  
 40' LIMITED USE BUFFER



**Wetland Photos**  
**Riverwoods Supportive Living Health Center**  
**5 White Oak Drive**  
**Exeter, NH**



Photo 1—Wetland A



Photo 2—Trail between Wetlands A and B (A to right, B to the left)





Photo 3—Wetland B



Photo 4—Driveway between Wetlands C and D (C to right, D to the left)

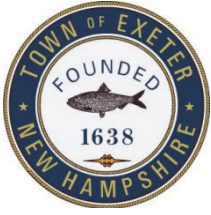




Photo 5—Wetland C



Photo 6—Wetland D



# TOWN OF EXETER, NEW HAMPSHIRE

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

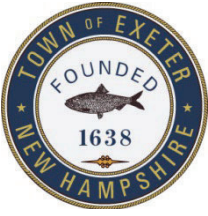
[www.exeternh.gov](http://www.exeternh.gov)

DATE: January 1, 2024  
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 RiverWoods Supportive Living Health Center

Project Location 5 White Oak Drive

Applicant/Owner Name RiverWoods Company at Exeter

Mailing Address 7 Riverwoods Drive, Exeter, NH 038033

Phone Number (603) 772-4700 email kgaskell@trwg.org

Project Engineer Altus Engineering

Mailing Address 133 Court Street, Portsmouth, NH 03801

Phone Number (603) 433-2335 email esaari@altus-eng.com

Type of Discharge/Connection  Sewer  Water  Stormwater

Application completed by

Name Erik Saari (Altus Engineering, Agent)

Signature \_\_\_\_\_ Date 09/10/24

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 Connection of a pressure sewer to an existing manhole.  
Title of plan Utility Plan, Sheet C-7  
Total design flow (gpd) 8,070 gpd

*\*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 Connection of domestic and fire water services to and existing main.  
Title of plan Utility Plan, Sheet C-7  
Total design flow (gpd) 8,070 gpd

Approved \_\_\_\_\_ Date \_\_\_\_\_  
Water & Sewer Managing Engineer

**STORMWATER**

---

Description of work No connection to town system  
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) Office, vacant woodland

<u>Use</u>	<u>Unit Flow (gpd)</u>	<u>Total Existing Flow</u>
Office	. 330 gpd	. 330 gpd
Total existing flow		. 330 gpd

**Proposed Use(s)**

Describe proposed use(s) Elderly Congregate Care Facility

<u>Use</u>	<u>Unit Design Flow (gpd)</u>	<u>Total Design Flow</u>
Elderly Congregate Care	. 8,070 gpd	. 8,070 gpd
Total proposed flow		. 8,070 gpd

**Impact Fees** (80% of the design flow)

Change in flow rate (gpd)	<u>. 7,740</u>	x 0.8 = Impact Fee flow rate (gpd)	<u>. 2,322</u>
---------------------------	----------------	------------------------------------	----------------

*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)	<u>. 2,322</u>	x \$1.81=	<u>\$ 4,202.82</u>
Water Impact Fee: Flow increase (gpd)	<u>. 2,322</u>	x \$3.74 =	<u>\$ 8,684.28</u>

**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  RiverWoods Company at Exeter   
Owner’s Representative  Kim Gaskell   
Address  7 Riverwoods Drive, Exeter, NH 038033   
Phone  (603) 772-4700  email  kgaskell@trwg.org   
Tenant Name  .   
Address  .   
Phone  .  email  .

**PART II - PRODUCT OR SERVICE INFORMATION**

Products Manufactured  None   
Services Provided  Elderly Care   
SIC Code(s)  836104  Building Area (SF)  173,893 sf   
Number of Employees  .70  Days/week of operation  . 7  Shifts per day  . 2

**PART III - CATEGORY OF SEWER DISCHARGE**

Type of Discharge  Septic  Proposed  Existing  Change of Use  
Water Use (gpd)  8,070  (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).

Signature of Applicant  Date 09/10/24

Name of Property Owner Mr. Erik Saari (Agent)

**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.

**THE RIVERWOODS COMPANY, AT EXETER, NEW HAMPSHIRE  
ABUTTER LIST**

**OWNER/APPLICANT:**

97/23 Riverwoods Company at Exeter  
7 Riverwoods Drive  
Exeter, NH 03833

**ABUTTERS:**

73/47 Boston & Maine Railroad Corp.  
c/o CSX Transportation  
500 Water Street, J-910  
Jacksonville FL 32202

102/4 Richard & Debbi Schaefer, Trustees  
Schaefer Family Rev. Trust  
24 Powder Mill Road  
Exeter, NH 03833

97/24 & 102/3 Town of Exeter  
10 Front Street  
Exeter, NH 03833

97/34 Keely Rose McElwain  
92 Kingston Road  
Exeter, NH 03833

97/33 Christian Burns  
90 Kingston Road  
Exeter, NH 03833

97/32 Lauren Drinker  
88 Kingston Road  
Exeter, NH 03833

97/37 Sandra Bowers, Trustee  
Sandra Bowers Rev. Trust  
83 Kingston Road  
Exeter, NH 03833

97/31 Altie Bird, Trustee  
Altie Bird Rev. Trust  
84 Kingston Road  
Exeter, NH 03833

97/30 Joseph & Marlene Fitzpatrick  
82 Kingston Road  
Exeter, NH 03833

97/28 Grant & Carol Murray  
74 Kingston Road  
Exeter, NH 03833

97/27 Portland Natural Gas  
c/o Duff & Phelps  
PO Box 2629  
Addison, TX 75001

97/26 Susan & Daniel Sarmiento  
Sarmiento Family Trust  
3 Riverwoods Drive  
Exeter, NH 03833

97/25 Glenn Theodore  
5 Riverwoods Drive  
Exeter, NH 03833

97/8 Jeffrey & Angela Tougas  
4 Riverwoods Drive  
Exeter, NH 03833

97/9 Christopher & Molly Lewis  
6 Cullen Way  
Exeter, NH 03833

97/22 Christopher & Courtney Benevides  
9 Cullen Way  
Exeter, NH 03833

97/21 Shivan Sarna  
David Desrosiers  
11 Cullen Way  
Exeter, NH 03833

97/20 James & Virginia Harnett  
13 Cullen Way  
Exeter, NH 03833

97/19 Kathleen Evans, Trustee  
Kathleen McCartin Evans Rev. Trust  
15 Cullen Way  
Exeter, NH 03833

97/18 Colby & Stephen Nesbitt  
17 Cullen Way  
Exeter, NH 03833

97/17 Jean Fremont-Smith, Trustee  
Jean Fremont-Smith Rev. Trust  
19 Cullen Way  
Exeter, NH 03833

97/16 Terrence & Kelsey Cosgrove, Trustees  
Cosgrove Living Trust  
21 Cullen Way  
Exeter, NH 03833

96/23 Lawrence Arlen Trust  
Jacqueline Arlen Trust  
23 Cullen Way  
Exeter, NH 03833

96/22 Michael & Kimberly Barner  
25 Cullen Way  
Exeter, NH 03833

96/21 Thomas & Kristen Ellis, Trustees  
Ellis Revocable Trust  
27 Cullen Way  
Exeter, NH 03833

96/20 Nathan & Diane Day, Trustees  
Cullen Way Trust  
29 Cullen Way  
Exeter, NH 03833

96/19 David & Christine Soutter  
31 Cullen Way  
Exeter, NH 03833

96/18 Julia & Andrew McPhee  
33 Cullen Way  
Exeter, NH 03833

96/17	Alyson & Christopher Wood 35 Cullen Way Exeter, NH 03833
97/41	Southeast Land Trust 247 North River Road Epping, NH 03042
98/12	Judith McDermott-Eggert 12 Pickpocket Road Exeter, NH 03833
98/13	Robert & Karen Prior, Trustees Robert & Karen Prior Rev. Living Trust 16 Pickpocket Road Exeter, NH 03833
98/14	Joanne Niedzielski, Trustee Joanne Niedzielski Revocable Trust PO Box 96 Exeter, NH 03833
98/39	Dennis & Cheryl Hayward, Trustees 9 Pickpocket Road Exeter, NH 03833
98/36	Paul & Sheila Roberge 15 Pickpocket Road Exeter, NH 03833
79/21	John Bell 2 Split Rock Road Exeter, NH 03833
79/20	Paul Holloway, Jr. 71 Wentworth Road Rye, NH 03870
79/19 & 79/18	Sarah Ramsay 2 Indian Trail Exeter, NH 03833

79/11	Anthony Pyro & Katherine Walther, Trustees Pyro Walther Revocable Trust 14 Runawit Road Exeter, NH 03833
79/10	Machaon & Kathryn Bonafede 131 Pickpocket Road Brentwood, NH 03833
80/17-9	David & Elisabeth Matson 17 Blackford Drive Exeter, NH 03833
97/45	Ruth Hooten, Trustee Ruth Hooten Revocable Trust 61 Kingston Road Exeter, NH 03833
97/6.2	Pamela & Nils Oulundsen, Trustees Oulundsen Family Revocable Trust 0 Hillside Drive Exeter, NH 03833
97/6.1	Jeffrey & Elizabeth Shapiro 62 Kingston Road Exeter, NH 03833
97/6	Michael & Nadine Deacy 64 Kingston Road Exeter, NH 03833
97/7	Denis Boulanger Elizabeth Reyes 2 Riverwoods Drive Exeter, NH 03833
75/17	Blackford Place Homes Association c/o Parkway Development 11 Lafayette Road North Hampton, NH 03862
80/6	Marshall Farms Crossing Condominium 163 Main Street, Suite 201 Salem, NH 03079

97/39	Timothy Berry Lauren Knowles 6 Pickpocket Road Exeter, NH 03833
97/38	William & Susan Goodenough Goodenough Family Trust 4 Pickpocket Road Exeter, NH 03833
80/17-38	Town of Exeter 10 Front Street Exeter, NH 03833
98/35 (duplicate)	Riverwoods Co Exeter 7 Riverwoods Drive Exeter, NH 03833
102/4.1	Christine Rupp 69 Newburyport Tpke Newbury, MA 01951
ATTORNEY:	Sharon Cuddy Somers, Esq. Donahue, Tucker & Ciandella, PLLC 16 Acadia Lane Exeter, NH 03833
ENGINEER:	Erik Saari Altus Engineering 133 Court Street Portsmouth, NH 03801
LANDSCAPE ARCHITECT:	Robbi Woodburn Woodburn & Co. 103 Kent Place Newmarket, NH 03857

## Section 2

# Letter of Authorization



**Letter of Authorization**

I, Kim Gaskell, authorized representative for The RiverWoods Group, hereby authorize Altus Engineering of Portsmouth, New Hampshire to represent us as the Owner/Applicant in all matters concerning engineering and related permitting for Tax Map 97, Lot 23 located at 5 White Oak Drive in Exeter, New Hampshire. This authorization shall include representation at public hearings and other project-related meetings in addition to any signatures required for Federal, State and Municipal permit applications.

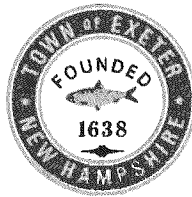
<u>Kim Gaskell</u> Signature	<u>Kim Gaskell</u> Print Name	<u>8/7/2024</u> Date
<u>EBS: [Signature]</u> Witness	<u>Erik Saari</u> Print Name	<u>08/07/24</u> Date

## Section 3

# Property and Easement Deeds



RECORDING 14.00  
SURCHARGE 2.00



**TOWN OF EXETER, N.H.**

**VOLUNTARY LOT MERGER FORM**

*(Applicant must file two originals; please type or print legibly in black ink)  
Applicant is responsible for Registry of Deeds Fee(s)*

As provided for in RSA 674:39-a, the undersigned applicant requests that the Town of Exeter, New Hampshire, hereby merge the following contiguous parcels of land for the purposes of land assessment and recognized for regulatory purposes as a single tract or parcel of land:

Name of record owner(s) (must be identical for all lots consolidated):

The RiverWoods Company, at Exeter, New Hampshire

Mailing address of owner(s):

7 Riverwoods Drive, Exeter, NH 03833

The following existing parcels are to be consolidated into a single parcel:

Map/Lot	Street Address	Deed Reference	
		Book	Page
97/23	7 Riverwoods Drive	2973	1176
98/37	5 Timber Lane	3851	1293
80/18	6 White Oak Drive	3856	1913
97/29	78 Kingston Road	6524	2076
97/44	67 Kingston Road	5909	2862

It is a condition of this application that each of the above parcels shall (i) not be subject to separate liens or mortgages, or (ii) any such liens apply equally to all parcels merged. In addition, all real estate taxes on all parcels shall be current. By signing below, legal counsel for the owner(s) certifies as to the facts of either (i) or (ii) above.

Date: March 1, 2024 Sharon Cuddy Somers  
Signature of Legal Counsel to Applicant

Sharon Cuddy Somers  
Printed Name of Legal Counsel to Applicant

By signing below, the applicant agrees that (i) this request is subject to approval of the Planning Board\* to assure such merger does not create a violation of the current zoning ordinance or subdivision regulations, (ii) that upon approval, this agreement shall be recorded in the Rockingham County Registry of Deeds, and (iii) subsequent to the approval of this agreement, the owner(s) shall not separately convey or encumber any of the previously existing parcels. Any attempt to separately convey any parcel or part of a parcel submitted hereunder shall require subdivision approval from the Exeter Planning Board.

Dated this 29 day of February, 2024.

THE RIVERWOODS COMPANY, AT EXETER, NEW HAMPSHIRE

Owner's signature (s) [Signature]  
Print Name(s): Justine Vogel, CEO

**(For municipal use only)**

By signing below, the application has been reviewed by the Exeter Planning Board\* and the lot merger shall not result in a violation of the current zoning ordinance or subdivision regulations.

Date: 3/1/2024 [Signature]  
Planning Board Chairperson

This request has been reviewed by the Exeter Tax Assessor, who has assigned the following tax map and lot number to the resulting parcel: Map #: 97 Lot #: 23

Date: 3/4/2024 [Signature]  
Tax Assessor/designee

One original to be retained in the Tax Assessor's and Planning Department files. One original shall be forwarded to the Rockingham County Registry of Deeds for recording upon approval. The Recorded Copy will be returned to the Owner(s).

\*Or the Building Inspector, to whom the Planning Board could delegate this responsibility.  
4874-0141-5063, v. 2

002057

THIS IS A NON-CONTRACTUAL CONVEYANCE PURSUANT TO NEW HAMPSHIRE RSA 78-B:2 AND IS EXEMPT FROM THE NEW HAMPSHIRE REAL ESTATE TRANSFER TAX.

**AMENDED AND RESTATED CONSERVATION EASEMENT DEED**

This Amended and Restated Conservation Easement Deed is made as of January 14, 2010 by and between the **RIVERWOODS COMPANY, AT EXETER, NEW HAMPSHIRE**, a New Hampshire nonprofit corporation (f/k/a Life Care Services of New Hampshire, Inc.), with an address of 7 RiverWoods Drive, Exeter, County of Rockingham, State of New Hampshire 03833, ("River Woods") and the **SOUTHEAST LAND TRUST OF NEW HAMPSHIRE**, a New Hampshire not-for-profit corporation (f/k/a Rockingham Land Trust), with an address of 12 Center Street, Second Floor, P. O. Box 675, Exeter, County of Rockingham, State of New Hampshire 03833 ("SELTNH")

**RECITALS**

A. RiverWoods, as Life Care Services of New Hampshire, Inc., granted a Conservation Easement Deed to SELTNH, f/k/a Rockingham Land Trust, dated March 24, 1993, recorded in the Rockingham County Registry of Deeds on that date at Book 2973, Page 1185, with respect to a 66.9 acre parcel of land located in Exeter, New Hampshire, shown on a plan entitled "Overview Plan for Life Care Services of New Hampshire, Inc." by Kimball Chase, Portsmouth, New Hampshire dated 11/21/90, with revisions through 3/16/93, and recorded in the Rockingham County Registry of Deeds as Plan No. D-22123;

B. Life Care Services of New Hampshire, Inc., the Grantor of the conservation easement is now known as the RiverWoods Company, at Exeter, New Hampshire, and the Rockingham Land Trust, the Grantee of the conservation easement, is now known as Southeast Land Trust of New Hampshire;

C. RiverWoods and SELTNH desire to amend and restate said Conservation Easement Deed to revise the property description contained therein in order to remove and release two small portions of the property subject to the easement from the restrictions of the

2010 JAN 15 PM 2:50

ROCKINGHAM COUNTY  
REGISTRY OF DEEDS

conservation easement and to add a portion of the property of the RiverWoods not previously subject to the easement to the restrictions of the Conservation Easement Deed;

D. RiverWoods and SELTNH further desire to amend and restate the Conservation Easement Deed, all to further the conservation purposes of the Conservation Easement Deed.

NOW THEREFORE, the RiverWoods and SELTNH each in consideration of the agreements of the other herein contained hereby amend and restate the said Conservation Easement Deed, including the description of the property subject to the Conservation Easement Deed as follows:

**THE RIVERWOODS COMPANY, AT EXETER, NEW HAMPSHIRE**, a New Hampshire nonprofit corporation (f/k/a Life Care Services of New Hampshire, Inc.) with an address of 7 RiverWoods Drive, Exeter, County of Rockingham, State of New Hampshire 03833 (hereinafter 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, successors and assigns),

**FOR CONSIDERATION PAID**, with WARRANTY covenants, grants in perpetuity to the

**SOUTHEAST LAND TRUST OF NEW HAMPSHIRE**, a New Hampshire not-for-profit corporation (f/k/a Rockingham Land Trust), with an address of 12 Center Street, 2<sup>nd</sup> floor, PO Box 675, Exeter, County of Rockingham, State of New Hampshire 03833, having been determined by the Internal Revenue Service to be an income tax exempt, publicly supported corporation, contributions to which are deductible for federal income tax purposes pursuant to the United States Internal Revenue Code, (hereinafter referred to as the "Grantee" which shall, unless the context clearly indicates otherwise, include the Grantee's successors and assigns),

the **Conservation Easement** (herein referred to as the "Easement") hereinafter described with respect to that certain parcel of land (herein referred to as the "Property") being primarily unimproved land situated at 7 RiverWoods Drive in the Town of Exeter, County of Rockingham, State of New Hampshire, as originally shown on a survey entitled "Overview Plan for Life Care Services of New Hampshire, Inc." by Kimball Chase, Portsmouth, NH, dated 11/21/90 with revisions through 3/16/93, and recorded in the Rockingham County Registry of Deeds as Plan # D-22123 and further shown with certain modifications to the boundary of the Easement on a survey entitled "Revised Conservation Easement Plan Tax Assessor's Parcel 97-23 7 Riverwoods Drive Exeter, New Hampshire for The Riverwoods Company at Exeter" by James Verra and Associates, Inc., Newington, NH, dated August 28, 2006 and recorded herewith at the Rockingham County Registry of Deeds, (collectively hereinafter referred to as the "Plan") and more particularly bounded and described as "Conservation Easement Area" in **Exhibit "A"** attached hereto and made a part hereof.

1. PURPOSES

The Easement hereby granted is pursuant to NH RSA 477:45-47, exclusively for the following conservation purposes:

- A. 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 values of the Property; and,
- B. To preserve the more than 4,300 feet of shoreline along the Exeter River and the high water quality of the Exeter River, as recognized through its enrollment in the New Hampshire River Management and Protection Program, and to assist in protecting the drinking water supply of the Town of Exeter; and
- C. To preserve the Property for the passive pedestrian recreational use of the Grantor, its successors or assigns; and
- D. To preserve open spaces, particularly the wetland and productive forest land, of which Property 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 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."; and
- E. To provide access to the Exeter River for fishermen in accordance with prior agreement of a previous landowner, via a fishing easement 15 feet in width, as measured from the bank of the Exeter River;

These purposes are consistent with the Exeter Master Plan which calls for preservation of the character of the Town by preservation of forest land open spaces and protection of water supply sources, and 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, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources."

All of these Purposes are consistent and in accordance with the U.S. Internal Revenue Code, Section 170(h).

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

2. USE LIMITATIONS (Subject to the reserved rights specified in Section 3 below)

A. The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except forestry as described below, and provided that the productive capacity of the Property to produce forest products shall not be degraded by on-site activities.

i. For the purposes hereof, "forestry" shall include the growing, stocking, cutting, and sale of Christmas trees or forest trees of any size capable of producing timber or other forest products; and the processing and sale of products produced on the Property (such as maple syrup).

ii. Forestry on the Property shall be performed, to the extent reasonably practicable, as hereinafter specified in accordance with the following goals, and in a manner not detrimental to the Purposes of this Easement.

a. The goals are:

- maintenance of soil productivity;
- protection of water quality, wetlands, and riparian zones;
- maintenance or improvement of the overall quality of forest products;
- conservation of scenic quality;
- protection of unique or fragile natural areas;
- protection of unique historic and cultural features; and
- conservation of native plant and animal species.

b. Such forestry shall be performed in accordance with a written forest management plan consistent with this Easement, prepared by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee. Said plan shall have been prepared not more than ten years prior to the date any harvesting is expected to commence, or shall have been reviewed and updated as required by such a forester or other qualified person at least thirty (30) days prior to said date.

c. At least thirty (30) days prior to harvesting, Grantor shall submit to Grantee a written certification, signed by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee, that such plan has been prepared in compliance with the terms of this Easement. Grantee may request the Grantor to submit the plan itself to Grantee within ten (10) days of such request, but acknowledges that the plan's purpose is to guide forest management activities in compliance with this Easement, and that the actual activities will determine compliance therewith.



- d. The plan shall include a statement of landowner objectives, and shall specifically address:
- the accomplishment of those Purposes for which this easement is granted;
  - the goals in Section 2.A.iii.a above; and
  - the protection of the water quality of the Exeter River.
- e. Timber harvesting with respect to such forestry shall be conducted in accordance with said plan and be supervised by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee.
- f. Such forestry shall be carried out in accordance with all applicable local, state, federal, and other governmental laws and regulations, and, to the extent reasonably practicable, in accordance with then-current, generally accepted best management practices for the sites, soils, and terrain of the Property. For references, see "Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire" (J.B. Cullen, 2004), and "Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire" (New Hampshire Forest Sustainability Standards Work Team, 1997), or similar successor publications.
- g. In areas used by, or visible to the general public, such forestry shall be carried out, to the extent reasonably practicable, in accordance with the recommendations contained in "A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters, and Landowners" (Geoffrey Jones, 1993) or similar successor publications.

B. The Property shall not be subdivided.

C. No structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, golf course, swimming pool, dock, aircraft landing strip, telecommunications and/or wireless communications facility, tower, or mobile home, shall be constructed, placed or introduced onto the Property. However, ancillary structures and improvements including, but not limited to, a permeable road, dam, fence, bridge, culvert, barn, maple sugar house, or shed may be constructed, placed or introduced onto the Property only as necessary in the accomplishment of the forestry, conservation, or noncommercial outdoor recreational uses of the Property and provided that they are not detrimental to the purposes of this Easement.

D. No removal, filling, or other disturbances of soil surface, nor any changes in topography, surface or subsurface water systems, wetlands, or natural habitat shall be allowed unless such activities:

i. are commonly necessary in the accomplishment of the forestry, conservation, habitat management, or noncommercial outdoor recreational uses of the Property;

ii. do not harm state or federally recognized rare, threatened, or endangered species, such determination of harm to be based upon information from the New Hampshire Natural Heritage Inventory or the agency then recognized by the State of New Hampshire as having responsibility for identification and/or conservation of such species; and

iii. are not detrimental to the scenic, recreational, wildlife habitat, and water quality protection purposes of this easement.

iv. Prior to commencement of any such activities, all necessary federal, state, and local permits and approvals shall be secured.

E. No outdoor advertising structures such as signs and billboards shall be displayed on the Property except as desirable or necessary in the accomplishment of the forestry, conservation, or noncommercial outdoor recreational uses of the Property, and provided such signs are not detrimental to the purposes of this Easement. No such sign shall be artificially illuminated and no such size shall exceed 16 (sixteen) square feet in size.

F. There shall be no mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials on the Property, except in connection with any improvements made pursuant to the provisions of sections 2.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, burning, or burial of man-made materials or materials then known to be environmentally hazardous including vehicle bodies or parts on the Property.

H. The Property shall in no way be used to satisfy the density requirements of any applicable zoning ordinance or subdivision with respect to the development of any other property.

I. There shall be no defacement, movement, removal, or alteration of any stone walls or other monuments or markers that serve as legal boundaries, as per New Hampshire RSA 472:6, or as the legal boundary of this Easement as described in Appendix A.

J. No rights-of-way or easements of ingress or egress in favor of any third party shall be created or developed into, under, over, or across the Property except those of record as of the execution of this Easement and those specifically permitted in the provisions of this Easement.

### 3. RESERVED RIGHTS

A. All uses of the Property not expressly prohibited herein and not inconsistent with the Purposes of this Easement are expressly reserved to the Grantor.

B. The Grantor reserves the right to maintain, repair, upgrade, or replace the existing utilities within the Property that primarily serve the Property or the "Building Envelope Development Area", as identified on the Plan and on the Baseline Documentation Report on file with the Grantor and Grantee. Any upgrade or replacement of said existing utilities that significantly alters the relationship to and impact of the utilities on the Property including, but not limited to, the replacement of overhead power lines with buried power lines, shall be subject to review and approval by the Grantee. The Grantor shall provide the Grantee with appropriate plans and descriptions of the proposed upgrade or replacement at least sixty (60) days before the proposed undertaking of said activities. The Grantee shall review and evaluate said upgrade or replacement based on its impact on the Purposes of this Easement and shall approve, approve with conditions, or disapprove of said upgrade or replacement within forty-five (45) days of receipt of the proposed plans and descriptions. In making its decision, the Grantee shall take into consideration the short-term and long-term impact of the proposed upgrade or replacement of said utilities on the Purposes of this Easement, but in no case shall approve an upgrade or replacement that will have a greater impact on the Purposes of this Easement than the existing utilities being upgraded or replaced. Said approval shall not be unreasonably withheld.

C. The Grantor reserves the right to construct a second water supply pipe to service the land of Grantor shown on the Plan as not being subject to the Easement through the easternmost reserved access from Cullen Way as shown on the Plan, and to maintain, repair, upgrade, and replace said pipe. The Grantor shall secure all Federal, State and local permits as necessary prior to exercising this reserved right. The Grantor shall notify the Grantee thirty (30) days prior to constructing said pipe.

D. The Grantor reserves the right to maintain the existing pond, as identified on the Plan and on the Baseline Documentation Report on file with the Grantor and Grantee, for the purpose of fire protection, wildlife habitat enhancement, and drainage control from the Property. The Grantor shall secure all Federal, State and local permits as necessary prior to undertaking any said maintenance.

E. The Grantor reserves the right to maintain, repair, and replace retention and detention basins, storm drainage channels, and appurtenant embankments, dams, and other drainage structures, as identified on a plan entitled "Grading, Drainage & Erosion Control Plan", a copy of which is on file with the Grantor and Grantee, in order to accommodate and treat storm water runoff from the other land of Grantor shown on the Plan as "Building Envelope Development Area" and not being subject to the Easement and from the adjacent pre-existing development to the north and as shown on a plan entitled, "Plan of Land located in Exeter, N.H. by Kimball Chase Co., Inc., Portsmouth, N.H., Belmonte Estates for Bell & Flynn, Inc." dated January 27, 1986, and recorded in the Rockingham County Registry of Deeds as Plan No. D-15176.

F. The Grantor reserves the right to create and maintain pedestrian trails located within the Property, provided said trails are consistent with and not detrimental to the Purposes of this Easement and conform to best practices recommended by the Appalachian Mountain Club or similar trail-maintaining organization. (For reference, see The Complete Guide to Trail Building

and Maintenance (C. Demrow, D. Salisbury, Appalachian Mountain Club) or similar successor publication.) The Grantor shall notify the Grantee thirty (30) days prior to undertaking the creation of new trails or relocation of existing trails

G. The Grantor reserves the right to post against vehicles, motorized or otherwise, on the Property.

H. The Grantor reserves the right to post against hunting.

#### 4. NOTIFICATION OF TRANSFER, TAXES, MAINTENANCE

A. The Grantor agrees to notify the Grantee in writing 10 (ten) days before the transfer of title to the Property.

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

#### 5. BENEFITS, BURDENS, AND ACCESS

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 this Easement shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferable only to the State of New Hampshire, the U.S. Government, or any subdivision of either of them, consistent with Section 170(c)(1) of the U.S. Internal Revenue Code of 1986, as amended, or to any qualified organization within the meaning of Section 170(h)(3) of said Code, which organization 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.

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

C. The Grantee shall have the right to place signs on the Property boundaries for the purpose of identifying it as conservation easement land protected by the Grantee.

#### 6. RESOLUTION OF DISAGREEMENTS

A. The Grantor and the Grantee desire that issues arising from time to time concerning uses or activities in light of the provisions of the Easement will first be addressed through candid and open communication between the parties rather than unnecessarily formal or adversarial action. Therefore, the Grantor and the Grantee agree that if either party becomes concerned whether any use or activity (which together for the purposes of this Section, "Resolution of Disagreements," shall be referred to as the "Activity") complies

with the provisions of this Easement, wherever reasonably possible the concerned party shall notify the other party of the perceived or potential problem, and the parties shall explore the possibility of reaching an agreeable resolution by informal dialogue.

- B. If informal dialogue does not resolve a disagreement regarding the Activity, and the Grantor agrees not to proceed or to continue with the Activity pending resolution of the disagreement concerning the Activity, either party may refer the disagreement to mediation by written notice to the other. Within ten (10) days of the delivery of such a notice, the parties shall agree on a single impartial mediator. Mediation shall be conducted in Exeter, New Hampshire, or such other location as the parties shall agree. Each party shall pay its own attorneys' fees and the costs of mediation shall be split equally between the parties.
- C. If the parties agree to bypass mediation, if the disagreement concerning the Activity has not been resolved by mediation within sixty (60) days after delivery of the notice of mediation, or if the parties are unable to agree on a mediator within ten (10) days after delivery of the notice of mediation, the disagreement shall be submitted to binding arbitration in accordance with New Hampshire RSA 542. The Grantor and the Grantee shall each choose an arbitrator within twenty (20) days of the delivery of written notice from either party referring the matter to arbitration. The arbitrators so chosen shall in turn choose a third arbitrator within twenty (20) days of the selection of the second arbitrator. The arbitrators so chosen shall forthwith set as early a hearing date as is practicable, which they may postpone only for good cause shown. The arbitration hearing shall be conducted in Exeter, New Hampshire, or such other location as the parties shall agree. A decision by two of the three arbitrators, made as soon as practicable after submission of the matter, shall be binding upon the parties and shall be enforceable as part of this Easement.
- D. Notwithstanding the availability of mediation and arbitration to address disagreements concerning the compliance of any Activity with the provisions of this Easement, if the Grantee believes that some action or inaction of the Grantor or a third party is causing irreparable harm or damage to the Property, the Grantee may seek a temporary restraining order, preliminary injunction or other form of equitable relief from any court of competent jurisdiction to cause the cessation of any such damage or harm, to enforce the terms of this Easement, to enjoin any violation by permanent injunction, and to require the restoration of the Property to its condition prior to any breach.

#### 7. BREACH OF EASEMENT – GRANTEE'S REMEDIES

- A. If the Grantee determines that a breach of this Easement has occurred or is threatened, the Grantee shall notify the Grantor in writing of such breach and demand corrective action to cure the breach and, where the breach involves injury to the Property, to restore the portion of the Property so injured to its prior condition.
- B. The Grantor shall, within thirty (30) days after receipt of such notice or after otherwise



learning of such breach, undertake those actions, including restoration, which are reasonably calculated to cure swiftly said breach and to repair any damage. The Grantor shall promptly notify the Grantee of its actions taken hereunder.

- C. If the Grantor fails to perform its obligations under the immediately preceding paragraph B. above, or fails to continue diligently to cure any breach until finally cured, the Grantee may undertake any actions that are reasonably necessary to repair any damage in the Grantor's name or to cure such breach, including an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction, and to require the restoration of the Property to the condition that existed prior to any such injury.
- D. If the Grantee, in its sole discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the conservation features of the Property, the Grantee may pursue its remedies under this Section, "Breach of Easement..." without prior notice to the Grantor or without waiting for the period provided for cure to expire.
- E. The Grantee shall be entitled to recover damages from the party directly or primarily responsible for violation of the provisions of this Easement or injury to any conservation features protected hereby, including, but not limited to, damages for the loss of scenic, aesthetic, or environmental attributes of the Property. Without limiting the Grantor's liability therefore, the Grantee, in its sole discretion, may apply any damages recovered to the cost of undertaking any corrective action on the Property.
- F. The Grantee's rights under this Section, "Breach of Easement..." apply equally in the event of either actual or threatened breach of this Easement, and are in addition to the provisions of the preceding Section, "Resolution of Disagreements," which section shall also apply to any disagreement that may arise with respect to activities undertaken in response to a notice of breach and the exercise of the Grantee's rights hereunder.
- G. The Grantor and the Grantee acknowledge and agree that should the Grantee determine, in its sole discretion, that the conservation features protected by this Easement are in immediate danger of irreparable harm, the Grantee may seek the injunctive relief described in the third paragraph of this Section, "Breach of Easement..." both prohibitive and mandatory, in addition to such other relief to which the Grantee may be entitled, including specific performance of the terms of this Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. The Grantee's remedies described in this Section, "Breach of Easement..." shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.
- H. Provided that the Grantor is directly or primarily responsible for the breach, all reasonable costs incurred by the Grantee in enforcing the terms of this Easement against the Grantor, including, without limitation, staff and consultant costs, reasonable

attorneys' fees and costs and expenses of suit, and any costs of restoration necessitated by the Grantor's breach of this Easement shall be borne by the Grantor; and provided further, however, that if the Grantor ultimately prevails in a judicial enforcement action each party shall bear its own costs. Notwithstanding the foregoing, if the Grantee initiates litigation against the Grantor to enforce this Conservation Easement, and if the court determines that the litigation was initiated without reasonable cause or in bad faith, then the court may require the Grantee to reimburse the Grantor's reasonable costs and reasonable attorney's fees in defending the action.

- I. Forbearance by the Grantee to exercise its rights under this Easement in the event of any breach of any term thereof by the Grantor shall not be deemed or construed to be a waiver by the Grantee of such term or of any subsequent breach of the same or any other term of this Easement or of any of the Grantee's rights hereunder. No delay or omission by the Grantee in the exercise of any right or remedy upon any breach by the Grantor shall impair such right or remedy or be construed as a waiver. The Grantor hereby waives any defense of laches or estoppel.
- J. Nothing contained in this Easement shall be construed to entitle the Grantee to bring any action against the Grantor for any injury to or change in the Property resulting from causes beyond the Grantor's control, including, but not limited to, unauthorized actions by third parties, natural disasters such as fire, flood, storm, disease, infestation and earth movement, or from any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes. The Grantee and the Grantor reserve the right, separately or collectively, to pursue all legal and/or equitable remedies, as set forth in this Section, "Breach of Easement..." against any third party responsible for any actions inconsistent with the provisions of this Easement.

## 8. NOTICES

All notices, requests and other communications, required or permitted to be given under this Easement shall be in writing, except as otherwise provided herein, and shall be delivered in hand or sent by certified mail, postage prepaid, return receipt requested to the appropriate address set forth above or at such other address as the Grantor or the Grantee may hereafter designate by notice given in accordance herewith. Notice shall be deemed to have been given when so delivered or so mailed.

## 9. SEVERABILITY

If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction, by confirmation of an arbitration award or otherwise, the remainder of the provisions of this Easement or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.



10. 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 land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale, in lieu of condemnation, of the Property unencumbered by the restrictions hereunder) shall be divided between the Grantor and the Grantee in proportion to the fair market value at the time of condemnation of their respective interests in that part of the Property condemned. The values of the Grantor's and Grantee's interest shall be determined by an appraisal prepared by a qualified appraiser at the time of condemnation.

C. The Grantee shall use its share of the proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

11. ADDITIONAL EASEMENT

Should the Grantor determine that the expressed purposes of this Easement could better be effectuated by the conveyance of an additional easement, the Grantor may execute an additional instrument to that effect, provided that the conservation purposes of this Easement are not diminished thereby and that a public agency or qualified organization described in Section 5.A., above, accepts and records the additional easement.

12. MERGER

The Grantor and Grantee explicitly agree that it is their express intent, forming a part of the consideration hereunder, that the provisions of the Easement set forth herein are to last in perpetuity, and that to that end no purchase or transfer of the underlying fee interest in the Property by or to the Grantee or any successor or assignee shall be deemed to eliminate the Easement, or any portion thereof, granted hereunder under the doctrine of "merger" or any other legal doctrine.

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

THIS AMENDED AND RESTATED CONSERVATION EASEMENT IS INTENDED TO AMEND, SUPERSEDE AND RESTATE THE CONSERVATION EASEMENT DATED MARCH 24, 1993, AND RECORDED THAT DAY IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AT BOOK 2973, PAGE 1185, AND TO AMEND THE PROPERTY

DESCRIPTION OF THE PARCEL OF REAL ESTATE AFFECTED THEREBY. BY THEIR SIGNATURES AFFIXED HERETO AGREE THAT THIS DOCUMENT SHALL HENCEFORTH DEFINE THE RIGHTS AND RESPONSIBILITIES OF THE PARTIES TOWARD EACH OTHER WITH RESPECT TO THAT CERTAIN PARCEL OF LAND DESCRIBED IN APPENDIX A ATTACHED HERETO.

IN WITNESS WHEREOF, Grantor has hereunto set its hand this 14<sup>th</sup> day of January, 2010.

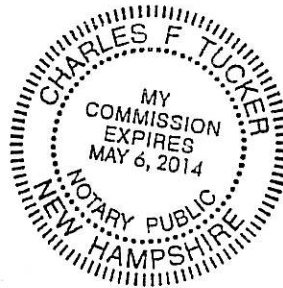
THE RIVERWOODS COMPANY,  
AT EXETER, NEW HAMPSHIRE

BY: [Signature]  
Duly Authorized

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM, ss.

On this 14<sup>th</sup> day of January, 2010, before me personally appeared Justin Vogel the President of The RiverWoods Company, at Exeter, New Hampshire, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument, and acknowledged that he executed the same as his free act and deed for the purposes therein contained.

[Signature]  
Notary Public/Justice of the Peace



ACCEPTED: SOUTHEAST LAND TRUST OF NEW HAMPSHIRE, f/k/a ROCKINGHAM LAND TRUST

By: [Signature]  
Thomas B. Chamberlin

Title: President, Duly Authorized

Date: 1/8/2010

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM, ss.

On this 8<sup>th</sup> day of January, 2010, before me personally appeared Thomas B. Chamberlin, the President of the Southeast Land Trust of New Hampshire, f/k/a Rockingham Land Trust, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument, and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

[Signature]  
Notary Public/Justice of the Peace

KAREN McCORMACK  
Notary Public, State of New Hampshire  
My Commission Expires April 15, 2014

## EXHIBIT A

Entire Perimeter of Property

The following description is of the entire parcel, a portion of which is subject to the Conservation Easement as described in the text preceding this Exhibit. The entire area of the parcel, some of which is subject to the Conservation Easement, and some of which is not, is shown on a plan entitled "Overview Plan for Life Care Services of New Hampshire, Inc." recorded in the Rockingham County Registry of Deeds as Plan D-22123.

The entire perimeter of the property is bounded and described as follows:

Said parcel of land is located to the East of Kingston Road (Route 111) and to the South of Cullen Way, in Exeter, County of Rockingham, State of New Hampshire, and is more particularly bounded and described as follows:

Beginning at a point at the Exeter River and land now or formerly of the Boston & Maine Railroad at the Southeasterly corner of the described premises; thence turning and running in a generally Northwesterly direction along the Exeter River to a point at land now or formerly of Daryl and Deborra Merchant, said points can be connected by a tie line running North 55° 49' 40" West, 2,386.97 feet; thence continuing along land of Merchant, North 13° 11' 20" West approximately 35 feet to a tack in a stump; thence continuing in the same direction 230.62 feet to an iron pin at land now or formerly of Margaret E. and Pauline Nixon; thence turning and running North 11° 17' 40" West, 194.77 feet, to an iron pin at land now or formerly of Albert J. and Jeanette Boisvert; thence turning and running along land of Boisvert North 31° 59' 30" East, 102.25 feet, to a tack in a stump; thence turning and running along land of Boisvert North 42° 52' 40" East, 72.04 feet, to a point; thence turning and running North 53° 58' 20" East, 71.92 feet, to a point; thence turning and running North 43° 10' 30" West, 4.20 feet, to an iron pin; thence continuing North 43° 10' 30" West, 172.15 feet, to an iron pin; thence continuing North 43° 10' 30" West, 13.39 feet, to a point at Kingston Road; thence turning and running along Kingston Road, North 38° 13' 30" East, 51.00 feet, to a point in other land now or formerly of Riverview Trust; thence turning and running along other land of Riverview Trust South 42° 56' 40" East, 203.59 feet, to an iron pin at land now or formerly of Lannon; thence turning and running along land of Robert J. Lannon in the following five courses and distances: South 42° 56' 40" East, 275.00 feet, to a point; North 64° 01' 50" East, 242.14 feet, to a point; South 67° 21' 10" East, 392.90 feet, to a point; North 35° 22' 10" West, 241.37 feet, North 18° 07' 20" West, 421.82 feet, to an iron pin at land now or formerly of Charles and Marjorie Starkey; thence turning and running along land of Starkey, North 05° 08' 00" East, 5.61 feet; thence turning and running South 48° 21' 15" East, 6.11 feet, to other land now or formerly of Riverview Trust (Lots 2 and 3 as shown on "Subdivision of Land in Exeter, New Hampshire, Belmonte Estates for Bell & Flynn, Inc." recorded in the Rockingham County Registry of Deeds as Plan D-15176); thence turning and running along other land of Riverview Trust South 48° 21' 15" East, 400.50 feet, to a point at land now or formerly of the Town of Exeter; thence turning and running along land of the Town of Exeter South 41° 38' 45" West, 25.00 feet; thence turning and running along land of the Town of Exeter South 48° 21' 15" East, 50.00 feet, to a point; thence turning and

running on a curve to the right, with a radius of 825.00 feet, a distance of 53.86 feet, to a point; thence turning and running along other land of Riverview Trust (Lot 3) on a curve to the right with a radius of 825 feet, an arc length of 84.81 feet, to a granite bound; thence continuing along said Lot 3, North 29° 59' 48" East, 106.93 feet, to a granite bound; thence continuing on a curve to the left with a radius of 25 feet, an arc length of 37.34 feet, to a granite bound at RiverWoods Drive, f/k/a Cullen Way; thence turning and running along RiverWoods Drive on a curve to the left with a radius of 625 feet, an arc length of 288.11 feet, to a granite bound; thence continuing along RiverWoods Drive on a curve to the right with a radius of 325.23 feet, an arc length of 21.55 feet, to an iron pin at other land of Riverview Trust (Lot 5); thence turning and running along said Lot 5, South 40° 50' 27" West, 321.84 feet, to an iron pin; thence turning and running in part along Lots 5, 6, and 7 (Lots 5 and 6 being now or formerly of Riverview Trust and Lot 7 being now or formerly of Patricia Grahame) South 49° 09' 32" East, 631.66 feet, to an iron pin; thence continuing along land of Patricia Grahame, South 60° 51' 34" East, 129.38 feet, to an iron pin at land now or formerly of Kathleen and William Evans; thence turning and running along land of Evans North 84° 17' 22" East, 294.41 feet, to an iron pin at land now or formerly of Mary Grillo; thence continuing along land of Mary Grillo North 84° 17' 22" East, 187.98 feet, to an iron pin; thence continuing along land now or formerly of Grillo, land now or formerly of William and Margaret Vickers, land now or formerly of William and Helen Howell, and land now or formerly of Anthony and Elise Romano North 69° 07' 12" East, 634.47 feet, to a point at land now or formerly of Robert and Margaret Abbott; thence turning and running North 65° 00' 30" East, 81.43 feet, by the land of Abbott to a point; thence turning and running along land of Abbott North 37° 59' 00" East, 14.47 feet, to a point; thence turning and running along land of Abbott North 43° 21' 50" East, 140.39 feet, to a point at land now or formerly of Chrysler First Financial Services; thence turning and running along land of Chrysler North 63° 47' 10" East, 60.29 feet, to a point; thence turning and running along land of Chrysler North 36° 09' 10" East, 34.26 feet, to a point; thence continuing along said land of Chrysler and land now or formerly of Robert and Roberta Jordan, North 60° 59' 00" East, 152.75 feet, to a point; thence turning and running along land of said Jordan, North 79° 17' 41" East, 6.46 feet, and North 79° 42' 10" East, 54.11 feet; thence continuing along land of said Jordan and land now or formerly of John and Deborah Wilbur South 84° 29' 30" East, 41.14 feet, and South 83° 26' 10" East, 109.09 feet, to a point; thence turning and continuing along land of said Wilbur and land now or formerly of Terry and Judith Peirce, and now of Harland and Ursula Mackey, North 81° 44' 40" East, 80.65 feet, to a point; thence continuing along land of Mackey North 76° 27' 20" East, 169.29 feet, to a point at land now or formerly of Michael and Susan Belsante; thence continuing along land of Belsante North 76° 27' 20" East, 9.29 feet, to land now or formerly of the Boston & Maine Railroad; thence turning and running along the land now or formerly of the Boston & Maine Railroad, South 36° 38' 04" West, 1,500.59 feet, to a point; thence turning and continuing to run along land of the Boston & Maine Railroad, South 38° 47' 40" West, 418.45 feet; thence turning and running North 11° 46' 29" West, 20.00 feet; thence continuing along land now or formerly of the Boston & Maine Railroad, South 41° 13' 34" West, 730.00 feet, to the point of beginning. Said land containing 84.6 acres, more or less.



**Conservation Easement Area**

A certain tract or parcel of land situated in the Town of Exeter, County of Rockingham and State of New Hampshire and shown on a plan entitled "Overview Plan for Life Care Services of New Hampshire, Inc." recorded in the Rockingham County Registry of Deeds as Plan D-22123 and on plan "Revised Conservation Easement Plan Tax Assessor's Parcel 97-23, 7 RiverWoods Drive, Exeter, New Hampshire for The RiverWoods Company at Exeter", prepared by James Verra and Associates, Inc. dated August 28, 2006, with revisions through December 29, 2009 and recorded at the Rockingham County Registry of Deeds as Plan # D-36239, being further bounded and described as follows:

Beginning at a point at the Exeter River and land now or formerly of the Boston & Maine Railroad at the southeasterly corner of the described premises; thence turning and running in a generally northwesterly direction along the Exeter River to a point at land now or formerly of Daryl and Deborra Merchant, said points can be connected by a tie line running North 55° 49' 40" West 2,386.97 feet; thence continuing along land of Merchant, North 13° 11' 20" West approximately 35 feet to a tack in a stump; thence continuing in the same direction 230.62 feet to an iron pin at land now or formerly of Margaret E. and Pauline Nixon; thence turning and running North 11° 17' 40" West 194.77 feet to an iron pin at land now or formerly of Albert J. and Jeanette Boisvert; thence turning and running along land of Boisvert North 31° 59' 30" East 102.25 feet to a tack in a stump; thence turning and running along land of Boisvert North 42° 52' 40" East 72.04 feet to a point; thence turning and running North 53° 58' 20" East 71.92 feet to a point; thence turning and running North 43° 10' 30" West 4.20 feet to an iron pin; thence continuing North 43° 10' 30" West 172.15 feet to an iron pin; thence continuing North 43° 10' 30" West 13.39 feet to a point at Kingston Road; thence turning and running along Kingston Road, North 38° 13' 30" East 51.00 feet to a point in other land now or formerly of Riverview Trust; thence turning and running along other land of Riverview Trust South 42° 56' 40" East 203.59 feet to an iron pin at land now or formerly of Robert J. Lannon; thence turning and running along land of Lannon in the following five courses and distances: South 42° 56' 40" East 275.00 feet to a point, North 64° 01' 50" East 242.14 feet to a point, South 67° 21' 10" East 392.90 feet to a point, North 35° 22' 10" West 241.37 feet to a tack in a stump, North 18° 07' 20" West 421.82 feet to an iron pin at land now or formerly of Charles and Marjorie Starkey; thence turning and running along land of Starkey, North 05° 08' 00" East 5.61 feet; thence turning and running South 48° 21' 15" East 6.11 feet to other land now or formerly of Riverview Trust (Lots 2 and 3 as shown on "Subdivision of Land in Exeter, New Hampshire, Belmonte Estates for Bell & Flynn, Inc." recorded in the Rockingham County Registry of Deeds as Plan D-15176); thence turning and running along other land of Riverview Trust South 48° 21' 15" East 400.50 feet to a point at land now or formerly of the Town of Exeter; thence turning and running along land of the Town of Exeter South 41° 38' 45" West 25.00 feet; thence turning and running along land of the Town of Exeter South 48° 21' 15" East 50.00 feet to an iron rod and thence running along the same bearing 51.49 feet to an iron rod; thence turning and running South 15° 19' 51" West 384.81 feet to an iron rod; thence turning and running North 85° 03' 18" West 78.00 feet to an iron rod; thence turning and running South 23° 09' 40" West 423.84 feet to an iron rod; South 64° 23' 07" East 195.28 feet to an iron rod; South 82° 40' 40" East 226.27 feet to an iron rod; S 47° 47' 04" East 60.07 feet to an iron rod; South 61° 46' 12" East 183.40 feet to an iron rod;

South 28° 13' 48" West 7.50 feet to an iron rod; South 61° 46' 12" East 25.00 feet to an iron rod; North 28° 13' 48" East 7.50 feet to an iron rod; South 61° 46' 12" East 35.00 feet to an iron rod; South 54° 58' 06" East 164.39 feet to an iron rod; South 47° 09' 00" East 53.50 feet to an iron rod; South 64° 23' 07" East 167.69 feet to an iron rod; South 64° 23' 07" East 137.04 feet to an iron rod; North 21° 14' 50" East 141.21 feet to an iron rod; North 21° 14' 50" East 457.16 feet to an iron rod; North 21° 14' 50" East 45.59 feet to an iron rod; North 66° 20' 21" West 224.25 feet to an iron rod; South 62° 20' 01" West 42.45 feet to an iron rod; North 63° 31' 41" West 461.13 feet to an iron rod; North 85° 03' 20" West 285.70 feet to an iron rod; North 08° 06' 19" West 202.44 feet to an iron rod; North 25° 19' 56" East 172.15 feet to an iron rod; South 49° 09' 32" East 54.60 feet to an iron rod at land now or formerly of Riverview Trust; thence turning and running South 49° 09' 32" East 215.00 feet to an iron rod at other land now or formerly of Riverview Trust; thence continuing South 49° 09' 32" East 215.00 feet along land of Riverview Trust to an iron rod at land now or formerly of Patricia Grahame; running along land of Grahame South 49° 09' 32" East 201.66 feet to an iron rod and thence; thence continuing along land of Grahame, South 60° 51' 34" East 129.38 feet to an iron pin at land now or formerly of Kathleen and William Evans; thence turning and running along land of Evans North 84° 17' 22" East 269.41 feet to an iron rod at land now or formerly of Mary Grillo; thence continuing along land of Mary Grillo North 84° 17' 22" East 187.98 feet to an iron pin; thence continuing along land now or formerly of Grillo, land now or formerly of William and Margaret Vickers, land now or formerly of William and Helen Howell, and land now or formerly of Anthony and Elise Romano North 69° 07' 12" East 634.47 feet to a point at land now or formerly of Robert and Margaret Abbott; thence turning and running North 65° 00' 30" East 81.43 feet by the land of Abbott to a point; thence turning and running along land of Abbott North 37° 59' 00" East 14.47 feet to a point; thence turning and running along land of Abbott North 43° 21' 50" East 140.39 feet to a point at land now or formerly of Chrysler First Financial Services; thence turning and running along land of Chrysler North 63° 47' 10" East 60.29 feet to a point; thence turning and running along land of Chrysler North 36° 09' 10" East 34.26 feet to a point; thence continuing along said land of Chrysler and land now or formerly of Robert and Roberta Jordan, North 60° 59' 00" East 152.75 feet to a point; thence turning and running along land of said Jordan, North 79° 17' 41" East 6.46 feet and North 79° 42' 10" East 54.11 feet; thence continuing along land of said Jordan and land now or formerly of John and Deborah Wilbur South 84° 29' 30" East 41.14 feet and South 83° 26' 10" East 109.09 feet to a point; thence turning and continuing along land of said Wilbur and land formerly of Terry and Judith Peirce, and now of Harland and Ursula Mackey, North 81° 44' 40" East 80.65 feet to a point; thence continuing along land of Mackey North 76° 27' 20" East 169.29 feet to a point at land now or formerly of Michael and Susan Belsante; thence continuing along land of Belsante North 76° 27' 20" East 9.29 feet to land now or formerly of the Boston & Maine Railroad; thence turning and running along the land now or formerly of the Boston & Maine Railroad South 36° 38' 04" West 1,500.59 feet to a point; thence turning and continuing to run along land of the Boston & Maine Railroad South 38° 47' 40" West 418.45 feet; thence turning and running North 11° 46' 29" West 20.00 feet; thence continuing along land now or formerly of the Boston & Maine Railroad South 41° 13' 34" West 730.00 feet to the point of beginning. Said land containing 66.9 acres, more or less.



Note that the area subject to the Conservation Easement is subject to certain pre-existing easements to the Exeter-Hampton Electric Company, Granite State Gas Transmission, Inc., Robert J. Lannon, a drainage easement for the benefit of the adjacent Cullen Way subdivision, and a 15' wide public recreation access easement along the banks of the Exeter River, which is not necessarily, as yet, of record.

The improvements, structures, and alterations to the Conservation Easement area which are expressly permitted, are those shown on the site plan for RiverWoods at Exeter, for Life Care Services of New Hampshire, Inc., to be recorded herewith, specifically including access roads, utility easements, and drainage improvements as shown on said Plans, if any, and those expressly listed above in the text of the Easement and as shown on the Overview Plan and all other sheets which are specifically referred to thereon or recorded therewith.

### **Building Envelope**

The Conservation Easement does not cover the following parcel which is included within the boundaries of the entire parcel described above, which contains 17.67 acres and which describes a "CCRC Area" or "building envelope" within which all of the buildings will be contained.

A certain tract or parcel of land situated in the Town of Exeter, County of Rockingham and State of New Hampshire and shown as "Building Envelope Development Area" on a plan entitled "Revised Conservation Easement Plan Tax Assessor's Parcel 97-23, 7 RiverWoods Drive, Exeter, New Hampshire for The RiverWoods Company at Exeter", prepared by James Verra and Associates, Inc. dated August 28, 2006, with revisions through December 29, 2009, and recorded at the Rockingham County Registry of Deeds as Plan #D-36239, being further bounded and described as follows:

Beginning at an iron pin at the northerly corner of Lot 5 as shown on a plan of land entitled "Subdivision of Land located in Exeter, New Hampshire, by Kimball Chase, Belmonte Estates for Bell & Flynn, Inc." see Rockingham County Registry of Deeds Plan D-15176; thence running South 40° 50' 27" West 321.84 feet to an iron pin at the southwesterly corner of said Lot 5; thence turning and running North 49° 09' 32" West 54.60 feet to an iron rod; thence turning and running South 25° 19' 56" West 172.15 feet to an iron rod; thence turning and running South 08° 06' 19" East 202.44 feet to an iron rod; thence turning and running South 85° 03' 20" East 285.70 feet to an iron rod; thence turning and running South 63° 31' 41" East 461.13 feet to an iron rod; thence turning and running N 62° 20' 01" E a distance of 42.45 feet to an iron rod; thence turning and running S 66° 20' 21" E a distance of 224.25 feet to an iron rod; S 21° 14' 50" W a distance of 45.59 feet to an iron rod; thence turning and running South 21° 14' 50" West 457.16 feet to an iron rod; thence turning and running S 67° 30' 16" W a distance of 189.14 feet to an iron rod; thence turning and running North 64° 23' 07" West 167.69 feet to an iron rod; thence proceeding in a line which is measured 150 feet from mean high water of the Exeter River and which distance is approximated by the following five tie line segments, which segments shall be deemed to delimit the edge of the conservation easement, being North 47° 09' 00" West 53.50 feet, North 54° 58' 06" West 164.39 feet, North 61° 46' 12" West 35.00 feet; South 28°

13' 48" West a distance 7.50 feet; N 61° 46' 12" West a distance of 25.00 feet; North 28° 13' 48" East a distance of 7.50 feet; North 61° 46' 12" West 183.40 feet, North 47° 47' 04" West 60.07 feet, North 82° 40' 40" West 226.27 feet, North 64° 23' 07" West 195.28 feet to an iron rod; thence North 23° 09' 40" East 423.84 feet to an iron rod; thence South 85° 03' 18" East 78.00 feet to an iron rod; thence North 15° 19' 51" East 384.81 feet to an iron pin found; thence North 48° 21' 15" West 51.49 feet to an iron rod at land now or formerly of the Town of Exeter; thence proceeding along land of the Town of Exeter on a curve to the right with a radius of 825 feet, an arc length of 53.86 feet to an iron rod at Lot 3 of said Plan D-15176; thence continuing along Lot 3 on a curve with the same radius, an arc length of 84.81 feet to a granite bound; thence North 29° 59' 48" East 106.93 feet to a granite bound; thence continuing on a curve to the left with a radius of 25 feet, an arc length of 37.34 feet to a granite bound at Cullen Way, now known as RiverWoods Drive; thence continuing along Cullen Way on a curve to the left with a radius of 625 feet, an arc length of 288.11 feet to a granite bound; thence continuing along Cullen Way on a curve to the right with a radius of 325.23 feet, an arc length of 21.55 feet to the point of beginning. Said building development envelope area contains 17.67 acres, more or less.

Being the premises conveyed to Life Care Services of New Hampshire, Inc., now known as The RiverWoods Company at Exeter, New Hampshire, by deed of Marshall Farms Crossing, Inc. dated March 22, 1993 and recorded in the Rockingham County Registry of Deeds at Book 2973, Page 1176.

RECORDING 86.00  
SURCHARGE 2.00



(m)  
Donahue Tucker  
+ Ciardella PLLC  
PO Box 630  
Exeter NH 03833

THIS IS A TRANSFER TO THE TOWN OF EXETER, NH AND IS THEREFORE EXEMPT FROM THE NEW HAMPSHIRE REAL ESTATE TRANSFER TAX PURSUANT TO RSA 78-B:2, I AND FROM THE L-CHIP FEE PURSUANT TO RSA 478:17-g, II (a)

CONSERVATION EASEMENT DEED

**THE RIVERWOODS COMPANY, AT EXETER, NEW HAMPSHIRE**, a New Hampshire non-profit corporation, with an address of 5 White Oak Drive, Exeter, County of Rockingham, State of New Hampshire 03833 (hereinafter 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, successors and assigns),

**FOR CONSIDERATION PAID**, with WARRANTY covenants, grants in perpetuity to the **TOWN OF EXETER**, a municipal corporation duly organized and existing in the County of Rockingham, State of New Hampshire, with a place of business at 10 Front Street, Exeter New Hampshire 03833, with administration by and through the **Exeter Conservation Commission** pursuant to NH RSA 36:A (hereinafter referred to as the "Grantee" which shall, unless the context clearly indicates otherwise, include the Grantee's successors and assigns),

the **Conservation Easement** (herein referred to as the "Easement") hereinafter described with respect to those certain parcels of land (herein collectively referred to as the "Property" or "Easement Area", and both terms may be used interchangeably) being unimproved land shown on a plan entitled "Conservation Easement Plan. The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds as Plan #D-42956, more particularly bounded and described in **Exhibit "A"** attached hereto and made a part hereof.

1. PURPOSES

The Easement hereby granted is pursuant to NH RSA 477:45-47, exclusively for the following conservation purposes:

- A. To assure that the Easement Area will be retained forever in its undeveloped, scenic, and open space condition and to prevent any use of the Easement Area that will significantly impair or interfere with the conservation values of the Easement Area; and,
- B. To assist in assuring the drinking water supply and groundwater recharge of the Town of Exeter, the Easement Area being in the Exeter River watershed; and
- C. To preserve the land subject to this Easement for the passive recreational use of the Grantor, its successors or assigns, and the public; and
- D. To preserve open spaces, particularly the wetland and productive forest land, 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;

all consistent with the Exeter Master Plan which calls for preservation of the character of the Town by preservation of forest land open spaces and protection of water supply sources, all consistent and in accordance with the U.S. Internal Revenue Code, with respect to those certain parcels of land (herein collectively referred to as the "Easement Area") being unimproved land 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.

**DESCRIPTION OF ENVIRONMENTAL VALUE**

The property contains significant wetlands which provide excellent habitat for a variety of waterfowl, amphibians, aquatic furbearers, and in the adjacent uplands, deer, other mammals, and birds. In addition, portions of the Easement Area contain two swamp white oak basin swamps, an exemplary community recognized as rare by the NH Natural Heritage Bureau. The Easement Area is of further importance since its wetlands retain water which is gradually released to the Exeter River. Rockingham County is the fastest growing county in the State, and large tracts of land are being lost to development. These significant conservation values are set forth in detail in baseline documentation to be provided under separate cover.

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

2. USE LIMITATIONS (Subject to the reserved rights specified in Section 3 below)

- A. The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except as listed below in Paragraph 2.D. and in Paragraph 3.
- B. Forestry on the Property shall be performed, to the extent reasonably practicable, with the goal of maintaining a healthy forest, which may include the removal of dead, dying, or diseased trees or the selective cutting, culling, or thinning of trees. For the purposes hereof "forestry" shall include the cutting and sale of timber and other forest products not detrimental to the purposes of the easement. Forestry on the property shall be performed in accordance with a coordinated management plan reviewed and approved by the Exeter Conservation Commission for the sites and soils of the Property and developed according to scientifically based practices recommended by the University of New Hampshire Cooperative Extension, U.S. Natural Resources Conservation Service, or other government or private, nonprofit, natural resource conservation and management agencies then active.
- C. The Property shall not be subdivided.
- D. No structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, golf course, swimming pool, dock, aircraft landing strip, mobile home, or dwelling, and/or road shall be constructed, placed, or introduced onto the Property. However, ancillary structures and improvements including, but not limited to, a permeable road, dam, fence, bridge, culvert, and passive recreational trails, may be constructed, placed, or introduced onto the Property as necessary in the accomplishment of the forestry, conservation, or noncommercial outdoor recreational uses of the Property and provided that they are not substantially detrimental to the purposes of this Easement.
- E. No removal, filling, or other disturbances of soil surface, nor any changes in topography, surface or subsurface water systems, wetlands, or natural habitat shall be allowed unless such activities:
- i. are commonly necessary in the accomplishment of forestry, conservation, habitat management, or noncommercial outdoor recreational or other permitted uses of the Property.
  - ii. do not harm state or federally recognized rare, threatened, or endangered species, such determination of harm to be based upon information from the New Hampshire Natural Heritage Inventory or the agency then recognized by the State of New Hampshire as having responsibility for identification and/or conservation of such species.
  - iii. are not detrimental to the scenic, recreational, wildlife habitat, and water quality protection purposes of this easement.
  - iv. Prior to commencement of any such activities, all necessary federal, state, and local permits and approvals shall be secured.
- F. No outdoor advertising structures such as signs and billboards shall be displayed on the Property except as desirable or necessary in the accomplishment of the forestry, conservation, or

noncommercial outdoor recreational uses of the Property, and provided such signs are not detrimental to the purposes of this Easement.

G. There shall be no mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials on the Property, except in connection with the conservation purposes of the Easement. No such rocks, minerals, gravel, sand, topsoil, or other similar materials shall be removed from the Property.

H. There shall be no dumping, injection, burning, or burial of man-made materials, including landscaping materials, or materials then known to be environmentally damaging or hazardous including vehicle bodies or parts.

I. The Property may be used in order to help satisfy the density requirements of the Town of Exeter Zoning Ordinance and Site Plan Review Regulations. Grantor will prepare under separate cover a calculation of the units which could have been constructed in 2003 and 2007 using the conservation easement area as part of its density calculations, less any units that may have been approved and constructed to date (the "Surplus Units"). Upon agreement by both parties to the number of "Surplus Units, the Grantor has the right to apply for all applicable approvals for the Surplus Units and may use the conservation easement area to satisfy the density requirements. The agreement of the parties shall be kept on file with the Exeter Planning Department and with The RiverWoods Company, at Exeter, New Hampshire.

J. There shall be no defacement, movement, removal, or alteration of any stone walls or other monuments or markers that serve as legal boundaries, as per New Hampshire RSA 472:6, or as the legal boundary of this Easement as described in Appendix A.

K. The Easement is subject to an existing gas pipeline easement. For further reference, see Note 10 on the Plan. Further, the Grantor reserves the right to grant a corrective easement for the gas pipeline to reflect the field measurements as further identified on the Plan.

### 3. RESERVED RIGHTS

A. All uses of the Property not expressly prohibited herein and not inconsistent with the Purposes of this Easement are expressly reserved to the Grantor.

B. The Grantor specifically reserves the right to construct, maintain, repair, upgrade, or replace the existing utilities within the Easement Area, as identified upon the Plan recorded herewith, and on the Baseline Documentation Report on file with the Grantor and Grantee. Any upgrade or replacement of said existing utilities that significantly alters the relationship to and impact of the utilities on the Easement Area including, but not limited to, the replacement of overhead power lines with buried power lines, shall be subject to review and approval by the Grantee. The Grantor shall provide the Grantee with appropriate plans and descriptions of the proposed upgrade or replacement at least sixty (60) days before the proposed undertaking of said activities. The Grantee shall review and evaluate said upgrade or replacement based on its impact on the Purposes of this Easement and shall approve, approve with conditions, or disapprove of said upgrade or replacement within forty-five (45) days of receipt of the proposed

plans and descriptions. In making its decision, the Grantee shall take into consideration the short-term and long-term impact of the proposed upgrade or replacement of said utilities on the Purposes of this Easement. Said approval shall not be unreasonably withheld.

C. The Grantor reserves the right to maintain, repair, and replace retention and detention basins, storm drainage channels, and appurtenant embankments, dams, and other drainage structures, as identified on the Plan recorded herewith and on the Baseline Documentation Report on file with the Grantor and Grantee, in order to accommodate and treat storm water runoff from the developed area of the Grantor's property.

D. The Grantor reserves the right to create and maintain pedestrian trails located within the Easement Area. The Grantor shall notify the Grantee forty-five (45) days prior to undertaking the creation of new trails.

E. The Grantee, acting by and through the Conservation Commission, shall review the proposed location and design of the trails to ensure that there is no substantial interference with the general purpose of the easement, including any interference with the swamp white oak basin or vernal pools. The trail design, including construction materials, and crossings shall also be reviewed to ensure that there is no substantial interference with the general purpose of the easement.

F. Notwithstanding the language contained in Section 2. E., the Grantor expressly reserves the right to have signage for trails and to identify tree species within the Easement Area.

G. The Grantor reserves the right to post against vehicles, motorized or otherwise, on the Easement Area.

H. The Grantor reserves the right to post against hunting, including but not limited to trapping.

I. The Grantor reserves the right to post a portion or all of the Property, temporarily or permanently, in the event public access proves detrimental to the open space and conservation value of the easement area, or, to the health and safety of the residents of the non-easement area owned by the Grantor. Prior to modification of public access, the Grantor shall notify the Grantee of the circumstances contributing to a need for closure and will work with the Grantee to explore reducing public access before full closure is exercised.

#### 4. DISCRETIONARY AMENDMENTS

A. If owing to unforeseen or changed circumstances Grantor and Grantee agree that an amendment to, or modification of this Easement would be appropriate and desirable, Grantor and Grantee may jointly amend this Easement pursuant to the provisions and limitations of this section and applicable state and federal law. Any amendment shall be consistent with the Purposes of this Easement, shall enhance protection of or further clarify, but not impair, the conservation attributes of the Property protected by this Easement, and shall ensure the Easement remains in effect for a perpetual duration. Any such amendment shall be executed by the Grantor



and the Grantee and shall be recorded in the Rockingham County Registry of Deeds. Nothing in this paragraph shall require Grantor or Grantee to agree to any amendment or to consult or negotiate regarding any amendment.

5. NOTIFICATION OF TRANSFER, TAXES, MAINTENANCE

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

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

6. BENEFITS, BURDENS, AND ACCESS

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 this Easement shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferable only to the State of New Hampshire, the U.S. Government, or any subdivision of either of them, consistent with Section 170(c)(1) of the U.S. Internal Revenue Code of 1986, as amended, or to any qualified organization within the meaning of Section 170(h)(3) of said Code, which organization 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.

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

C. The Grantee shall have the right to place signs on the Property boundaries for the purpose of identifying it as conservation easement land protected by the Grantee.

7. BREACH OF EASEMENT

A. When a breach of this Easement, or conduct by anyone inconsistent with this Easement, comes to the attention of the Grantee, it shall notify the Grantor in writing of such breach or conduct, delivered in hand or by certified mail, return receipt requested.

B. The Grantor shall, within thirty (30) days after receipt of such notice or after otherwise learning of such breach or conduct, undertake those actions, including restoration, which are reasonably calculated to cure swiftly said breach, or to terminate said conduct, and to repair any damage. The Grantor shall promptly notify the Grantee of its actions taken under this section.

C. If the Grantor fails to take such proper action under the preceding paragraph, the Grantee shall, as appropriate to the purposes of this deed, undertake any actions that are reasonably necessary to cure such breach or to repair any damage in the Grantor's name or to terminate such

conduct. The cost thereof, including the Grantee's expenses, court costs, and legal fees shall be paid by the Grantor, provided that the Grantor is directly or primarily responsible for the breach.

D. Nothing contained in this Easement shall be construed to entitle the Grantee to bring any action against the Grantor for any injury to or change in the Property resulting from causes beyond the Grantor's control, including, but not limited to, unauthorized actions by third parties, natural disasters such as fire, flood, storm, and earth movement, or from any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes.

E. The Grantee and the Grantor reserve the right, separately or collectively, to pursue all legal remedies against any third party responsible for any actions detrimental to the conservation purposes of this Easement.

F. No delay or omission by Grantee in the exercise of any right or remedy upon any breach by Grantor shall impair Grantee's rights or remedies or be construed as a waiver.

8. NOTICES

All notices, requests, and other communications required or permitted to be given under this Easement shall be in writing, except as otherwise provided herein, and shall be delivered in hand or sent by certified mail, postage prepaid, return receipt requested to the appropriate address set forth above or at such other address as the Grantor or the Grantee may hereafter designate by notice given in accordance herewith. Notice shall be deemed to have been given when so delivered or so mailed.

9. SEVERABILITY

If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction, by confirmation of an arbitration award or otherwise, the remainder of the provisions of this Easement or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

10. 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 land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale, in lieu of condemnation, of the Property unencumbered by the restrictions hereunder) shall be divided between the Grantor and the Grantee in proportion to the fair market value at the time of condemnation of their respective interests in that part of the

Property condemned. The values of the Grantor's and Grantee's interest shall be determined by an appraisal prepared by a qualified appraiser at the time of condemnation.

C. The Grantee shall use its share of the proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

11. ADDITIONAL EASEMENT

Should the Grantor determine that the expressed purposes of this Easement could better be effectuated by the conveyance of an additional easement, the Grantor may execute an additional instrument to that effect, provided that the conservation purposes of this Easement are not diminished thereby and that a public agency or qualified organization described in Section 5.A., above, accepts and records the additional easement.

12. RESOLUTION OF DISPUTES

A. The Grantor and Grantee agree that should a dispute arise out of this Easement, the parties shall, in the first instance, endeavor to resolve the dispute through candid and open communication between the parties rather than unnecessarily formal or adversarial action. Therefore, the Grantor and the Grantee agree that the concerned party shall notify the other party of the perceived or potential problem, and the parties shall explore the possibility of reaching an agreeable resolution by informal dialogue. If informal dialogue does not resolve a disagreement, either party may endeavor to resolve the dispute through mediation. In order to facilitate a prompt resolution through mediation, the parties shall cooperate with one another in selecting a mediator and a mediation date. Unless otherwise agreed to in writing, any costs associated with the mediation, including but not limited to, the mediation fee shall be divided equally between the parties.

B. If either party determines that mediation is unavailable or otherwise inappropriate or the parties participate in mediation, but are unable to resolve the dispute, either party may institute legal proceedings in a court of competent jurisdiction and in accordance with all applicable laws, regulations and rules.

C. This Easement shall be interpreted and construed by the laws of the State of New Hampshire.

13. MERGER

The Grantor and Grantee explicitly agree that it is their express intent, forming a part of the consideration hereunder, that the provisions of the Easement set forth herein are to last in perpetuity, and that to that end no purchase or transfer of the underlying fee interest in the Property by or to the Grantee or any successor or assignee shall be deemed to eliminate the Easement, or any portion thereof, granted hereunder under the doctrine of "merger" or any other legal doctrine.

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

IN WITNESS WHEREOF, Grantor has hereunto set its hand this 19 day of July, 2021.

THE RIVERWOODS COMPANY, AT EXETER,  
NEW HAMPSHIRE

  
By: Deborah L. Riddell  
Its: Executive Director, Duly Authorized

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM, ss.

This instrument was acknowledged before me on this 19<sup>th</sup> day of July, 2021 by Deborah L. Riddell, as Executive Director of The RiverWoods Company, at Exeter, New Hampshire, a New Hampshire non-profit corporation, on behalf of said corporation.


  
Notary Public

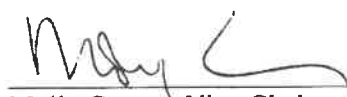
GINA M. DICKENSON, Notary Public  
My Commission Expires September 23, 2025




ACCEPTED this 10<sup>th</sup> day of May, 2021:

TOWN OF EXETER  
BY ITS SELECT BOARD

  
\_\_\_\_\_  
Niko Papakonstantis, Chair

  
\_\_\_\_\_  
Molly Cowan, Vice-Chair

  
\_\_\_\_\_  
Julie D. Gilman, Clerk

  
\_\_\_\_\_  
Daryl Browne

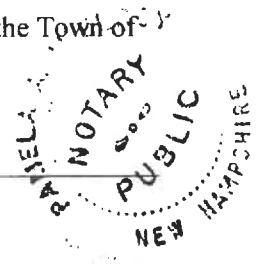
  
\_\_\_\_\_  
Lovey Roundtree Oliff

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 19<sup>th</sup> day of May, 2021 by Niko Papakonstantis, Chair of the Select Board of the Town of Exeter, a New Hampshire municipality, on behalf said Town.

Pamela A. McElroy  
NOTARY PUBLIC  
State of New Hampshire  
My Commission Expires 11/6/2024

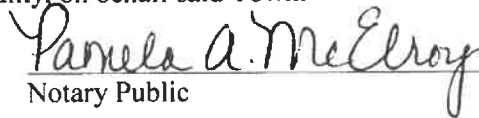
  
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Notary Public

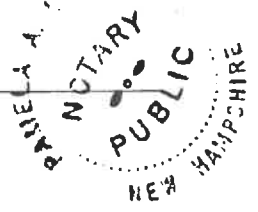


STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 28<sup>th</sup> day of May, 2021 by Molly Cowan, Vice Chair of the Select Board of the Town of Exeter, a New Hampshire municipality, on behalf said Town.

Pamela A. McElroy  
NOTARY PUBLIC  
State of New Hampshire  
My Commission Expires 11/6/2024

  
\_\_\_\_\_  
Notary Public



STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 25<sup>th</sup> day of May, 2021 by Julie D. Gilman, Clerk of the Select Board of the Town of Exeter, a New Hampshire municipality, on behalf said Town.

Pamela A. McElroy  
Notary Public

Pamela A. McElroy  
NOTARY PUBLIC  
State of New Hampshire  
My Commission Expires 11/6/2024

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 26<sup>th</sup> day of May, 2021 by Daryl Brown, Select Person of the Select Board of the Town of Exeter, a New Hampshire municipality, on behalf said Town.

Pamela A. McElroy  
Notary Public

Pamela A. McElroy  
NOTARY PUBLIC  
State of New Hampshire  
My Commission Expires 11/6/2024

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 21<sup>st</sup> day of May, 2021 by Lovey Roundtree Oliff, Select Person of the Select Board of the Town of Exeter, a New Hampshire municipality, on behalf said Town.

Pamela A. McElroy  
Notary Public

Pamela A. McElroy  
NOTARY PUBLIC  
State of New Hampshire  
My Commission Expires 11/6/2024

EXHIBIT A

CONSERVATION EASEMENT AREA

Conservation Easement "1" Area:

A certain tract of land in Exeter, County of Rockingham, State of New Hampshire, lying westerly of Jolly Rand Road, being shown as "**Conservation Easement "1" Area = 7.542 Acres**" on a plan entitled "Conservation Easement Plan, The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds. Said tract is more particularly bounded and described as follows:

Beginning at a set drill hole at the southeasterly corner of said tract, at a point identified as "POB 2" on said plan on the westerly sideline of Jolly Rand Road and at land now or formerly of Southeast Land Trust of N.H.;

Thence by a stonewall and land of said Southeast Land Trust of N.H. on the following courses:

South 84°13'12" West a distance of 85.36 feet to a found drill hole;  
South 78°23'20" West a distance of 93.44 feet to a point;  
South 85°25'45" West a distance of 50.03 feet to a point;  
South 83°56'59" West a distance of 115.02 feet to a found drill hole;  
South 84°14'28" West a distance of 120.50 feet to a point;  
South 82°58'46" West a distance of 153.09 feet to a point;  
South 80°16'15" West a distance of 155.42 feet to a found drill hole at the end of the stone wall;  
South 81°44'54" West a distance of 17.15 feet to a found iron rod at other land of said Riverwoods Company;

Thence by other land of said Riverwoods Company on the following courses:

North 13°15'55" West a distance of 797.15 feet to a set iron rod;  
North 17°23'02" East a distance of 178.87 feet to a set iron rod;

Thence over land of said Riverwoods Company on the following courses:

South 56°44'06" East a distance of 52.87 feet to a set iron rod;  
South 24°17'36" East a distance of 37.62 feet to a set iron rod;  
South 46°10'46" East a distance of 101.06 feet to a set iron rod;  
South 23°42'15" West a distance of 136.40 feet to a set iron rod;  
South 29°50'00" East a distance of 222.93 feet to a set iron rod;  
South 60°55'11" East a distance of 66.01 feet to a set iron rod;  
South 0°41'47" West a distance of 132.24 feet to a set iron rod;  
North 64°09'53" East a distance of 113.92 feet to a set iron rod;



South 76°37'00" East a distance of 84.08 feet to a set iron rod;  
South 19°01'27" East a distance of 161.23 feet to a set iron rod;  
South 58°32'34" East a distance of 114.70 feet to a set iron rod;  
North 53°08'53" East a distance of 206.92 feet to a set iron rod;  
North 10°30'59" West a distance of 145.29 feet to a set iron rod;  
North 13°39'49" East a distance of 94.05 feet to a set iron rod;  
North 17°27'56" West a distance of 116.82 feet to a set iron rod;  
North 47°05'13" East a distance of 85.42 feet to a set iron rod;  
South 33°21'02" East a distance of 72.12 feet to a set iron rod;  
South 0°31'32" East a distance of 239.96 feet to a set iron rod;  
South 68°48'26" East a distance of 69.96 feet to a set iron rod;  
North 45°21'25" East a distance of 120.24 feet to a set iron rod on the westerly sideline of said Jolly Rand Road;  
Thence by said sideline South 8°19'51" West a distance of 336.08 feet to the point of beginning. Said tract contains 7.542 acres.

Conservation Easement "2" Area:

A certain tract of land in Exeter, County of Rockingham, State of New Hampshire, lying westerly of Jolly Rand Road, being shown as "Conservation Easement "2" Area = 13.822 Acres" on a plan entitled "Conservation Easement Plan, The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds. Said tract is more particularly bounded and described as follows:

Beginning at a 14" maple tree with barbed wire at the Northwesterly corner of said tract, located N 4°37'36" W a distance of 1.22 feet from a found iron rod, said point being identified as "POB 1" on said Plan.

Thence by land of Blackford Place Home Owner's Association on the following courses:

- South 83°05'13" East a distance of 102.77 feet to a 12" maple tree with barbed wire;
- South 80°31'59" East a distance of 200.23 feet to a 30" oak tree with barbed wire;
- South 77°47'32" East a distance of 13.81 feet to a 30" pine tree with barbed wire;
- South 78°20'29" East a distance of 122.14 feet to a set iron rod;
- South 86°17'06" East a distance of 130.69 feet to a spike set at the beginning of a stonewall;
- South 86°07'10" East a distance of 59.14 feet to a spike set at the end of said stonewall;
- South 88°07'36" East a distance of 71.91 feet to a set iron rod at the beginning of a stonewall;

Thence continuing by land of said Blackford Place Home Owner's Association and a stonewall on the following courses:

South 73°35'35" East a distance of 96.54 feet to a found drill hole;  
South 79°20'02" East a distance of 91.43 feet to a found drill hole;  
South 85°41'38" East a distance of 81.94 feet to a found drill hole at the end of said stonewall;  
Thence continuing by land of said Blackford Place Home Owner's Association South 85°49'00"  
East a distance of 80.81 feet to a found iron rod on the westerly sideline of Jolly Rand Road;  
Thence by said westerly sideline of Jolly Rand Road on the following courses:  
South 17°20'31" West a distance of 72.89 feet to a set iron rod;  
South 12°06'18" West a distance of 65.62 feet to a set iron rod;  
South 8°22'08" West a distance of 161.06 feet to a set iron rod;  
South 42°34'40" West a distance of 41.96 feet to a set iron rod;  
South 53°47'25" West a distance of 42.72 feet to a set iron rod;  
South 34°13'25" West a distance of 285.22 feet to a set iron rod;  
South 32°13'11" West a distance of 100.83 feet to a set drill hole at the beginning of a  
stonewall;  
South 32°54'09" West a distance of 36.72 feet to a set drill hole at the end of a stonewall;  
South 30°49'29" West a distance of 25.80 feet to a set drill hole;  
South 13°15'25" West a distance of 31.94 feet to a set iron rod;  
South 9°28'09" West a distance of 91.62 feet to a set iron rod;  
South 19°16'35" West a distance of 31.80 feet to a set iron rod;  
South 34°12'24" West a distance of 99.63 feet in part by a stonewall to a found iron rod;  
South 23°51'43" West a distance of 153.42 feet by said stonewall to a set iron rod;  
Thence over land of The RiverWoods Company, at Exeter, New Hampshire (the "RiverWoods  
Company") on the following courses:  
North 24°08'39" West a distance of 194.30 feet to a set iron rod;  
North 06°47'48" West a distance of 206.64 feet to a set iron rod;  
North 15°23'34" East a distance of 114.00 feet to a set iron rod;  
South 75°31'54" East a distance of 60.27 feet to a set iron rod;  
South 68°29'45" East a distance of 148.11 feet to a set iron rod;  
North 32°20'22" East a distance of 99.23 feet to a set iron rod;  
North 7°01'27" West a distance of 155.90 feet to a set iron rod;  
North 38°07'11" West a distance of 182.66 feet to a set iron rod;  
North 85°25'08" West a distance of 99.91 feet to a set iron rod;  
South 78°55'40" West a distance of 77.93 feet to a set iron rod;  
South 57°17'12" West a distance of 246.28 feet to a set iron rod;  
South 71°55'08" West a distance of 118.80 feet to a set iron rod;  
South 51°32'33" West a distance of 116.53 feet to a set iron rod;  
South 28°29'02" West a distance of 152.30 feet to a set iron rod;  
South 60°14'25" West a distance of 48.79 feet to a set iron rod;  
North 88°48'37" West a distance of 136.77 feet to a set iron rod;  
North 77°23'23" West a distance of 158.04 feet to a set iron rod at other land of said

RiverWoods Company;  
Thence by said other land of RiverWoods Company on the following courses;  
North 58°31'14" East a distance of 594.48 feet to a set iron rod;  
North 4°37'36" West a distance of 518.46 feet to the point of beginning.  
Said tract contains 13.822 acres.

Conservation Easement "3" Area:

A certain tract of land in Exeter, County of Rockingham, State of New Hampshire, lying northerly of Pickpocket Road, but not adjacent thereto, being shown as "Conservation Easement "3" Area = 15.580 Acres" on a plan entitled "Conservation Easement Plan, The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds. Said tract is more particularly bounded and described as follows:

Beginning at a 1" iron pipe located at base at the westerly corner of said tract, at a point identified as "POB 3" on said plan, at land now or formerly Machaon M. & Kathryn A. Bonafede,

Thence by land of said Bonafede and barbed wire fence remnants on the following courses:

North 41°22'52" East a distance of 38.07 feet to a set iron rod;

North 29°29'53" East a distance of 75.85 feet to a set iron rod;

Thence continuing by said land of Bonafede on the following courses:

North 28°37'06" East a distance of 23.11 feet to a 16" maple tree with barbed wire;

North 26°21'02" East a distance of 45.96 feet to a 26" oak tree with barbed wire;

North 29°27'04" East a distance of 191.82 feet to a 5" hemlock tree with barbed wire;

North 36°40'45" East a distance of 12.36 feet to an 8" oak tree with barbed wire;

Thence continuing by said land of said Bonafede and barbed wire fence remnants on the following courses:

North 34°52'24" East a distance of 90.08 feet to a set iron rod;

North 15°48'41" East a distance of 54.03 feet to a set iron rod;

North 28°56'19" East a distance of 58.28 feet to a 5" beech tree with barbed wire;

North 35°35'05" East a distance of 41.13 feet to a 16" hemlock tree with barbed wire;

North 30°48'10" East a distance of 42.40 feet to a found iron pipe;

South 73°43'11" East a distance of 64.45 feet to an 8" oak tree with barbed wire;

South 82°30'52" East a distance of 92.43 feet to a 5" beech tree with barbed wire;

South 83°35'15" East a distance of 61.24 feet to an 8" beech tree with barbed wire;

South 76°26'47" East a distance of 51.72 feet to a 24" hemlock tree with barbed wire;

South 82°53'46" East a distance of 93.95 feet to a 14" hemlock tree with barbed wire;

South 73°39'53" East a distance of 116.38 feet to an 8" maple tree with barbed wire;  
South 79°20'30" East a distance of 53.93 feet to an 8" pine tree with barbed wire;  
Thence continuing by land of said Bonafede and barbed wire fence remnants on the following courses:  
South 78°45'07" East a distance of 110.52 feet to a set iron rod;  
South 85°00'56" East a distance of 138.84 feet to a found iron rod at land now or formerly of David C. & Elisabeth C. Matson;  
Thence by land of said Matson on the following courses:  
South 81°27'33" East a distance of 70.61 feet to an 18" pine tree with barbed wire;  
South 84°19'10" East a distance of 155.08 feet to a 14" maple tree with barbed wire;  
South 82°09'51" East a distance of 135.53 feet to a 14" oak tree with barbed wire;  
South 79°49'50" East a distance of 82.74 feet to a found iron rod at Sandstone Way Extension;  
Thence by said Sandstone Way Extension South 79°29'56" East a distance of 49.92 feet to a found granite bound at land of Blackford Place Home Owner's Association;  
Thence by land of said Blackford Place Home Owner's Association South 79°35'34" East a distance of 117.70 feet to a 14" maple tree with barbed wire;  
Thence by other land of The RiverWoods Company, at Exeter, New Hampshire ("RiverWoods Company") on the following courses:  
South 4°37'41" East a distance of 51.76 feet to a set iron rod;  
South 4°37'36" East a distance of 466.70 feet to a set iron rod;  
South 58°31'14" West a distance of 554.50 feet to a set iron rod;  
Thence over land of said RiverWoods Company on the following courses:  
North 26°26'02" West a distance of 180.00 feet to a set iron rod;  
North 68°14'27" West a distance of 166.74 feet to a set iron rod;  
North 56°12'15" West a distance of 137.13 feet to a set iron rod;  
North 12°57'15" West a distance of 95.00 feet to a set iron rod;  
North 58°15'11" East a distance of 69.17 feet to a set iron rod;  
North 38°10'32" East a distance of 110.66 feet to a set iron rod;  
South 72°16'35" East a distance of 90.60 feet to a set iron rod;  
North 84°18'37" East a distance of 101.45 feet to a set iron rod;  
South 30°31'36" East a distance of 198.23 feet to a set iron rod;  
South 80°18'00" East a distance of 150.00 feet to a set iron rod;  
North 59°54'15" East a distance of 184.65 feet to a set iron rod;  
North 12°57'06" East a distance of 81.70 feet to a set iron rod;  
North 9°37'52" East a distance of 59.77 feet to a set iron rod;  
North 10°13'11" East a distance of 120.23 feet to a set iron rod;  
North 49°58'01" West a distance of 87.28 feet to a set iron rod;  
North 7°22'05" West a distance of 67.84 feet to a set iron rod;  
North 79°39'08" West a distance of 20.00 feet to a set iron rod;  
North 79°39'09" West a distance of 50.00 feet to a set iron rod;

North 79°39'00" West a distance of 81.73 feet to a set iron rod;  
North 83°18'53" West a distance of 291.00 feet to a set iron rod;  
North 83°49'01" West a distance of 209.24 feet to a set iron rod;  
South 15°20'09" West a distance of 110.00 feet to a set iron rod;  
South 13°56'28" East a distance of 80.00 feet to a set iron rod;  
South 69°20'00" West a distance of 194.89 feet to a set iron rod;  
South 21°46'42" West a distance of 147.27 feet to a set iron rod;  
North 82°24'02" West a distance of 74.91 feet to a set iron rod;  
South 79°43'17" West a distance of 126.17 feet to a set iron rod;  
South 62°43'07" West a distance of 111.31 feet to a set iron rod;  
South 61°03'51" West a distance of 102.32 feet to a set iron rod;  
South 61°18'36" West a distance of 143.41 feet to a set iron rod;  
South 87°09'46" West a distance of 81.40 feet to a set iron rod;  
North 06°00'43" West a distance of 175.00 feet to a set iron rod;  
South 87°37'24" West a distance of 99.96 feet to the point of beginning.  
Said tract contains 15.580 acres.

Conservation Easement "4" Area:

A certain tract of land in Exeter, County of Rockingham, State of New Hampshire, lying northerly of Pickpocket Road, but not adjacent thereto, being shown as "Conservation Easement "4" Area = 14.841 Acres" on a plan entitled "Conservation Easement Plan, The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds. Said tract is more particularly bounded and described as follows:

Beginning at a found iron pipe at the northwesterly corner of said tract, at a point identified as "POB 4" on said plan, at the northeasterly corner of land now or formerly of Steven J. & Sarah B. Ramsay;

Thence over land of The RiverWoods Company, at Exeter, New Hampshire ("RiverWoods Company") on the following courses:

North 82°26'23" East a distance of 100.56 feet to a set iron rod;  
South 6°47'56" East a distance of 241.34 feet to a set iron rod;  
North 82°26'51" East a distance of 144.56 feet to a set iron rod;  
North 5°33'26" West a distance of 147.30 feet to a set iron rod;  
North 77°39'52" East a distance of 88.63 feet to a set iron rod;  
South 42°01'49" East a distance of 122.51 feet to a set iron rod;

South 66°07'59" East a distance of 198.09 feet to a set iron rod;  
South 26°04'38" West a distance of 98.60 feet to a set iron rod;  
South 16°13'55" West a distance of 110.74 feet to a set iron rod;  
South 78°46'11" East a distance of 179.90 feet to a set iron rod;  
South 73°27'14" East a distance of 138.13 feet to a set iron rod;  
South 34°45'24" East a distance of 92.84 feet to a set iron rod;  
South 22°34'05" West a distance of 216.00 feet to a set iron rod;  
By an arc of a curve, concave Northwesterly having a radius of 120.00 feet, a central angle of 40°00'47", an arc length of 83.80 feet, and a chord of South 42°34'28" West 82.11 feet to a set iron rod;  
South 62°34'52" West a distance of 176.65 feet to a set iron rod;  
By an arc of a curve, concave Southeasterly having a radius of 180.00 feet, a central angle of 23°52'24", an arc length of 75.00 feet, and a chord of South 50°38'40" West 74.46 feet to a set iron rod;  
North 69°17'22" West a distance of 63.39 feet to a set iron rod;  
South 32°21'28" West a distance of 55.04 feet to a set iron rod;  
South 37°59'00" East a distance of 82.46 feet to a set iron rod;  
By an arc of a curve, concave Easterly having a radius of 180.00 feet, a central angle of 15°54'56", an arc length of 50.00 feet, and a chord of South 00°27'28" East 49.84 feet to a set iron rod;  
South 08°24'56" East a distance of 106.83 feet to a set iron rod;  
By an arc of a curve, concave Westerly having a radius of 170.00 feet, a central angle of 44°14'01", an arc length of 131.24 feet, and a chord of South 13°42'05" West 128.01 feet to a set iron rod;  
South 35°49'05" West a distance of 159.87 feet to a set iron rod;  
South 29°25'52" West a distance of 85.00 feet to a set iron rod;  
North 76°15'27" West a distance of 85.00 feet to a set iron rod at land now or formerly of Paul B. & Sheila M. Roberge;  
Thence by land of said Roberge on the following courses:  
North 28°25'00" East a distance of 207.02 feet to a set iron rod;  
North 7°55'21" East a distance of 30.02 feet to a set iron rod;  
North 1°00'07" East a distance of 203.03 feet to a set iron rod;  
North 65°24'10" West a distance of 178.02 feet to a set iron rod at other land of said Riverwoods Company;  
Thence by other land of said Riverwoods Company on the following courses:  
North 7°55'30" East a distance of 230.58 feet to a set iron rod;  
North 80°41'51" West a distance of 384.61 feet to a found iron pipe at land now or formerly of John Bell;  
Thence by said Bell land and land now or formerly of Paul J. Holloway, Jr., North 8°49'16" West a distance of 129.12 feet to a found iron pipe;

Thence continuing by land of said Holloway on the following courses:

North 12°04'12" West a distance of 37.15 feet to a 10" oak tree with barbed wire;

North 1°38'30" West a distance of 74.01 feet to a set iron rod at land of said Ramsay;

Thence continuing by land of said Ramsay on the following courses:

North 83°42'43" East a distance of 217.51 feet to a set iron rod;

North 6°47'56" West a distance of 461.52 feet to the point of beginning.

Said tract contains 14.841 acres.

Conservation Easement "5" Area:

A certain tract of land in Exeter, County of Rockingham, State of New Hampshire, lying northerly of Pickpocket Road, being shown as "Conservation Easement "5" Area = 9.335 Acres" on a plan entitled "Conservation Easement Plan, The Boulders at RiverWoods & The Ridge at RiverWoods, Jolly Rand Road, Pickpocket Road & White Oak Drive, Exeter, New Hampshire, Tax Assessor's Parcels 98-37 & 80-18 for The RiverWoods Company, at Exeter, New Hampshire," dated January 28, 2021 and revised through February 25, 2021, prepared by James Verra and Associates, Inc., which plan is recorded in the Rockingham County Registry of Deeds. Said tract is more particularly bounded and described as follows:

Beginning at a set iron rod at the northeasterly corner of said tract, at a point identified as "POB 5" on said plan, at other land of The RiverWoods Company, at Exeter, New Hampshire ("RiverWoods Company");

Thence by other land of said Riverwoods Company on the following courses:

South 17°23'02" West a distance of 178.87 feet to a set iron rod;

South 13°15'55" East a distance of 797.15 feet to a found iron rod at land now or formerly of Southeast Land Trust of N.H.;

Thence by land of said Southeast Land Trust of N.H on the following courses:

South 81°35'13" West a distance of 152.17 feet to a point;

South 83°35'00" West a distance of 105.17 feet to a set iron rod at land now or formerly of Dennis A. Hayward Rev. Trust & Cheryl A. Hayward Rev. Trust;

Thence by land of said Hayward Trusts on the following courses:

North 6°19'08" West a distance of 103.64 feet to a set iron rod;

South 83°38'50" West a distance of 375.00 feet to a set iron rod;

South 13°56'03" East a distance of 295.23 feet to a found drill hole in a rock;

South 13°56'03" East a distance of 291.32 feet to a set iron rod on the northerly sideline of Pickpocket Road;

Thence by said road sideline on the following courses:

North 87°27'50" West a distance of 251.22 feet to a found iron rod;

North 84°05'42" West a distance of 51.25 feet to a found iron rod;

Thence over land of said Riverwoods Company on the following courses:



North 70°38'27" West a distance of 55.00 feet to a set iron rod;  
North 26°58'22" West a distance of 45.00 feet to a set iron rod;  
By an arc of a curve, concave Southeasterly having a radius of 120.00 feet, a central angle of 26°14'46", an arc length of 54.97 feet, and a chord of North 22°41'42" East 54.49 feet to a to a set iron rod;  
North 35°49'05" East a distance of 95.00 feet to a set iron rod;  
North 64°48'27" East a distance of 140.00 feet to a set iron rod;  
North 2°05'07" East a distance of 55.00 feet to a set iron rod;  
North 85°30'02" West a distance of 70.00 feet to a set iron rod;  
By an arc of a curve, concave Westerly having a radius of 230.00 feet, a central angle of 18°41'00", an arc length of 75.00 feet, and a chord of North 00°55'34" East 74.67 feet to a set iron rod;  
North 8°24'56" West a distance of 106.83 feet to a set iron rod;  
By an arc of a curve, concave Southeasterly having a radius of 120.00 feet, a central angle of 70°59'48", an arc length of 148.69 feet, and a chord of North 27°04'58" East 139.36 feet to a set iron rod;  
North 62°34'52" East a distance of 176.65 feet to a set iron rod;  
By an arc of a curve, concave Northwesterly having a radius of 180.00 feet, a central angle of 40°00'47", an arc length of 125.70 feet, and a chord of North 42°34'28" East 123.17 feet to a set iron rod;  
North 22°34'05" East a distance of 232.92 feet to a set iron rod;  
North 72°05'40" East a distance of 74.38 feet to a set iron rod;  
North 32°07'10" East a distance of 134.58 feet to a set iron rod;  
North 62°42'44" West a distance of 174.78 feet to a set iron rod;  
North 61°51'31" West a distance of 202.59 feet to a set iron rod;  
North 26°16'09" East a distance of 72.38 feet to a set iron rod;  
North 81°58'06" East a distance of 200.00 feet to a set iron rod;  
North 61°32'21" East a distance of 160.00 feet to a set iron rod;  
South 82°04'58" East a distance of 50.00 feet to the point of beginning.  
Said tract contains 9.335 acres.

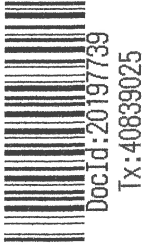
S:\RA-RL\RiverWoods Company\2019 Expansion\2021 05 05 Conservation Easement Deed.docx

(M)

DTC Lawyers  
16 Acadia Lane  
Exeter NH 03833

*Cathy Ann Seary*

LCHIP	ROA667362	25.00
TRANSFER TAX	RO127306	40.00
RECORDING		18.00
SURCHARGE		2.00



Transfer Tax: \$40.00

**EASEMENT DEED**

KNOW ALL MEN BY THESE PRESENTS, that **The RiverWoods Company, at Exeter, New Hampshire**, a New Hampshire nonprofit corporation, with an address of 7 Riverwoods Drive, Exeter, New Hampshire 03833 (“Grantor”), for consideration paid, grants to **D. Grant Murray (a/k/a Donald Grant Murray) and Carol J. Murray**, husband and wife, their successors and/or assigns, with an address of 74 Kingston Road, Exeter, New Hampshire 03833 (“Grantee”), the following perpetual easement located in the Town of Exeter, County of Rockingham, and State of New Hampshire:

A certain perpetual no-cut easement over land of Grantor in favor of land of Grantee located at 74 Kingston Road (a/k/a NH Route 111) in the Town of Exeter, County of Rockingham, and State of New Hampshire, which no-cut easement is depicted as **“22,393 S.F. No Cut Easement In Favor of Parcel 97-28 Over Parcel 97-29 (Hatched)”** (also referred to herein as the “No Cut Easement”) on easement plan entitled “Easement Plan Project/Location: Easement Plan RiverWoods & Murray Properties 74 & 78 Kingston Road Exeter, N.H. Owners: D. Grant Murray Carol J. Murray 74 Kingston Road Exeter, NH 03833 Assessor’s Parcel 97-28 RCRD 4592/2040 & 6524/2074 / The RiverWoods Company at Exeter New Hampshire 7 Riverwoods Drive Exeter, NH 03833 Assessor’s Parcel 97-29 RCRD 6524/2076,” prepared by James Verra & Associates, Inc. and Altus Engineering, dated December 28, 2023, recorded in the Rockingham County Registry of Deeds as Plan No. D-44288 (the “Easement Plan”), the terms of which are as follows:

Cutting of trees shall not be performed on the No Cut Easement area depicted on said Easement Plan, except as needed for the goal of maintaining a healthy forest, which may include the removal of dead, dying or diseased trees or the selective cutting, culling, or thinning of trees. Further, Grantor reserves the right to create and maintain pedestrian trails located within the No Cut Easement. Grantor shall notify Grantee forty-five (45) days prior to undertaking the creation of any trails. Grantor assigns and conveys all right to enforce this provision to Grantee, as the owners of the property located at 74 Kingston Road (shown as Parcel 97-28 on said Easement Plan), their successors and/or assigns.

Meaning and intending to describe and convey the above-described easement on a portion of land of The RiverWoods Company at Exeter, New Hampshire acquired by Deed of Sheila Groonell, of near or even date and recorded in the Rockingham County Registry of Deeds at Book 6524, Page 2076, in favor of land of D. Grant Murray (a/k/a Donald Grant Murray) and Carol J. Murray acquired by the following deeds: Deed of Sean R. Becht and Becky M. Brown, dated December 9, 2005, and recorded in said Registry of Deeds at Book 4592, Page 2040; and Deed of Sheila Groonell, of near or even date and recorded in said Registry of Deeds at Book 6524, Page 2074.

Reference is also made to plan entitled, "Lot Line Adjustment Plan Project/Location: Lot Line Adjustment Plan Murray & Groonell Properties 74 & 78 Kingston Road Exeter, N.H. Owners/Applicants: D. Grant Murray Carol J. Murray 74 Kingston Road Exeter, NH 03833 Assessor's Parcel 97-28 RCRD 4592/2040 / Sheila M. Groonell 78 Kingston Road Exeter, NH 03833 Assessor's Parcel 97-29 RCRD 4838/236," prepared by James Verra & Associates, Inc. and Altus Engineering, dated December 11, 2023, last revised December 19, 2023, recorded in the Rockingham County Registry of Deeds as Plan No. D-44277 (the "LLA Plan")

The foregoing easement is conveyed subject to the conditions shown and noted on said Easement and LLA Plans.

All rights, responsibilities, privileges, obligations and liabilities granted herein and created by this instrument shall inure to the benefit of and be binding upon the Grantor and the Grantee, and their respective heirs, devisees, administrators, executors, successors and assigns, jointly and severally, and shall run with the real estate owned by the Grantor and the Grantee, and may not be separately alienated or otherwise severed from the ownership of the real estate owned by each party.

[SIGNATURE AND ACKNOWLEDGMENT ON FOLLOWING PAGE.]

EXECUTED this 19th day of Dec., 2023.

The RiverWoods Company, at Exeter,  
New Hampshire

[Signature]  
Witness

[Signature]  
By: Kevin P. Goyette  
Title of Officer: Chief Financial Officer,  
Duly Authorized

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

This instrument was acknowledged before me on this 19th day of December, 2023,  
by Kevin P. Goyette, the duly authorized Chief Financial Officer of The RiverWoods Company,  
at Exeter, New Hampshire, a New Hampshire nonprofit corporation, on behalf of said  
corporation.

[Signature]  
Notary Public  
My Commission Expires: 6-5-2024



ACKNOWLEDGMENT

1369 283

*Del. Perkins*

THE STATE OF NEW HAMPSHIRE } ss:  
County of Rockingham }

On this the 20 day of August, 19 55 before me  
the undersigned officer, personally appeared Alvin F. Berry and Lois M. Berry  
known to me or satisfactorily proven to  
be the persons (s) whose name(s) \_\_\_\_\_ (s) (are) subscribed to the within instrument and acknowledged that he (they)  
voluntarily executed the same for the purposes therein contained.

IN WITNESS WHEREOF I hereunto set my hand and seal.

Received and recorded: Sept. 21, 2 PM, 1955.

*John W. Warrington Jr*  
Justice of the Peace  
Notary Public

ROCKINGHAM RECORDS  
Received 10/31-2 PM 1955  
Recorded Vol. 1369 Page 283

RIGHT OF WAY AGREEMENT

Know All Men By These Presents: That the undersigned Antonio Belmonte and Angelina Belmonte

of Exeter, Rockingham County, State of New Hampshire  
(hereinafter called GRANTOR, whether one or more), for and in consideration of SIX HUNDRED Dollars  
in hand paid, receipt of which is hereby acknowledged, does hereby give, grant, bargain, sell and confirm unto ALLIED NEW HAMPSHIRE  
GAS COMPANY, a New Hampshire Corporation duly organized by law with a usual place of business in Portsmouth, in the County of  
Rockingham and The State of New Hampshire (hereinafter called GRANTEE), and its successors and assigns, the right, privilege and authority  
to lay, relay, construct, maintain, operate, alter, repair, remove, relocate, change the size of and replace pipe lines (with fittings, appliances,  
and appurtenances, including cathodic protection equipment) for the transportation of oil, gas, petroleum products or any other liquids; gases  
or substances which can be transported through pipe lines by a route or routes which the Grantee shall have the right to select, change and  
alter under, upon, over and through lands which the Grantor owns or in which the Grantor has an interest, situated in the Town/City of  
Exeter County of Rockingham and The State of New Hampshire, bounded and described as  
follows:

A certain tract of land, situated in said Exeter, containing one hundred forty (140) acres, more or less, with all the buildings thereon, lying on the Southerly side of the road leading from Exeter to Kingston, and bounded as follows: Commencing on said road to a Westerly corner of said land and at a corner of land formerly of Nathaniel Gordon, and running Northeasterly and Easterly on said road to land lately owned by Harry Manjoy; thence Easterly by said Manjoy land and land formerly of Asa Lamson to land formerly of John G. Haley; thence Southerly by said Haley land to land formerly of William Wadleigh; thence Westerly on said Wadleigh land about twenty-four (24) rods to a stake and stones at an old wall; thence Southerly on said Wadleigh's land to the Railroad; thence Southeasterly on said Railroad to the Exeter River; thence West on said river and following the same to land formerly of Nathaniel Gordon; thence Northerly and Westerly by said Gordon land to the bound begun at.

However, excepting therefrom the school house lot, so-called, comprised of the old school building and a certain two (2) acres of land surrounding the same, said excepted premises being described as follows: Beginning at a point on the Southeasterly side of Kingston Road and the Northeasterly side of Exeter River; thence running by said Kingston Road North 44 degrees, 45 minutes East 377 feet to a stake; thence turning and running South 48 degrees 16 minutes East 264 feet to a stake; thence turning and running South 44 degrees, 45 minutes West 261 feet to said Exeter River; thence turning and running Northwesterly by said river to the point of beginning, containing two acres.

Book 1369 Page 0284

1369 284  
Being the same lands described in instrument(s) dated October 21, 1948 recorded in the Registry of Deeds for said County of Rockingham in Book 1115, Page 398, and conveyed by Albert J. Mace to Antonio Belmonte and Angelina Belmonte, as joint tenants.

It is agreed that the Grantee, its successors and assigns shall have an easement for all the purposes herein described under, upon, over and through a strip of land 35 feet in width and said strip of land shall extend 25 feet Easterly and 10 feet Westerly and along the entire length of a survey line as shown on a Plan of Pipe Line of Allied New Hampshire Gas Company, Plaistow, New Hampshire, to Exeter, New Hampshire to Portsmouth, New Hampshire, prepared by John W. Durgin, Civil Engineers, dated AUGUST 1955, Sheet No. 8, and recorded in Rockingham Records, Plat 75, Page 10.

The phrase "survey line" as hereinabove referred to and as shown on the aforesaid Plan does not necessarily mean the location of the pipe line in the easement and it is understood that the pipe line or pipe lines may be located or relocated anywhere within the aforesaid 35 foot easement.

The Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including the free right of ingress and egress to and from said pipe lines.

TO HAVE AND TO HOLD the said easement, rights, privileges and authority, unto the Grantee, its successors and assigns, until the first pipe line is constructed and so long thereafter as a pipe line is maintained thereon.

The Grantor reserves, subject to the rights, privileges and authority herein granted and confirmed, the right to use the said premises for planting and cultivation of crops, as a means of access, ingress and egress to and from the land adjoining, to build cross fences, to maintain and use roads, driveways, sewers, drains, waterlines, gas lines, telephone and telegraph lines and electric light and power lines across said easement, subject, however, to the conditions that no building or other structure shall be erected on said easement by the Grantor, and further provided that the rights reserved to the Grantor shall not be used or exercised in any manner which will interfere with the rights, privileges and authority herein granted and confirmed to the Grantee and further provided, however, that the Grantee shall have the right from time to time to cut and remove and keep removed by such means as the Grantee may select all trees, undergrowth and all other obstructions that may injure, endanger or interfere with the laying, relaying, constructing, maintaining, operating, altering, repairing, removing, relocating, changing the size of and replacing said pipe lines or fittings and appliances appurtenant to said lines.

The Grantee agrees to pay for any damage to crops, timber and existing improvements which may be caused the Grantor by the Grantee ~~in~~ relaying, ~~constructing~~ maintaining, operating, altering, repairing, removing, relocating, changing the size of and replacing said pipe lines. Said damage, if not mutually agreed upon, to be ascertained and determined by three disinterested persons; one to be appointed by the undersigned Grantor, his successors, heirs or assigns in title to said lands; one by the Grantee, its successors or assigns, or in the case of more than one ownership of said right of way and easement, such appointment shall be made by the Grantee, its successors or assigns, against whom damages are claimed; and the third by the two persons aforesaid, and the award of such three persons shall be final and conclusive.

It is agreed that this agreement as written covers all the agreements between the parties and that no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms of this agreement.

The word "Grantor" as herein used shall refer to and mean the Grantor, his, her or their heirs, executors, administrators or assigns, and the word "Grantee" shall refer to and mean the Grantee its successors or assigns.

We and each of us, husband and wife in consideration aforesaid do hereby relinquish my right of dower curtesy and homestead in the before mentioned premises.

And we and each of us do hereby release all rights of homestead secured to us or either of us by Chapter 260 of the Revised Laws of New Hampshire or by any other Statute of said State.

Witness our hands and seals to this conveyance this 12<sup>th</sup> day of September, 1955.

SIGNED, SEALED AND DELIVERED

IN THE PRESENCE OF  
John W. Durgin Jr.  
Robt. G. [unclear]

Antonio Belmonte his  
Angelina Belmonte her

ACKNOWLEDGMENT

THE STATE OF NEW HAMPSHIRE } ss:  
County of Rockingham

On this the 12<sup>th</sup> day of Sept, 19 55 before me  
the undersigned officer, personally appeared Antonio Belmonte and Angelina Belmonte known to me or satisfactorily proven to be the persons (s) whose name(s) X (are) subscribed to the within instrument and acknowledged that he (they) voluntarily executed the same for the purposes therein contained.

IN WITNESS WHEREOF I hereunto set my hand and seal.

John W. Durgin Jr.  
Justice of the Peace  
Notary Public

Received and recorded Sept. 21, 2 P.M. 1955.

ROCKINGHAM

## Section 4

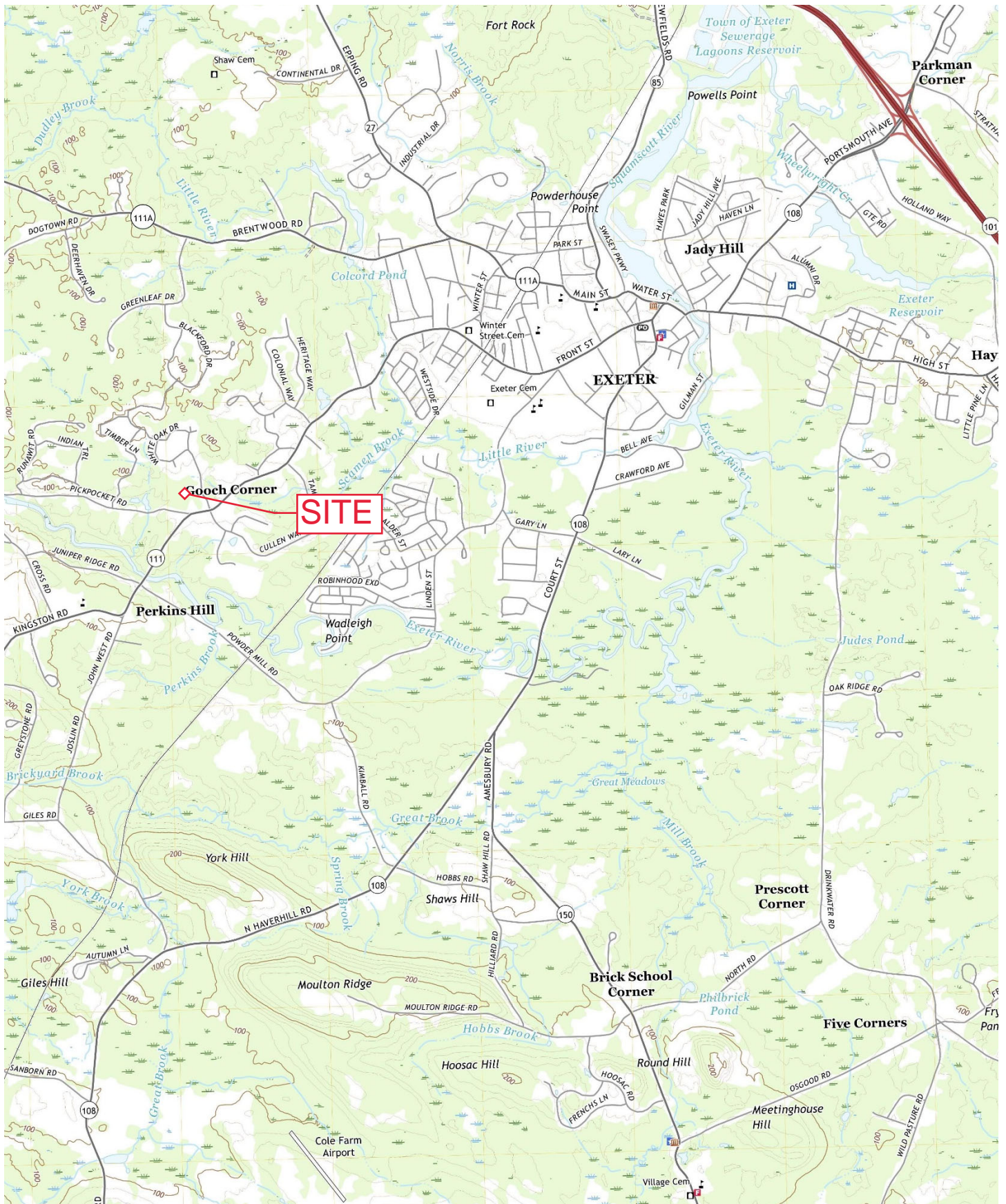
USGS Map

Aerial Photo

Tax Map

FIRM







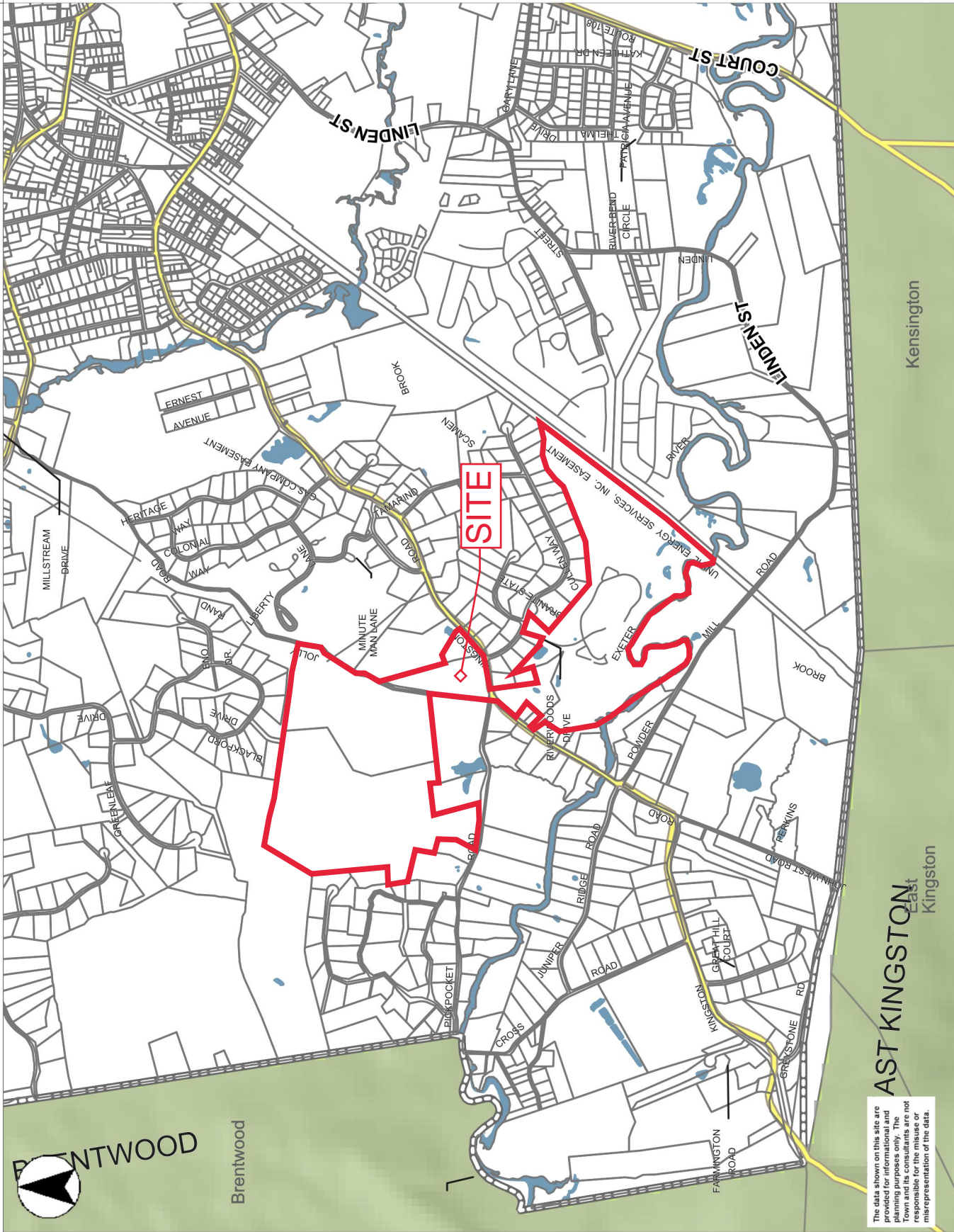


SITE





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



Brentwood

AST KINGSTON  
East  
Kingston

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

0 2100 4200 ft

Printed on 09/09/2024 at 01:27 PM



# National Flood Hazard Layer FIRMette

70°59'18"W 42°58'23"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**



0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*



**OTHER AREAS OF FLOOD HAZARD**

**OTHER AREAS**

**GENERAL STRUCTURES**

**Cross Sections with 1% Annual Chance Water Surface Elevation**

**OTHER FEATURES**

**MAP PANELS**

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/9/2024 at 1:17 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



70°58'40"W 42°57'57"N



Basemap Imagery Source: USGS National Map 2023



3087.00

October 8, 2024

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

*Re: RiverWoods Supportive Living Health Center  
Design Review Engineering Services  
Exeter, New Hampshire*

Site Information:

---

Tax Map/Lot#:	97 / 23	Review No. 1
Address:	5 White Oak Drive	
Lot Area:	204.48 ac	
Proposed Use:	Redevelopment / Institutional	
Water:	Municipal	
Sewer:	Municipal	
Zoning District:	R-1	
Applicant:	The Riverwoods Company at Exeter, New Hampshire	
Design Engineer:	Altus Engineering	

Plan Set Reviewed:

- Site plan set entitled "Supportive Living Health Center" last revised 9/10/2024, prepared by Altus Engineering

Dear Mr. Sharples:

Based on our review of the above information, we offer the following comments related to the site plans listed above in accordance with the Town of Exeter Regulations and standard engineering practice. UE performed only a cursory review of the storm drainage system, as the NHDES will be performing a detailed review as part of the Alteration of Terrain permitting.



Mr. Sharples  
October 8, 2024

Cover Sheet

1. An NHDES Sewer Connection Permit should be included in the required permits.

Existing Conditions Plans

2. We understand these two plan sheets were created prior to a voluntary lot merger. The final plans should be updated to reflect the lot merger.
3. Please explain the horizontal and vertical datum used listed as "Riverwoods "Site"". "
4. Significant trees should be labeled per Exeter's natural resource requirements.
5. How were the ROW lines established? Include the source of the information.

Demolition Plan

6. Coordinate with the Town of Exeter DPW, the means of sewer forcemain removal or abandonment within the Route 111 ROW. Note that existing services must be abandoned at the main.

Site Plan

7. We recommend increasing the radius (east side) of the drive entrance into the parking garage.
8. We understand the drive entrance to the north of the building is meant to accommodate 2-way traffic until the end of the parking area. We recommend providing a turnaround to prevent cars from reversing back down the lot to turn around at the garage entrance if the lot is full. We also recommend further signage to let drivers know ahead of time there is no thru traffic.

Stormwater Management Plan

9. Porous pavement is shown for a very small area of the project site. We understand there is no other porous pavement on the RiverWoods campus. Installation of such a small area of porous pavement will be difficult to construct and will require an atypical amount of maintenance including vacuuming several times a year.
10. Will there be any drains within the parking garage area? If so, where do they discharge?
11. Note 14 directs roof drainage to a stone drip edge. Please show the limits of the drip edge on the plan.

Utility Plan

12. Please add a note indicating the Contractor must have an employee with a Utility Installer license, issued by the Town of Exeter, onsite at all times when utility work is ongoing within the ROW.
13. The 12" water main is shown approximately 3' horizontally from the gas line. The applicant's consultant should consider options for increased separation.



Mr. Sharples  
October 8, 2024

14. We recommend adding a valve at the new water line's southern connection point for testing purposes and isolation of the line while keeping the existing hydrant at Route 111 active.
15. The existing conditions plans show an existing 2" forcemain entering SMH #2A from the west. If that line is to remain in place, it should remain depicted on all proposed plans.
16. Please revise the label for SMH #2A to direct the Contractor to refer to the detail on plan sheet C20.
17. We understand sewer design revisions are being considered; we defer further comments pending revised plans, however once it is known if open cut across Route 111 will be permissible by NHDOT, please include sufficient notes including any special requirements of the trench patching.

#### Lighting Plan

18. Artificial lights can impact nocturnal activity of amphibians. Please confirm lighting at the edge of paving at the wetland areas will be minimal.

#### Detail Sheets

19. Please add wetwell/pump station details, unless it is removed from the design.

#### Landscaping Plan

20. Confirm the large tree shown adjacent to the sewer pump station will not cause issues for maintenance accessibility.
21. A large tree is shown directly next to the 12" water main. The tree, including the roots will be affected by required repairs and replacement.
22. Evaluate potential conflicts between trees and the underground drainage system.

#### Architectural Plans

23. Parking garage:
  - Support columns reduce the usable width of some parking spaces below the required minimum. A waiver may be required.
  - Support columns in the northern drive aisle reduce the aisle width to less than 18'. A waiver is required.
  - Three parking spaces along the north wall are unusable due to column placement in the aisle.
  - Related to a previous comment, please show locations of floor drains, if any.
  - The aisle in between the two handicap parking spaces and the corners should be striped.





Mr. Sharples  
October 8, 2024

Other

24. Sewer flow calculations: Confirm the per capita numbers used account for the onsite laundry facilities and commercial kitchen.
25. Add a narrative to the stormwater report regarding pollutant removal regarding the Town of Exeter requirements for N, P and TSS.
26. Will the roadway through the site be close to through traffic during construction? Although not required for this plan set, we recommend a phasing plan, in conjunction with the demolition plan, to address traffic, temporary utilities, etc. prior to the pre-bid meeting.

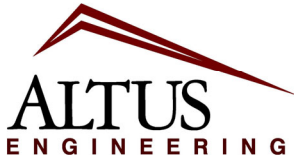
A written response is required to facilitate future reviews. Please contact us if you have any questions.

Very truly yours,  
UNDERWOOD ENGINEERS, INC.

Allison M. Rees, P.E. (NH)  
Project Manager

Robert J. Saunders, P.E. (NH, ME, VT, PA)  
Project Manager





**Civil  
Site Planning  
Environmental  
Engineering**

133 Court Street  
Portsmouth, NH  
03801-4413

October 23, 2024

Dave Sharples, Town Planner  
Town of Exeter  
10 Front Street  
Exeter, NH 03833

**Re: Engineering Review  
RiverWoods Supportive Living Health Center  
Tax Map 97, Lot 23  
5 White Oak Drive  
Exeter, New Hampshire  
Altus Project No. 5015**

Transmitted via email to: [dsharples@exeternh.gov](mailto:dsharples@exeternh.gov)

Dear Mr. Sharples,

Altus Engineering, Inc. (Altus) is in receipt of the Underwood Engineers (UEI) review comments dated October 8, 2024. We offer the following in response:

Cover Sheet

1. We have added NHDES Sewer Connection Permit to the list of required permits.

Existing Conditions Plans

2. The existing conditions plans have been revised to reflect the updated change & merger of the Riverwoods Tracts, and have noted the recorded Merger on sheet two.
3. The Riverwoods Site horizontal and vertical datums were established during the survey & design of the Riverwoods "Ridge" project in 2004. The Riverwoods horizontal datum IS NHSPC 1983. To convert from the Riverwoods horizontal datum to the current NGS control realization of NAD 1983 (2011)(EPOCH2010.000), decrease Northing values by 0.01' and increase Easting values by 1.14'. To convert Riverwoods site elevations to the NAVD 1988 vertical datum, reduce Riverwoods elevations by 0.2' (approximate). Due to the location and elevation of the Riverwoods Exeter complex ground survey values are the same as NHSPC 1983 values (no scaling required).
4. The existing conditions plans have been updated to show trees over a 20" caliper within the project area.
5. During our extensive research of Kingston Road, we were unable to find a layout for Kingston Road at the location of the subject tract. Based on plans of record and monumentation along Kingston Road, it appears that the right-of-way width is 3 Rods (49.5'). See the following plans recorded at Rockingham County Registry of Deeds : D-30933, D-8534, D- 9067, C-3008, D-9033,

D-14911, D-35705, D-43603, D-15176, D-7764, C-5785 & D-43602 which were used, in addition to found monumentation, to establish the Kingston Road (NH Route 111) ROW.

#### Demolition Plan

6. The existing 4" forcemain is now noted to be plugged and abandoned outside the receiving manhole. This is intended to accommodate the proposed replacement of the manhole as shown on the Utility Plan Sheet C-8. It is our intention to coordinate with DPW and other utility providers extensively thought the project.

#### Site Plan

7. The radius on the east side of the garage entrance has been increased to 15'.
8. We have replaced a parking space at the upper right corner of the north parking lot with a striped island. This is intended to provide a space for a vehicle to turn around instead of reversing. An R5-12 "No Thru Traffic" sign has also been added at the entrance of the parking lot to warn drivers of that condition.

#### Stormwater Management Plan

9. We have included porous pavement only to meet the Town and DES requirements for groundwater recharge. While a stone drip edge would have been preferable, the NH Stormwater Manual indicates that such BMPs only provide 55% nitrogen removal instead of the 60% required by the Site Plan Regulations. While this strikes us as inconsistent with the 60% shown for infiltration ponds that are essentially providing the same service, we have no choice but to include the pavement in the design. We understand that these small areas will require frequent maintenance. However, the Applicant currently has sections of porous pavement at their Durham campus and are familiar with the necessary upkeep.
10. Drains within the garage will be equipped with evaporators and no connection to the sewer system will be necessary.
11. Note #14 has been removed as has the drip edge detail.

#### Utility Plan

12. Note #31 has been added to the Utility Plan Sheet C-8 requiring the contractor to have an Exeter-licensed installer on site during all utility work in the NH 111 right of way.
13. The proposed utility corridor in front of the proposed building has been modified to show 5' separation between the water and gas lines.
14. A valve has been added to the new water main just north of its connection to the existing main.
15. The existing private forcemain has been added to the plans and appropriate notations regarding the maintenance of service added to Sheets C-1 and C-8.
16. The plans have been modified and the relocated 4" forcemain has been redirected to SMH #P3 adjacent to the southeast corner of the proposed building. A note directing the contractor to the SMH #P2 detail had been added to the Sewer Schedule on Shet C-8.

17. The sewer has been redesigned to eliminate the new pump station and second forcemain. A gravity service is now shown extending from the proposed building to an existing manhole in RiverWoods Drive. This will require an open cut across NH 111, the patching of which is detail on Sheet C-16.

#### Lighting Plan

18. Lighting is only provided along roadway and parking areas and has been designed to minimize overspill to adjacent properties or wetland areas.

#### Detail Sheets

19. The pump station has been removed from the design.

#### Landscaping Plan

20. As noted, the pump station has been removed from the plans.
21. All proposed trees have been moved as far away from the water main as is feasible given the site layout. We understand that certain trees and their root systems could be affected by future repairs or line replacements. If a tree is not able to be saved following a future event involving excavation of the water main line, it will be replaced in kind.
22. The underground drainage system below the eastern parking lot has been removed from the design, eliminating any tree conflicts. Proposed trees located adjacent to the underground drainage system at the north end of the building have been moved farther away from the system, also eliminating any conflicts.

#### Architectural Plans

23.
  - a. The support columns have been relocated out of the drive aisle.
  - b. We believe that because these spaces are within a building, the Site Plan Regulations do not apply. Instead, the column placement between the parking spaces is compliant with Accessibility Code ANSI.A.117.1.2009 Section 502.2 which specifies that stalls can be 8' wide.
  - c. The columns have been relocated so as to not conflict with the three spaces in question.
  - d. Floor drains are now shown on the Lower Level Floor Plan. Slopes to trench drains are at 1/8" per foot minimum down 3" to the drain, with a 2% slope up at perimeter parking.
  - e. The aisle between the two handicap spaces has been striped.

#### Other

24. The sewer flow calculations are based on actual flow from The RiverWoods Woods and Ridge campuses, both of which have complete laundry and kitchen facilities.
25. A section regarding pollutant removal efficiencies has been added to the narrative portion of the drainage analysis.
26. White Oak Drive is intended to remain open throughout construction. This, along with the other intricacies of the planned utility relocations, will require extensive planning by the contractor. We agree that this should be a topic of discussion at the preconstruction meeting and have notified the contractor of this.

Altus hopes that the above information satisfies your concerns. Please call me if you have any questions or need any additional information. Thank you for your time and consideration.

Please feel free to contact me directly if you have any questions or require any additional documentation. Thank you for your time and consideration.

Sincerely,

**ALTUS ENGINEERING**



Erik Saari  
Vice President

ebs/5015.01-LTR-PB-102324



3087.00

November 4, 2024

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

*Re: RiverWoods Supportive Living Health Center  
Design Review Engineering Services  
Exeter, New Hampshire*

Site Information:

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Tax Map/Lot#:	97 / 23	Review No. 2
Address:	5 White Oak Drive	
Lot Area:	204.48 ac	
Proposed Use:	Redevelopment / Institutional	
Water:	Municipal	
Sewer:	Municipal	
Zoning District:	R-1	
Applicant:	The Riverwoods Company at Exeter, New Hampshire	
Design Engineer:	Altus Engineering	

Plan Set Reviewed:

- Site plan set entitled "Supportive Living Health Center" last revised 10/23/2024, prepared by Altus Engineering

Dear Mr. Sharples:

Based on our review of the above information, we offer the following comments related to the site plans listed above in accordance with the Town of Exeter Regulations and standard engineering practice. UE performed only a cursory review of the storm drainage system, as the NHDES will be performing a detailed review as part of the Alteration of Terrain permitting.

Please note previous comments from our draft letter dated October 8<sup>th</sup> that have been satisfactorily addressed are no longer listed.



Mr. Sharples  
November 4, 2024

Utility Plan

16. Regarding the label for SMH #2A directing the Contractor to refer to the detail on C20, please change C20 to C21.

Architectural Plans

23. Parking garage:
  - f. No floor drains are shown on the latest plan set.

New Comments

27. A manhole detail is needed for SMH P2A to address the higher force main inlet elevation.
28. Please add rim and invert information to plan sheet C9.
29. The existing conditions plan does not appear to show edge of pavement along portions of the DOT's road, perhaps it is a linescale issue in CADD.
30. The catch basin (portrayed as part of POA 100) is missing from the existing conditions plan. It is portrayed on other plans, but UE is struggling to find its pertinent information – Rim, Inverts, outlet pipe diameter?
31. UE notes that all POST model runs show reduced discharges to Pond 1P over the PRE model runs, however the PRE 50-year water surface elevation at 77.10' is 18" inches over the elevation of the adjacent roadway. UE is unclear on whether run-off overflows the road in the existing condition, but doubts that if it does, it is doing so with any depth of significance. Model updates made should apply to all model runs, pre and post.

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. (NH)  
Project Manager

Robert J. Saunders, P.E. (NH, ME, VT, PA)  
Project Manager



# TOWN OF EXETER

## *Planning and Building Department*

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

[www.exeternh.gov](http://www.exeternh.gov)

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**Date:** November 6, 2024

**To:** Erik Saari, P.E., Altus Engineering  
Justine Vogel, CEO, RiverWoods  
Sharon Cuddy Somers, Esq.

**From:** Dave Sharples, Town Planner

**Re:** Site Plan Review TRC Comments - RiverWoods Company at Exeter  
Supportive Living Healthcare Center - 5 White Oak Drive  
PB Case #24-16  
Tax Map Parcel #97-23

The following comments are provided as a follow-up for technical review of the site plans and supporting documents submitted on October 23<sup>rd</sup>, 2024 for the above-captioned project. The TRC meeting was held on Thursday, October 31<sup>st</sup>, 2024 and materials were reviewed by Town departments.

**TOWN PLANNER COMMENTS** – No comments

**PUBLIC WORKS COMMENTS** - No comments

**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

### **Ladder Truck Dimensions: See L1-Attachment**

## **CONSERVATION & SUSTAINABILITY PLANNER COMMENTS**

### **Site Plan**

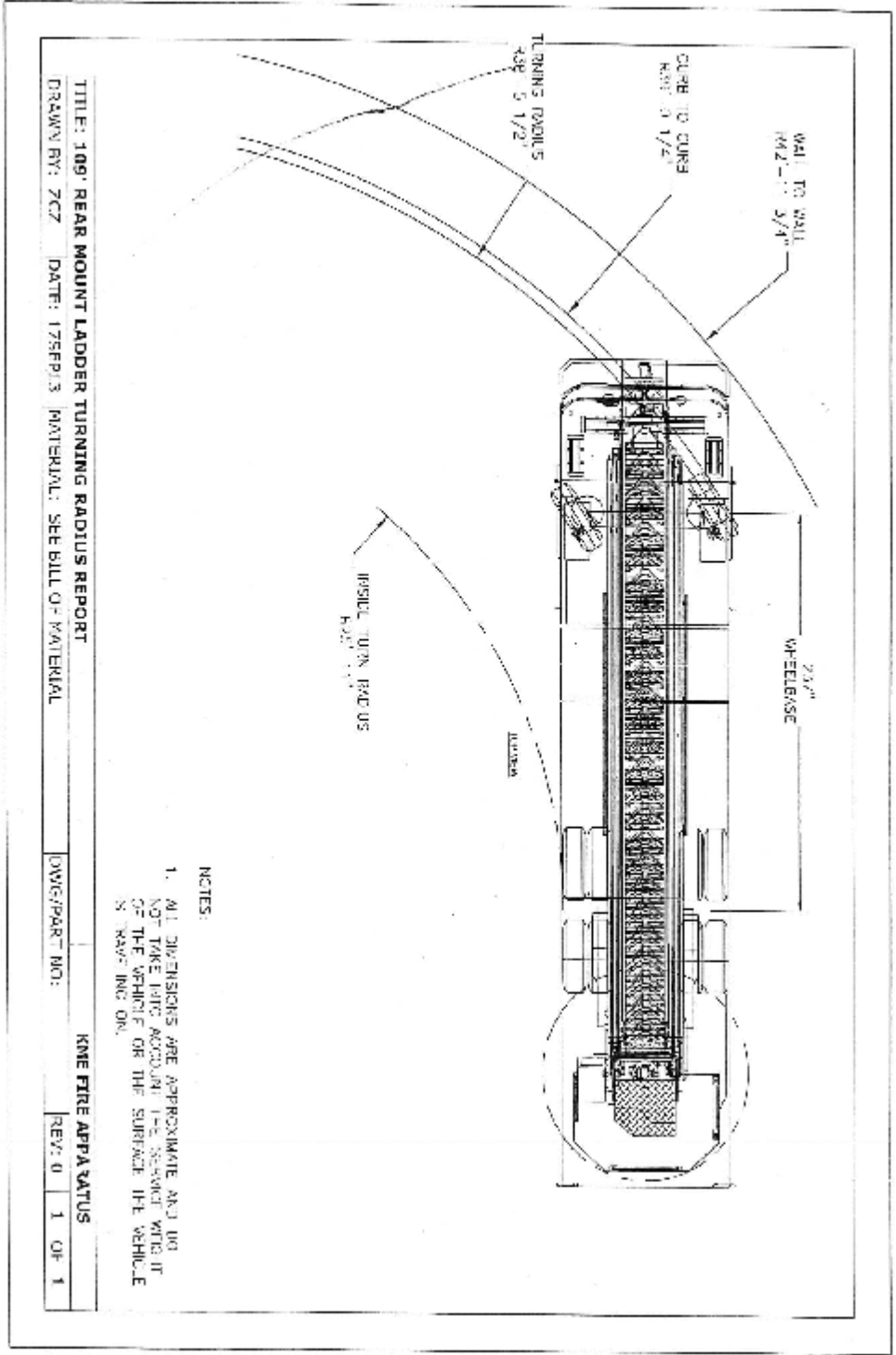
- I commend the effort and attention given to incorporating native plantings in the landscape plan for this project.
- Given the amount of direct wetland and wetland buffer impact a natural resource plan seems warranted for this project (Site and Sub 7.12). Recommend consulting and aligning with documents previously prepared for Riverwoods Ridge/Boulders developments.
- Though a mitigation proposal is planned for this project, details were not provided in advance of the TRC.
- I do not see impacts calculated for the relocation of the raised beds. Strongly recommend these not be located in a wetland/wetland buffer area to allow for restoration or enhanced plantings in order to meet minimization of impact criteria.
- Use of fertilizer within the wetland buffers is prohibited. A waiver may be required if fertilizer is necessary for new plantings.
- Please confirm lighting is dark sky compliant (Site/Sub 9.20.4.3).
- Revise sediment control note to require the use of natural jute for erosion protection.
- Please specify listed species referenced in the wildlife notes on the cover. A dedicated sheet with photos of species with potential to enter the work area is common.
- The wetland note indicates a January survey date. Was there snow cover during the survey or marker location and what follow up efforts have been conducted to determine whether vernal pool habitat may be present?

- Examine the pedestrian connections from the parking areas to the building and from the recreation area to the building.

#### **Wetland CUP**

- Condition 2 and 4: There is limited detail provided in terms of alternative designs that were considered and eliminated to demonstrate this proposal meets this condition. Has the applicant considered: eliminating the 18 parking spaces above town parking requirements, locating more stormwater treatment beneath the parking (gallery or porous pavement) to reduce disturbance footprint, replacing the outdoor patio with parking to locate needed parking outside of the wetland/buffer. See comment above re: relocation of raised beds.
- Condition 3: The function/values report identifies wildlife habitat impacts for wetland E. Review of the ARM Mapper stream crossings does show the culvert Dave Sharples suggested as undersized (SADES 6458). Enhancing the size of this culvert for greater hydraulic capacity and aquatic organism passage while adding wildlife crossing opportunities could be an important mitigation option to offset this loss.
- Condition 6: Though a buffer restoration area is identified on sheet C-11, it is not clear what restoration may entail. Please provide details. In addition, there appears to be an opportunity to further enhance the habitat value through additional shrub plantings and elimination of seasonal mowing.

In order to be heard at the November 21<sup>st</sup>, 2024 Planning Board meeting, please submit any revised plans along with a letter responding to these comments (and other review comments, if applicable) **no later than November 13, 2024**, but sooner if possible, to allow staff adequate time to review the revisions and responses prior to the planning board hearing.



**TITLE: 109' REAR MOUNT LADDER TURNING RADIUS REPORT**  
 DRAWN BY: ZCZ    DATE: 17SEP13    MATERIAL: SEE BILL OF MATERIAL    DWG/PART NO:    **KNE FIRE APPARATUS**  
 REV: 0    1 OF 1

- NOTES:
1. ALL DIMENSIONS ARE APPROXIMATE AND DO NOT TAKE INTO ACCOUNT THE SLOPE WITH IT OF THE VEHICLE OR THE SURFACE THE VEHICLE IS TRAVELING ON.

**TOWN OF EXETER  
CONSERVATION COMMISSION MEMORANDUM**

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Date: November 11, 2024  
To: Exeter Planning Board  
From: Kristen Murphy for the Exeter Conservation Commission  
Subject: Wetland CUP Application

**Project Information:**

Project Location: Living Healthcare Center Building at Riverwoods, Exeter, NH  
Map/Lot: Tax Map Parcels #97-3  
CC Review Date: 11/12/24  
PB CASE: #24-16

The Conservation Commission reviewed the wetland conditional use permit application at their meeting on November 12 and voted unanimously that they have reviewed the application and have no objection to the application as proposed and recommend the following condition be added to the approval:

- A deed restriction or conservation easement for the 3.53-acres of the “Grinnell parcel” will be executed prior to the issuance of certificate of occupancy with conditions similar to Southeast Land Trust or Town held easements.

Additionally, after walking the property during the site walk and reviewing the existing natural resource plan that was previously prepared for Riverwoods, I no longer feel a natural resource referenced in my TRC comments is necessary. I do feel supplemental plantings should be included in the efforts to restore the driveway in addition to the seeding proposed to minimize invasive plant encroachment. We discussed this at the conservation commission meeting and the landscape architect indicated she would be willing to evaluate site conditions to identify appropriate native plantings for the area.

Kristen Murphy



# Section 5

## Transportation Plan

## **RiverWoods Exeter**

**Date:** September 3, 2024

**Subject:** Transportation Plan for Centralized Healthcare Building

**From:** Julie Clark, RWE Executive Director & Kim Gaskell, VP of Operations

---

### **Table of Contents**

1. **Introduction**
  2. **Objectives of the Transportation Plan**
  3. **Transportation for Independent Residents to the Health Center**
  4. **Transportation for Healthcare Residents to and from Independent Living Campuses**
  5. **Demographic and Mobility Information**
  6. **Implementation Timeline**
  7. **Evaluation and Monitoring**
  8. **Conclusion**
- 

### **1. Introduction**

RiverWoods Exeter is embarking on an exciting project to construct a centralized healthcare building that will serve as the cornerstone of our community's health and wellness services. As we progress with this development, it is essential to ensure that all residents, spouses, friends, and family members can easily and conveniently commute to and from the health center, regardless of which independent living campus they reside in—The Woods, The Ridge, or The Boulders.

Recognizing the importance of seamless access across all campuses of the RiverWoods Exeter community, we have conducted a thorough review of our current transportation services and identified key areas to enhance. Our goal is to provide reliable, flexible transportation options that meet the diverse needs of our community. This includes offering scheduled transportation services that can be pre-planned, as well as on-demand services that cater to immediate or urgent needs. A key component is the ability to bring a resident, spouse, friend, or family member to the healthcare building at any hour of the day, seven days a week.

This transportation plan outlines the strategies and actions we will take to ensure that all residents and their loved ones can access the centralized healthcare building with ease and peace of mind.

---

### **2. Objectives of the Transportation Plan**

The primary objectives of this plan include:

- **Improving Efficiency:** Enhance transportation services to and from the centralized healthcare building.
  - **Enhancing Resident Experience:** Provide convenient and timely transportation options, now and in the future, based on resident choice, preference, and accessibility.
  - **Connecting Campuses:** Ensure seamless access between the centralized healthcare building and other areas of the campus, fostering the unity of the RiverWoods Exeter community.
  - **Increasing Accessibility:** Cater to residents with varying mobility needs, ensuring transportation services are inclusive and available at all hours.
  - **Increasing Resident Satisfaction:** Continuously assess and respond to resident feedback regarding transportation services to enhance overall satisfaction.
- 

### 3. Transportation for Independent Residents to the Health Center

#### The Daily Regular Visit

This section outlines transportation services for independent residents on all campuses accessing the health center<sup>1</sup> for daily visits, such as visiting a spouse, friend, or family member or attending a meeting or event. Key components include:

- **Current Services:** Campus Services team (transportation) operates between 6:00 AM and 7:00 PM. A shuttle runs on a continuous loop, stopping at each campus. See attached plan title Overall Campus Shuttle Plan which depicts the shuttle route.
- **Proposed Enhancements:** Extend service hours from 6:00 AM to 9:00 PM, followed by on-demand service. A second shuttle will operate during peak times, which typically fall around meals (11:30AM-1:00PM and 5:00PM-7:00PM)
- **Requesting Transportation:** Residents can request transportation by calling, texting, visiting the front desk, or using a resident portal/app.
- **Accessibility Considerations:** All shuttles and cars will be ADA accessible.

#### The After-Hours Emergency Visit

This section outlines after-hours transportation services for emergency visits from all campuses to the health center:

- **Current Services:** No existing plan for after-hours emergency transportation.

---

<sup>1</sup> This applies to the centralized health center to be constructed as well as the current arrangement of health services provided at different campuses. As it stands today, we have residents who may receive healthcare services in a campus other than their home campus due to either occupancy constraints or the usage of Skilled Nursing (SNF beds, all of which are located at the Ridge campus but serve all three campuses.

- **Proposed Enhancements:** Healthcare staff will arrange transportation using available vehicles, with security guards handling after-hours transportation.
- 

#### 4. Transportation for Healthcare Residents to and from Independent Living Campuses

This section focuses on transportation needs for healthcare residents traveling between independent living campuses:

- **Current Services:** Shuttle services available for pre-scheduled or on-demand transportation between campuses. An example of a pre-scheduled transportation request may be a resident at the Woods campus putting in a request on Monday to be taken to the Centralized Healthcare Building on Thursday of that week to meet a friend for lunch. This would be something that is pre-planned and able to be scheduled with our Campus Services department.
  - **Proposed Enhancements:** Dedicated shuttles for larger resident events, with ADA-compliant vehicles. Even in today's current composition of Independent Living and Healthcare campuses, we have many Healthcare residents who wish to attend events or all-resident meetings/presentations that are held at one campus. Because we anticipate a higher volume of residents who will be attending these meetings who may have mobility devices, we will have dedicated shuttles that will solely transport residents from the Centralized Healthcare building to the campus where the event is being held. Recent examples of this have included:
    - **All Resident Community Budget Presentation** – held in the Woods Great Bay Room at the Woods Campus. Shuttles picked up residents at the Ridge and Boulders campuses to transport them to the Great Bay Room.
    - **Young at Heart Musical Performance** – held at Boulders Hall. Residents from Independent Living and each Healthcare Lodge were transported from the Woods and Ridge to the Boulders to attend this event.
- 

#### 5. Demographic and Mobility Information –

This section provides an analysis of the resident population's demographics and mobility needs:

- **Demographic Overview:** The chart below represents our current demographic information, as of August 14, 2024.

Data as of 8/14/2024						
	60 - 69	70-79	80 - 89	90-99	100+	Total
<b>IL</b>						
<b>Total</b>	4	105	296	106	5	516
Married	0	76	168	48	1	293
Single	4	29	128	58	4	223
% of IL Pop	1%	20%	57%	21%	1%	
<b>HC</b>						
<b>Total</b>	0	1	44	49	6	100
Married	0	0	15	13	1	29
Single	0	1	29	36	5	71
% of HC Pop	0%	1%	44%	49%	6%	
<b>Total residents</b>						
<b>Total residents</b>	4	106	340	155	11	616
% of Total Res	1%	17%	55%	25%	2%	
<b>NOTE: 14 of the 29 Married HC residents have a spouse also in HC, 15 have a spouse in IL</b>						

- **Mobility Needs Assessment:** Our Nurse Practitioners in each campus maintain a list of all residents and their mobility and other assistive needs. We primarily track this for emergencies if evacuation is needed, however it allows us to better understand our demographic mobility or assistance needs. The spreadsheet contains:
  - **Apartment Number**
  - **Name(s)**
  - **If resident(s) has a portable Oxygen tank**
  - **If pet(s) are present in the home**
  - **If escort services are needed and to what level**
    - **(A) = lead out of building, has dementia/memory loss, needs direction**
    - **(P) = needs person to help evacuate, escort, lift, wheelchair, electric cart, walker, or live on the 2<sup>nd</sup>/3<sup>rd</sup> floor and cannot do stairs**
    - **(O2) = needs oxygen taken with them**
- Based on the information captured above, RWE currently has:
  - 87 Independent Living Residents utilizing walkers
  - 10 Independent Living Residents utilizing electric scooters or wheelchairs
- **Implications for Transportation:** RiverWoods currently has a fleet of 9 vehicles, ranging in size and capacity. At present we have:

VEHICLE TYPE	CAPACITY WITHOUT WHEELCHAIRS	CAPACITY WITH WHEELCHAIRS
Bus	18	16 + 2 small or 1 large wheelchair
Bus	12	12 + 1 small wheelchair
Bus (2)	12	12 + 2 wheelchairs or 8 + 4 wheelchairs
Minivan (2)	3-5	N/A
Sedan (3)	3	N/A

- Based on the above, we would likely add an additional bus that would be dedicated to remaining on campus (no offsite trips) on a daily basis to best accommodate the number of residents with mobility assistive devices wishing to travel between campuses and the centralized healthcare building.

---

## 6. Implementation Timeline -

This section outlines the timeline for implementing the proposed transportation plan. We have identified interim steps we can take over the course of the next few years while the Centralized Healthcare building is being constructed that would enhance our current offerings.

- **Phase 1:** Implement expanded after-hours transportation plan by January 1, 2025.
  - Currently, all of our Skilled Nursing beds (SNF) are located at the Ridge campus. There are times when a resident at the Woods or Boulders has a spouse in a SNF bed. We would like to begin providing transportation to/from The Ridge for any visit requests.
  - By January 2025, we will plan to have security or a member of the nursing staff transport a resident to a different campus if they are intending to visit a spouse in a campus different than their home campus.
- **Phase 2:** Introduce texting for on-demand transportation requests and a new resident portal in 2025.
  - The implementation of this new technology will provide additional options for requesting and scheduling transportation.
- **Phase 3:** Increase staffing and extend service hours within six months of the centralized healthcare building opening.
  - We currently do not task our staff with transporting a resident to another campus after hours to visit with a loved one. As we move closer to opening the Centralized

Healthcare building, we have identified a strategy for achieving this without adding to our staffing levels.

- If a member of the Healthcare staff identifies that a resident's spouse or loved one needs to get to the Health Center after hours, the healthcare team will arrange the transportation for the Independent Living resident. A Campus Services vehicle and shuttle will be left at each Independent Living campus at the end of every night so that it is available for afterhours trips to the health center.
  - First, the Healthcare staff member would contact the spouse or family member to alert them that a car will be over to pick them up within 10 minutes. The Healthcare staff will then contact our Campus Services team. After hours, this would be a security guard that is stationed at each of the campuses, including the healthcare building. The security guard contacted will get the car from the main entryway of that campus and wait to transport the resident. When the resident wishes or needs to return to the Independent Living campus, the resident will go to the Healthcare reception desk and the healthcare security guard will transport the resident back to the designated Independent Living campus.

---

## 7. Evaluation and Monitoring

This section details how the transportation plan's effectiveness will be evaluated and monitored:

- **Performance Metrics:** Resident surveys, tracking usage statistics, and continuous feedback collection.
- **Feedback Mechanisms:** Regular meetings and forums for resident input, including the dedicated resident Transportation Task Force.
- **Regular Reviews:** Biannual reviews of transportation plans and services by our Transportation Department and other RiverWoods leadership.

---

## 8. Conclusion

The transportation plan for RiverWoods Exeter is designed with a singular focus: ensuring that all residents, spouses, friends, and family members have convenient and reliable access to the new centralized healthcare building from any of our independent living campuses—The Woods, The Ridge, and The Boulders and that the health care residents have convenient and reliable access to all independent living campuses. By offering both scheduled and on-demand services, we aim to provide flexibility that accommodates daily needs, urgent situations, and everything in between.

Our plan is driven by the objective to enhance resident satisfaction through improved efficiency, increased accessibility, and seamless connectivity across our community. We are committed to implementing a transportation system that is inclusive, responsive, and reflective of the diverse needs of our residents. As we move forward, we will continue to evaluate and refine our services,



ensuring that RiverWoods Exeter remains a unified and supportive community where access to healthcare is both easy and reassuring.

By adhering to this comprehensive transportation plan, we are confident that we can provide a high level of service that not only meets but exceeds the expectations of our residents, ensuring their well-being and peace of mind for years to come. The transportation plan is designed to serve current needs as well as the more permanent need following the completion of the centralized healthcare building.

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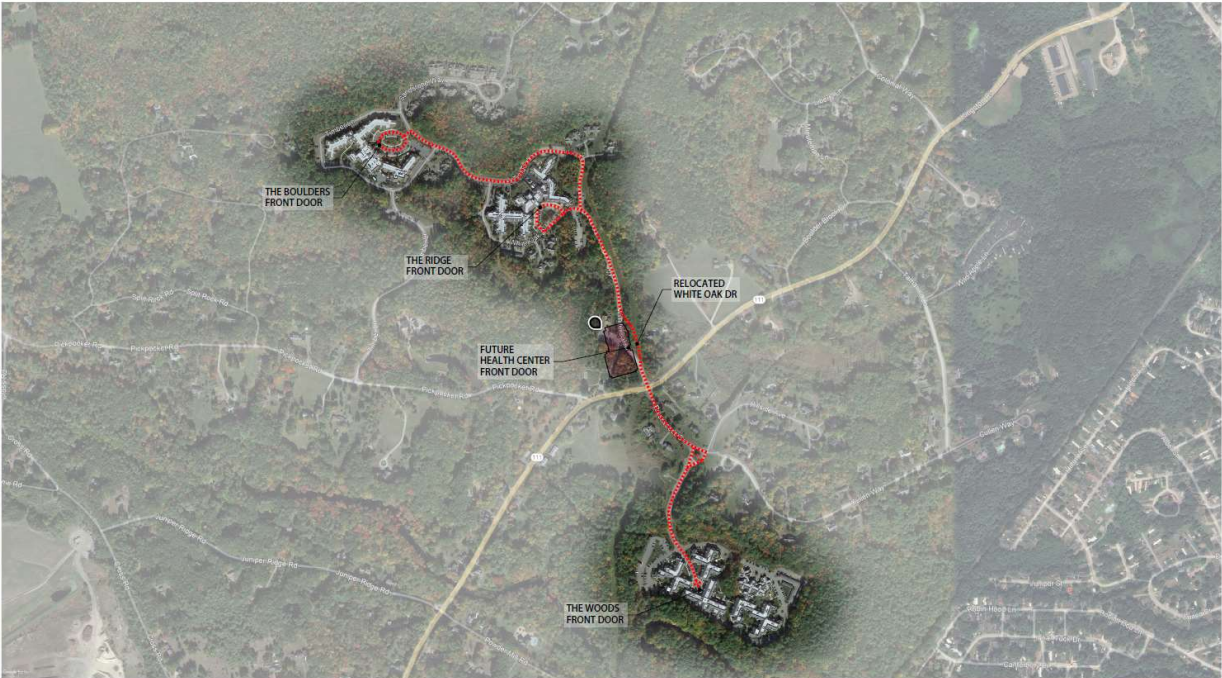
# OVERALL CAMPUS SHUTTLE PLAN

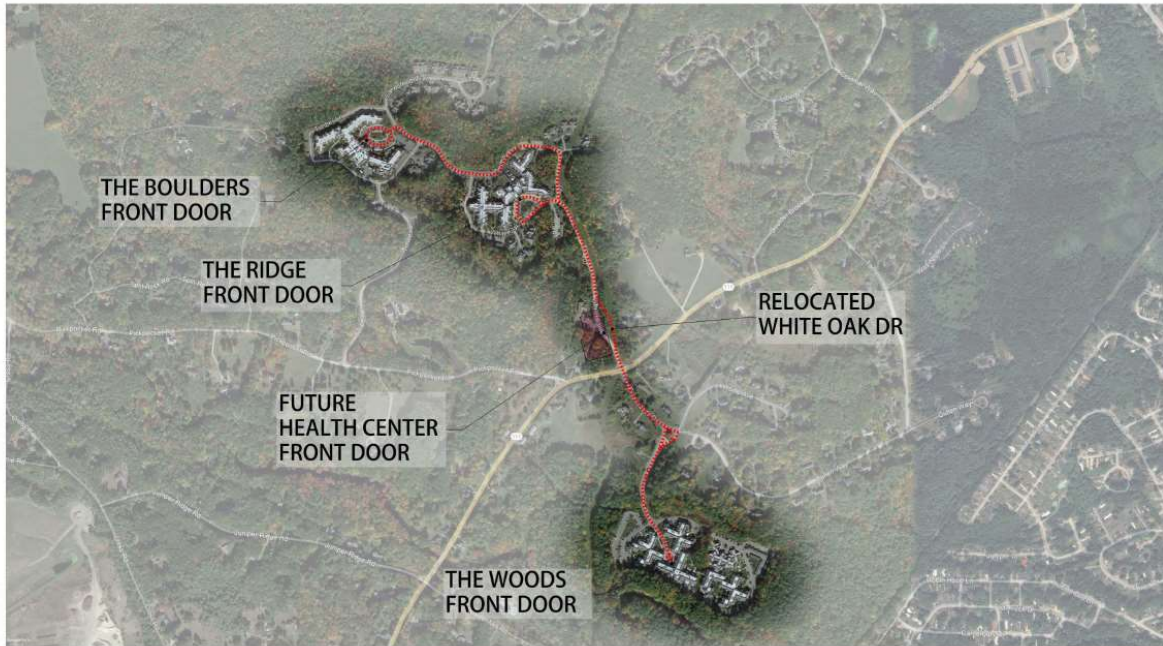
We will continue to have a dedicated shuttle service running on a continuous loop that will now add a stop at the new centralized healthcare building. To enhance this service, we will extend the pickup times from 6:00AM to 9:00PM and then transition to on-demand service after 9:00PM.

A sample schedule would look like:

- 6:00AM Start at Woods Campus (7 RiverWoods Drive)
- 6:10 Arrive at Centralized Health Center (5 White Oak Drive)
- 6:20 Arrive at Ridge Campus (10 White Oak Drive)
- 6:30 Arrive at Boulders Campus (6 Timber Lane)
- 6:40 Arrive at Centralized Health Center
- 6:50 Arrive at Woods Campus

A map depicting this continuous loop can be found below. It should be noted that this route allows us to stay internally throughout our existing campuses utilizing White Oak Drive instead of Timber Lane or Pickpocket Road.





RiverWoods Exeter Health Center  
Exeter, New Hampshire

OVERALL CAMPUS SHUTTLE PLAN  
JULY 2024



During these times, if a resident missed the shuttle at their campus' pickup time, an additional shuttle will be sent to pick up the resident(s) at the requesting campus. Additionally, we will staff a second shuttle during peak times (11:30AM-1:00PM & 5:00PM-7:00PM) to provide additional options without having to wait longer than 10 minutes for a ride.

Requesting Transportation: A resident will be able to request an on-demand ride to the Centralized Healthcare Building in a variety of ways:

- **Calling Campus Services:** Residents will continue to dial extension 3009 to request a ride.
- **Texting Campus Services:** Residents will be able to text a request to Campus Services (Coming in 2025)
- **Going to their Campus Front Desk:** The front desk receptionists will be available during their regular scheduled office hours to arrange transportation through Campus Services
- **Resident Portal/App:** Residents will be able to request transportation through either their resident engagement portal or through an app that integrates with this portal (Coming in 2025)

**ABUTTER AND/OR PUBLIC CORRESPONDENCE**  
*(received prior to PB mailing/posting on 11/14/24)*

Jan Kennedy  
5 Timber Lane  
Exeter, NH 03833  
603-658-0107  
[jankenn@aol.com](mailto:jankenn@aol.com)

RECEIVED  
NOV 12 2024  
EXETER PLANNING OFFICE

November 12, 2024

Langdon Plumer, Chair  
Planning Board  
Town of Exeter NH  
10 Front Street  
Exeter, NH, 03833

RE: The application of RiverWoods Company at Exeter for site plan review and Wetland CUP application for the demolition of the existing administrative building and the proposed construction of the new supportive living health center along with associated site improvement on the property located at 5 White Oak Drive.

The subject property is located in the R-1, Low Density Residential zoning district and are identified as Tax Map Parcel #97-23. PB Case #24 16.

The attached list of RiverWoods residents and myself, are life tenants at RiverWoods Exeter (RWE). We request that the record for this application reflect our opposition to a **new central health care center at RiverWoods Exeter.**

We have nine concerns and a list of people willing to support these concerns. Unfortunately, many RWE residents are not willing to sign the statement due to age, thinking they will be dead before it is built, administration comments that the new Central Health Center is a "done deal" or fear of retribution from the staff or administration.

We would like to preserve the existing structure and system with independent, assisted and skilled nursing care included and in each of the three campus buildings **AS WE WERE SOLD.**

We are:

Opposed to a stand-alone nursing home.

Concerned about loneliness, isolation, lack of integrated community and interaction with our independent living residents.

Concerned about transportation to visit loved ones and dear friends.

Concerned about more residents, more traffic, the enormous building construction and additional costs to us.

Concerned about the impact of adding approximately 70 total new independent living units to the overall community.

Concerned many of the existing projects at the campuses have been difficult to complete satisfactorily.

Have grave concerns that this much bigger project can be effectively and financially managed and completed.

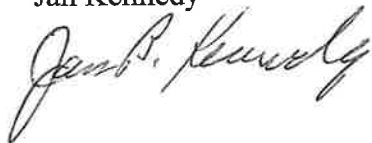
The value proposition which we were sold and invested in, i.e. to live at our campus from independent living status through the end of life is being violated.

We feel the objective of the RiverWoods administration is to maximize the RWE income at the expense and discomfort of its residents.

Attached are RWE resident signatures opposing this application. Also attached is an article from Ken Brown, a RWE's resident, that was published in Seacoast Online that describes opposition by RWE's residents. Seacoast Online has also published an article about the concerns of Exeter Town abutters regarding RWE central health project.

Thank you for your time and consideration.

Jan Kennedy

A handwritten signature in cursive script, appearing to read "Jan B. Kennedy". The signature is written in dark ink and is positioned below the typed name "Jan Kennedy".



	A	B	C
1	<b>STATEMENT FOR THE RECORD</b>		<b>10/30/24</b>
2	<b>NO.</b>	<b>RESIDENT</b>	<b>CAMPUS</b>
3	<b>1</b>	<i>Jean B. Kennedy</i>	BOULDERS
4	<b>2</b>	<i>Clair L. Kennedy</i>	BOULDERS
5	<b>3</b>	<i>Paul Burt</i>	BOULDERS
6	<b>4</b>	<i>Joann Owens</i>	BOULDERS
7	<b>5</b>	<i>Sandra A. Mackay</i>	BOULDERS
8	<b>6</b>	<i>Freddie Lynch</i>	BOULDERS
9	<b>7</b>	<i>Cynthia H. Williams</i>	BOULDERS
10	<b>8</b>	<i>Mary Lou Clemens</i>	BOULDERS
11	<b>9</b>	<i>Judith Sullivan</i>	BOULDERS
12	<b>10</b>	<i>Mary Lou Leene</i>	BOULDERS
13	<b>11</b>	<i>Tempest Tardiff</i>	BOULDERS
14	<b>12</b>	<i>Eileen Lane</i>	BOULDERS
15	<b>13</b>	<i>Bill Hartman</i>	BOULDERS
16	<b>14</b>	<i>Barbara Trulson</i>	BOULDERS
17	<b>15</b>	<i>Conrad Trulson</i>	BOULDERS
18	<b>16</b>	<i>HB/DeMa</i>	BOULDERS
19	<b>17</b>	<i>Marsha Herma</i>	BOULDERS
20	<b>18</b>	<i>Deane Bredet</i>	BOULDERS
21	<b>19</b>	<i>Paul Johnson</i>	BOULDERS
22	<b>20</b>	<i>Robert Cully</i>	BOULDERS



	A	B	C
23	<b>21</b>	<i>Ann Cully</i>	BOULDERS
24	<b>22</b>	<i>Terri Halloran</i>	BOULDERS
25	<b>23</b>	<i>Jane Kaufmann</i>	BOULDERS
26	<b>24</b>		BOULDERS
27	<b>25</b>		BOULDERS
28	<b>26</b>		BOULDERS
29	<b>27</b>		BOULDERS
30	<b>28</b>		BOULDERS
31	<b>29</b>		BOULDERS
32	<b>30</b>		BOULDERS
33	<b>31</b>		BOULDERS
34	<b>32</b>		BOULDERS

# RiverWoods

## Exchanging Humanity for Business

FRIDAY, SEPTEMBER 27, 2024 | SEACOASTONLINE.COM

RiverWoods is 'exchanging humanity for business'

To the Editor:

In a recent article (9/13/24) RiverWoods CEO provided her reasons for wanting to build a centralized healthcare facility on the RiverWoods Exeter (RWE) property. What she didn't mention is that the majority of residents of RWE who will have to pay approximately \$200 million for it do not want it. We, residents of RWE, were promised that we were moving into a building that would provide independent living units, assisted living and skilled nursing through the "end of life."

Marianna Hatch, one of the founders of RWE, was quoted in The New York Times (March 18, 2003) after her husband's death saying "It was gratifying to be with him day or night, summer or winter." Removing healthcare centers from each of the three campuses for a centralized healthcare center will destroy this very important part of living at RWE. We came to RWE because we were led to believe that we would always be able to visit our loved ones and friends every day or night, summer or winter. And now, our CEO wants to destroy that in order to turn three healthcare facilities into income-producing apartments.

Today, residents in assisted living and skilled nursing often come with wheelchairs and crutches to activities in the independent living side of the campus to join relatives and friends for dinners and social activities. This would also go away with a centralized healthcare center.

It would cost far less to completely update our current healthcare facilities and maintain a critical aspect of life for residents of RWE.

As one of our residents, a retired physician, said she is exchanging humanity for business.

Ken Brown, Exeter

Posted 9/29/24  
Ken Brown (Ridge)

# Section 6

## Drainage Analysis

(under separate cover in hard copy)





# SUPPORTIVE LIVING HEALTH CENTER

5 WHITE OAK DRIVE  
EXETER, NEW HAMPSHIRE

Assessor's Parcel 97, Lot 23

ISSUED FOR REVIEW

Plan Issue Date:

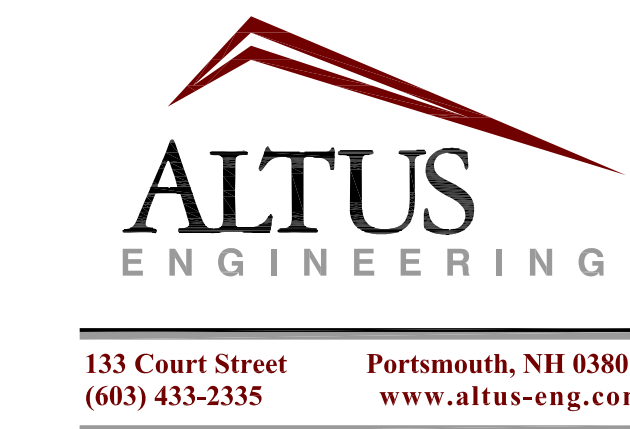
November 13, 2024

**WILDLIFE PROTECTION NOTES**

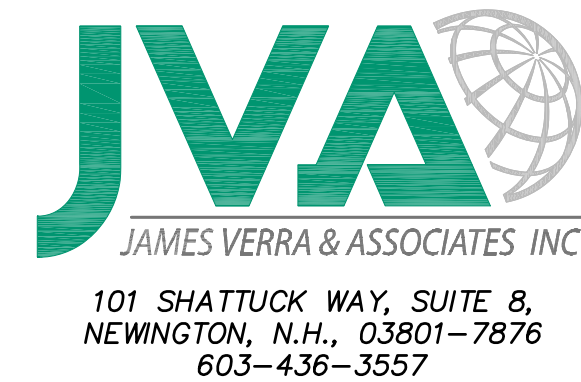
1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT [NHFGREVIEW@WILDLIFE.NH.GOV](mailto:NHFGREVIEW@WILDLIFE.NH.GOV), WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER (NHB 24-0142), THE PROJECT NAME (BILL DUBE KIA), AND THE TERM "WILDLIFE SPECIES OBSERVATION".
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.
4. THE NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

Owner/Applicant:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

Civil Engineer:



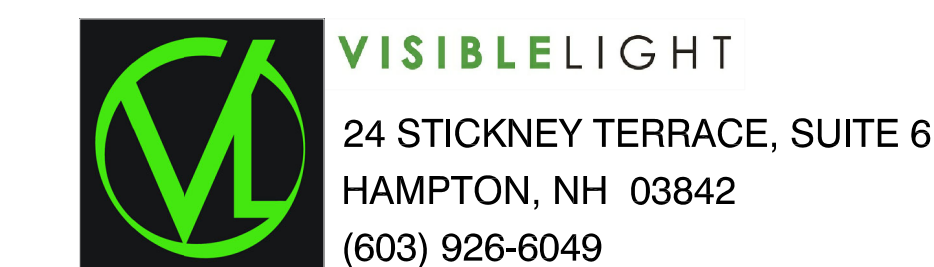
Surveyor:



Wetland Scientist:



Lighting Consultant:



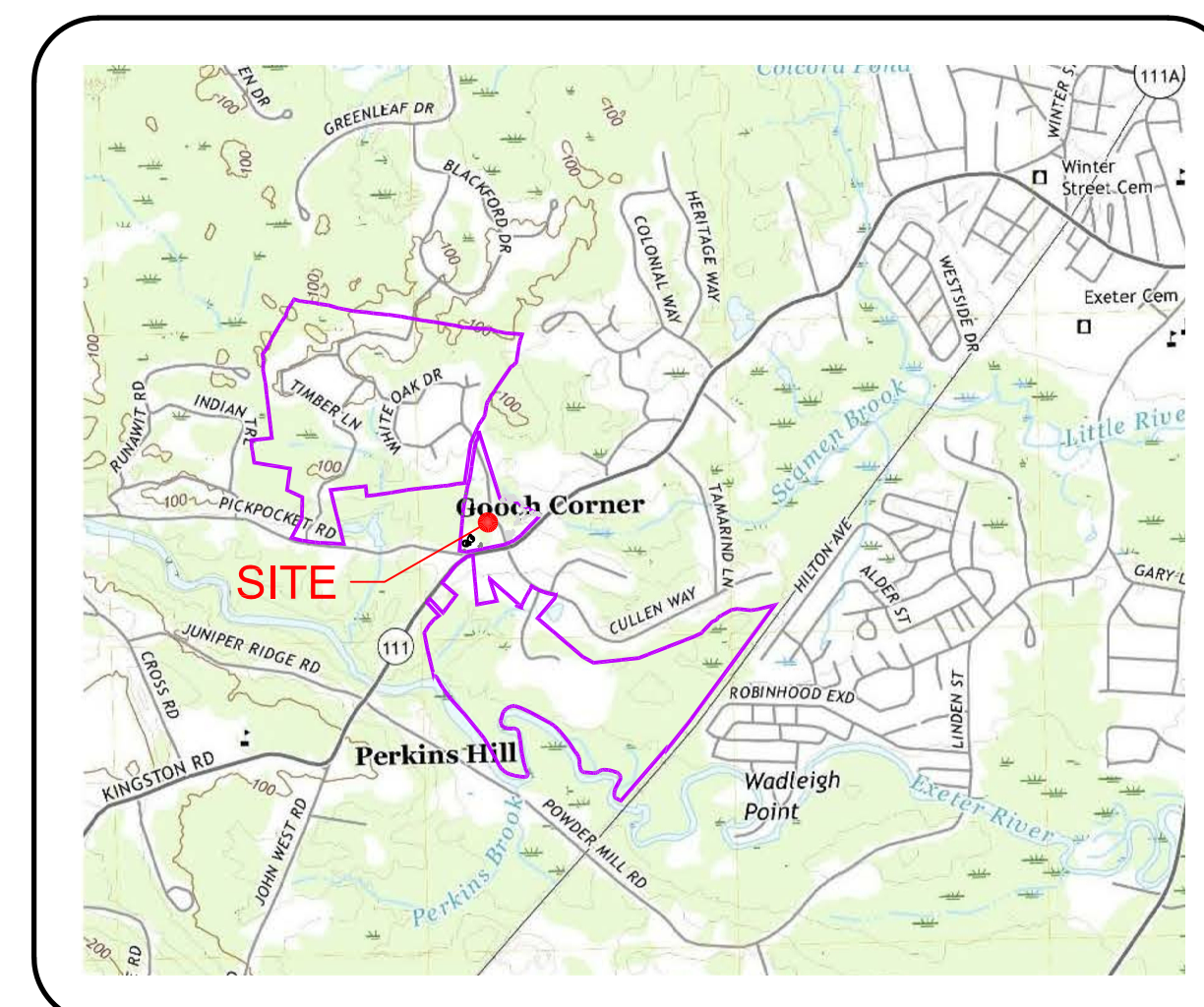
Architect:



Landscape Architect:



Traffic Engineer:



LOCUS

SCALE: 1" = 2,000'

Sheet Index

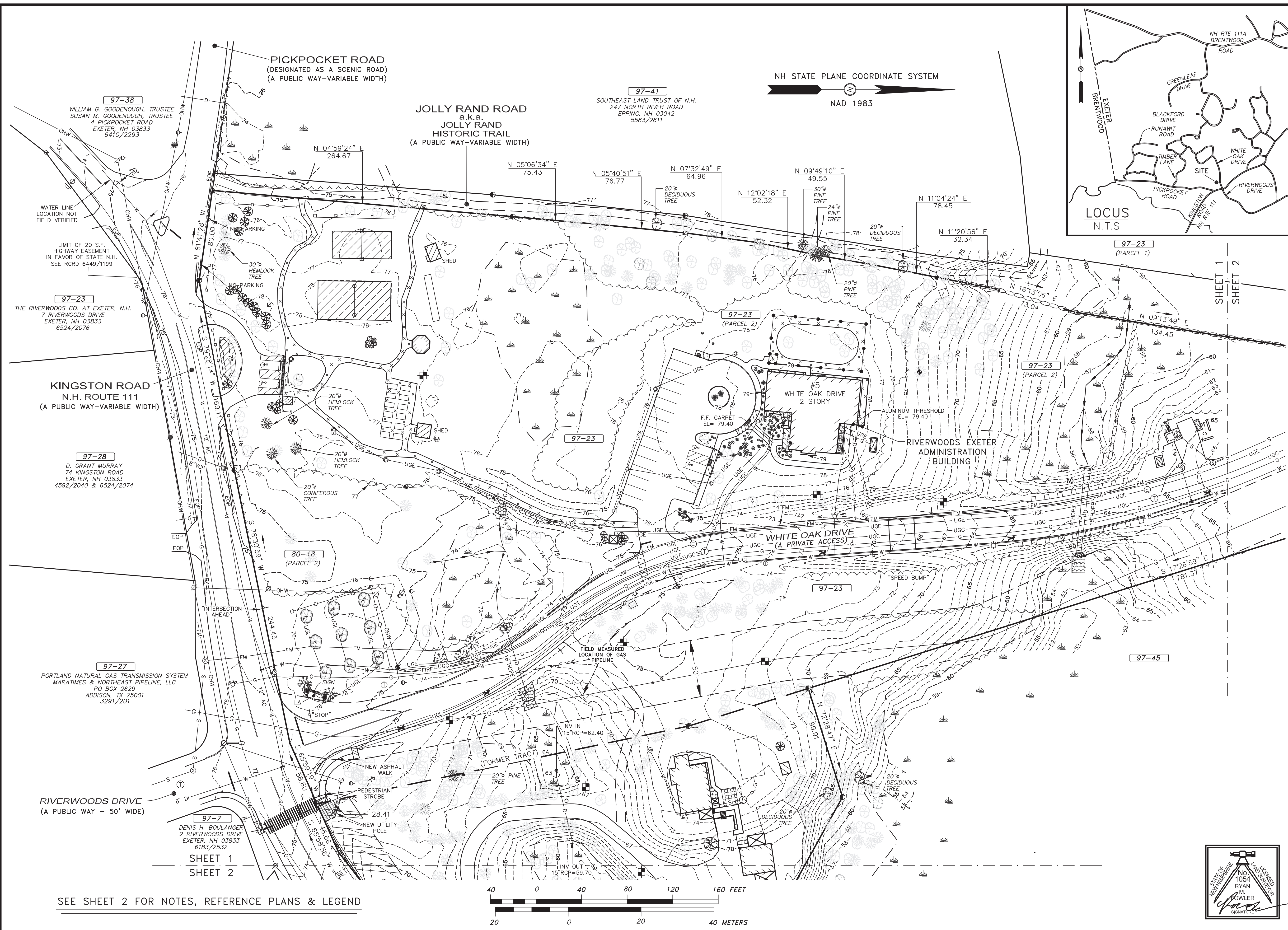
Title	Sheet No.:	Rev.	Date
Limited Existing Conditions Plan	1 of 2	4	11/11/24
Limited Existing Conditions Plan	2 of 2	4	11/11/24
Demolition and Site Preparation Plan	C-1	2	11/13/24
Site Plan	C-2	2	11/13/24
Vehicular Access Plan	C-3	2	11/13/24
Roadway Plan and Profile	C-4	2	11/13/24
Roadway Plan and Profile	C-5	2	11/13/24
Stormwater Management Plan	C-6	2	11/13/24
Erosion and Sediment Control Plan	C-7	2	11/13/24
Utility Plan	C-8	2	11/13/24
Sewer Plan and Profile	C-9	1	11/13/24
Lighting Plan	C-10	2	11/13/24
Wetland and Conditional Use Permit Plan	C-11	2	11/13/24
Detail Sheet	C-12	1	10/23/24
Detail Sheet	C-13	1	10/23/24
Detail Sheet	C-14	1	10/23/24
Detail Sheet	C-15	1	10/23/24
Detail Sheet	C-16	1	10/23/24
Detail Sheet	C-17	2	11/13/24
Detail Sheet	C-18	1	10/23/24
Detail Sheet	C-19	1	10/23/24
Detail Sheet	C-20	1	10/23/24
Detail Sheet	C-21	2	11/13/24
Detail Sheet	C-22	1	10/23/24
Landscaping Plan	L-1	2	11/12/24
Lower Level Floor Plan	-	1	10/24
First Floor Plan	-	0	07/24
Second Floor Plan	-	0	07/24
Third Floor Plan	-	0	07/24
Exterior Elevations	-	0	07/24
Exterior Elevations	-	0	07/24
Front Entry	-	0	07/24

Permit Summary

	Submitted	Received
Exeter Site Plan & CUP	09/10/24	-
NHDES Alteration of Terrain	-	-
NHDES Wetlands Dredge and Fill	10/31/24	-
NHDES Sewer Connection Permit	-	-
Army Corps of Engineers	10/31/24	-
NHDOT Driveway Entrance	09/25/24	-
EPA Notice of Intent	By Contractor 14 days prior to construction	-



J:\2023 PROJECTS\23-2014 ALTUS-RIVERWOODS - 7 RIVERWOODS DR - EXETER\23-2014.DWG\23-2014\_BASE.DWG 2024-11-11



**SURVEYOR:**  
**JVA**  
 JAMES VERRA & ASSOCIATES, INC.  
 101 SHATTUCK WAY, SUITE 8,  
 NEWINGTON, N.H., 03801-7876  
 603-436-3557  
 JOB NO: 23-2014  
 PLAN NO: 23-2014

**ENGINEER:**  
**ALTUS**  
 ENGINEERING  
 133 Court Street Portsmouth, NH 03801  
 (603) 433-2335 www.altus-eng.com

**ISSUED FOR:**  
 SUBMISSION

**ISSUE DATE:**  
 SEPTEMBER 11, 2023

**REVISIONS**

NO.	DESCRIPTION	BY	DATE
1	ENGINEERING DESIGN	JCS	9/11/23
2	LIMITED SITE UPDATE	JCS	9/5/24
3	PER UEI COMMENTS	RMF	10/22/24
4	PER UEI COMMENTS	RMF	11/11/24

**DRAWN BY:** JCS  
**APPROVED BY:** RMF  
**DRAWING FILE:** 23-2014.DWG

**SCALE:**  
 22" x 34" - 1" = 40'  
 11" x 17" - 1" = 80'

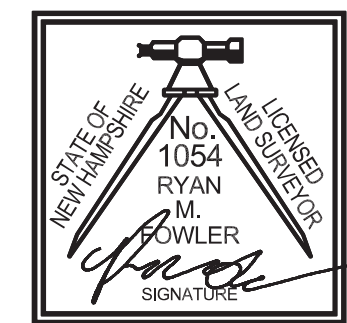
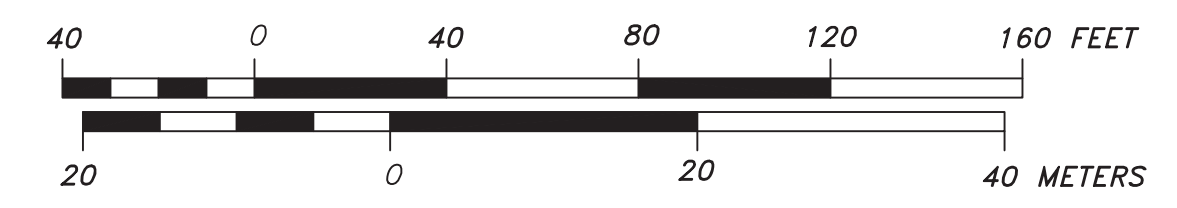
**OWNER/APPLICANT:**  
 THE RIVERWOODS COMPANY  
 AT EXETER, NEW HAMPSHIRE  
 5 WHITE OAK DRIVE  
 EXETER, N.H. 03833  
 ASSESSOR'S PARCELS  
 97-23

**PROJECT:**  
 PROPOSED SITE  
 REDEVELOPMENT  
 PLANS  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833  
 ASSESSOR'S PARCEL  
 97-23  
 KINGSTON ROAD  
 RIVERWOODS DRIVE  
 PICKPOCKET ROAD  
 JOLLY RAND ROAD

**TITLE:**  
 LIMITED  
 EXISTING  
 CONDITIONS  
 PLAN

**SHEET NUMBER:**  
 1 OF 2

SEE SHEET 2 FOR NOTES, REFERENCE PLANS & LEGEND

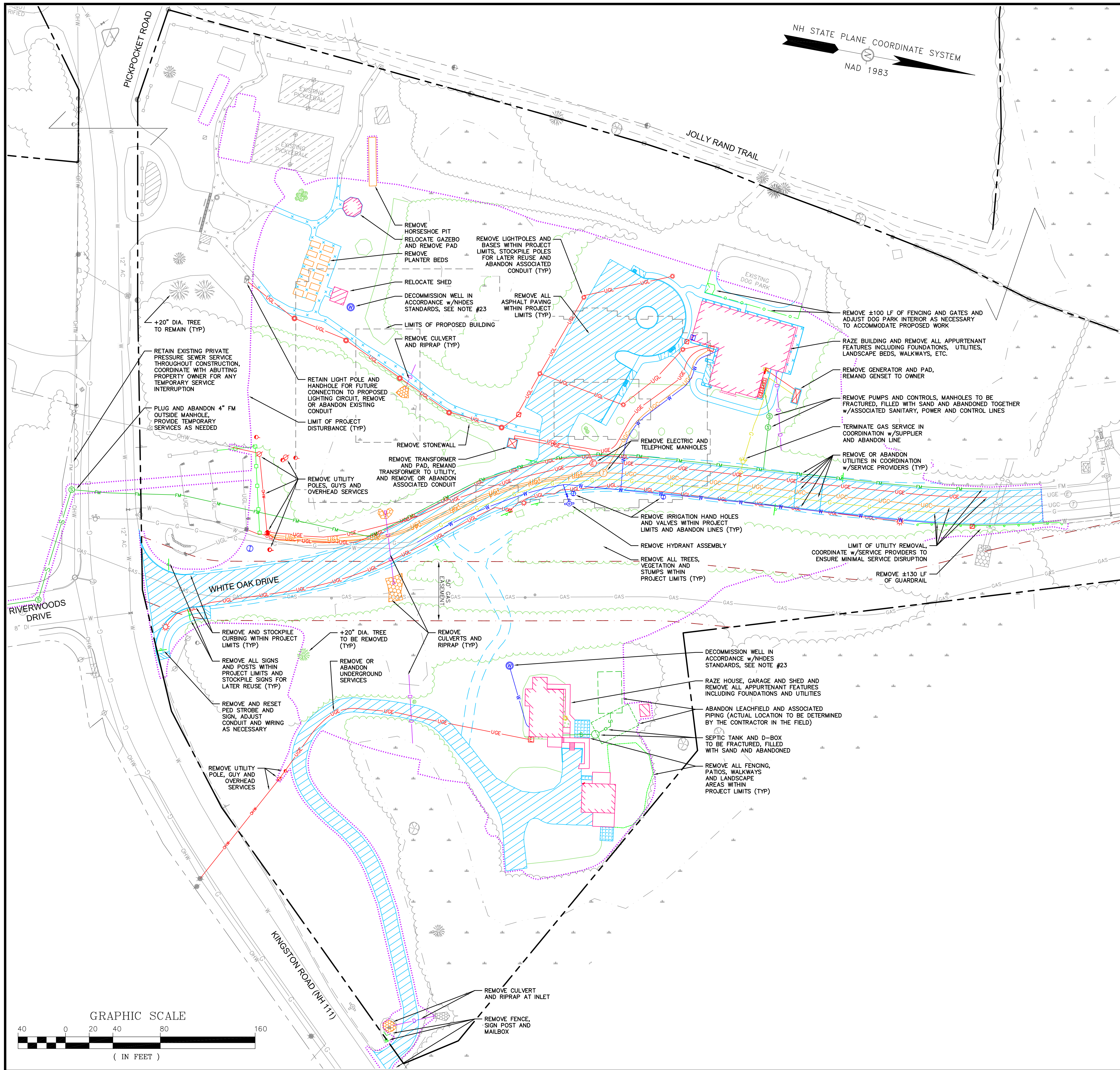


P5015



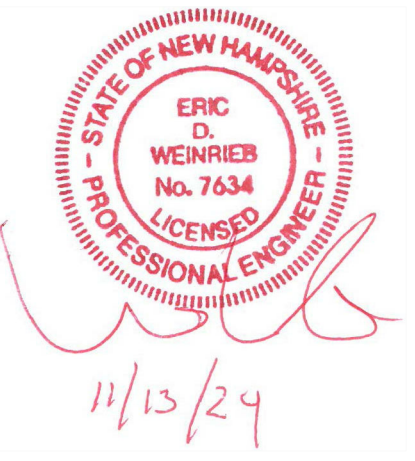
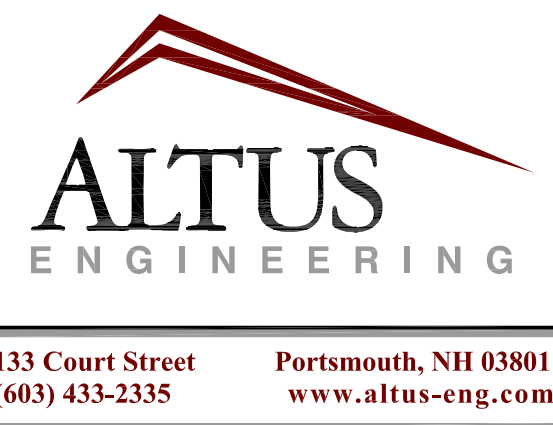






**DEMOLITION NOTES**

1. LOCAL DEMOLITION PERMIT REQUIRED PRIOR TO ANY BUILDING DEMOLITION ACTIVITIES. CONTRACTOR IS NOTIFIED THAT THIS PERMIT PROCESS MAY REQUIRE A 30-DAY LEAD TIME.
2. CONTRACTOR SHALL SAFELY SECURE THE SITE AND WORK LIMITS WITH SECURITY FENCING WHICH SHALL BE LOCKED DURING NON-WORK HOURS. KNOX BOX TO BE PROVIDED ON FENCING. CONTRACTOR SHALL COORDINATE WITH LOCAL FIRE DEPARTMENT FOR KEYING.
3. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
5. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS SHALL BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES, LOCAL DPW AND ABUTTING PROPERTY OWNERS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
6. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, ETC. SHALL BE ADJUSTED TO FINISH GRADE UNLESS OTHERWISE SPECIFIED.
7. SEE EROSION CONTROL PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES THAT SHALL BE IN PLACE PRIOR TO DEMOLITION ACTIVITIES.
8. ALL MATERIALS SCHEDULED FOR DEMOLITION OR REMOVAL ON PRIVATE PROPERTY SHALL REMAIN THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. ITEMS INDICATED TO BE STOCKPILED SHALL BE REUSED ON-SITE IF DEEMED SUITABLE BY THE ENGINEER.
9. ALL MATERIAL SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS/CODES.
10. CONTRACTOR TO CONTACT LOCAL DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY DEMOLITION TO COORDINATE ALL WORK CONCERNING DISCONNECTION/DEMOLITION OF ANY PROPOSED WATER AND SEWER LINE IMPROVEMENTS. EXETER DPW: (603) 773-6157.
11. ALL WATER MAIN AND SERVICE DISCONNECTIONS SHALL CONFORM TO LOCAL DPW STANDARDS.
12. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
13. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
14. EXISTING UTILITIES TO BE DISCONTINUED SHALL BE ABANDONED IN PLACE UNLESS OTHERWISE NOTED TO BE REMOVED OR ENCOUNTERED DURING THE INSTALLATION OF NEW WORK. ALL CONDUIT, CULVERT OR PIPE TO BE ABANDONED THAT IS 6" OR GREATER IN SIZE SHALL BE FILLED WITH FLOWABLE FILL.
15. IN AREAS WHERE CONSTRUCTION IS TO BE ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG THE PROPERTY LINE IN ALL AREAS WHERE PERIMETER SEDIMENT CONTROLS OR SITE SECURITY FENCING IS NOT OTHERWISE REQUIRED.
16. LOCATIONS OF PAVEMENT REMOVAL & SAWCUT LIMITS ARE SHOWN TO DEPICT THE GENERAL LIMITS OF WORK. CONTRACTOR'S MEANS & METHODS & PAVEMENT CONDITION WILL DICTATE THE EXACT LIMITS OF PAVEMENT REMOVAL.
17. SHOULD GROUNDWATER BE ENCOUNTERED DURING EXCAVATION, APPROPRIATE BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED TO ENSURE SEDIMENT LADEN WATER IS NOT DISCHARGED INTO AN EXISTING DRAINAGE SYSTEM OR ADJACENT WETLANDS.
18. THE LOCATION(S) OF EXISTING WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS AND OTHER SERVICES TO THE EXISTING BUILDINGS ARE APPROXIMATE AND OTHER UNKNOWN UTILITY SERVICES MAY EXIST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING WHATEVER EXPLORATORY INVESTIGATIONS ARE REQUIRED TO ASCERTAIN THE SIZE, LOCATION AND DEPTH OF THESE SERVICES. CONTRACTOR SHALL TERMINATE THE EXISTING SERVICES AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH LOCAL STANDARDS.
19. ALL ELECTRIC, TELEPHONE, WATER, SEWER AND OTHER UTILITY STRUCTURES TO REMAIN SHALL BE RELOCATED OR ADJUSTED TO PROPOSED FINISH GRADE AS APPROPRIATE. EXISTING PEDESTRIAN-RATED STRUCTURES IN PROPOSED PAVEMENT AREAS SHALL BE REPLACED WITH H-20 RATED STRUCTURES.
20. SOME DEMOLITION WORK AND UTILITY DISCONNECTIONS CALLED FOR ON THIS PLAN MAY HAVE PREVIOUSLY OCCURRED. THE CONTRACTOR SHALL EVALUATE THE EXISTING CONDITION OF THE SITE PRIOR TO COMMENCING WORK.
21. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL BUILDINGS, PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, BOLLARDS, FENCES, TREES, VEGETATION, STUMPS AND ANY OTHER EXISTING FEATURES AS NECESSARY TO FULLY CONSTRUCT THE PROJECT.
22. REMOVE FRAMES, GRATES AND COVERS FROM ALL SUBSURFACE STRUCTURES TO BE ABANDONED AND REMOVE STRUCTURE TO 3" MIN. BELOW FINISH GRADE. ALL CLOSED-BOTTOM STRUCTURES SHALL BE FRACTURED PRIOR TO BACKFILLING WITH SAND. THE CONTRACTOR HAS THE OPTION TO COMPLETELY REMOVE THESE STRUCTURES AND ASSOCIATED PIPES.
23. REMOVE WELL CASING TO 3' BELOW FINISH GRADE AS PART OF DECOMMISSIONING. REFER TO NHDES FACT SHEET DWG8-22-16 FOR ABANDONMENT CRITERIA. RELATED WATER AND ELECTRIC SERVICE LINES MAY BE ABANDONED IN PLACE.
24. ALL SEPTIC AND OTHER SANITARY SEWER STRUCTURES SHALL BE PUMPED DRY PRIOR TO DEMOLITION.
25. ALL ROAD/LANE CLOSURES OR OTHER TRAFFIC INTERRUPTIONS ON NH 111 OR RIVERWOODS DRIVE SHALL BE COORDINATED WITH NHDOT DISTRICT 6, THE EXETER POLICE DEPARTMENT, DPW AND THE OWNER AT LEAST TWO WEEKS PRIOR TO COMMENCING RELATED CONSTRUCTION.
26. THE CONTRACTOR SHALL USE ALL MEANS NECESSARY TO ENSURE THAT UTILITY SERVICES AND VEHICULAR ACCESS VIA WHITE OAK DRIVE TO THE RIDGE AND BOULDERS CAMPUSES REMAIN AS UNINTERRUPTED AS POSSIBLE FOR THE DURATION OF THE PROJECT. ANY SHUT DOWN OR CLOSURE SHALL BE COORDINATED WITH THE OWNER AT LEAST ONE WEEK IN ADVANCE.
27. SEE DETAIL SHEETS FOR LEGEND.



**NOT FOR CONSTRUCTION**

ISSUED FOR: REVIEW

ISSUE DATE: NOVEMBER 13, 2024

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24
2	REVISED PER COMMENTS	EBS	11/23/24

DRAWN BY: EBS  
 APPROVED BY: EBS  
 DRAWING FILE: 5015-SITE.dwg

SCALE:  
 24" x 36" - 1" = 40'  
 11" x 17" - 1" = NOT TO SCALE

OWNER:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

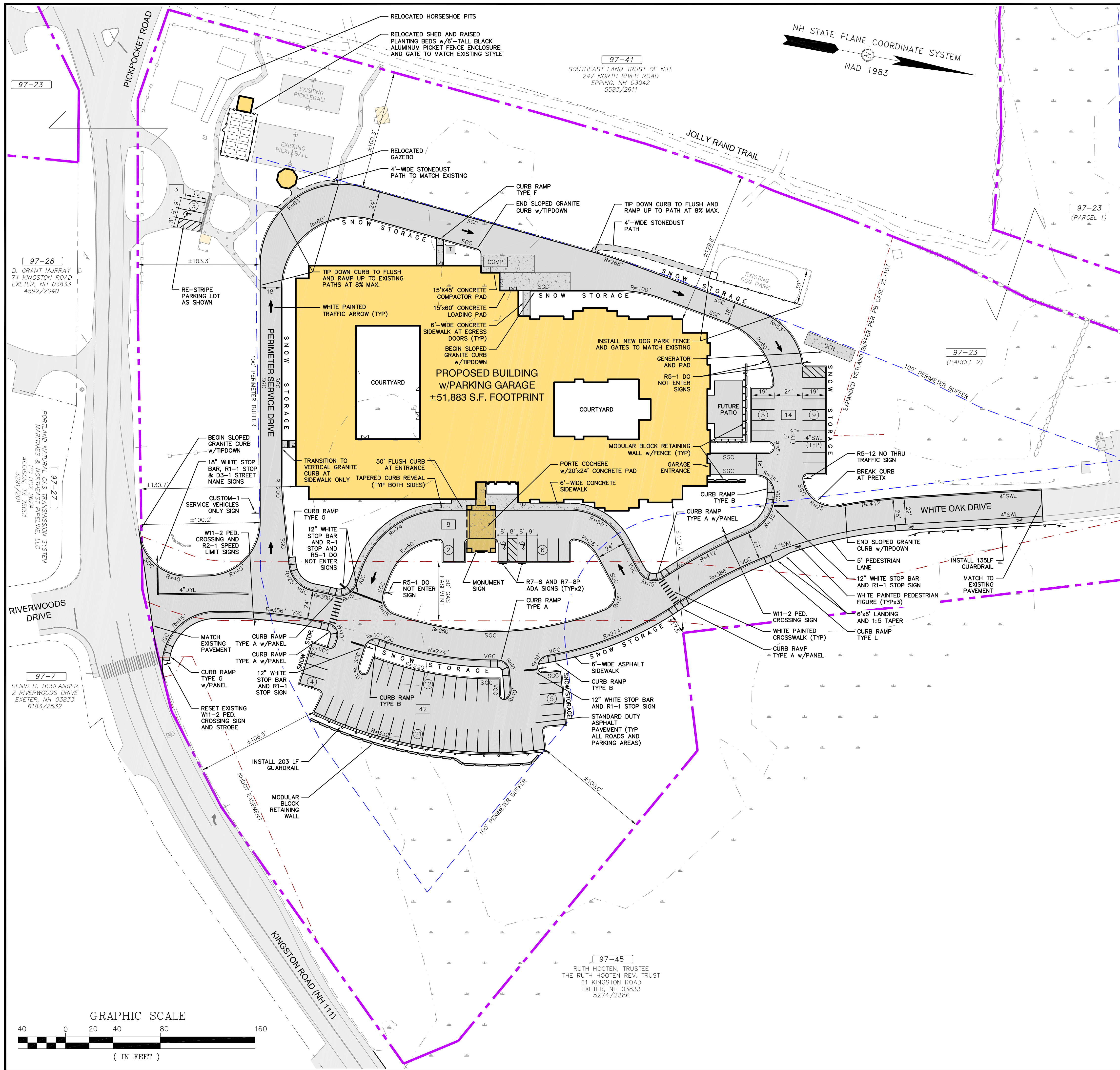
APPLICANT:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

PROJECT:  
 RIVERWOODS  
 SUPPORTIVE LIVING  
 HEATH CENTER  
 TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833

TITLE:  
 DEMOLITION  
 AND SITE  
 PREPARATION PLAN

SHEET NUMBER:  
 C-1



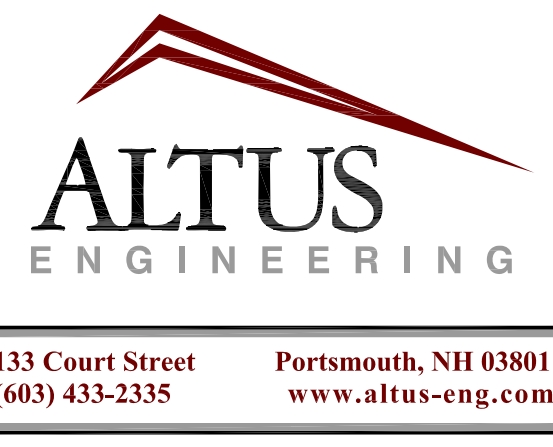


**SITE NOTES**

- DESIGN INTENT - THIS PLAN SET IS INTENDED TO DEPICT THE REDEVELOPMENT OF THE SITE FOR A SUPPORTIVE LIVING HEALTH CARE CENTER.
- APPROXIMATE LOT AREA: ±204.48 AC.
- REFERENCE DEED: ROCKINGHAM COUNTY REGISTRY OF DEED BOOK 6534 PAGE 2917
- ZONE: RESIDENTIAL LOW DENSITY (R-1)
- DIMENSIONAL REQUIREMENTS:
  - MIN. LOT AREA: 2 ACRES OR 40,000 S.F. w/WATER AND SEWER
  - DENSITY: 3 UNITS/ACRE (FOR ELDERLY CONGREGATE CARE)
  - MIN. STREET FRONTAGE: 150'
  - FRONT SETBACK: 25' (±130.7' PROVIDED)
  - SIDE SETBACK: 15' (±100.4' PROVIDED)
  - REAR SETBACK: 25' (N/A, NO REAR ON THIS SECTION OF THE PARCEL)
  - MAX. BUILDING HEIGHT: 35'/3 STORIES (35' PROPOSED)
  - MIN. OPEN SPACE: 70% (>70% PROVIDED)
  - PERIMETER BUFFER: 100' (FOR ELDERLY CONGREGATE CARE)
  - WETLAND SETBACKS: 40' (POORLY DRAINED)  
50' (VERY POORLY DRAINED)  
75' (PARKING & STRUCTURES)  
100' (VERNAL POOL)
- PARKING REQUIREMENTS:
 

DUE TO THE PROPOSED USE NOT BEING ADEQUATELY REPRESENTED IN THE OFF-STREET PARKING SCHEDULE, AN ALTERNATE PARKING CALCULATION PER ZONING SECTION 5.8.3.B.1 IS UTILIZED HERE TO CALCULATE PARKING DEMAND. THIS CALCULATION IS BASED ON PROJECTED STAFFING LEVELS AND ANTICIPATED VISITOR DEMAND DERIVED FROM EXPERIENCE WITH THE THREE EXISTING RIVERWOODS EXETER CAMPUSES:

STAFF AT MAX. SHIFT:	83	TOTAL PARKING REQUIRED	= 125 SPACES
RESIDENT VISITORS:	25	TOTAL PARKING PROVIDED	= 131 SPACES (64 GARAGE, 67 SURFACE)
OTHER VISITORS:	15	SURPLUS/DEFICIT	= +6 SPACES
GOOCH PARK:	2		
- OVERALL AREA OF DISTURBANCE OVER 100,000 S.F., NHDES ALTERATION OF TERRAIN PERMIT REQUIRED.
- AREA OF DISTURBANCE OVER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT REQUIRED (NOIS TO BE PREPARED AND SUBMITTED BY CONTRACTOR, SWPPP AND INSPECTIONS TO BE PREPARED AND PERFORMED BY CONTRACTOR).
- NHDOT DRIVEWAY PERMIT REQUIRED.
- TOWN OF EXETER SIGN PERMIT REQUIRED.
- CONDITIONAL USE PERMIT UNDER ZONING SECTION 9.1.6 REQUIRED FOR SITE DEVELOPMENT IN THE WETLANDS CONSERVATION DISTRICT.
- SITE IS NOT IN A SPECIAL FLOOD HAZARD ZONE PER FIRM PANEL #33015C0401E PANEL 401 OF 681 AS REVISED PER LOMR DATED NOV. 5, 2018.
- WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES, INC. IN JANUARY, 2023 IN ACCORDANCE WITH THE U.S. ARMY CORPS OF ENGINEERS (ACOE) WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH-CENTRAL AND NORTHEAST REGION (VERSION 2). HYDRIC SOIL DETERMINATIONS WERE CONDUCTED IN ACCORDANCE WITH THE U.S. DEPT. OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE'S FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES (VERSION 7.0, 2010) ALONG WITH THE MANUAL FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND (VERSION 3, APRIL 2004). PLANT SPECIES INDICATOR STATUS WAS BASED ON THE ACOE'S THE NATIONAL WETLAND PLANT LIST (2013).
- ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
- ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE REGULATIONS AND STANDARD SPECIFICATIONS OF THE TOWN OF EXETER, LATEST EDITIONS. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
- ALL WATER, SEWER, ROAD (INCLUDING PARKING LOT), AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 9.3 STORMWATER STANDARDS, STORMWATER MANAGEMENT PLAN, STORMWATER POLLUTION PREVENTION PLAN, AND EROSION AND SEDIMENT CONTROL STANDARDS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC UTILITIES IN EXETER, NEW HAMPSHIRE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER LOCATION, INSTALLATION AND ORIENTATION OF ALL SIGNS.
- PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
- PAVEMENT MARKINGS SHALL BE CONSTRUCTED USING WHITE, YELLOW OR BLUE TRAFFIC PAINT (WHERE SPECIFIED) MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F OR EQUAL. PAINTED LANDS AND LOADING ZONES SHALL BE 4"-WIDE DIAGONAL WHITE LINES 3'-0" O.C. BORDERED BY 4"-WIDE WHITE LINES. PARKING STALLS SHALL BE SEPARATED BY 4"-WIDE WHITE LINES. SEE DETAILS FOR HANDICAP SYMBOLS, SIGNS AND SIGN DETAILS.
- PAVEMENT MARKING ABBREVIATIONS:
  - SWL: SINGLE WHITE LINE (4" SOLID LINE)
  - DYL: DOUBLE YELLOW LINE (2 x 4" SOLID LINES SEPARATED BY 4")
- CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINES WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
- UNLESS OTHERWISE NOTED, ALL NEW CURBING SHALL BE SLOPED GRANITE ("SGC") OR VERTICAL GRANITE ("VGC") WITH A MINIMUM RADIUS OF 4'.
- CURB RAMP INDICATED AS "w/PANEL" SHALL BE EQUIPPED WITH AN ADA-COMPLIANT DETECTABLE WARNING PANEL.
- SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT AND IN AREAS SHOWN HEREON AS APPROPRIATE. NO SNOW SHALL BE STORED IN ANY STORMWATER POND.
- BUILDING AREA AND DIMENSIONS SHOWN ARE BASED ON MEASUREMENTS TO THE EXTERIOR FACE. ACTUAL DIMENSIONS TO FOUNDATION AND INTERIOR SPACE WILL DIFFER. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ALL NECESSARY COORDINATION BETWEEN CIVIL AND ARCHITECTURAL PLANS TO ENSURE THE DESIGN INTENT IS MET. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR RESOLUTION.
- THIS SITE PLAN IS DESIGNED IN COMPLIANCE WITH ALL APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED BUILDING IS DESIGNED IN COMPLIANCE WITH ALL APPLICABLE ACCESSIBILITY REGULATIONS INCLUDING NH RSA 155-A:5-a&b, THE IBC AND ANSI 117.1.
- AT THE CONCLUSION OF THE PROJECT, THE CONTRACTOR SHALL PREPARE AN AS-BUILT SITE AND UTILITY PLAN STAMPED BY A NH LICENSED LAND SURVEYOR (LLS) & PROVIDE DIGITAL COPIES IN PDF AND CAD FORMAT TO THE ENGINEER.
- SEE DETAIL SHEETS FOR LEGEND.



NOT FOR CONSTRUCTION

ISSUED FOR: REVIEW

ISSUE DATE: NOVEMBER 13, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24
2	REVISED PER COMMENTS	EBS	11/13/24

DRAWN BY: EBS

APPROVED BY: EBS

DRAWING FILE: 5015-SITE.dwg

SCALE: 24" x 36" - 1" = 40'

11" x 17" - 1" = NOT TO SCALE

OWNER: RIVERWOODS COMPANY AT EXETER

7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER

7 RIVERWOODS DRIVE EXETER, NH 03833

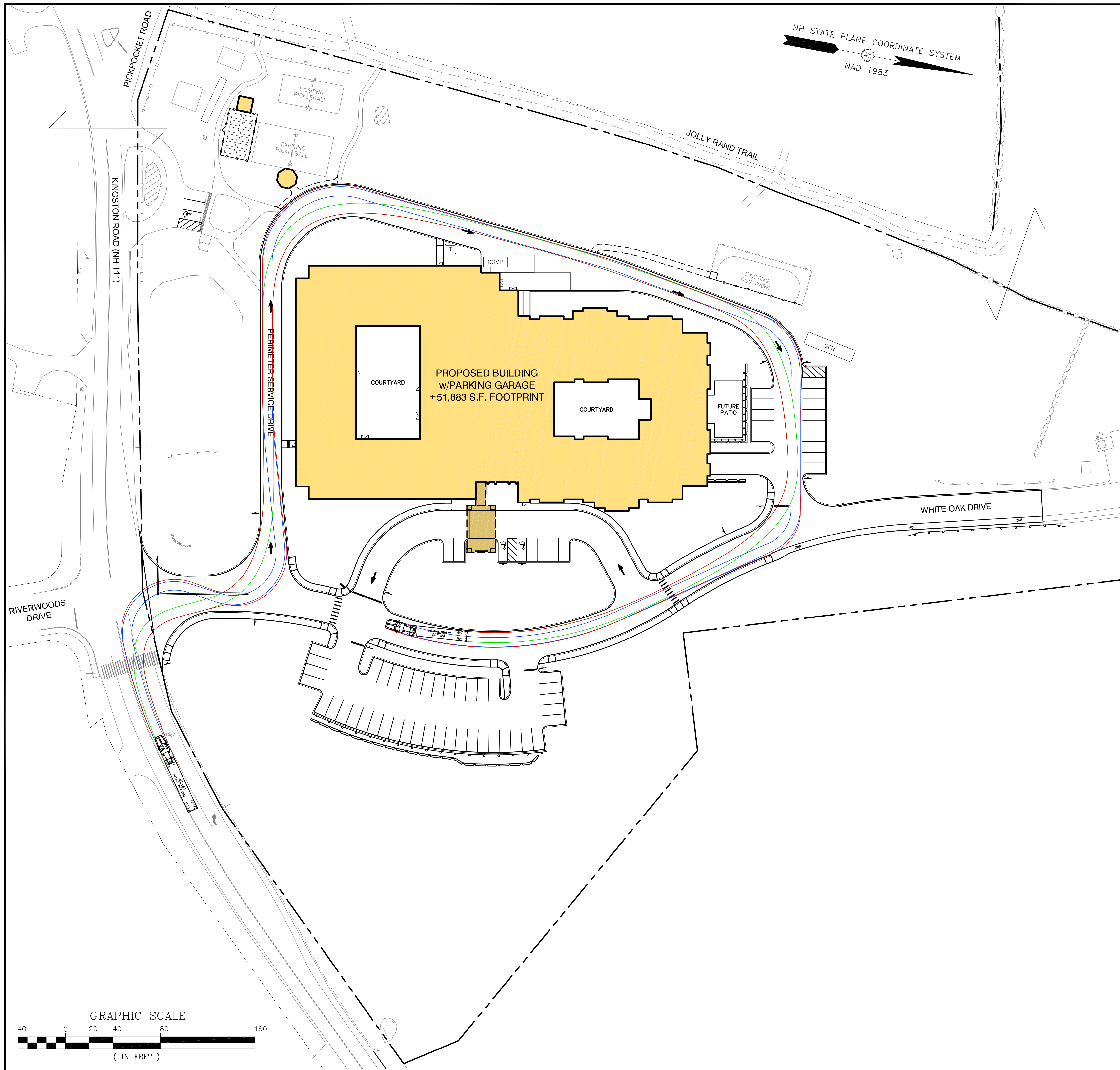
PROJECT: RIVERWOODS SUPPORTIVE LIVING HEALTH CENTER

TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE: SITE PLAN

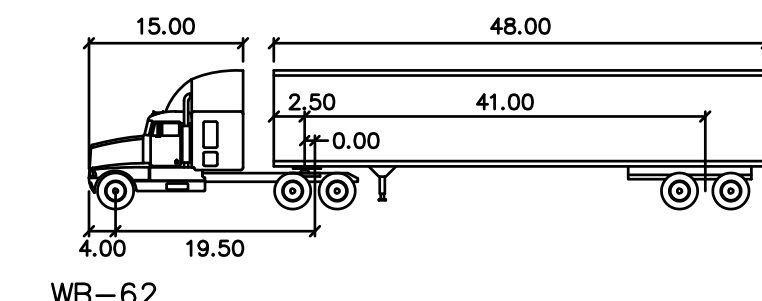
SHEET NUMBER: C-2





**TURNING MOVEMENT NOTES**

1. THE GRAPHIC VEHICLE PROFILE SHOULD NOT BE CONSIDERED A COMPLETELY ACCURATE VISUAL DEPICTION OF THE DESIGN VEHICLE AND IS ONLY INTENDED TO CONVEY A GENERIC REPRESENTATION OF ITS GENERAL APPEARANCE.
2. THIS PLAN IS INTENDED TO DEMONSTRATE THAT THE PROJECT AS DESIGNED SHOULD BE ABLE TO ADEQUATELY ACCOMMODATE ANY VEHICLE UP TO AND INCLUDING THIS DESIGN VEHICLE.
3. DESIGN VEHICLE PROFILE:

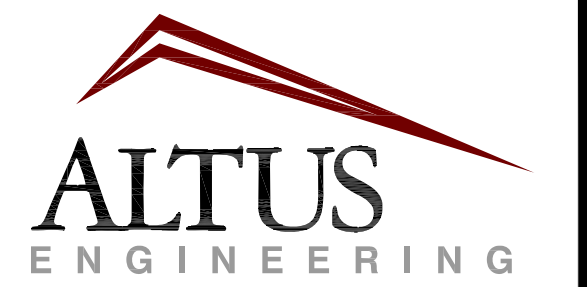


WB-62

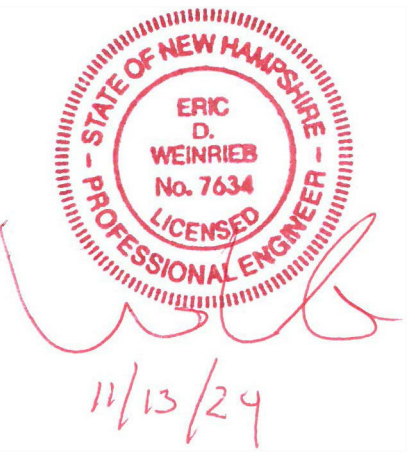
feet	
Tractor Width	: 8.00
Trailer Width	: 8.50
Tractor Track	: 8.00
Trailer Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 28.4
Articulating Angle	: 70.0

**LEGEND**

- FRONT TRACK
- REAR TRACK
- VEHICLE BODY/OVERHANG



133 Court Street Portsmouth, NH 03801  
 (603) 433-2335 www.altus-eng.com



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DRAWN BY: \_\_\_\_\_ EBS  
 APPROVED BY: \_\_\_\_\_ EBS  
 DRAWING FILE: 5015-SITE.dwg

SCALE:  
 24" x 36" - 1" = 40'  
 11" x 17" - 1" = NOT TO SCALE

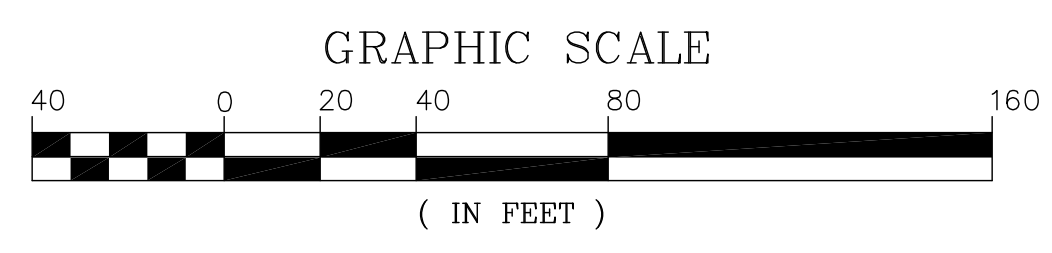
OWNER:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

APPLICANT:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

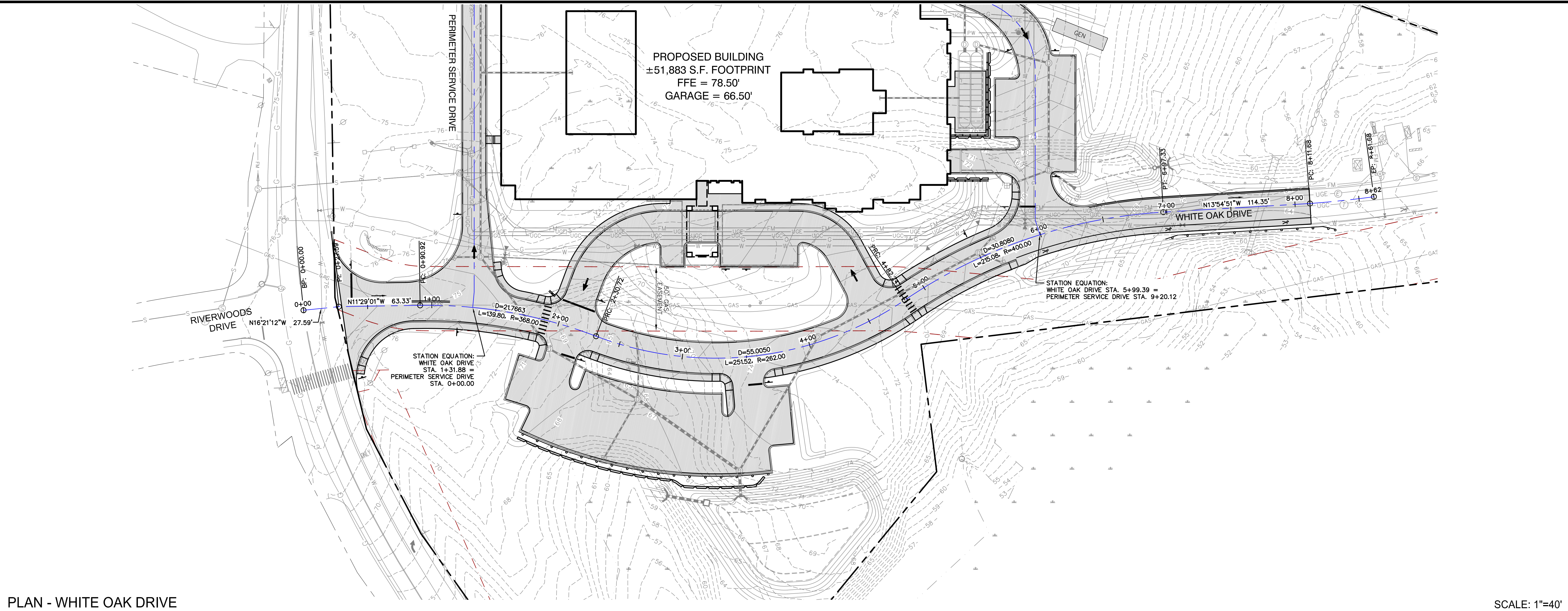
PROJECT:  
**RIVERWOODS  
 SUPPORTIVE LIVING  
 HEATH CENTER**  
 TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833

TITLE:  
**VEHICULAR  
 ACCESS PLAN**

SHEET NUMBER:  
**C-3**

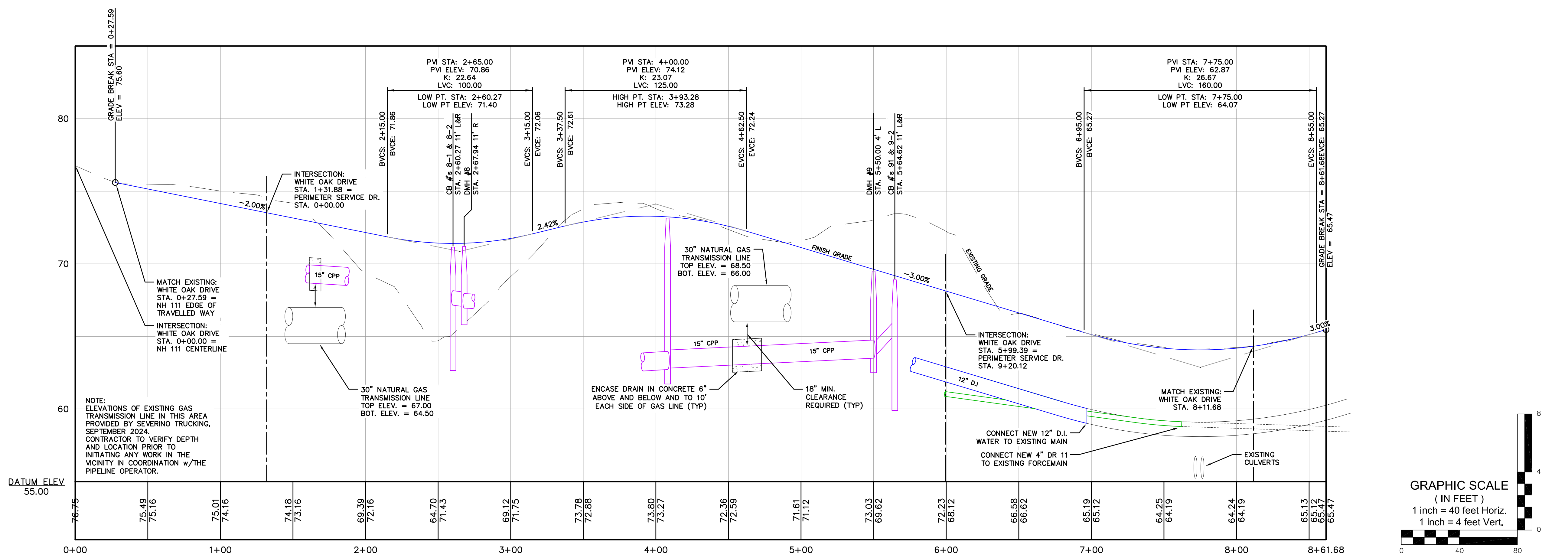






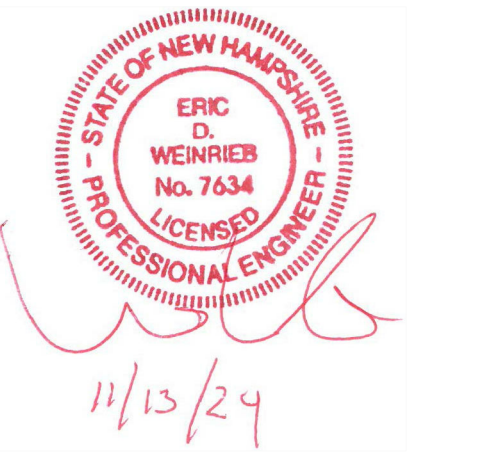
PLAN - WHITE OAK DRIVE

SCALE: 1"=40'



PROFILE - WHITE OAK DRIVE

SCALE: 1"=40' H, 1"=4' V



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APPROVED BY: EBS

DRAWING FILE: 5015-SITE.dwg

SCALE: 24" x 36" - 1" = 40'  
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OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

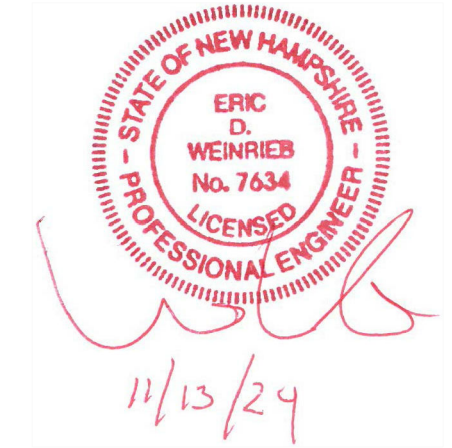
APPLICANT:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

PROJECT:  
RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:  
ROADWAY PLAN  
AND PROFILE

SHEET NUMBER:  
C-4





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APPROVED BY: EBS  
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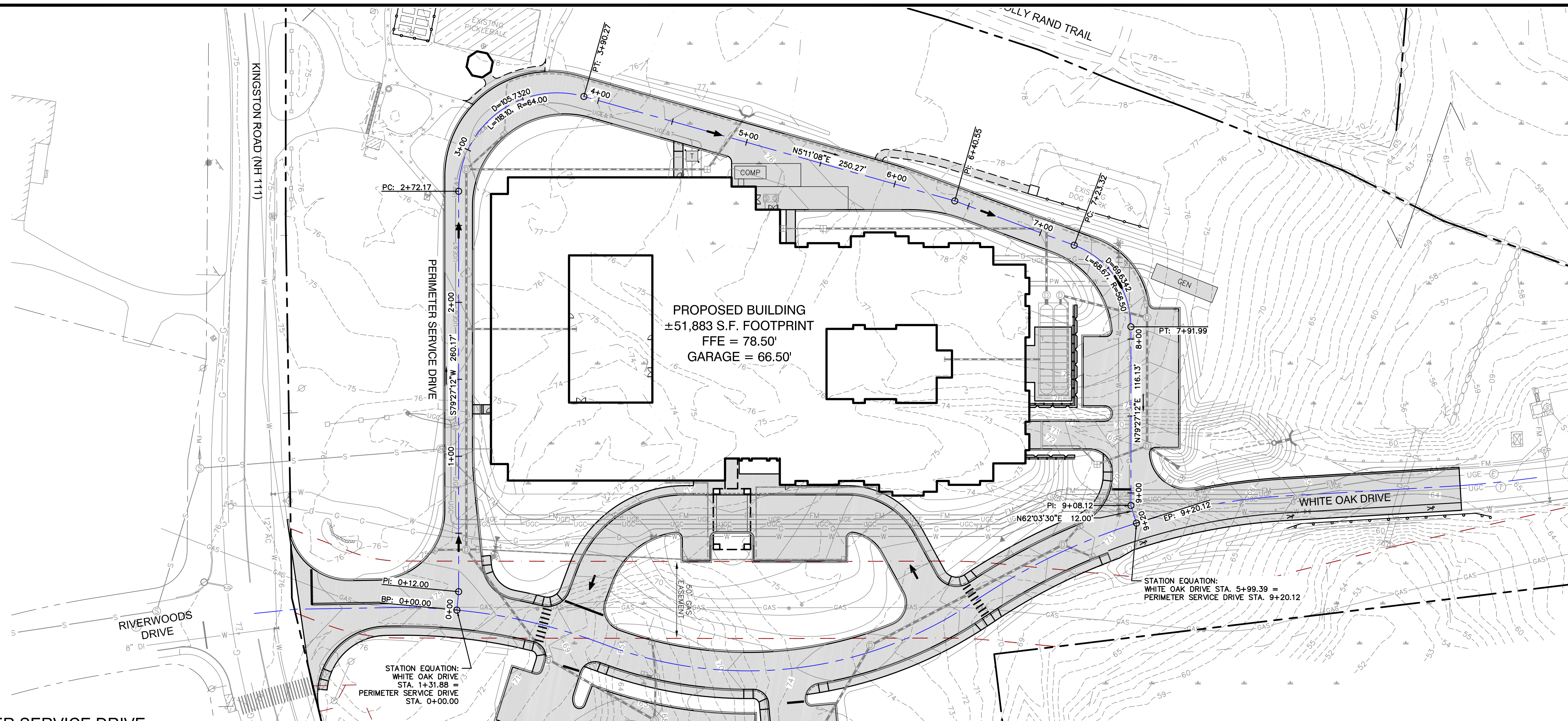
OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

APPLICANT:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

PROJECT:  
**RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER**  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

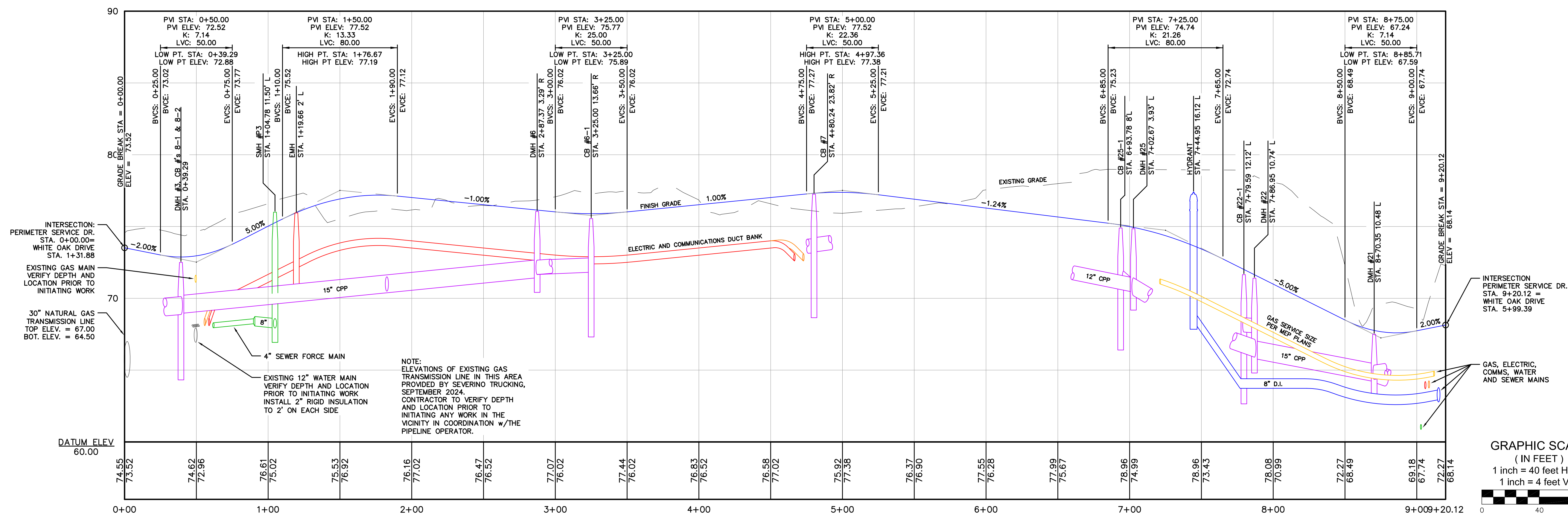
TITLE:  
**ROADWAY PLAN  
AND PROFILE**

SHEET NUMBER:  
**C-5**



PLAN - PERIMETER SERVICE DRIVE

SCALE: 1"=40'



PROFILE - PERIMETER SERVICE DRIVE

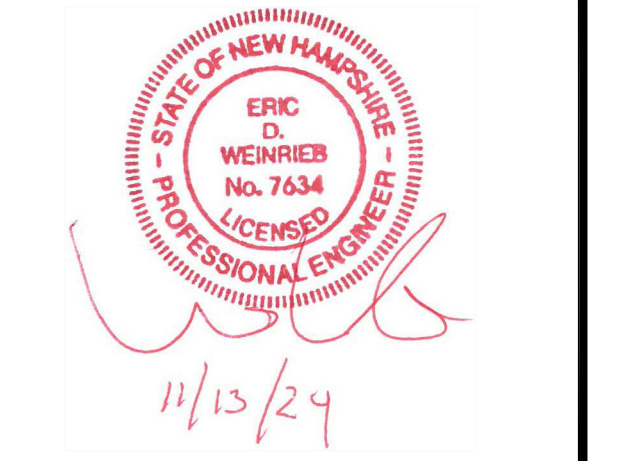
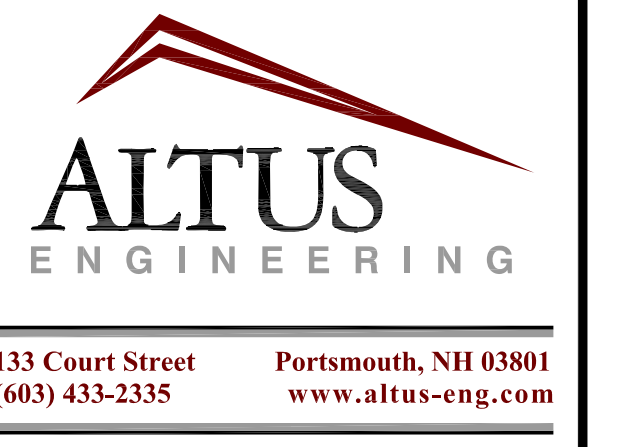
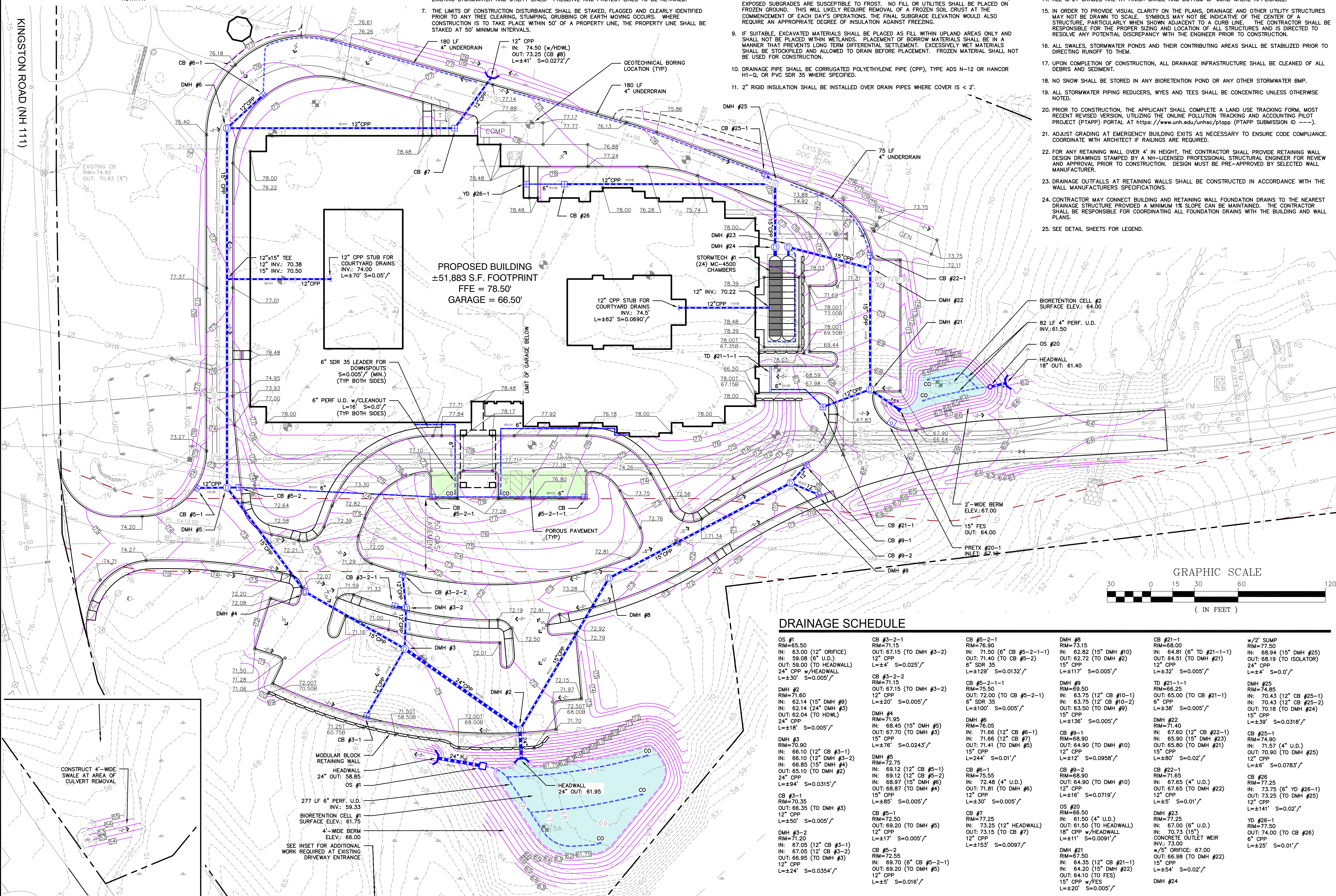
SCALE: 1"=40' H, 1"=4' V



**GRADING AND DRAINAGE NOTES**

- DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
- CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE MUNICIPAL ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
- ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
- UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
- PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
- THE LIMITS OF CONSTRUCTION DISTURBANCE SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY TREE CLEARING, STUMPING, GRUBBING OR EARTH MOVING OCCURS. WHERE CONSTRUCTION IS TO TAKE PLACE WITHIN 50' OF A PROPERTY LINE, THE PROPERTY LINE SHALL BE STAKED AT 50' MINIMUM INTERVALS.
- PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
- IF SUITABLE EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
- DRAINAGE PIPE SHALL BE CORRUGATED POLYETHYLENE PIPE (CPP), TYPE ADS N-12 OR HANCOR H1-Q, OR PVC SDR 35 WHERE SPECIFIED.
- 2" RIGID INSULATION SHALL BE INSTALLED OVER DRAIN PIPES WHERE COVER IS < 2'.
- ALL CATCH BASIN, MANHOLE AND OTHER DRAINAGE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISH GRADE. ANY RIM ABOVE SURROUNDING FINISH GRADE SHALL NOT BE ACCEPTED UNLESS OTHERWISE SPECIFIED.
- ALL ROOF DRAIN RISERS SHALL BE LOCATED IN COORDINATION WITH THE ARCHITECTURAL PLANS TO MATCH DOWNSPOUT LOCATIONS. RISERS SHALL BE INSTALLED PER THE MANUFACTURERS SPECIFICATIONS AND SET TO FINISH GRADE PLUS 6" (MIN.).
- ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
- IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. SYMBOLS MAY NOT BE INDICATIVE OF THE CENTER OF A STRUCTURE, PARTICULARLY WHEN SHOWN ADJACENT TO A CURB LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL SWALES, STORMWATER PONDS AND THEIR CONTRIBUTING AREAS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- UPON COMPLETION OF CONSTRUCTION, ALL DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
- NO SNOW SHALL BE STORED IN ANY BIORETENTION POND OR ANY OTHER STORMWATER BMP.
- ALL STORMWATER PIPING REDUCERS, WYES AND TEES SHALL BE CONCENTRIC UNLESS OTHERWISE NOTED.
- PRIOR TO CONSTRUCTION, THE APPLICANT SHALL COMPLETE A LAND USE TRACKING FORM, MOST RECENT REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL AT <https://www.unh.edu/unhsc/ptapp> (PTAPP SUBMISSION ID ----).
- ADJUST GRADING AT EMERGENCY BUILDING EXITS AS NECESSARY TO ENSURE CODE COMPLIANCE. COORDINATE WITH ARCHITECT IF RAILINGS ARE REQUIRED.
- FOR ANY RETAINING WALL OVER 4' IN HEIGHT, THE CONTRACTOR SHALL PROVIDE RETAINING WALL DESIGN DRAWINGS STAMPED BY A NH-LICENSED PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. DESIGN MUST BE PRE-APPROVED BY SELECTED WALL MANUFACTURER.
- DRAINAGE OUTFALLS AT RETAINING WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE WALL MANUFACTURERS SPECIFICATIONS.
- CONTRACTOR MAY CONNECT BUILDING AND RETAINING WALL FOUNDATION DRAINS TO THE NEAREST DRAINAGE STRUCTURE PROVIDED A MINIMUM 1% SLOPE CAN BE MAINTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL FOUNDATION DRAINS WITH THE BUILDING AND WALL PLANS.
- SEE DETAIL SHEETS FOR LEGEND.

KINGSTON ROAD (NH 111)



NOT FOR CONSTRUCTION

ISSUED FOR: REVIEW  
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DRAWN BY: EBS  
APPROVED BY: EBS  
DRAWING FILE: 5015-SITE.dwg

SCALE: 24" x 36" - 1" = 30'  
11" x 17" - 1" = NOT TO SCALE

OWNER: RIVERWOODS COMPANY AT EXETER  
7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER  
7 RIVERWOODS DRIVE EXETER, NH 03833

PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER

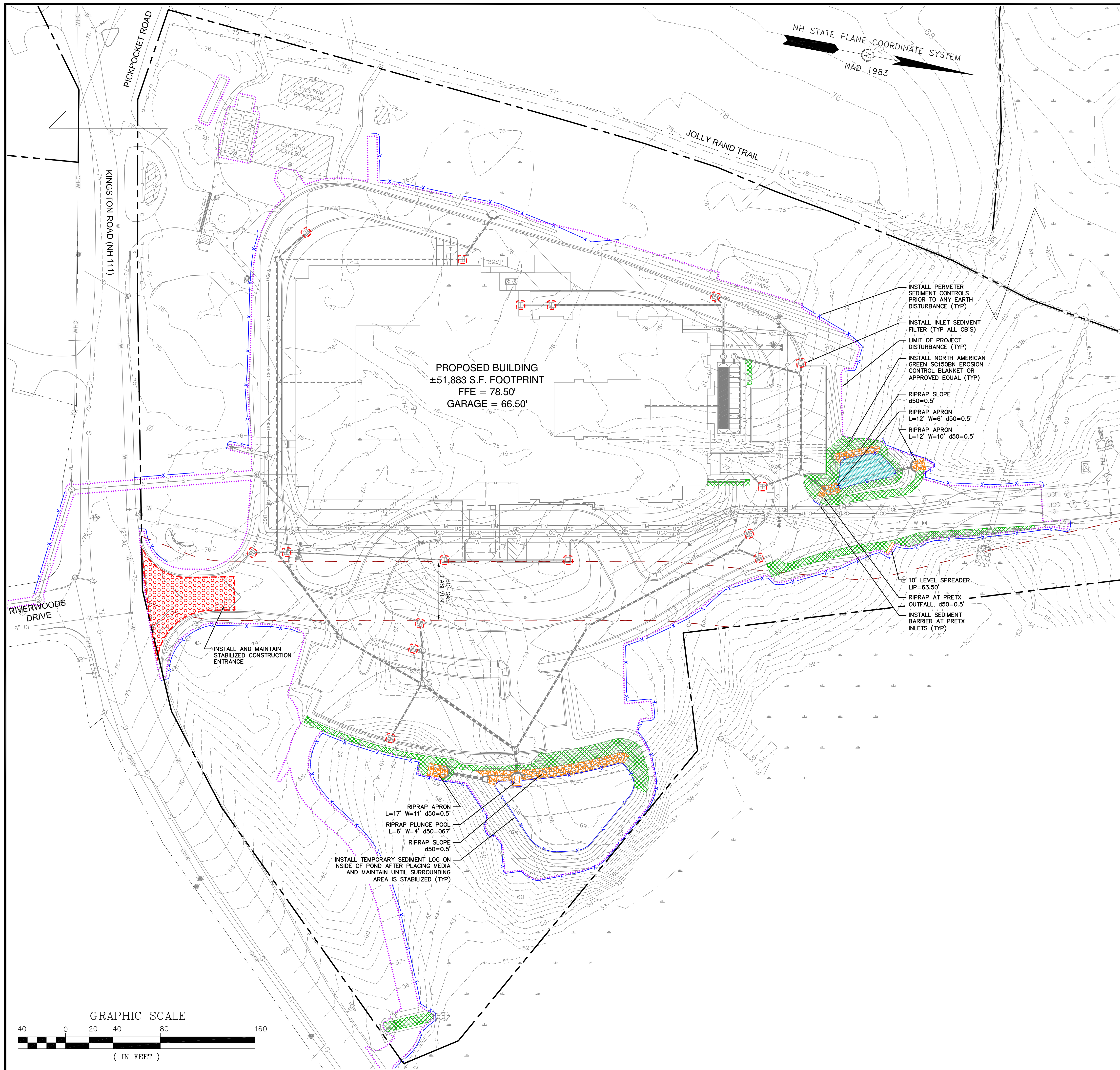
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE EXETER, NH 03833

TITLE: STORMWATER MANAGEMENT PLAN

SHEET NUMBER: C-6

P3015



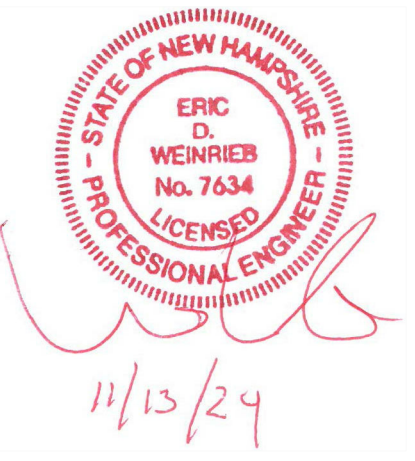


**EROSION AND SEDIMENT CONTROL NOTES**

1. AREA OF DISTURBANCE = ±231,500 S.F. NHDES ALTERATION OF TERRAIN PERMIT REQUIRED.
2. PROPOSED IMPERVIOUS AREA WITHIN PROJECT LIMITS: 135,562 S.F. (80,891 S.F. INCREASE OVER EXISTING CONDITIONS).
3. PERIMETER SEDIMENT CONTROLS AND CULVERT AND CATCH BASIN INLET PROTECTION MEASURES SHALL BE INSTALLED AFTER TREE CLEARING OPERATIONS HAVE CEASED AND BEFORE ANY STUMPING, GRUBBING OR OTHER EARTH DISTURBANCE.
4. GRIND STUMPS AND REUSE GRINDINGS FOR EROSION CONTROL WHERE POSSIBLE OR TRUCK OFFSITE FOR PROPER DISPOSAL IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS. NO STUMPS SHALL BE BURIED ON SITE OR LEFT AT ANY DEPTH BELOW ROADWAY OR PARKING LOT SURFACES.
5. NO EARTHWORK SHALL COMMENCE UNTIL ALL APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED IN GOOD WORKING ORDER FOR THE DURATION OF CONSTRUCTION AND THE SITE IS STABILIZED.
6. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DESIGN STANDARDS AND SPECIFICATIONS SET FORTH BY THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
7. THE CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO PREVENT EROSION, PREVENT SEDIMENT FROM LEAVING THE SITE AND/OR ENTERING WETLANDS AND ENSURE PERMANENT SOIL STABILIZATION.
8. TEMPORARY INLET PROTECTION MEASURES SHALL BE INSTALLED AT ALL CULVERT ENTRANCES AND IN ALL CATCH BASINS WITHIN 100' OF THE PROJECT SITE WHEN SITE WORK WITHIN CONTRIBUTING AREAS IS ACTIVE OR SAID AREAS HAVE NOT BEEN STABILIZED.
9. ALL EROSION CONTROL BLANKETS AND FASTENERS SHALL BE BIDEGRADEABLE.
10. ALL EROSION CONTROL BLANKETS SHALL BE BY NORTH AMERICAN GREEN OR EQUAL AS APPROVED IN WRITING BY THE ENGINEER.
11. ALL SWALES, STORMWATER PONDS AND THEIR CONTRIBUTING AREAS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
12. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS.
13. FUGITIVE DUST SHALL BE CONTROLLED DURING CONSTRUCTION IN ACCORDANCE WITH ENV-A 1000. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DUST FROM LEAVING THE SITE. THIS SHALL INCLUDE BUT NOT BE LIMITED TO THE PROACTIVE MANAGEMENT OF STOCKPILES, MATERIALS PROCESSING ACTIVITIES, VEHICULAR TRAFFIC, THE EXCAVATION AND PLACEMENT OF EARTH MATERIALS, SPRAYING WATER, SWEEPING PAVED SURFACES, PROVIDING TEMPORARY VEGETATION, AND/OR MULCHING EXPOSED AREAS AND STOCKPILES.
14. ALL ACTIVITIES SHALL BE MANAGED IN STRICT ACCORDANCE WITH NH RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES. NO INVASIVE SPECIES SHALL BE INSTALLED ON THE PROJECT SITE FOR ANY REASON.
15. TEMPORARY SEDIMENT LOG (SILT/SOXX OR EQUAL APPROVED BY THE ENGINEER) SHALL BE INSTALLED AROUND THE INLETS OFF ALL CULVERTS AND THE BOTTOM PERIMETERS OF ALL STORMWATER PONDS. THESE MEASURES ARE TO REMAIN IN PLACE UNTIL ALL CONTRIBUTING AREAS HAVE BEEN STABILIZED.
16. MATERIAL STOCKPILE LOCATIONS SHOWN ARE CONCEPTUAL. THE CONTRACTOR MAY LOCATE STOCKPILES WHERE NECESSARY PROVIDED THAT TEMPORARY SEDIMENT LOGS OR OTHER ACCEPTABLE PERIMETER SEDIMENT CONTROLS ARE INSTALLED AT THEIR DOWNSLOPE PERIMETERS.
17. NO MATERIAL STOCKPILE SHALL BE LOCATED WITHIN 50' OF THE PROPERTY LINE.
18. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE SIX (6") INCHES OF LOAM, LIMESTONE, FERTILIZER, SEED, AND HAY MULCH OR EROSION CONTROL BLANKET USING APPROPRIATE SOIL STABILIZATION TECHNIQUES. SEE DETAILS FOR ADDITIONAL INFORMATION.
19. UPON COMPLETION OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED BY THE REMOVAL SMOOTHED AND REVEGETATED.
20. SEE DETAIL SHEETS FOR ADDITIONAL SEDIMENT AND EROSION CONTROL NOTES AND DETAILS.
21. SEE DETAIL SHEETS FOR LEGEND.

**ALTUS**  
ENGINEERING

133 Court Street Portsmouth, NH 03801  
(603) 433-2335 www.altus-eng.com



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DRAWN BY: EBS  
APPROVED BY: EBS  
DRAWING FILE: 5015-SITE.dwg

SCALE:  
24" x 36" - 1" = 40'  
11" x 17" - 1" = NOT TO SCALE

OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

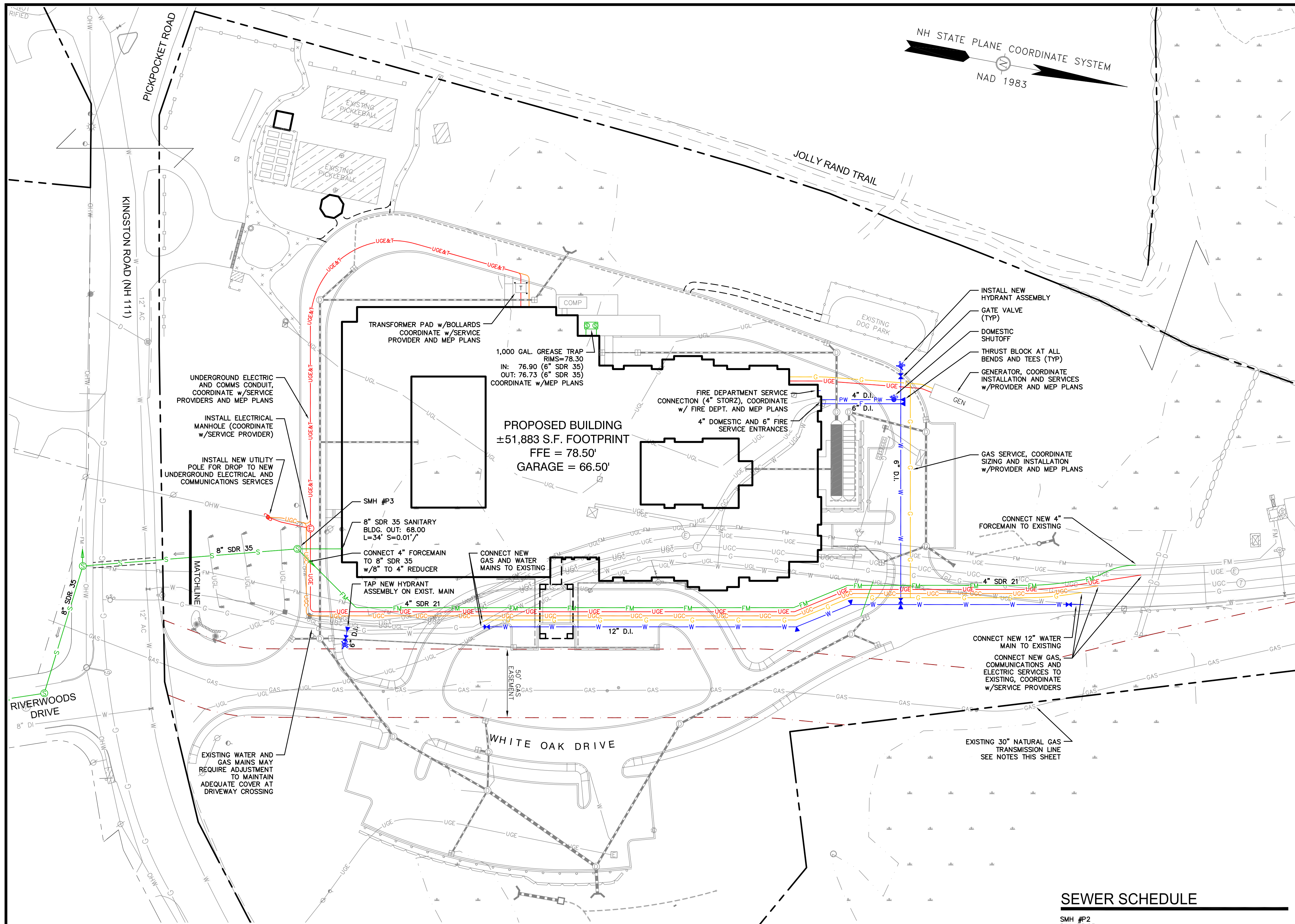
APPLICANT:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

PROJECT:  
RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:  
EROSION AND  
SEDIMENT  
CONTROL PLAN

SHEET NUMBER:  
C-7





**UTILITY NOTES**

1. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE. CATCH BASINS, MANHOLES, WATER GATES, ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY PROVIDERS AND GOVERNMENTAL AGENCIES. AS SUCH, THEY ARE NOT INCLUSIVE AS OTHER UTILITIES AND UNDERGROUND STRUCTURES THAT ARE NOT SHOWN ON THE PLANS MAY EXIST. THE ENGINEER, SURVEYOR AND OWNER ACCEPT NO RESPONSIBILITY FOR POTENTIAL INACCURACIES IN THE PLAN AND/OR UNFORESEEN CONDITIONS. THE CONTRACTOR SHALL NOTIFY, IN WRITING, SAID AGENCIES, UTILITY PROVIDERS, LOCAL DPW AND OWNER'S AUTHORIZED REPRESENTATIVE AND CALL DIG SAFE AT 1 (800) DIG-SAFE AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO ANY EXCAVATION WORK.
2. PRIOR TO CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING AND PROPOSED STORMWATER AND UTILITY LINES. CONFLICTS SHALL BE ANTICIPATED AND ALL EXISTING LINES TO BE RETAINED SHALL BE PROTECTED. ANY DAMAGE DONE TO EXISTING UTILITIES SHALL BE REPAIRED AND, IF NECESSARY, EXISTING UTILITIES SHALL BE RELOCATED AT NO EXTRA COST TO THE OWNER. ALL CONFLICTS SHALL BE RESOLVED WITH THE INVOLVEMENT OF THE ENGINEER, LOCAL DPW AND APPROPRIATE UTILITIES.
3. THE SITE IS SERVED BY MUNICIPAL WATER AND SEWER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE-IN AND CONNECTION FEES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LOCAL UTILITY CONNECTION/DISCONNECTION AND TRENCHING PERMITS. THIS INCLUDES BUT IS NOT LIMITED TO A DOT EXCAVATION PERMIT FOR ALL WORK IN THE NH ROUTE 111 RIGHT OF WAY.
6. ALL UTILITY RELOCATIONS SHALL BE DONE IN A MANNER SO AS TO MINIMIZE DISRUPTION OF SERVICE. ALL INTERRUPTIONS SHALL BE COORDINATED WITH THE SERVICE PROVIDERS AND OWNER AT LEAST 72 HOURS PRIOR TO PERFORMING THE WORK.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCHING, BEDDING, BACKFILL & COMPACTION FOR ALL UTILITY TRENCHING IN ADDITION TO ALL CONDUIT INSTALLATION AND COORDINATION OF ALL REQUIRED INSPECTIONS.
8. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND LOCAL REGULATIONS.
9. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDING. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
10. THE INSTALLATION OF ELECTRIC POWER AND COMMUNICATIONS LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE.
11. THE CONTRACTOR SHALL INSTALL APPROVED BACKFLOW PREVENTORS FOR BOTH FIRE AND DOMESTIC WATER LINES.
12. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE ARCHITECT, CONTRACTOR, APPROPRIATE UTILITY COMPANIES AND THE LOCAL DPW.
13. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
14. UTILITY PROVIDERS AND CONTACTS:
  - MARITIMES AND NORTHEAST PIPELINE: RICHMOND, MAINE AREA SUPER., (207) 737-8249.
  - WATER & SEWER: EXETER PUBLIC WORKS, PAUL VLASICH, TOWN ENGINEER, (603) 773-6157.
  - GAS: UNTIL, DAVID MACLEAN, (603) 294-5144.
  - TELECOMMUNICATIONS: CONSOLIDATED, JOE CONSIDINE, (603) 427-5525.
  - CABLE: COMCAST, MIKE COLLINS, (603) 679-9695, EXT. 1037.
  - ELECTRICAL: EVERSOURCE, MARK BOUGHER, (603) 634-3029. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48-HOUR MINIMUM NOTICE REQUIRED.
15. CONTRACTOR TO PROVIDE BOLLARDS OR OTHER PROTECTIVE MEASURES AT UTILITY SERVICE ENTRANCES PER THE SPECIFICATIONS OF THE RESPECTIVE UTILITY PROVIDERS.
16. ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL BE CONSTRUCTED AND TESTED PER EXETER DPW STANDARDS AND SPECIFICATIONS. ALL OTHER UTILITIES SHALL BE TO THE STANDARDS AND SPECIFICATIONS OF THE RESPECTIVE UTILITY PROVIDERS.
17. WHERE WATER LINES CROSS, RUN ADJACENT TO OR ARE WITHIN 5' OF STORM DRAINAGE PIPES OR STRUCTURES, 2"-THICK CLOSED CELL RIGID BOARD INSULATION SHALL BE INSTALLED FOR FROST PROTECTION.
18. WATER AND SANITARY SEWER LINES SHALL BE LOCATED AT LEAST 10' HORIZONTALLY FROM EACH OTHER. WHERE CROSSING, 18" MINIMUM VERTICAL CLEARANCE SHALL BE PROVIDED WITH WATER INSTALLED OVER SEWER.
19. THE CONTRACTOR SHALL CONFIRM ALL UTILITY LINE AND CONDUIT SIZES WITH THE MEP PLANS AND SERVICE PROVIDERS PRIOR TO INSTALLATION. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
20. FIRE ALARM PANELS SHALL BE MONITORED THROUGH A THIRD-PARTY SECURITY COMPANY. CONTRACTOR SHALL COORDINATE PANEL LOCATIONS AND INTERCONNECTIONS WITH LOCAL FIRE DEPARTMENT AND ARCHITECT.
21. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE BUILDING AS SHOWN. COORDINATE WITH MEP PLANS AND THE LOCAL FIRE DEPARTMENT. ACCESS TO THE FDC SHALL BE MAINTAINED AS A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
22. THE PROPOSED STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED UNDER LOCAL AND STATE BUILDING CODES.
23. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED.
24. UNLESS OTHERWISE DETERMINED BY THE UTILITY PROVIDER, ALL ELECTRICAL TRANSFORMERS AND SWITCHES SHALL REMAIN THE PROPERTY OF THE UTILITY.
25. THE TOWN OF EXETER SHALL HAVE A BLANKET EASEMENT TO ACCESS ALL EXTERIOR VALVES AND SHUTOFFS CONNECTED TO THE MUNICIPAL WATER SYSTEM.
26. ALL WATER VALVES AND HYDRANTS SHALL BE OPEN LEFT.
27. ALL UTILITY FOUNDATION PENETRATIONS SHALL BE SLEEVED. COORDINATE w/MEP AND ARCHITECTURAL PLANS.
28. IRRIGATION PIPING AND WATER SUPPLY WELL TO BE DESIGN-BUILD BY CONTRACTOR. INSTALL PIPE SLEEVES UNDER ROADWAY AS REQUIRED FOR IRRIGATION PIPE AND CONTROL WRING.
29. COORDINATE WITH MEP PLANS FOR SITE IRRIGATION CONNECTION(S) AT BUILDING.
30. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL HANDHOLES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS IN ORDER TO RENDER THE FULL INSTALLATION OF COMPLETE AND OPERATIONAL UTILITY AND DRAINAGE SYSTEMS.
31. THE CONTRACTOR MUST HAVE AN EMPLOYEE WITH A VALID EXETER UTILITY INSTALLER LICENSE ON SITE DURING ALL UTILITY WORK WITHIN THE NH 111 RIGHT OF WAY.
32. SEE DETAIL SHEETS FOR LEGEND.

**SEWER SCHEDULE**

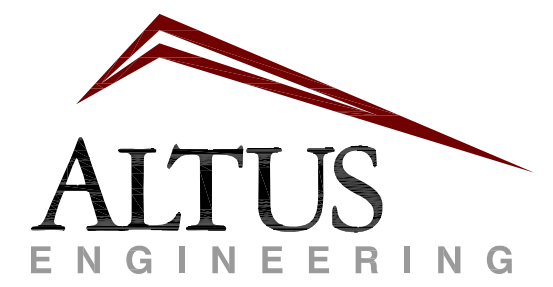
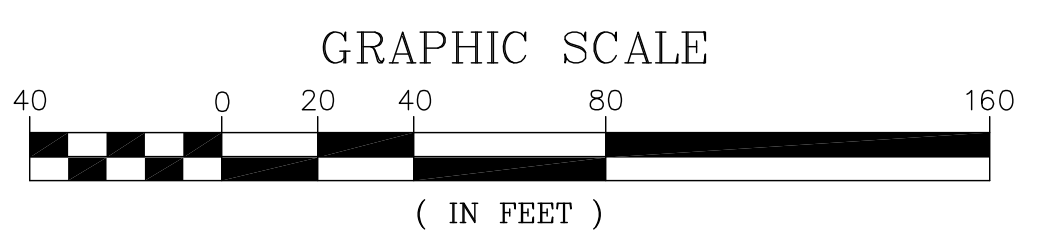
SMH #P2 RIM=75.25 IN: 63.54 (8" SMH #P2A) OUT: 63.44 (TO EX. SMH #1) 8" SDR 35 L=±116' S=0.015'/	SMH #P2A RIM=75.75 (SEE DETAIL) IN: 71.60 (4" INTERNAL DROP FROM FM) OUT: 64.47 (TO SMH #P3) 8" SDR 35 L=±93' S=0.017'/	SMH #P3 (SEE DETAIL) RIM=75.75 IN: 67.70 (8" FROM BLDG.) OUT: 67.60 (TO SMH #P2A) L=±153' S=0.0198'/
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**SEWER FLOW CALCULATIONS**

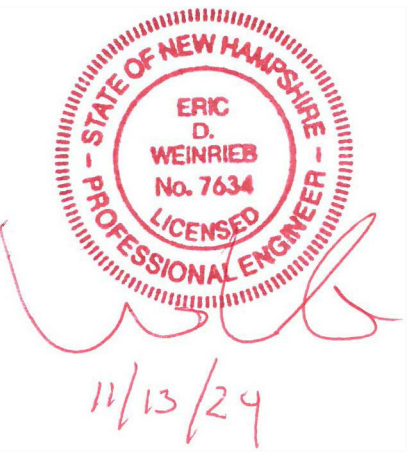
SUPPORTED LIVING RESIDENTS: 135 x 52 GPD/BED = 7,020  
 FULL TIME EMPLOYEES: 70 x 15 GPD/DAY = 1,050 GPD  
 TOTAL DAILY FLOW = 8,070 GPD

SUPPORTED LIVING FLOW BASED ON PER CAPITA AVERAGE DAILY FLOW (ADF) FROM RIVERWOODS WOODS AND RIDGE CAMPUSES: 25,888 GPD ADF / 495 RESIDENTS = 52 GPD/BED.

AVERAGE DAILY PER CAPITA FLOW FOR EMPLOYEES CALCULATED FROM METCALF & EDDY/AECOM "WASTEWATER ENGINEERING TREATMENT AND RESOURCE RECOVERY", 5TH EDITION



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DRAWN BY: EBS  
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SCALE: 24" x 36" - 1" = 40'  
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OWNER: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER

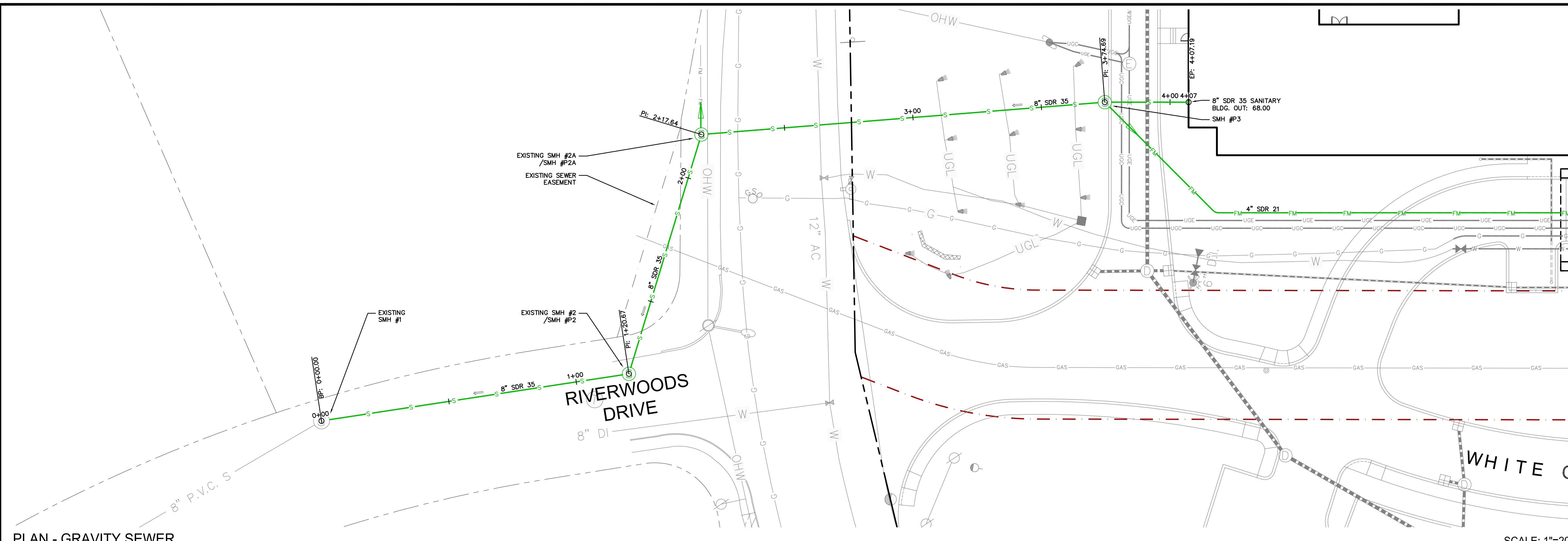
TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE EXETER, NH 03833

TITLE:

UTILITY PLAN

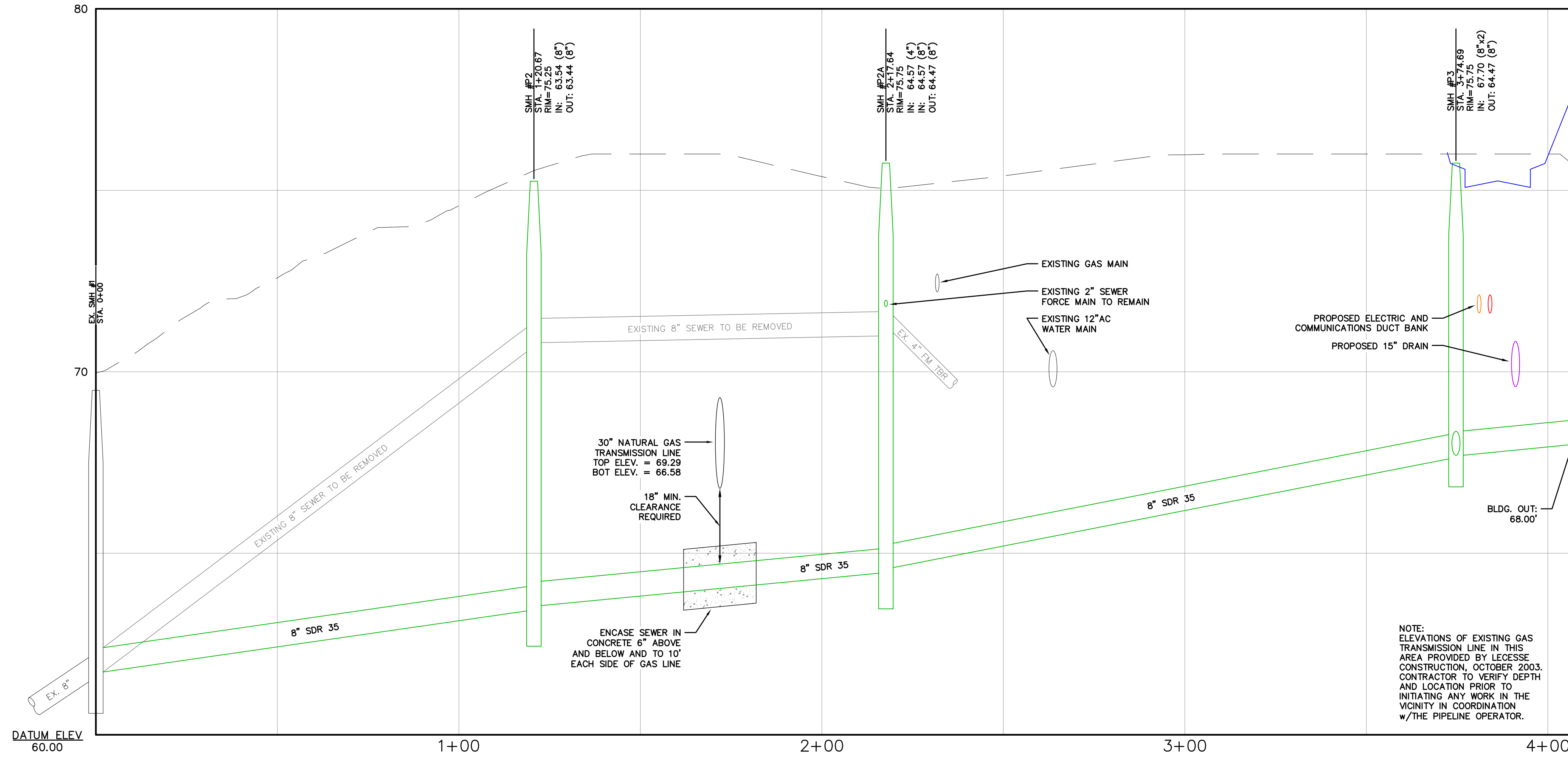
SHEET NUMBER: C-8



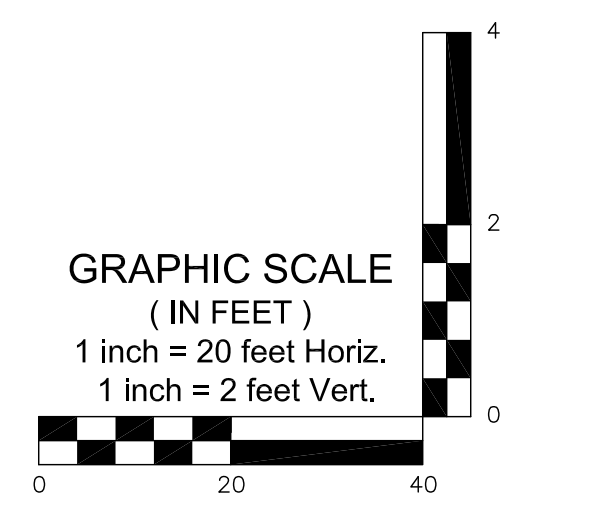


PLAN - GRAVITY SEWER

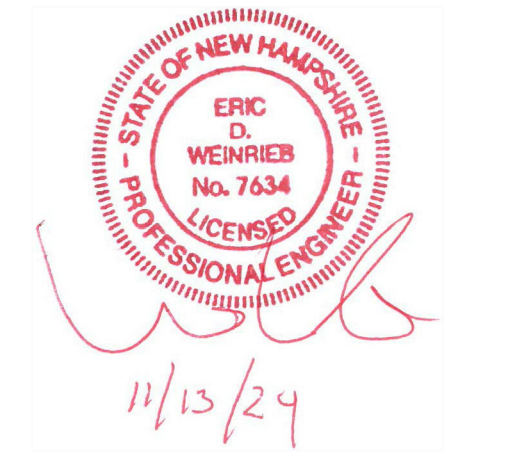
SCALE: 1"=20'



PROFILE - GRAVITY SEWER



SCALE: 1"=20' H, 1"=2' V



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OWNER:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

APPLICANT:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

PROJECT:  
**RIVERWOODS SUPPORTIVE LIVING HEATH CENTER**  
 TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833

TITLE:  
**SEWER PLAN AND PROFILE**

SHEET NUMBER:  
**C-9**





**LIGHTING NOTES**

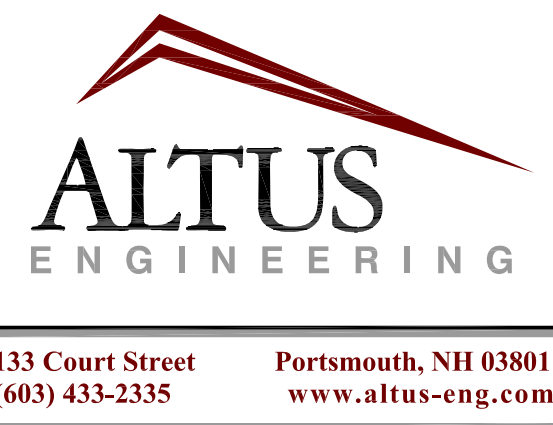
1. SITE CONTRACTOR SHALL COORDINATE LOCATIONS OF ALL UNDERGROUND UTILITIES, DRAINAGE AND OTHER INFRASTRUCTURE BEFORE INSTALLING POLE BASES.
2. ALL LIGHTING MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE AND LOCAL REGULATIONS.
3. ALL ELECTRICAL SERVICES TO LIGHT POLES SHALL BE UNDERGROUND.
4. LIGHTING CONDUIT SHALL BE PVC SCH 40, SIZING AND QUANTITIES PER ELECTRICAL CONTRACTOR. CONDUIT INSTALLATION, INCLUDING BUT NOT LIMITED TO ANY SAWCUTTING, TRENCHING, BACKFILLING AND PAVEMENT PATCHING, SHALL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR. FINAL ROUTING SHALL BE PER THE ELECTRICAL CONTRACTOR.
5. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES TO INCLUDE LIGHTING CONDUIT, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
6. SITE CONTRACTOR SHALL COORDINATE WITH ARCHITECT AND ELECTRICAL CONTRACTOR FOR ALL SITE ELECTRICAL WORK INCLUDING BUT NOT LIMITED TO ALL SERVICE ENTRANCES/EXITS, RISERS, CIRCUITRY, METERS, SUB-METERS, ETC. ALL WIRING AND CIRCUITRY SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
7. COORDINATE WITH ARCHITECTURAL PLANS FOR ALL BUILDING-MOUNTED AND LANDSCAPE FIXTURES, TYPES, LOCATIONS AND WIRING.
8. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP BALLAST AND LUMINAIRE MAY AFFECT FIELD RESULTS.
9. ALL EXTERIOR LIGHTING SHALL BE DOWN-LIT AND FULLY SHIELDED SO NO CONCENTRATED LIGHT IS DIRECTED TOWARDS ADJACENT PROPERTIES AND ROADWAYS.
10. ALL PARKING LOT AND DRIVEWAY LIGHTING SHALL BE EQUIPPED WITH A TIMER OR OTHER CONTROLLER TO EITHER SHUT OFF OR REDUCE TO 25% INTENSITY EVERY EVENING AT 10PM.
11. ALL PARKING LOT AND DRIVEWAY LIGHTING FIXTURES SHALL BE FULL CUT-OFF AND 3000K COLOR TEMPERATURE SO AS TO BE DARK-SKY COMPLIANT AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
12. THIS LIGHTING DESIGN WAS PROVIDED IS BASED ON LIMITED INFORMATION PROVIDED BY VISIBLE LIGHT, INC., 24 STICKNEY TERRACE, SUITE 6, HAMPTON, NH 03842. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, CIRCUITRY, ETC.) SHALL BE COORDINATED BETWEEN THE CONTRACTOR, ARCHITECT AND SPECIFIER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE LIGHTING INSTALLATION MEETS THE ILLUMINATION LEVELS SHOWN HERE.
13. SEE DETAIL SHEETS FOR POLE BASE AND CONDUIT TRENCH DETAILS.

**Statistics**

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Courtyard	+	0.6 fc	4.6 fc	0.0 fc	N/A	N/A
Courtyard	+	0.4 fc	6.8 fc	0.0 fc	N/A	N/A
Front Parking Lot/Drive	+	1.0 fc	9.5 fc	0.4 fc	23.8:1	2.5:1
Landscape Area	+	1.0 fc	19.9 fc	0.1 fc	199.0:1	10.0:1
Landscape Area	+	0.9 fc	5.9 fc	0.4 fc	14.8:1	2.3:1
Landscape Area	+	0.8 fc	4.1 fc	0.0 fc	N/A	N/A
Landscape Area	+	1.2 fc	13.3 fc	0.1 fc	133.0:1	12.0:1
Outside of Parking Lot	+	0.1 fc	1.9 fc	0.0 fc	N/A	N/A
Perimeter Service Drive	+	1.2 fc	5.4 fc	0.4 fc	13.5:1	3.0:1
Side Parking Lot	+	1.3 fc	3.2 fc	0.5 fc	6.4:1	2.6:1
Under Canopy	+	15 fc	19 fc	0 fc	N/A	N/A
White Oak Drive	+	0.9 fc	1.7 fc	0.4 fc	4.3:1	2.3:1

**Schedule**

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Filename	Lumens per Lamp	LLF	Wattage	Distribution	Wattage
○	B	10	Lithonia Lighting	RADB LED P5 30K SYM MVOLT BTT BCC H36 DBDX	Radean Ballard; mounted at 3ft	LED	RADB_LED_P5_30K_SYM_DO_BDX.ies	2116	0.9	32.31	TYPE VS, BUG RATING: B1 - U1 - G0	32.31
○	D	14	Indy	L6 23LM 30K 120 G4 80CRI ZT WPR CD	Indy 6in Downlight; mounted at 12ft	LED	L6_23LM_30K_120_G4_80CRI_ZT_WPR_CD.ies	1736	0.9	23.52	DIRECT, SC-0=1.12, SC-90=1.12	23.52
⌂	S3	3	Lithonia Lighting	DSXO LED P4 30K 80CRI T3M MVOLT SPA DBDX with SSS 20 4C DM19AS DBDX	D-Series Size 0 Area Fixture Type 3; mounted at 22ft (20ft pole on 2ft base)	LED	DSXO_LED_P4_30K_80CRI_T3M.ies	9695	0.9	93.04	TYPE IV, MEDIUM, BUG RATING: B2 - U0 - G3	93.04
⌂	S3-HS	7	Lithonia Lighting	DSXO LED P4 30K 80CRI T3M HS MVOLT SPA DBDX with SSS 20 4C DM19AS DBDX	D-Series Size 0 Area Fixture Type 3 with house-side shield; mounted at 22ft (20ft pole on 2ft base)	LED	DSXO_LED_P4_30K_80CRI_T3M_HS.ies	8404	0.9	93.04	TYPE IV, MEDIUM, BUG RATING: B1 - U0 - G3	93.04
⌂	S4	1	Lithonia Lighting	DSXO LED P4 30K 80CRI TFM MVOLT SPA DBDX with SSS 20 4C DM19AS DBDX	D-Series Size 0 Area Fixture Type 4; mounted at 22.5ft (20ft pole on 2.5ft base)	LED	DSXO_LED_P4_30K_80CRI_TFM.ies	9908	0.9	93.04	TYPE IV, SHORT, BUG RATING: B2 - U0 - G3	93.04
⌂	S4-HS	4	Lithonia Lighting	DSXO LED P4 30K 80CRI TFM HS MVOLT SPA DBDX with SSS 20 4C DM19AS DBDX	D-Series Size 0 Area Fixture Type 4 with house-side shield; mounted at 22ft (20ft pole on 2ft base)	LED	DSXO_LED_P4_30K_80CRI_TFM_HS.ies	8309	0.9	93.04	TYPE IV, MEDIUM, BUG RATING: B1 - U0 - G2	93.04
⌂	S5	4	Lithonia Lighting	DSXO LED P4 30K 80CRI TFM MVOLT SPA DBDX with SSS 20 4C DM19AS DBDX	D-Series Size 0 Area Fixture Type 5; mounted at 22ft (20ft pole on 2ft base)	LED	DSXO_LED_P4_30K_80CRI_TFM.ies	10124	0.9	93.04	TYPE VS, BUG RATING: B4 - U0 - G2	93.04
⌂	W1	14	Lithonia Lighting	WDGE1 LED P1 30K 80CR VF MVOLT SRM DBDX	WDGE1 LED Wallpack; mounted at 10ft(above doors)	LED	WDGE1_LED_P1_30K_80CRI_VF.ies	1161	0.9	10.0002	TYPE II, VERY SHORT, BUG RATING: B0 - U0 - G0	10.0002



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7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER  
7 RIVERWOODS DRIVE EXETER, NH 03833

PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE EXETER, NH 03833

TITLE: LIGHTING PLAN

SHEET NUMBER: C-10



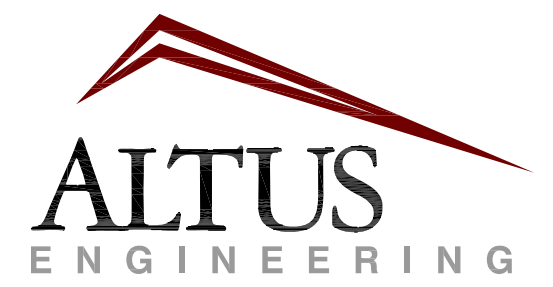


**WETLAND NOTES**

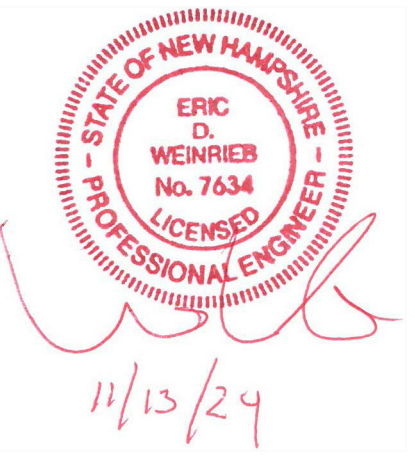
- NHDES WETLAND IMPACT ANALYSIS:  
 AREA: 19,380 S.F.  
 PERMANENT IMPACT: 19,380 S.F.  
 TEMPORARY IMPACT: 84 S.F.
- TOWN OF EXETER WETLAND BUFFER IMPACT ANALYSIS:  
 AREA: 47,387 S.F.  
 40' LIMITED USE BUFFER: 47,387 S.F.  
 75' PARKING AND STRUCTURE BUFFER: 38,537 S.F.  
 TOTAL BUFFER IMPACT: 85,924 S.F.
- WETLAND BUFFER RESTORATION AREA:  
 AREA: 3,901 S.F.  
 40' LIMITED USE BUFFER: 3,901 S.F.  
 75' PARKING AND STRUCTURE BUFFER: 1,736 S.F.  
 TOTAL BUFFER RESTORATION: 5,637 S.F.
- WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES INC. ON 01/11/23. NO POTENTIAL VERNAL POOLS WERE IDENTIFIED. WETLANDS WERE DELINEATED UTILIZING THE FOLLOWING STANDARDS:
  - REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
  - FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.2. UNITED STATES DEPARTMENT OF AGRICULTURE (2018).
  - NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE, 2019 VERSION 4, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, LOWELL, MA.
  - U.S. ARMY CORPS OF ENGINEERS NATIONAL WETLAND PLANT LIST, VERSION 3.5. (2020)
  - CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS-79/31 (1979).

**LEGEND**

- - - - - 40' LIMITED USE BUFFER
- - - - - 75' PARKING AND STRUCTURE BUFFER
- - - - - LIMIT OF PROJECT DISTURBANCE
- - - - - WETLAND BOUNDARY
- PROPOSED 40' WETLAND BUFFER IMPACT
- PROPOSED 75' WETLAND SETBACK IMPACT
- PROPOSED WETLAND IMPACT (PERMANENT)
- PROPOSED WETLAND IMPACT (TEMPORARY)
- PROPOSED BUFFER RESTORATION AREA



133 Court Street Portsmouth, NH 03801  
 (603) 433-2335 www.altus-eng.com



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ISSUED FOR: REVIEW

ISSUE DATE: NOVEMBER 13, 2024

REVISIONS		
NO.	DESCRIPTION	BY DATE
0	INITIAL SUBMISSION	EBS 09/10/24
1	REVISED PER COMMENTS	EBS 10/23/24
2	REVISED PER COMMENTS	EBS 11/23/24

DRAWN BY: EBS  
 APPROVED BY: EBS  
 DRAWING FILE: 5015-SITE.dwg

SCALE: 24" x 36" - 1" = 40'  
 11" x 17" - 1" = NTS

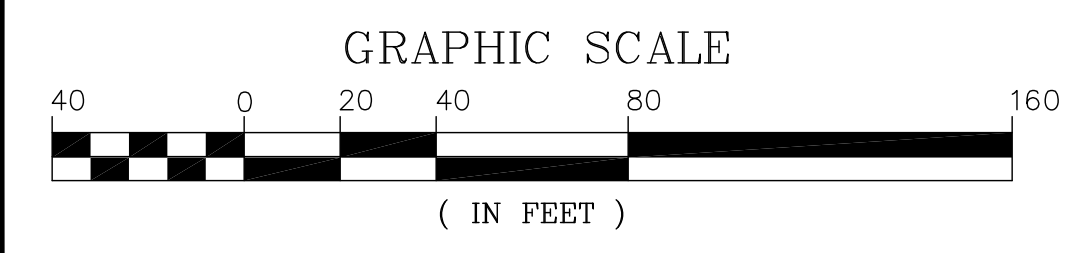
OWNER: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

PROJECT: RIVERWOODS SUPPORTIVE LIVING HEALTH CENTER  
 TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE EXETER, NH 03833

TITLE: WETLAND AND CONDITIONAL USE PERMIT PLAN

SHEET NUMBER: C-11





# SEDIMENT AND EROSION CONTROL NOTES

## PROJECT NAME AND LOCATION

RIVERWOODS SUPPORTIVE LIVING HEALTH CENTER  
 5 WHITE OAK DRIVE  
 EXETER, NEW HAMPSHIRE  
 TAX MAP 97, LOT 23

LATITUDE: 42°58'10" N  
 LONGITUDE: 70°59'02" W

OWNER/APPLICANT  
 RIVERWOODS GROUP  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

## DESCRIPTION

The project consists of a new senior independent living healthcare center together with associated site improvements.

## PROJECT PHASING

The project will be completed in one phase.

## NAME OF RECEIVING WATER

The site drains to an unnamed wetland complex tributary to Scamman Brook.

## SEQUENCE OF MAJOR ACTIVITIES

- Attend pre-construction meeting with Town and relevant stakeholders.
- Prepare SWPPP and file NOI at least two weeks prior to initiating earthwork.
- Cut trees but do not remove stumps.
- Install temporary erosion control measures including perimeter controls, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
- Demolish buildings and other site features.
- Stump, grub and strip and stockpile loam.
- Relocate utilities and roadway.
- Shape and stabilize primary stormwater ponds and swales.
- Construct building foundation.
- Rough grade site.
- Construct drainage structures and utilities.
- Fine grade site.
- Install pavement subgrade.
- Install base course paving.
- Install curbing.
- Install landscaping.
- Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
- Install top course paving.
- Install striping and signage.
- When all construction activity is complete and site is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.

## TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 - 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, perimeter controls shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area and permanent measures are established, perimeter controls shall be removed.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through appropriate perimeter controls. All storm drain inlets shall be provided with inlet protection measures.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

## INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

### A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

- The smallest practical portion of the site shall be denuded at one time but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.
- All control measures shall be inspected at least once each week and following any storm event of 0.25 inches or greater.
- All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
- Built-up sediment shall be removed from perimeter barriers when it has reached one-third the height of the barrier or when "bulges" occur.
- All diversion dikes shall be inspected and any breaches promptly repaired.
- Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
- The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
- All roadways and parking lots shall be stabilized within 72 hours of achieving final grade.
- All cut and fill slopes shall be loamed and seeded within 72 hours of achieving final grade.
- An area shall be considered stable if one of the following has occurred:
  - Base coarse gravels have been installed in areas to be paved;
  - A minimum of 85% vegetated growth has been established;
  - A minimum of 3 inches of non-erosive material such as stone or riprap has been installed; - or -
  - Erosion control blankets have been properly installed.
- The length of time of exposure of area disturbed during construction shall not exceed 45 days.

### B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

- Timing - In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
  - Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
  - Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on an area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.

## INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CONTINUED)

Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrubs.
Jute and Fibrous Matting (Erosion Blanket)	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	<ul style="list-style-type: none"> <li>The organic matter content is between 80 and 100% dry weight basis.</li> <li>Particle size by weight is 100% passing a 6" screen and a minimum of 70 % maximum of 85%, passing a 0.75" screen.</li> <li>The organic portion needs to be fibrous and elongated.</li> <li>Large portions of silts, clays or fine sands are not acceptable in the mix.</li> <li>Soluble salts content is less than 4.0 mmhos/cm.</li> <li>The pH should fall between 5.0 and 8.0.</li> </ul>

- Maintenance - All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

### C. PERMANENT SEEDING -

- Bedding - stones larger than 1/2", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

- Fertilizer - lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and organic fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:
  - Agricultural Limestone @ 100 lbs. per 1,000 s.f.
  - 10-20-20 organic fertilizer @ 12 lbs. per 1,000 s.f.

Type	Lbs. / Acre	Lbs. / 1,000 sf
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

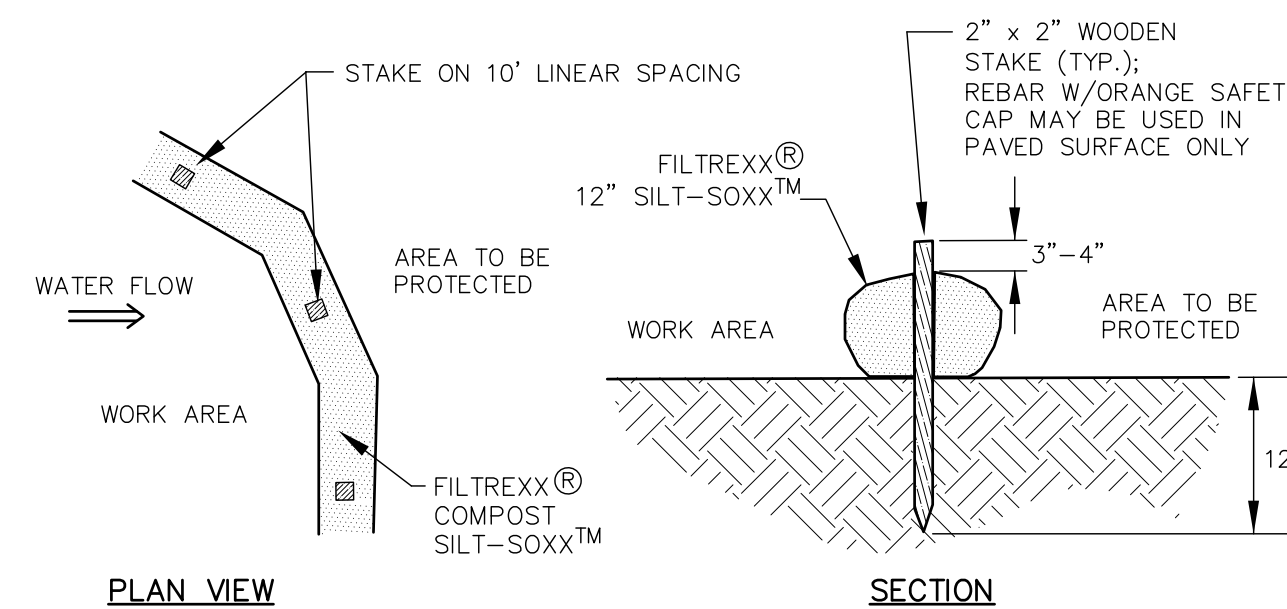
Seed Mixture (For slope embankments\*\*):  
 Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified:

Type	Min. Purity (%)	Min. Germination (%)	Kg./Hectare (Lbs./Acre)
Creeping Red Fescue (c)	96	85	45 (40)
Perennial Rye Grass (a)	98	90	35 (30)
Redtop	95	80	5 (5)
Alsike Clover	97	90(e)	5 (5)
			Total 90 (80)

- Ryegrass shall be a certified fine-textured variety such as Penfline, Fiesta, Yorktown, Diplomat, or equal.
  - Fescue varieties shall include - Creeping Red and/or Hard Reliant, Scaldis, Koket, or Jamestown.
  - Alternate seed mixtures may be used with the approval of the engineer and landscape architect.
  - \*\* In the event that the seed mixes shown here conflict with the project landscape plans, the landscape plans shall govern.
- Sodding - sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

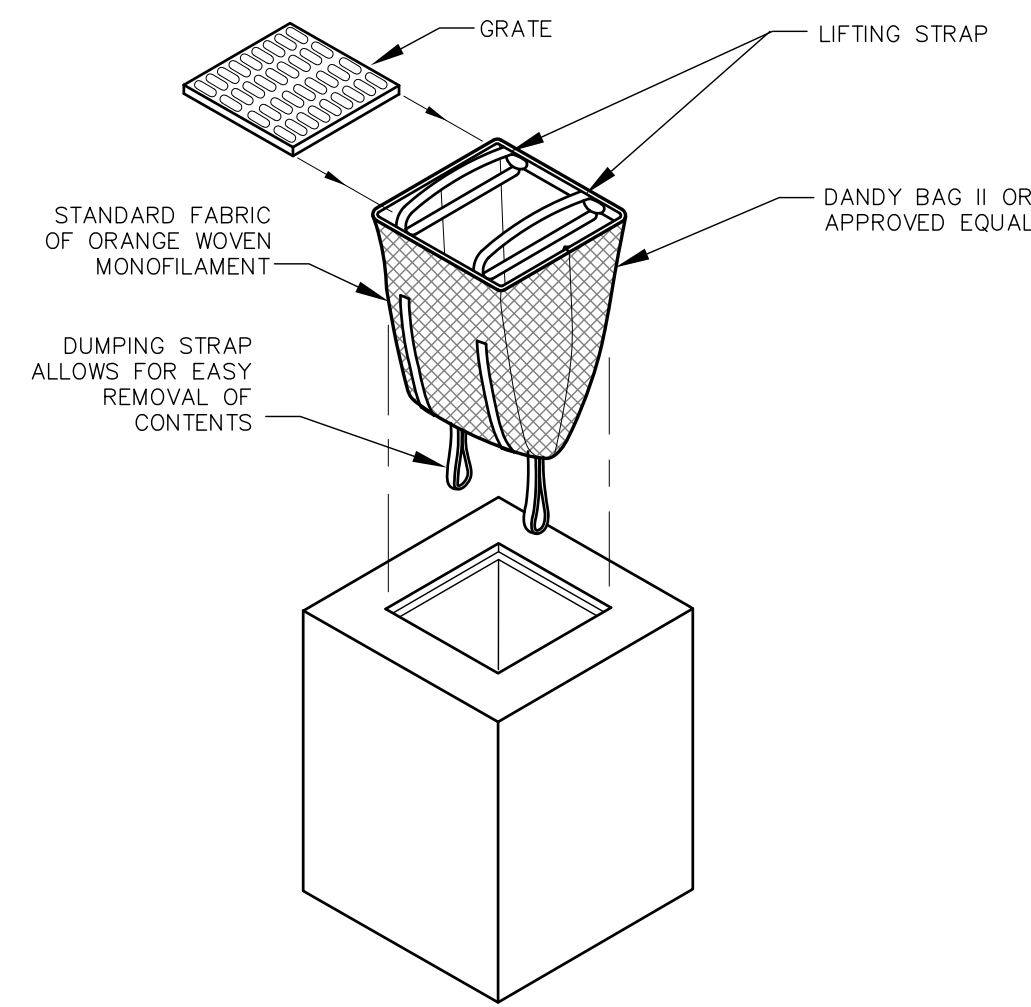
## WINTER CONSTRUCTION NOTES

- All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
- All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
- After October 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.



- NOTES:**
- SILT-SOXX OR APPROVED EQUAL MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
  - ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
  - SILT-SOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
  - ALL SEDIMENT TRAPPED BY SILT-SOXX SHALL BE DISPOSED OF PROPERLY.

## TUBULAR SEDIMENT BARRIER NOT TO SCALE



## INSTALLATION AND MAINTENANCE:

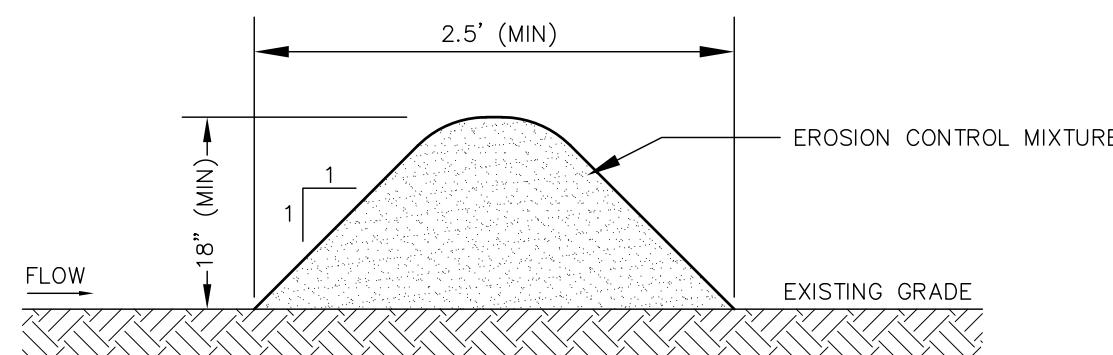
INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

## UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

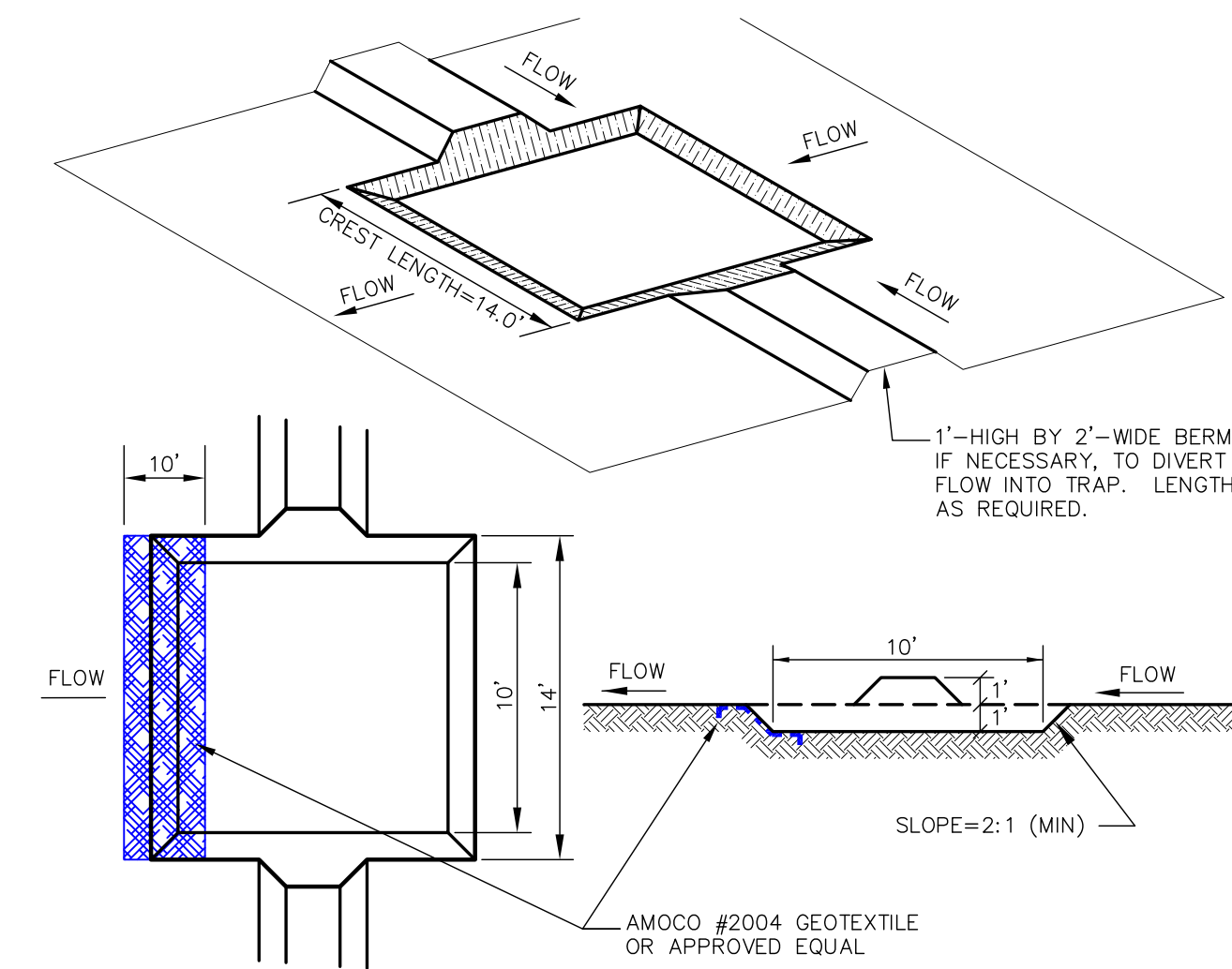
## STORM DRAIN INLET PROTECTION NOT TO SCALE



## NOTES

- ORGANIC FILTER BERMS MAY BE UTILIZED IN LIEU OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
- THE EROSION CONTROL MIXTURE USED IN FILTER BERMS SHALL BE A WELL-GRADED MIX OF PARTICLE SIZES THAT MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, AND/OR ACCEPTABLE MANUFACTURED PRODUCTS AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH. EROSION CONTROL MIXTURE SHALL MEET THE FOLLOWING STANDARDS:
  - THE ORGANIC CONTENT SHALL BE 80-100% OF DRY WEIGHT.
  - PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70-85% PASSING A 0.75" SCREEN.
  - THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
  - LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
  - SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
  - THE PH SHALL BE BETWEEN 5.0 AND 8.0.
- ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
- ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES NO STEEPER THAN 3:1 AND UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE) AND A MINIMUM OF 36" WIDE. ON LONGER AND/OR STEEPER SLOPES, THE BERM SHALL BE TALLER AND WIDER TO ACCOMMODATE THE POTENTIAL FOR ADDITIONAL RUNOFF (MAXIMUM HEIGHT SHALL NOT EXCEED 2').
- FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
- SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BERM.
- ORGANIC FILTER BERMS MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED PROVIDED ANY SEDIMENT DEPOSITS TRAPPED BY THEM ARE REMOVED AND DISPOSED OF PROPERLY.
- FILTER BERMS ARE PROHIBITED AT THE BASE OF SLOPES STEEPER THAN 8% OR WHERE THERE IS FLOWING WATER WITHOUT THE SUPPORT OF ADDITIONAL MEASURES SUCH AS SILTENCE.

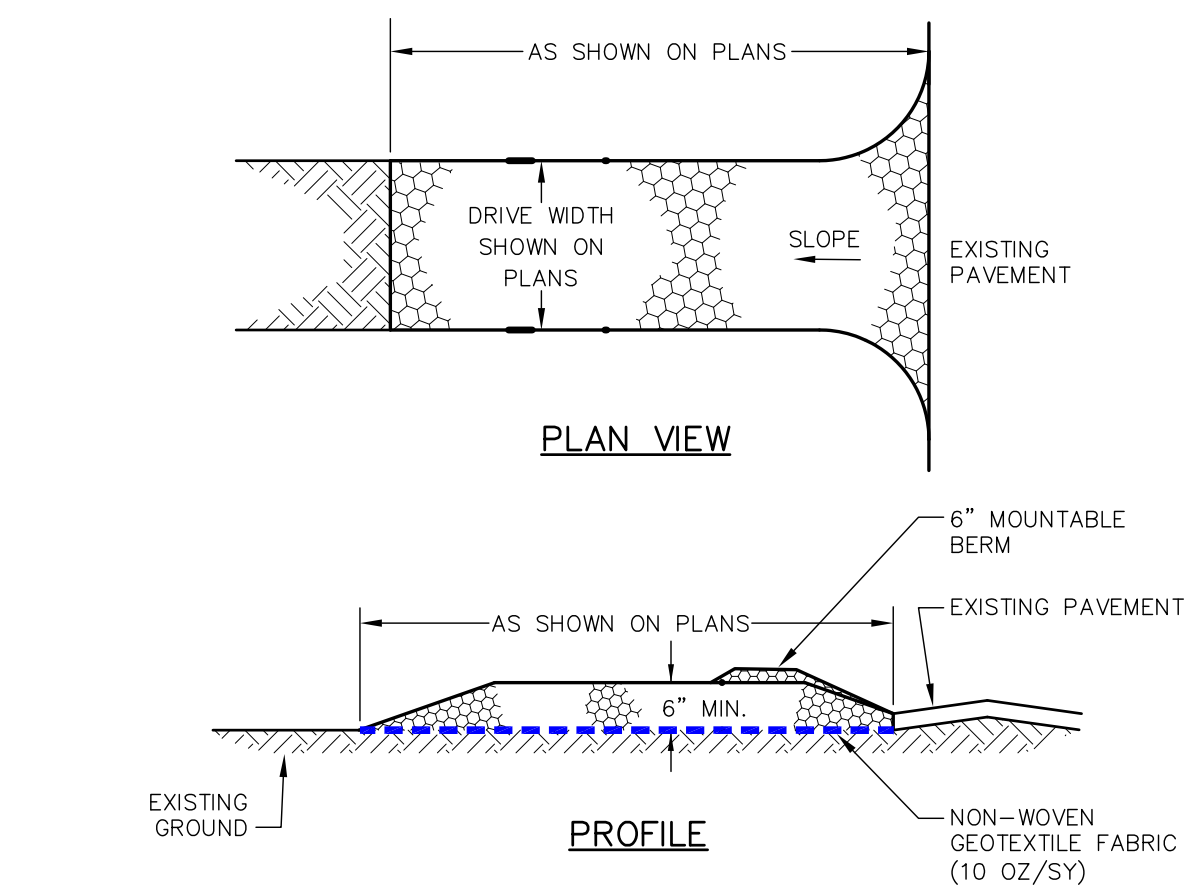
## ORGANIC FILTER BERM NOT TO SCALE



## NOTES:

- THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ALL VEGETATION, ROOTS, AND DEBRIS.
- THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS, WOODY VEGETATION, STONES OVER 6" SIZE, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIALS. THE FILL SHALL BE COMPACTED BY ROUTING CONSTRUCTION EQUIPMENT OVER IT SO THAT THE ENTIRE AREA OF THE FILL IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF THE EQUIPMENT.
- CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
- ALL CUT AND FILL SLOPES SHALL BE 2:1 (H:V) OR FLATTER.
- OUTLET CREST ELEVATIONS SHALL BE AT LEAST ONE FOOT BELOW THE TOP OF THE EMBANKMENT.
- OUTLET CREST IS TO BE STABILIZED WITH AMOCO #2004 GEOTEXTILE (OR APPROVED EQUAL), WHICH IS TO BE TOED INTO THE GROUND AT ITS ENDS AT LEAST SIX INCHES AND IS TO EXTEND AT LEAST ONE FOOT INTO THE TRAP AND ONE FOOT DOWNSTREAM FROM THE OUTLET EDGE FOR THE ENTIRE LENGTH OF THE CREST.
- ALL DISTURBED AREAS SHALL BE VEGETATED USING THE APPROPRIATE VEGETATIVE BEST MANAGEMENT PRACTICE.
- ALL TRAPS ARE TO HAVE SEDIMENT DEPOSITS REMOVED AND DISPOSED PROPERLY ONCE THEY REACH HALF THE CAPACITY OF THE TRAP.

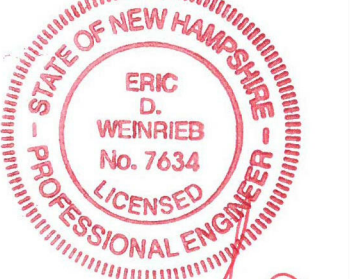
## TEMPORARY SEDIMENT TRAP NOT TO SCALE



## CONSTRUCTION SPECIFICATIONS

- STONE SIZE - 3" MINIMUM.
- LENGTH - DETAILED ON PLANS (50 FOOT MINIMUM).
- THICKNESS - SIX (6) INCHES (MINIMUM).
- WIDTH - FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
- FILTER FABRIC - MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
- SURFACE WATER CONTROL - ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE GROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
- MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS-OF-WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

## STABILIZED CONSTRUCTION EXIT NOT TO SCALE



*Wole*  
10/20/24

## NOT FOR CONSTRUCTION

ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24

DRAWN BY: EBS  
 APPROVED BY: EBS  
 DRAWING FILE: 5015-SITE.dwg

SCALE:  
 24" x 36" - 1" = NOT TO SCALE  
 11" x 17" - 1" = NOT TO SCALE

OWNER:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

APPLICANT:  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

PROJECT:  
 RIVERWOODS  
 SUPPORTIVE LIVING  
 HEALTH CENTER

TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833

TITLE:

DETAIL SHEET

SHEET NUMBER:

C-12





*Wale*  
10/20/24

**NOT FOR CONSTRUCTION**

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ISSUE DATE: OCTOBER 23, 2024

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PROJECT:  
**RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER**

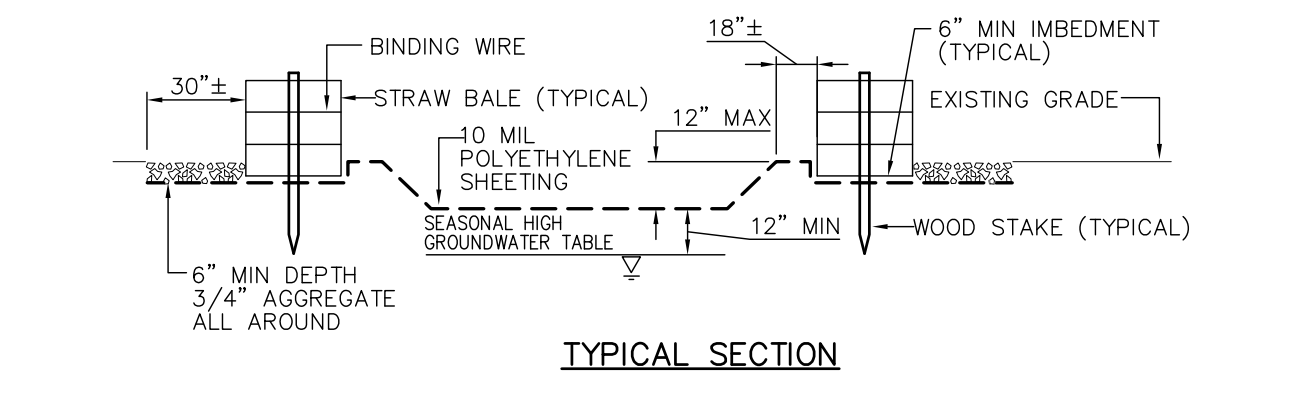
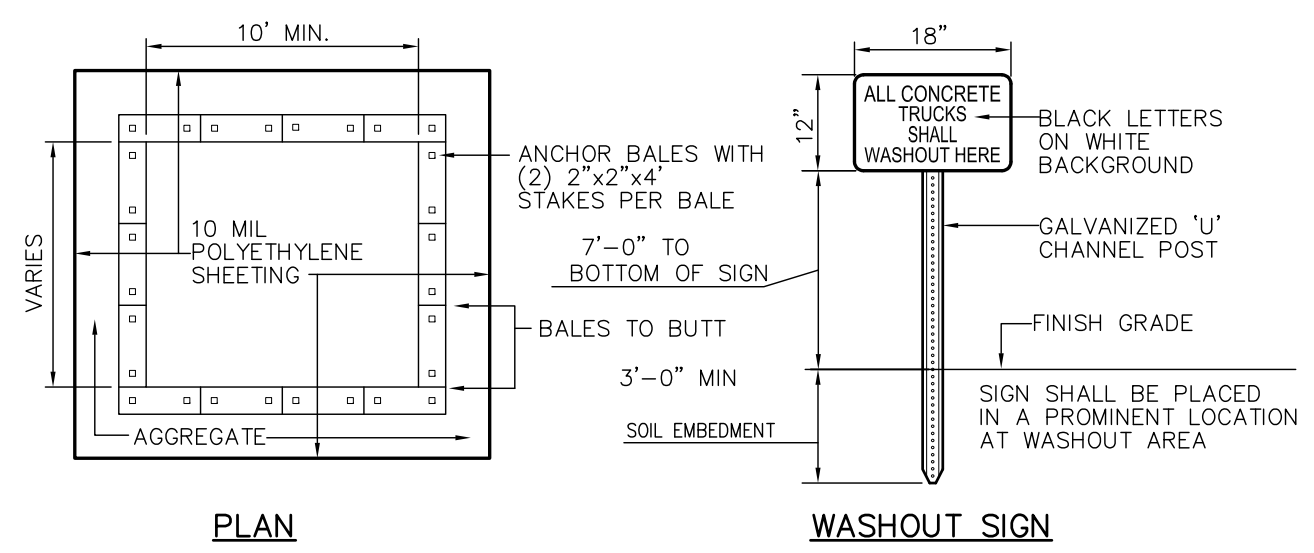
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:

DETAIL SHEET

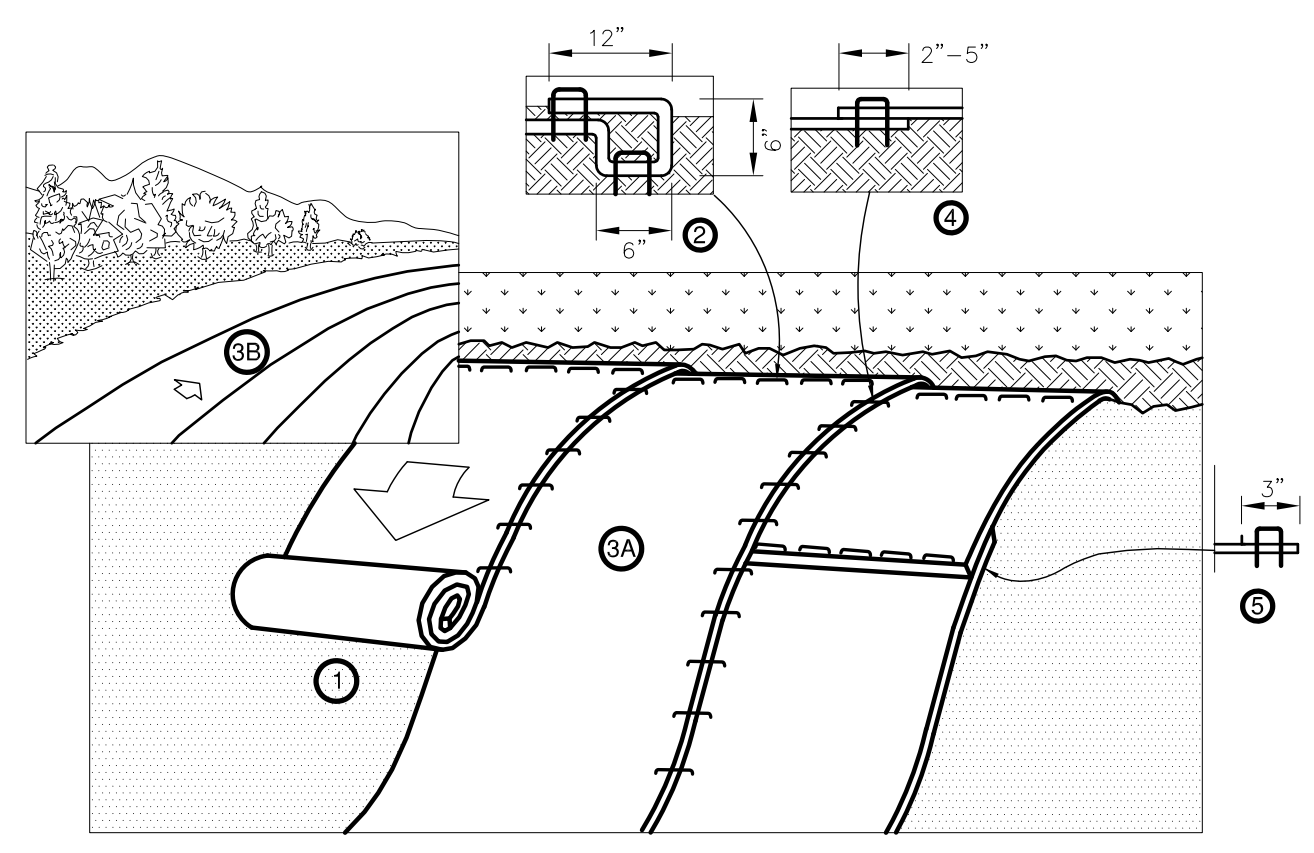
SHEET NUMBER:

**C-13**



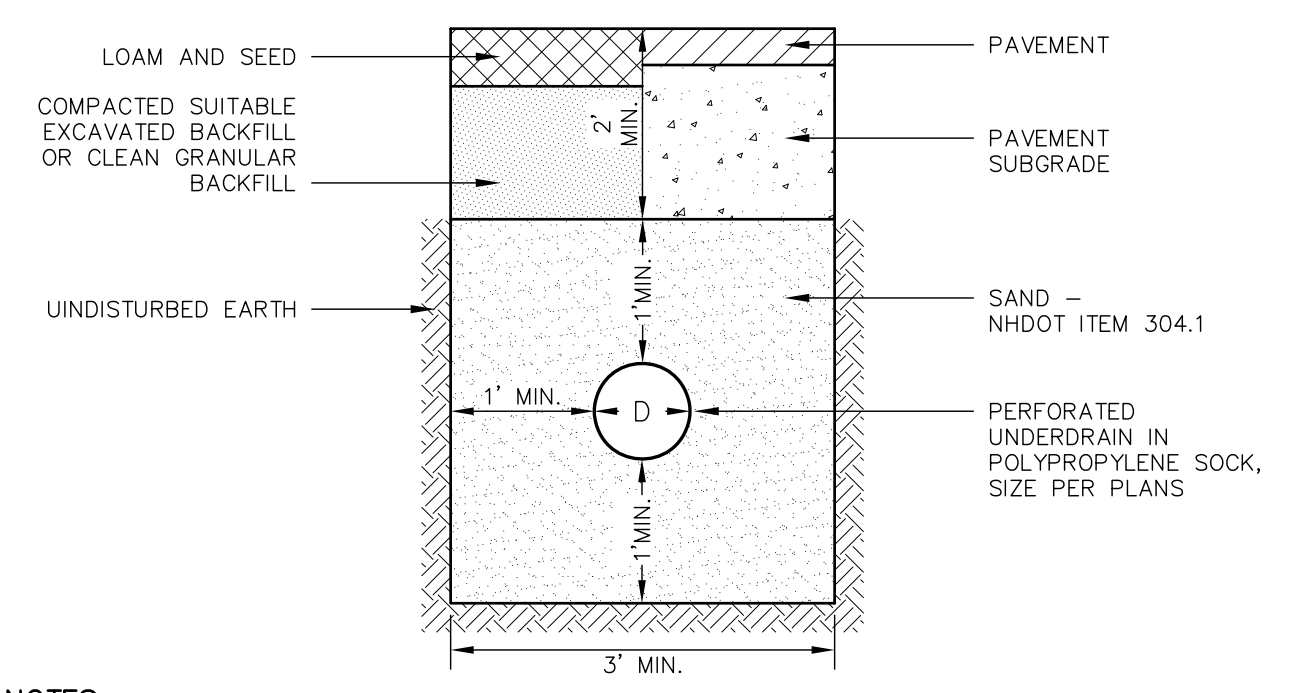
- NOTES:**
- CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
  - CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
  - WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
  - WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
  - ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
  - AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

**CONCRETE WASHOUT NOT TO SCALE**



- NOTES:**
- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
  - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
  - ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
  - THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
  - CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

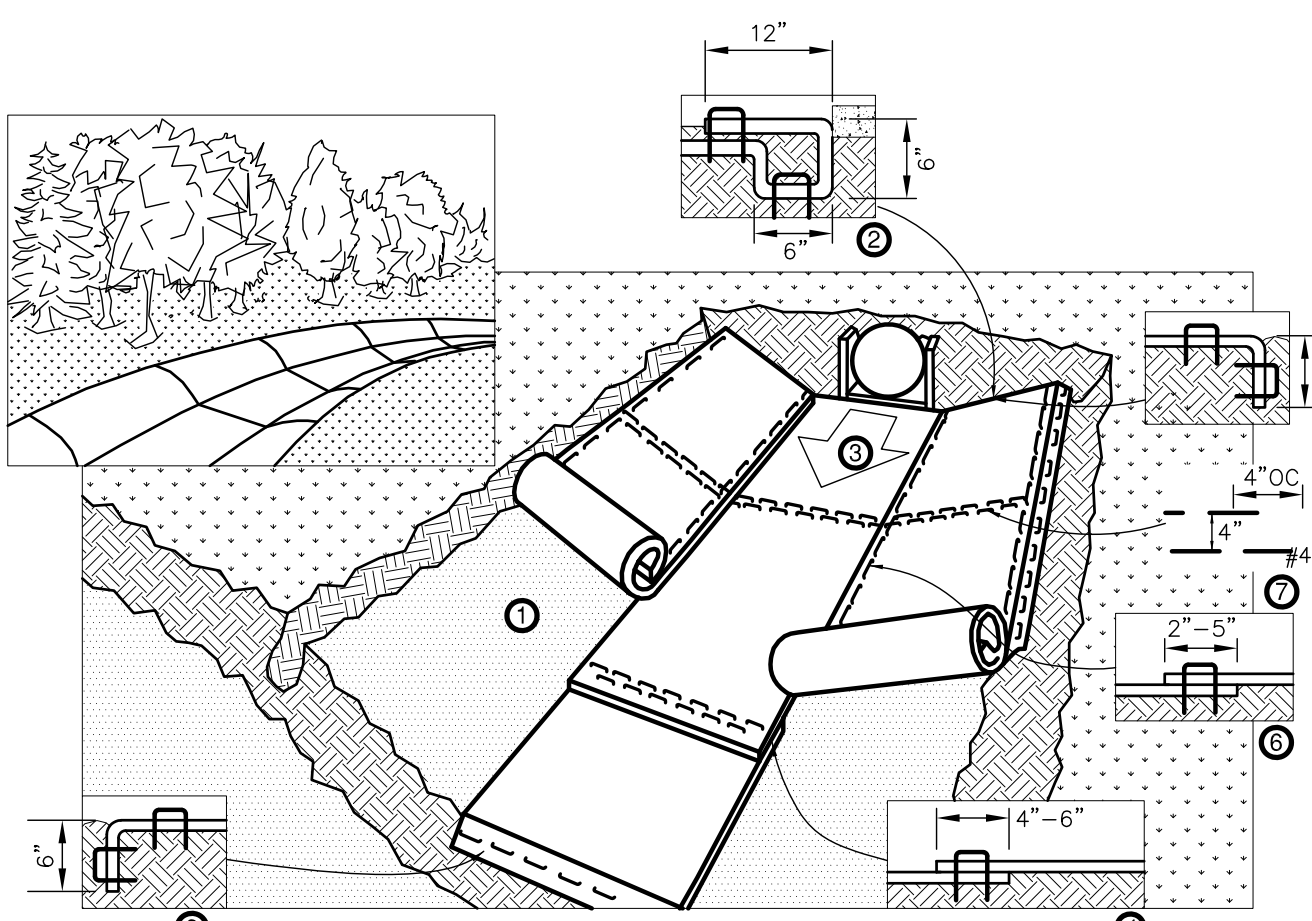
**EROSION CONTROL BLANKET - SLOPE NOT TO SCALE**



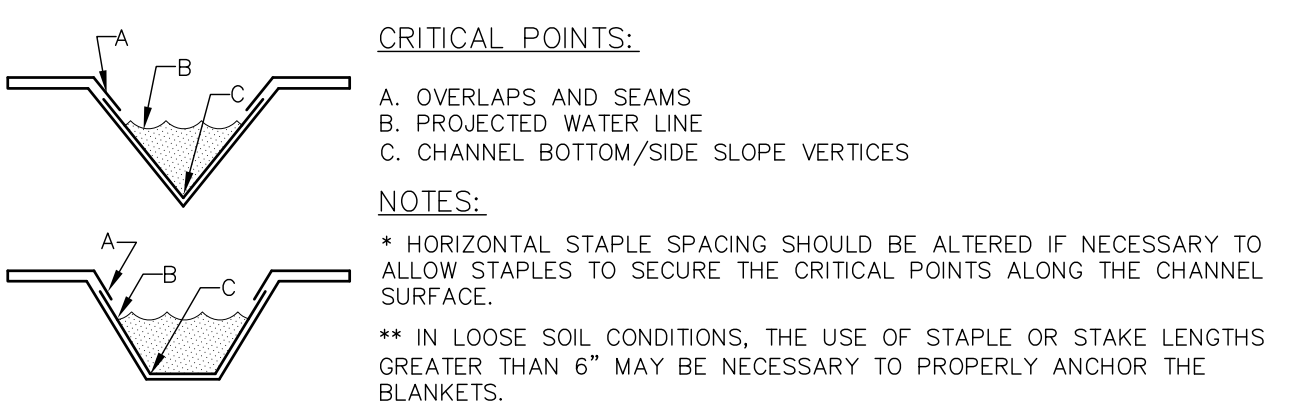
**NOTES:**

- PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
- NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
- ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

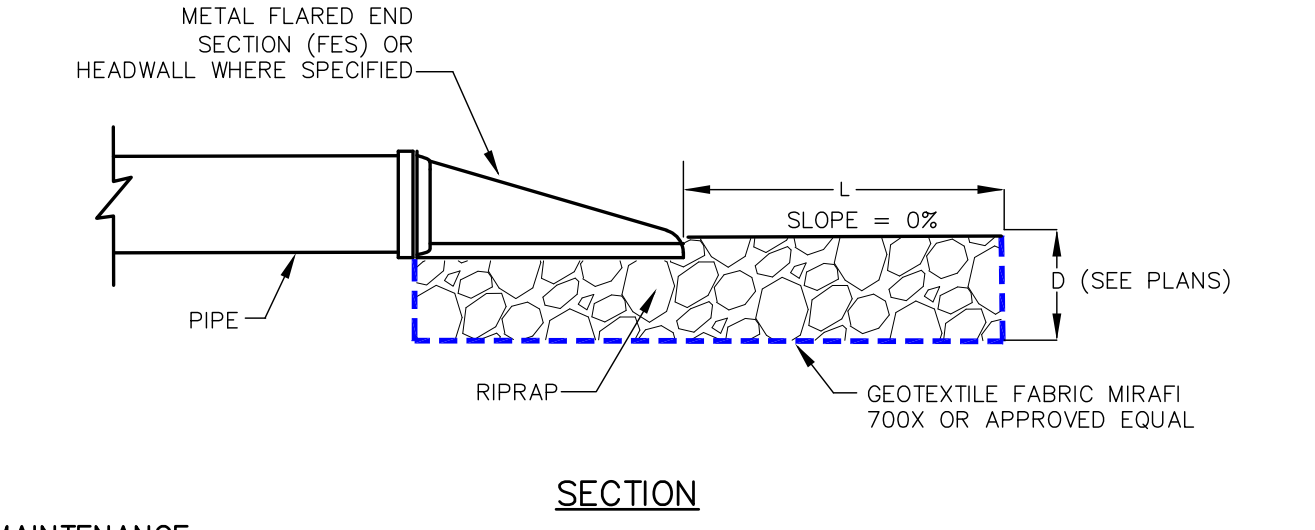
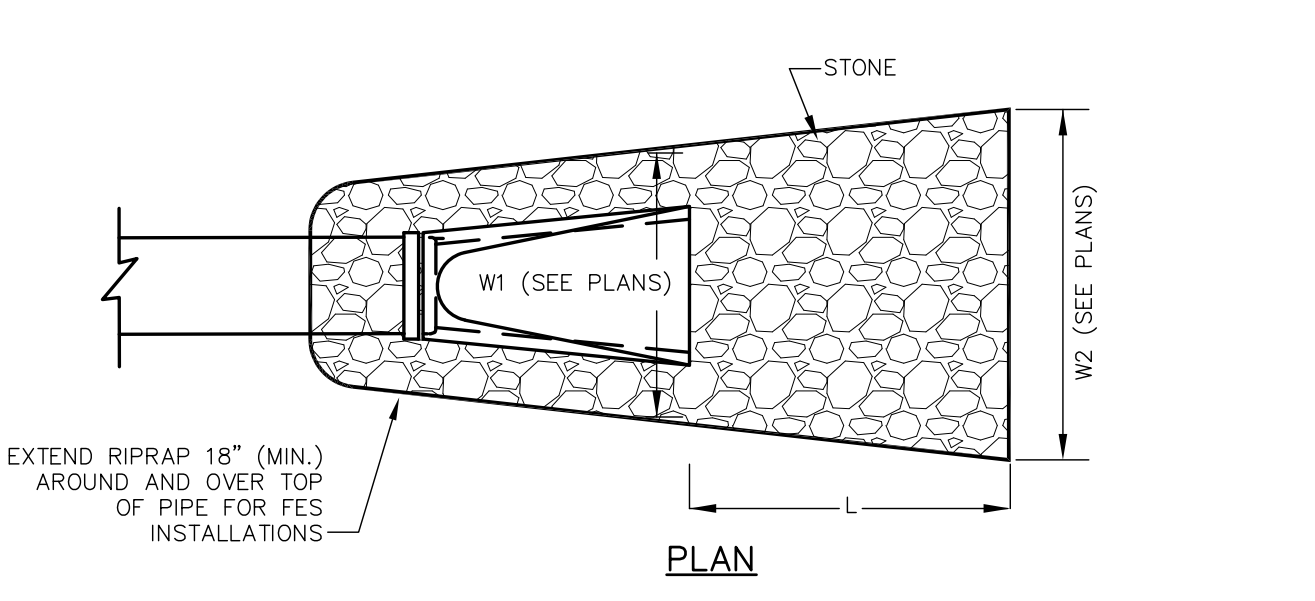
**UNDERDRAIN TRENCH NOT TO SCALE**



- NOTES:**
- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
  - BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
  - ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
  - PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE BLANKETS.
  - FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  - ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (DEPENDING ON BLANKET TYPE) AND STAPLED. TO INSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
  - IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
  - THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



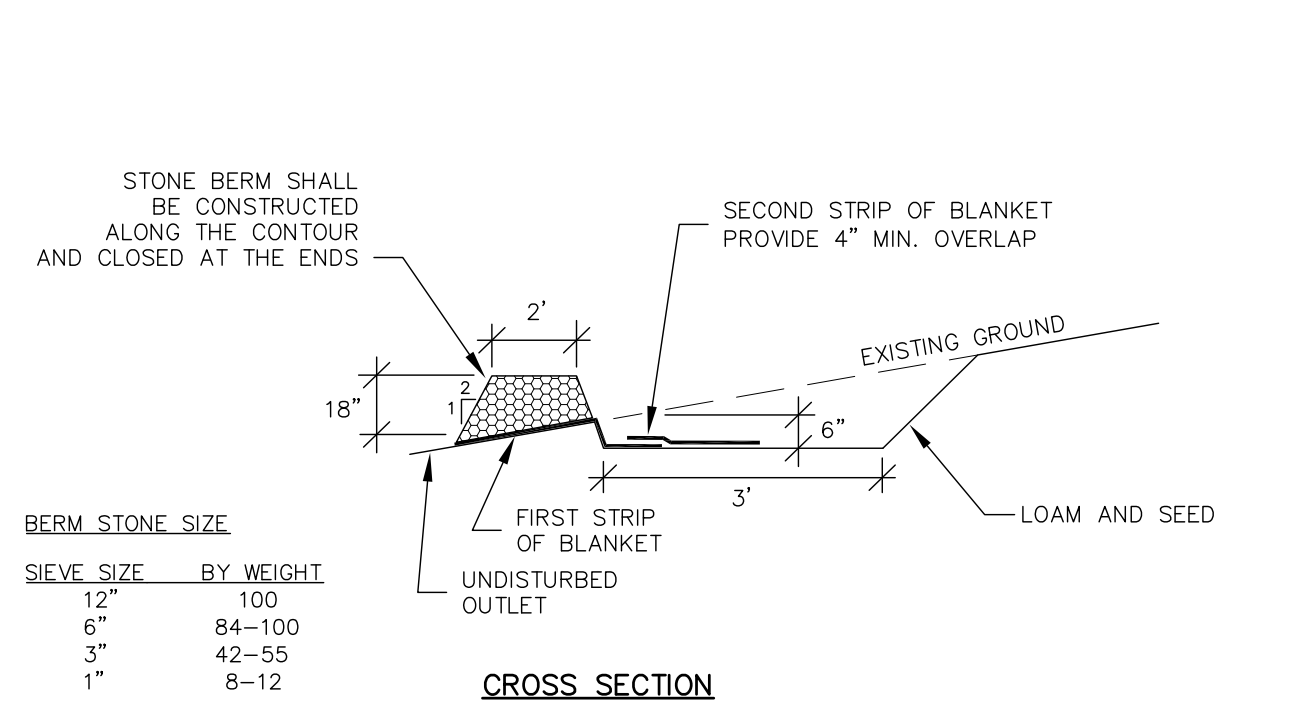
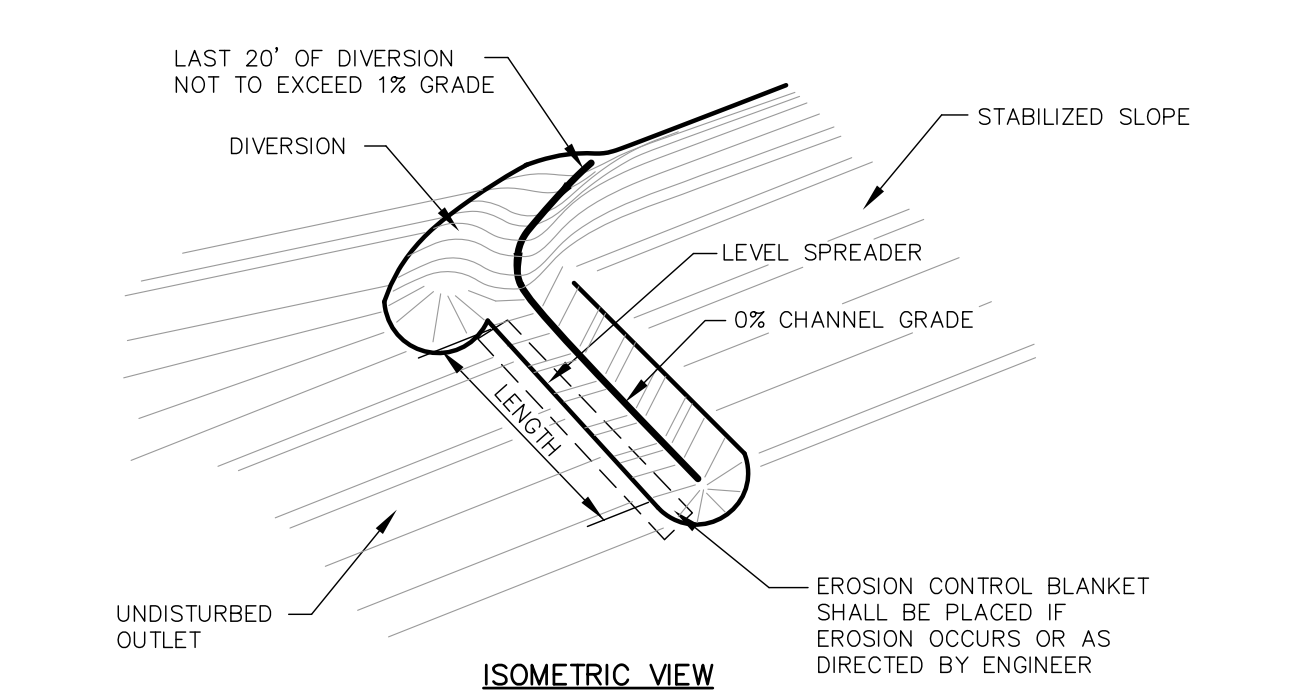
**EROSION CONTROL BLANKET - SWALE NOT TO SCALE**



- MAINTENANCE:**
- THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

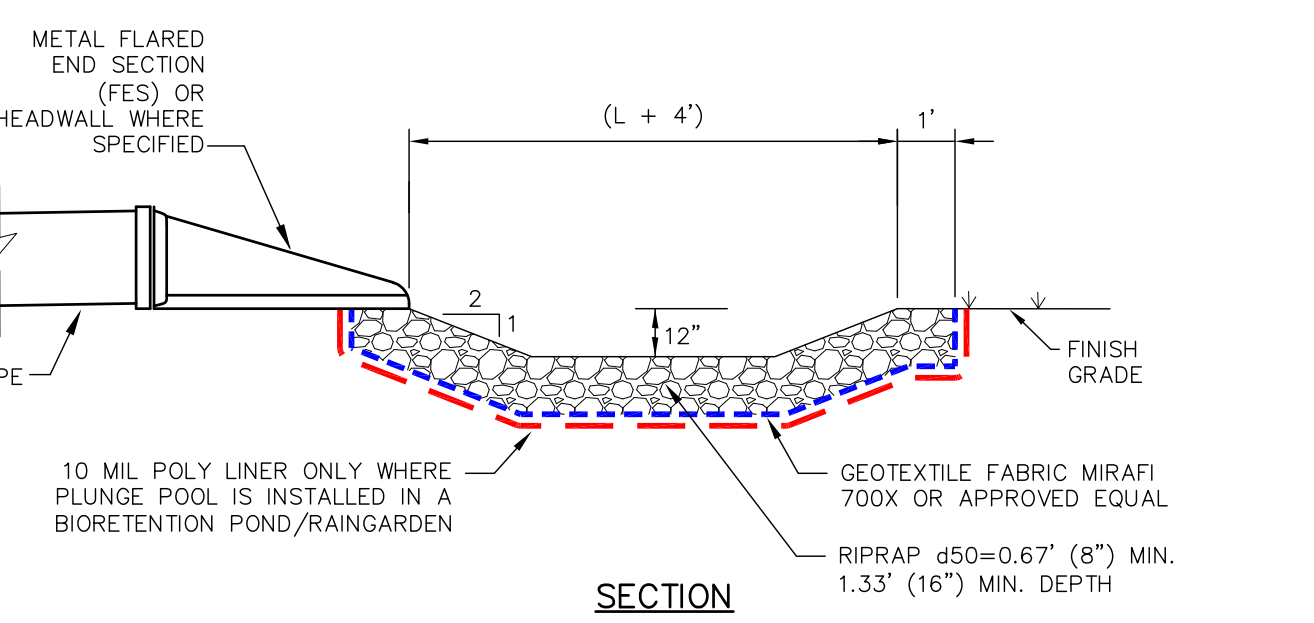
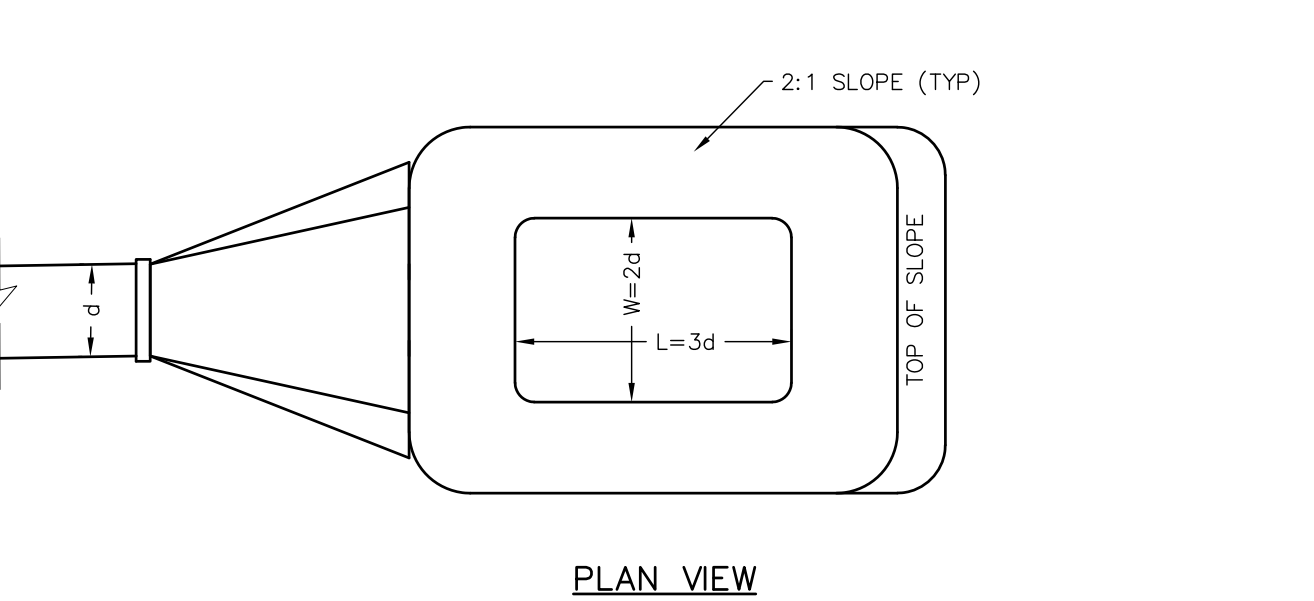
- CONSTRUCTION SPECIFICATIONS:**
- THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
  - THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
  - GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
  - STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

**RIPRAP OUTLET PROTECTION NOT TO SCALE**



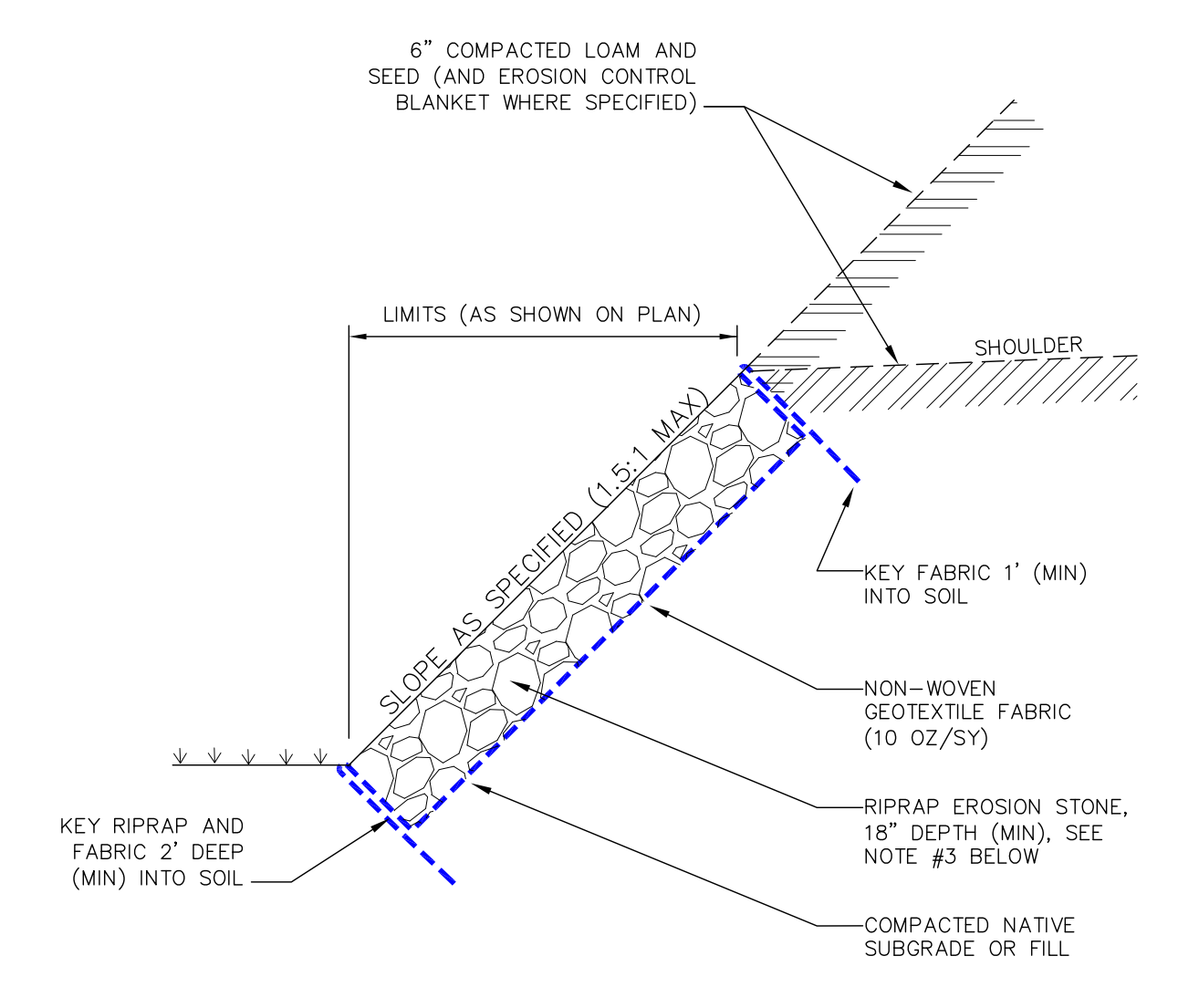
- NOTES:**
- LEVEL SPREADERS SHALL BE CONSTRUCTED PER STORMWATER MANAGEMENT FOR MAINE, "VOLUME III BMP'S TECHNICAL DESIGN MANUAL, CHAPTER 5.2.2, BUFFER WITH STONE BERMED LEVEL LIP SPREADER", LATEST EDITION.
  - FOR EROSION CONTROL BLANKET STAPLE REQUIREMENTS SEE MANUFACTURER'S STANDARDS & SPECIFICATIONS FOR PROTECTIVE MATERIALS.
  - AREAS BELOW LEVEL SPREADERS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

**LEVEL SPREADER NOT TO SCALE**



- NOTES:**
- CONSTRUCT PLUNGE POOL TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
  - THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO ACCOUNT FOR THE DEPTH OF RIPRAP.
  - EROSION STONE USED FOR THE PLUNGE POOL SHALL MEET THE FOLLOWING GRADATION:
- | SIZE | PERCENT PASSING BY WEIGHT |
|------|---------------------------|
| 18"  | 100                       |
| 12"  | 90-100                    |
| 4"   | 0-15                      |
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18".
  - THE EROSION STONE MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

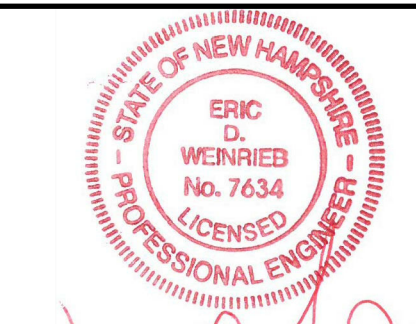
**PLUNGE POOL NOT TO SCALE**



- NOTES:**
- CONSTRUCT RIP RAP LINED SLOPE TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
  - THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
  - EROSION STONE USED FOR THE RIP RAP LINED SLOPE SHALL MEET THE FOLLOWING GRADATION:
- | SIZE | PERCENT PASSING BY WEIGHT |
|------|---------------------------|
| 12"  | 100                       |
| 6"   | 25-50                     |
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.
  - THE EROSION STONE MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

**RIPRAP STABILIZED SLOPE NOT TO SCALE**





*Wole*  
10/20/24

NOT FOR CONSTRUCTION

ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

NO.	DESCRIPTION	BY	DATE
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1	REVISED PER COMMENTS	EBS	10/23/24

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APPROVED BY: EBS  
DRAWING FILE: 5015-SITE.dwg

SCALE:  
24" x 36" - 1" = NOT TO SCALE  
11" x 17" - 1" = NOT TO SCALE

OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

APPLICANT:  
RIVERWOODS COMPANY  
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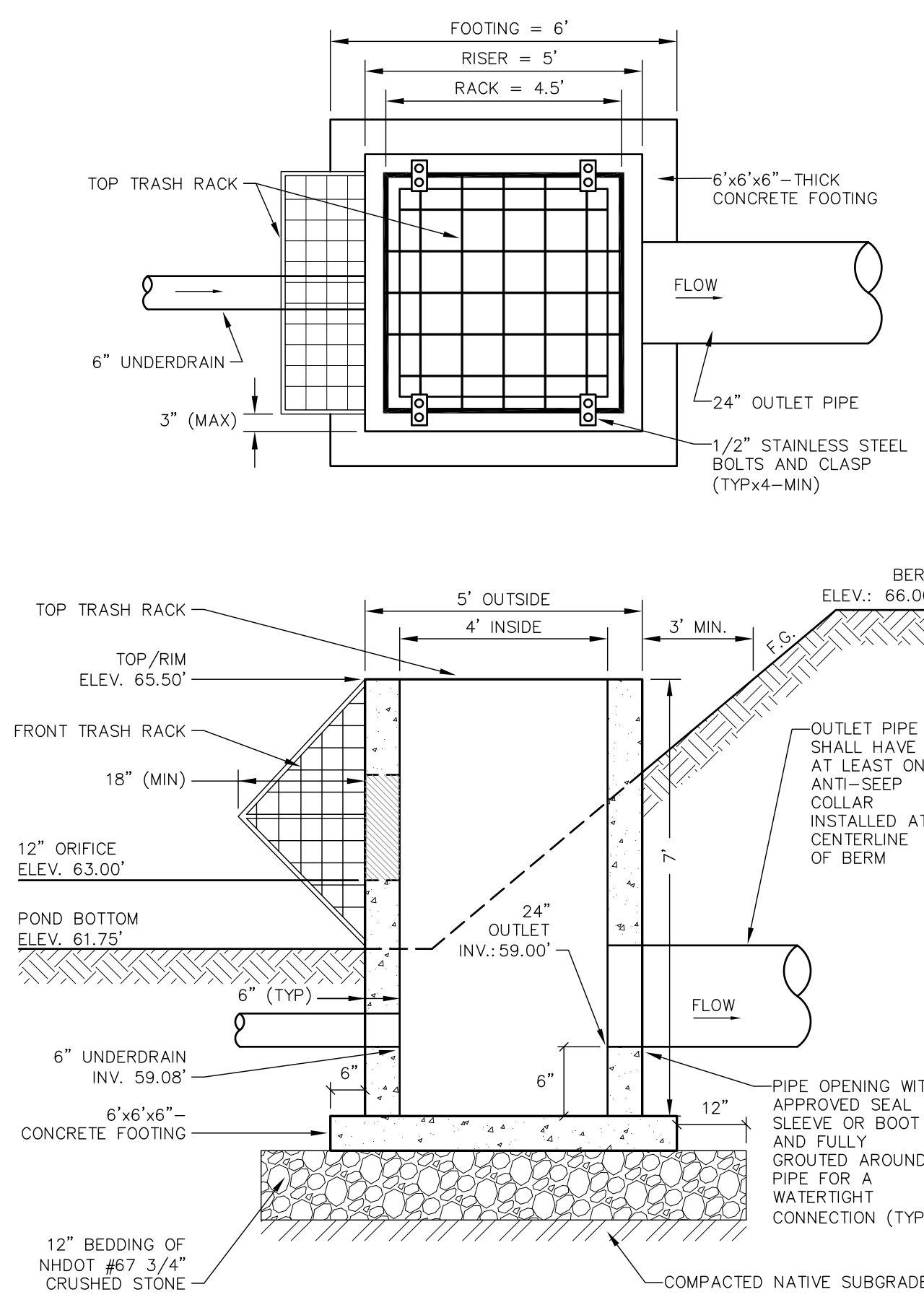
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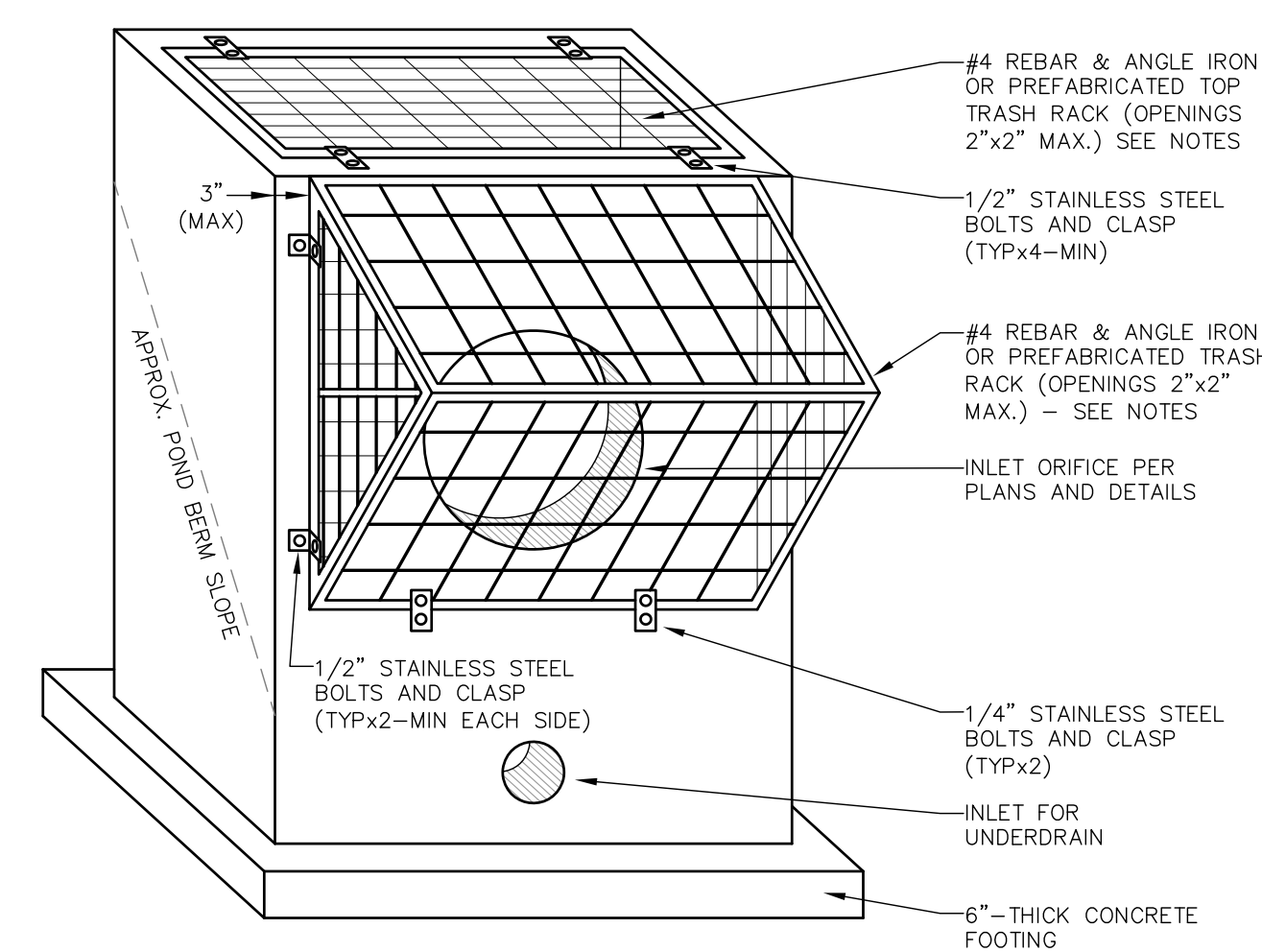
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C-14

P3015

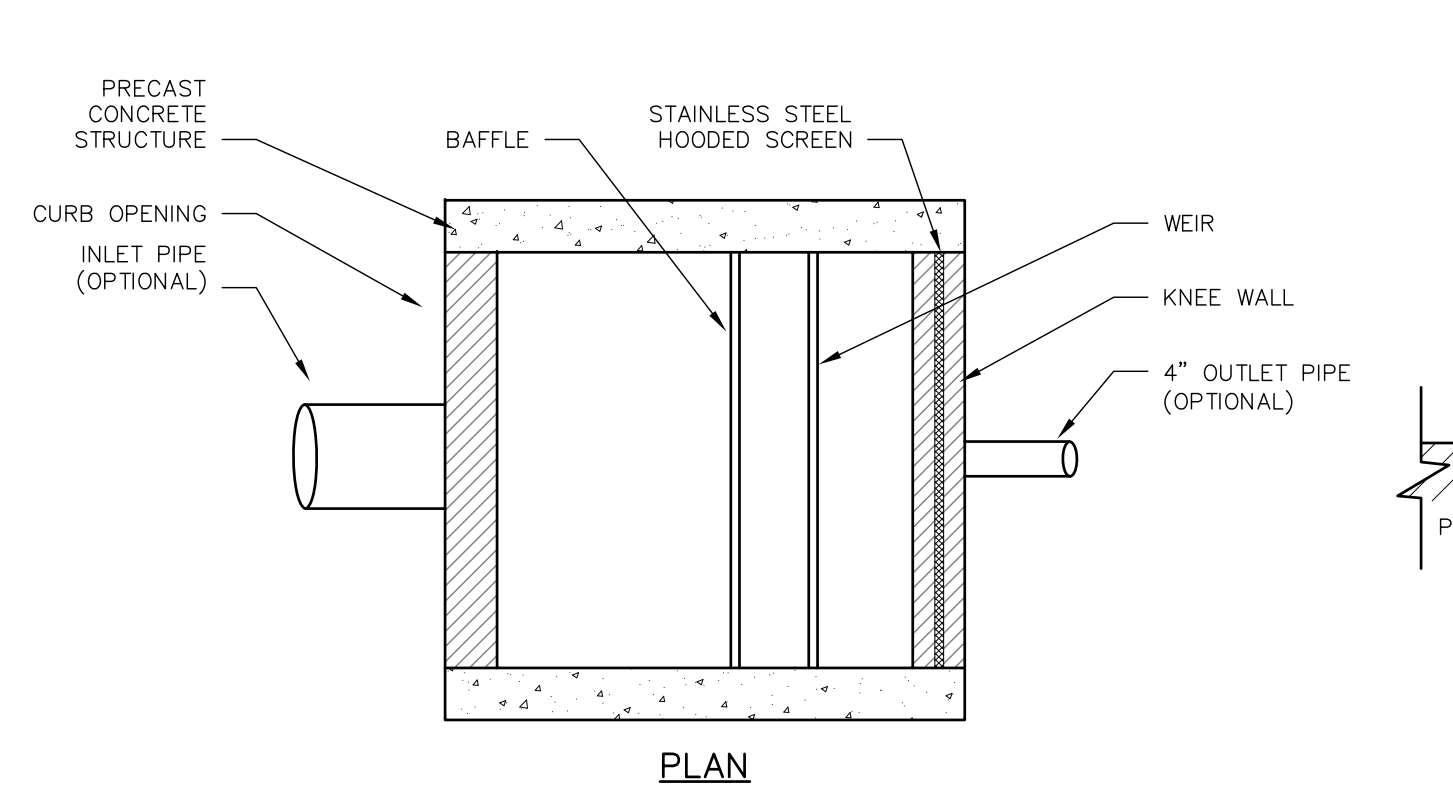
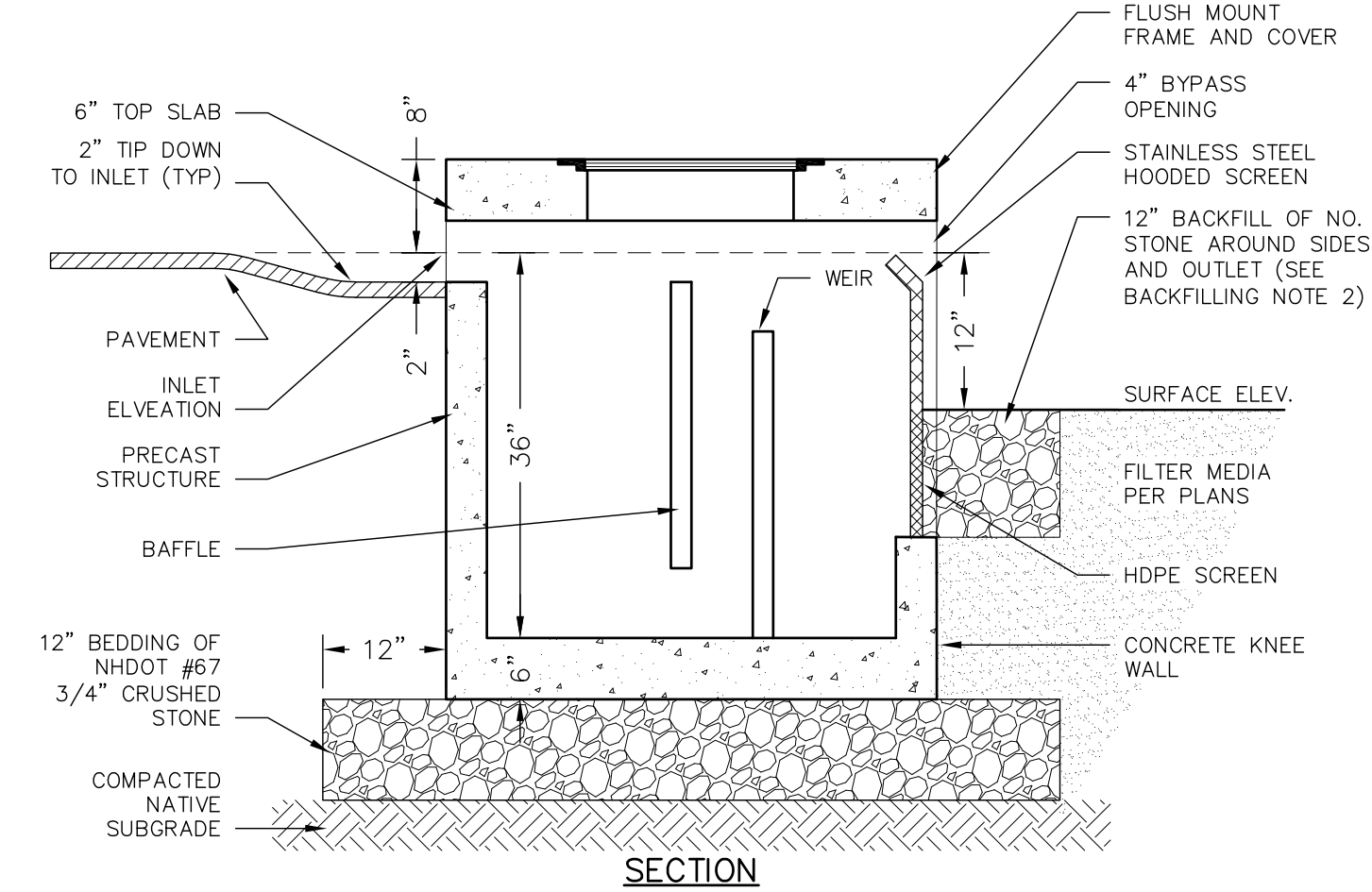


OUTLET STRUCTURE ("OS") #1 NOT TO SCALE

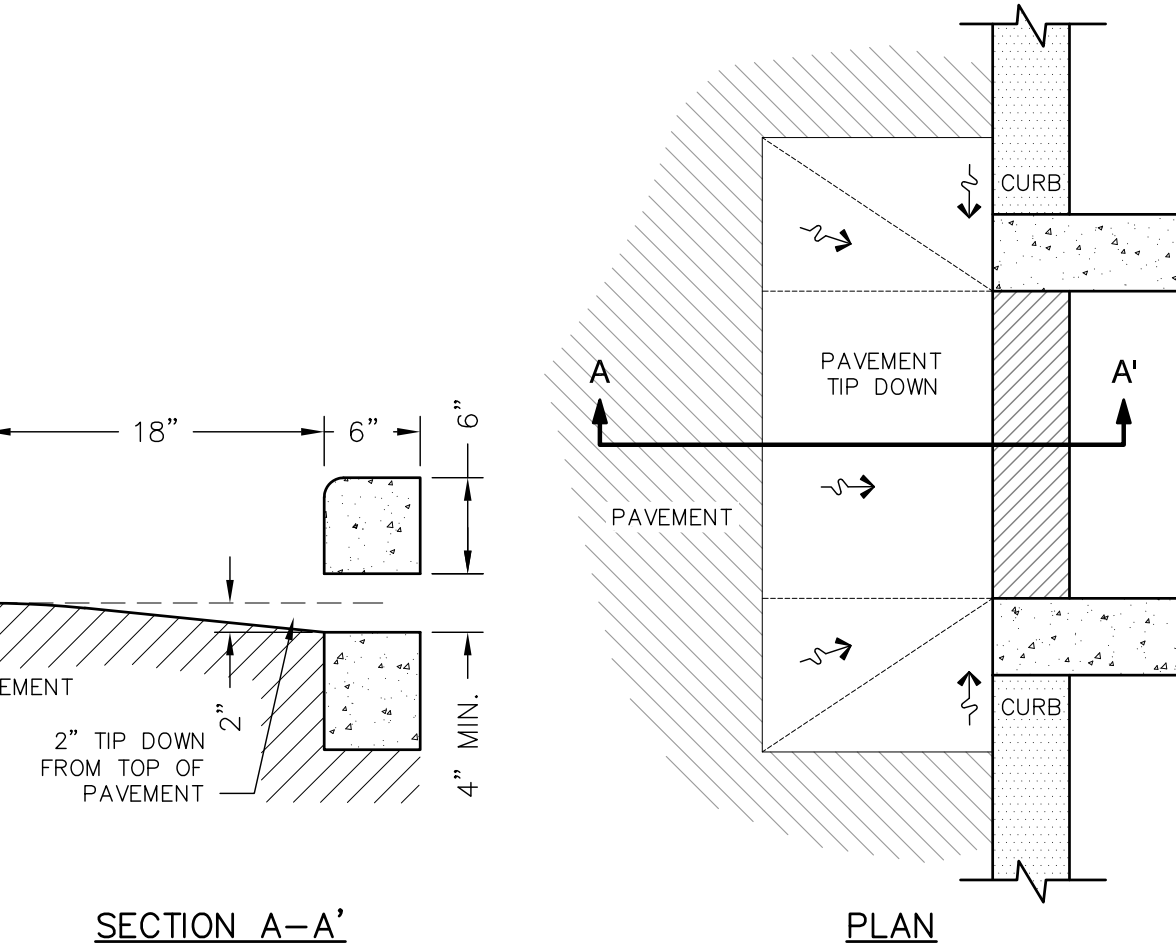


- CONSTRUCTION SPECIFICATIONS**
- OUTLET STRUCTURE SHALL BE CONSTRUCTED OF STEEL REINFORCED CONCRETE FABRICATED ONSITE OR PRECAST TO EQUAL DIMENSIONS AND REINFORCING.
  - CONCRETE FOOTING TO BE CONSTRUCTED INTEGRAL WITH BASE. IF CONSTRUCTED SEPARATELY, FOOTING SHALL HAVE A CONTINUOUS KEYWAY INSTALLED AND REBAR CAST INTO IT THAT SHALL EXTEND ABOVE THE SLAB A MINIMUM OF 6" FOR CONNECTION TO THE BOX AND ANY REINFORCING.
  - ALL JOINTS AND PIPE OPENINGS SHALL BE SEALED WATERTIGHT WITH MORTAR.
  - ALL EXPOSED REBAR TO BE PAINTED WITH RUST-RESISTANT PAINT OR HOT-DIPPED GALVANIZED.
  - PRE-FABRICATED TRASH RACKS INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS ARE ACCEPTABLE UPON WRITTEN ACCEPTANCE BY THE ENGINEER.
  - STRUCTURE IS TO BE BUILT TO WITHSTAND H2O LOADING.
  - NATIVE IN SITU SOILS UNDERLYING THE STRUCTURE'S STONE BASE PAD AND THE PAD ITSELF ARE TO BE COMPACTED PRIOR TO INSTALLING STRUCTURE.
  - ALL CONCRETE SHALL BE 4,000 PSI MINIMUM.
  - STAINLESS STEEL BOLTS FOR TRASH RACK TO BE INSTALLED WITH HILTI AND EPOXY OR CAST IN.
  - EXTERIOR TRASH RACK DIMENSIONS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TRASH RACKS THAT ALLOW FULL SCREENING PROTECTION TO EVERY INLET ORIFICE AND THE TOP OF THE STRUCTURE. THIS MAY REQUIRE CUSTOM FABRICATION AND/OR ALTERNATE METHODS TO CONNECT THE RACKS TO THE OUTLET STRUCTURE.

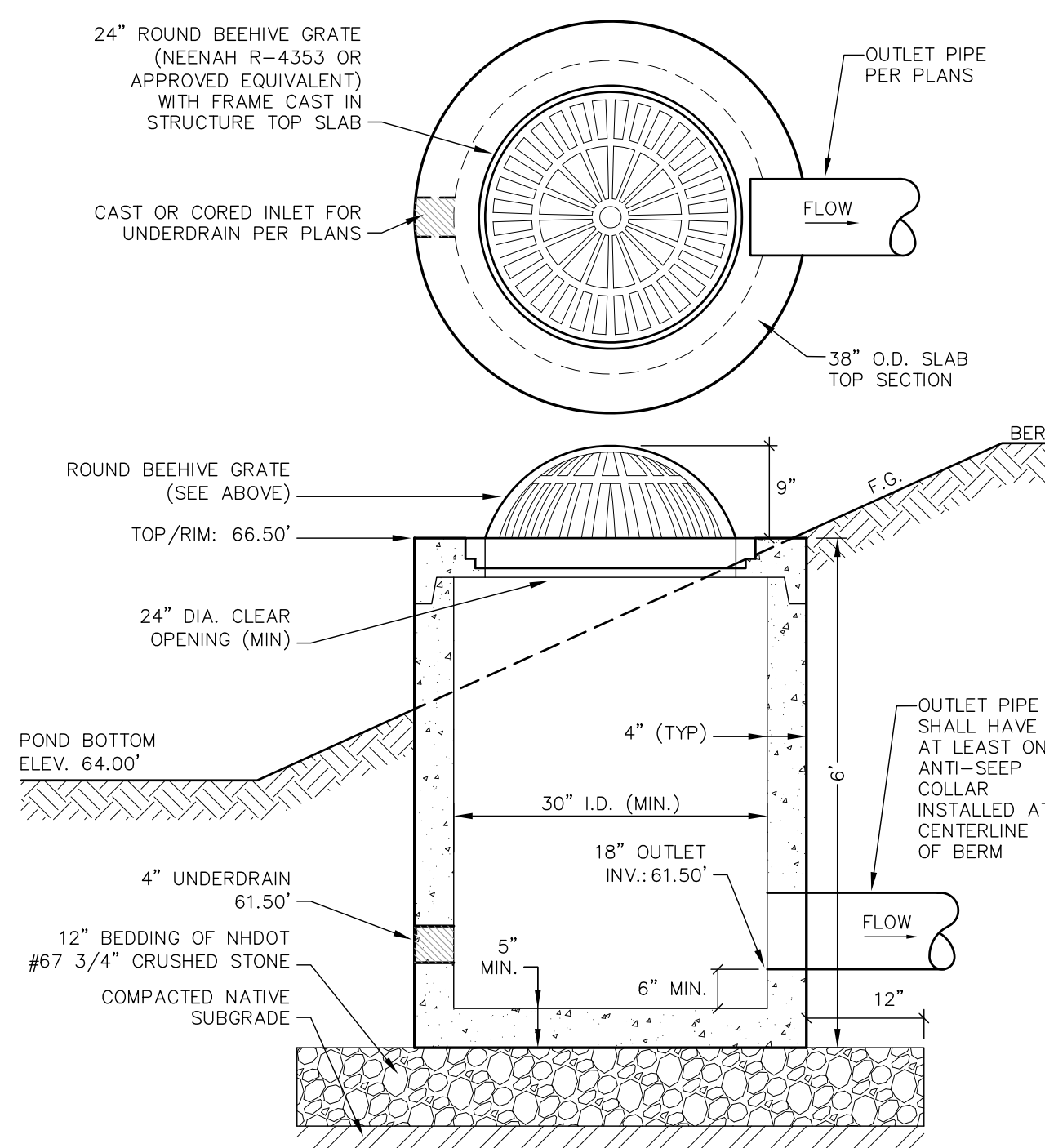
PRETEX CURB INLET PRETREATMENT DEVICE ("PRETX") NOT TO SCALE



- NOTES**
- INSTALLATION -**
- PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
  - VERIFY ELEVATIONS FOR ADJACENT CURBS; EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DRIP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
  - VERIFY ELEVATIONS FOR ADJACENT CURBS.
  - VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
  - VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
  - VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
  - INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
  - VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VEHICLE.
  - INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS.
  - ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
- BACKFILLING -**
- BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
  - BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN. DO NOT MATCH NO. 57 STONE TO GUSSET OR RAINGARDEN UNDERGRAIN STONE.
  - BACKFILL WITH BIOTRENTATION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
  - DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
  - DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
  - STABILIZE ALL REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.

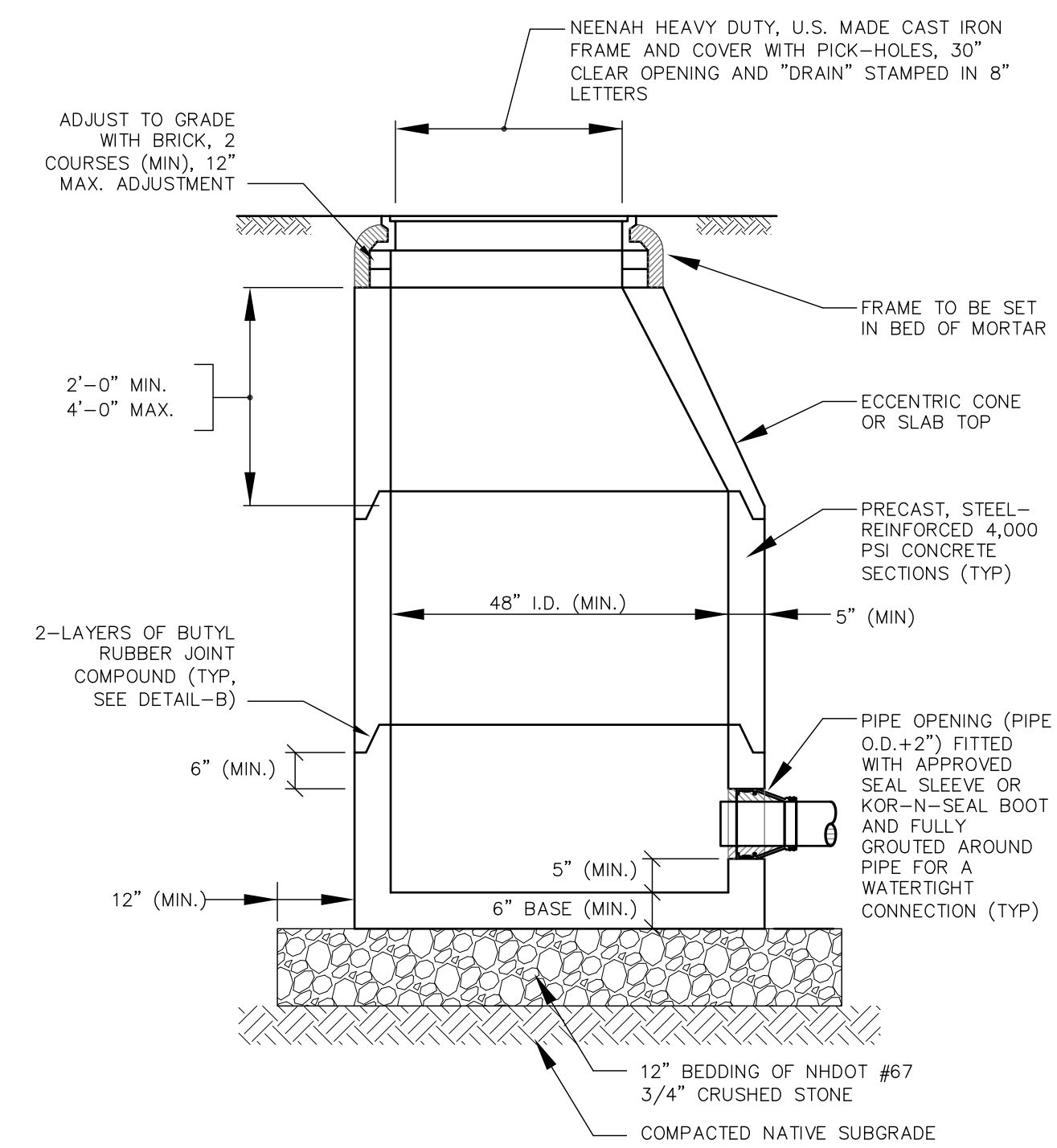


PRETEX CURB INLET PRETREATMENT DEVICE ("PRETX") NOT TO SCALE



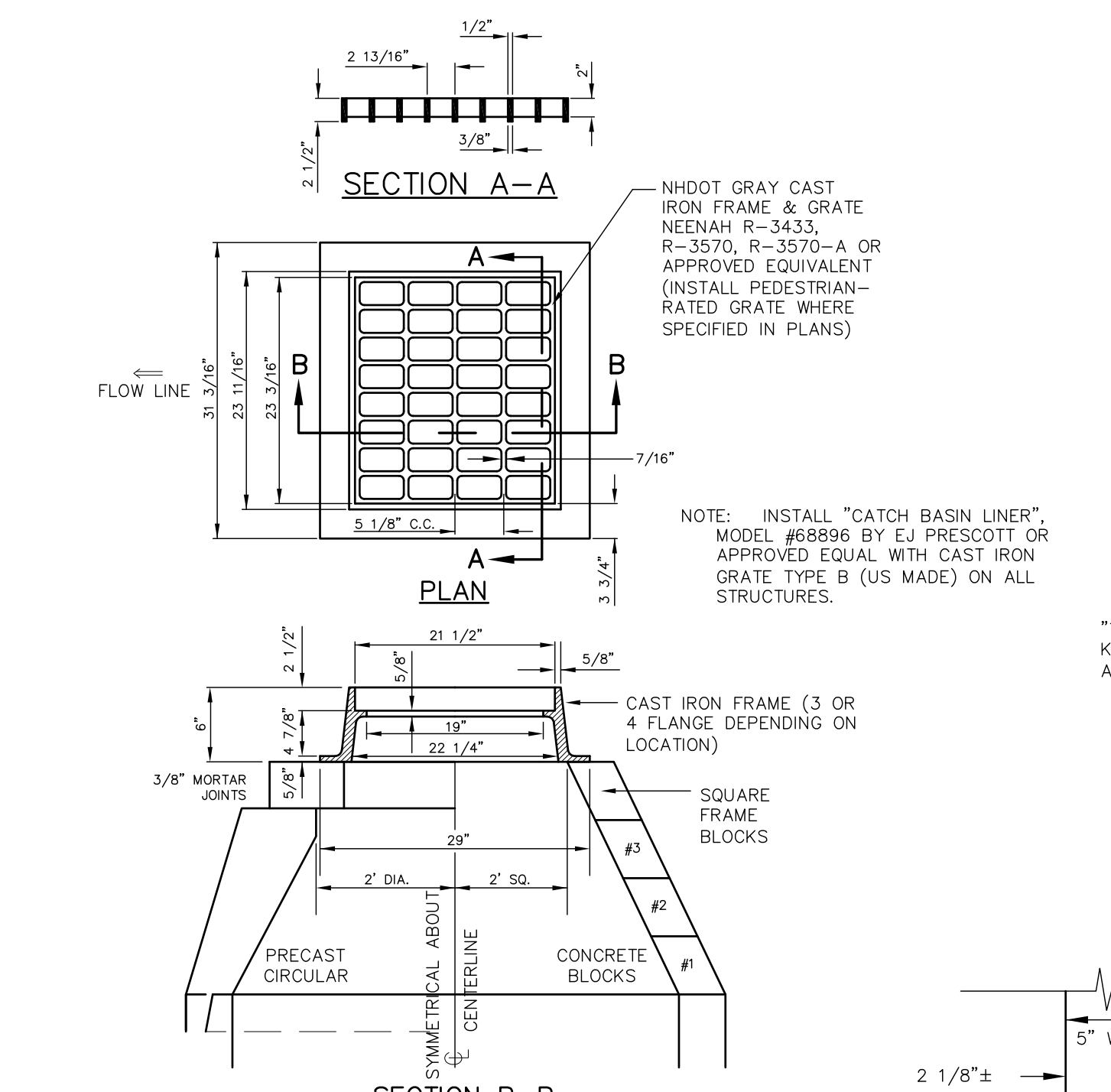
- CONSTRUCTION SPECIFICATIONS**
- OUTLET STRUCTURE SHALL BE CONSTRUCTED ONSITE OR PRECAST TO EQUAL DIMENSIONS. A SUITABLE PLASTIC STRUCTURE MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER.
  - ALL JOINTS AND PIPE OPENINGS SHALL BE SEALED WATERTIGHT WITH MORTAR. PIPE OPENINGS TO HAVE SEAL SLEEVE OR BOOT.
  - CONCRETE STRUCTURE IS TO BE BUILT TO WITHSTAND H2O LOADING.
  - NATIVE SOIL UNDERLYING THE STRUCTURE'S GRAVEL BASE PAD AND THE PAD ITSELF ARE TO BE COMPACTED TO 95% MODIFIED PROCTOR.
  - ALL CONCRETE SHALL BE 4,000 PSI MINIMUM.

OUTLET STRUCTURE ("OS") #20 NOT TO SCALE



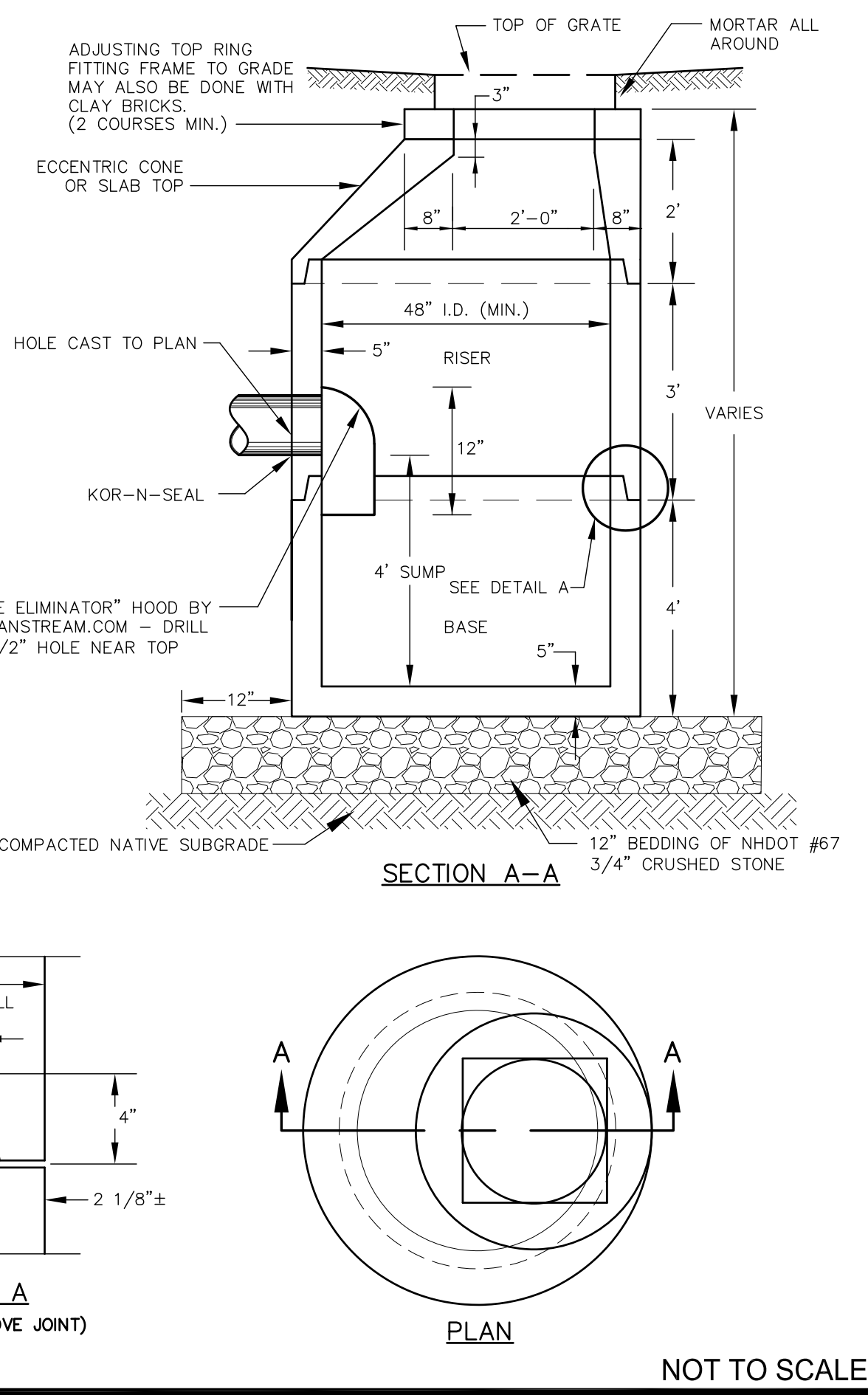
- NOTES**
- ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
  - CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
  - THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
  - RISERS OF 1", 2", 3" & 4" CAN BE USED TO REACH DESIRED DEPTH.
  - ALL MANHOLE STRUCTURES SHALL BE DESIGNED FOR H2O LOADING.
  - USE H-20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4' OF GRADE.
  - MANHOLE STEPS ARE REQUIRED PER THE CITY OF DOVER.

DRAIN MANHOLE ("DMH") NOT TO SCALE



- NOTES**
- ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
  - CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
  - THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
  - RISERS OF 1", 2", 3" & 4" CAN BE USED TO REACH DESIRED DEPTH.
  - THE STRUCTURES SHALL BE DESIGNED FOR H2O LOADING.
  - USE H2O LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4' OF FINISH GRADE.
  - FRAME AND GRATE DIMENSIONS ARE TYPICAL BUT MAY VARY BASED ON PRODUCT SELECTED OR EQUIVALENT APPROVED BY THE ENGINEER.

DEEP SUMP CATCH BASIN ("CB") NOT TO SCALE







*Wole*  
10/20/24

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AT EXETER**  
  
7 RIVERWOODS DRIVE  
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APPLICANT:  
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TAX MAP 97 LOT 23  
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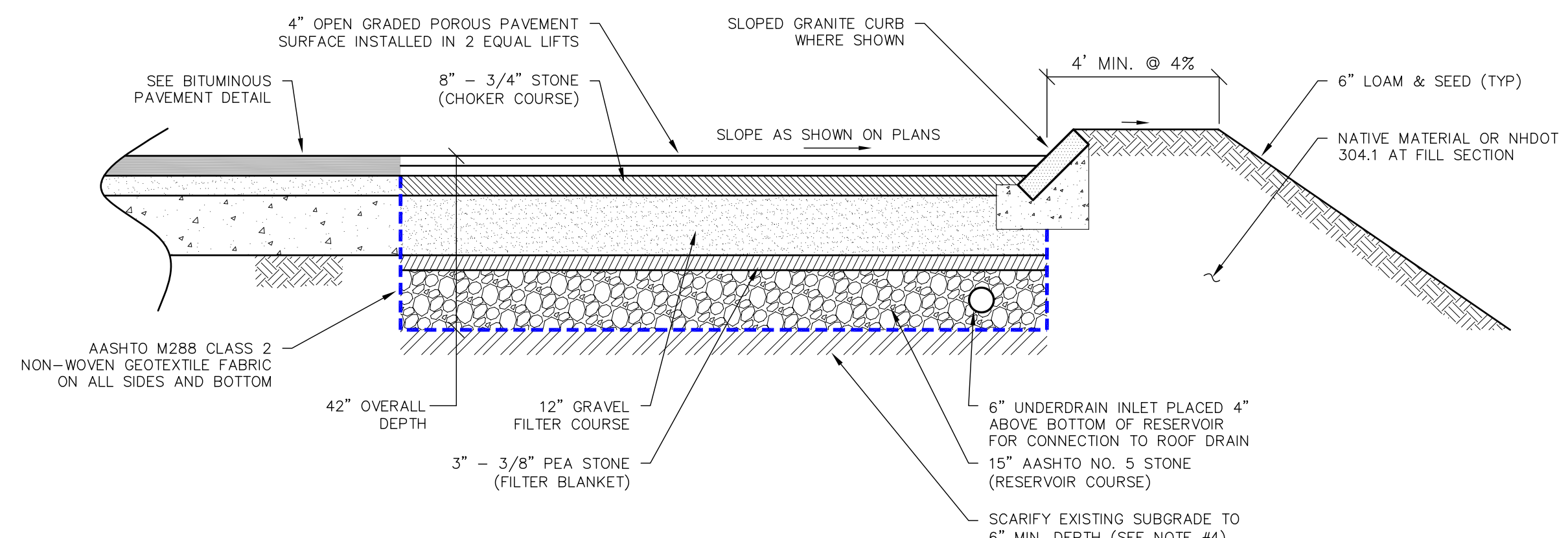
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DETAIL SHEET

SHEET NUMBER:

**C-15**

P3015

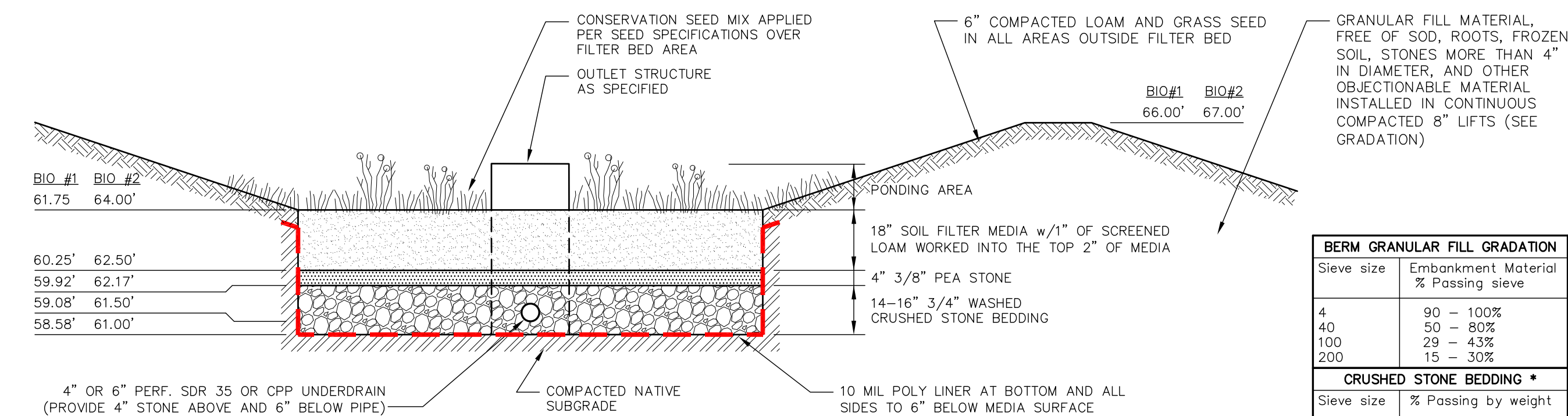


MATERIAL GRADATIONS							
3/4\"/>							
Sieve size	% Passing by weight	Sieve size	% Passing by weight	Sieve size	% Passing by weight	Sieve size	% Passing by weight
1"	100%	6"	100%	1/2"	100%	1-1/2"	100%
3/4"	90 - 100%	#4	70 - 85%	3/8"	85 - 100%	1"	90 - 100%
3/8"	20 - 55%	#8	0 - 6%	#4	10 - 30%	3/4"	20 - 55%
#4	0 - 10%	#16	0 - 10%	#8	0 - 10%	1/2"	0 - 10%
#8	0 - 5%	#30	0 - 5%	#30	0 - 5%	3/8"	0 - 5%

\* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 NHDOT STANDARD SPECIFICATIONS

- NOTES:**
- DESIGN OF POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.
  - THE CONSTRUCTION OF THE POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH THE UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.
  - CONTRACTOR SHALL PROVIDE SUBMITTALS FOR POROUS PAVEMENT AS NOTED IN THE SPECIFICATIONS A MINIMUM OF 14-DAYS PRIOR TO COMMENCING CONSTRUCTION.
  - THE ENGINEER SHALL INSPECT SITE PREPARATION AND INSTALLATION OF POROUS PAVEMENT.
  - CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 7 DAYS IN ADVANCE OF WORK SO THAT THE ENGINEER CAN OBSERVE INSTALLATION OF POROUS PAVEMENT CROSS SECTION.
  - CONTRACTOR TO REMOVE ANY EXISTING BURIED LAYERS OF LOAM OR UNSUITABLE MATERIAL DURING THE EXCAVATION OF THE PARKING AREA.
  - PROOF ROLL THE EXISTING SUBGRADE PRIOR TO SCARIFYING ONLY AT AREAS REQUESTED BY THE ENGINEER.
  - POROUS PAVEMENT BASE MATERIAL AND ASPHALT SHALL NOT BE INSTALLED UNTIL ALL OTHER SITE WORK AND BUILDING CONSTRUCTION IS SUBSTANTIALLY COMPLETE AND THE SURROUNDING AREA HAS BEEN STABILIZED.
  - THE TOP LAYER (WEARING COURSE) SHALL BE PRE-BLENDED PG 76-28 MODIFIED WITH SBS. THE BASE COURSE SHOULD BE, AT A MINIMUM, PG 64-28 WITH 5 POUNDS OF FIBER PER TON ASPHALT MIX. IF SUFFICIENT STAGING OR USE OF THE BASE COURSE SECTION WILL BE REQUIRED PRIOR TO THE APPLICATION OF THE WEARING COURSE, THE ENGINEER MAY DECIDE TO USE PRE-BLENDED PG 64V-28 MODIFIED WITH SBS ON BOTH COURSES.
  - AFTER INSTALLATION, THE MIXING OR RINSING OF CONCRETE, GYPSUM, PAINT OR ANY OTHER SIMILAR ACTIVITY SHALL BE STRICTLY PROHIBITED ON ANY SECTION OF POROUS PAVEMENT OR IN ANY UPHILL CONTRIBUTING AREA.

**POROUS PAVEMENT CROSS SECTION NOT TO SCALE**

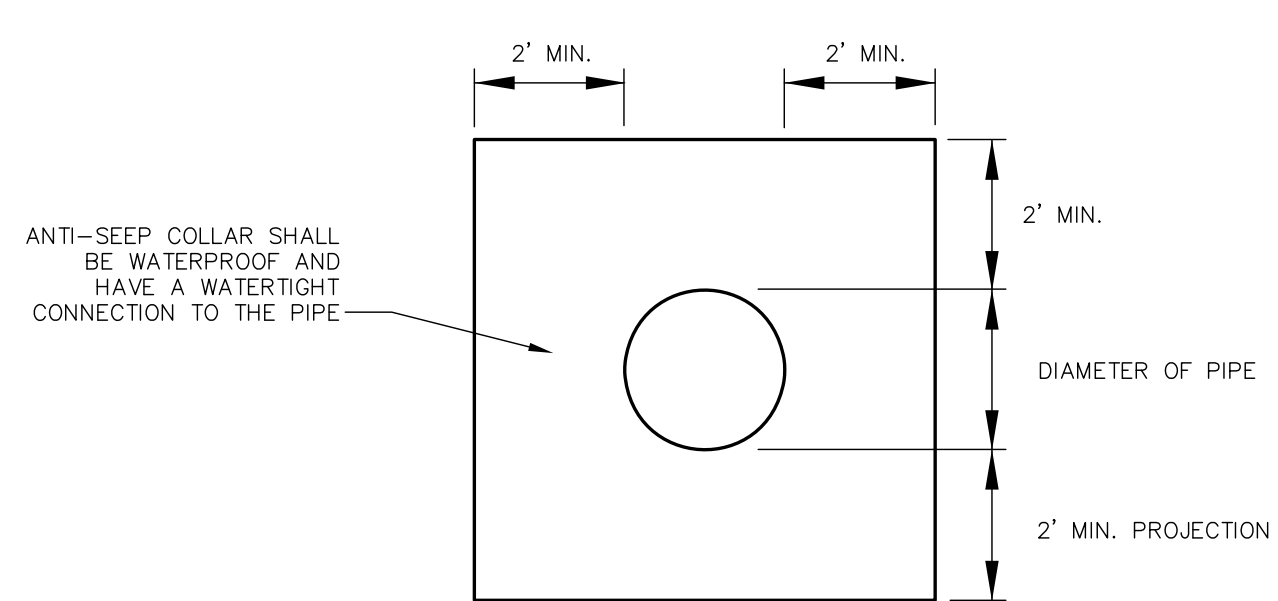


- NOTES:**
- WHEN CONTRACTOR EXCAVATES BIORETENTION POND AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
  - SOIL FILTER MEDIA SHALL EITHER OPTION A OR OPTION B AT CONTRACTOR'S DISCRETION.
  - DO NOT PLACE BIORETENTION POND INTO SERVICE UNTIL ITS SIDE SLOPES AND CONTRIBUTING AREAS HAVE BEEN STABILIZED.
  - DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES TO THE BIORETENTION POND DURING ANY STAGE OF CONSTRUCTION.
  - DO NOT TRAFFIC EXPOSED SURFACES OF BIORETENTION POND WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION ACTIVITIES WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE BASIN.
  - POND BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STORMWATER POND BERM DETAIL.

- MAINTENANCE REQUIREMENTS**
- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
  - PRE-TREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
  - AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
  - VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING WEED WHACKING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES. BERM AREAS ARE TO BE MOWED TWICE ANNUALLY.

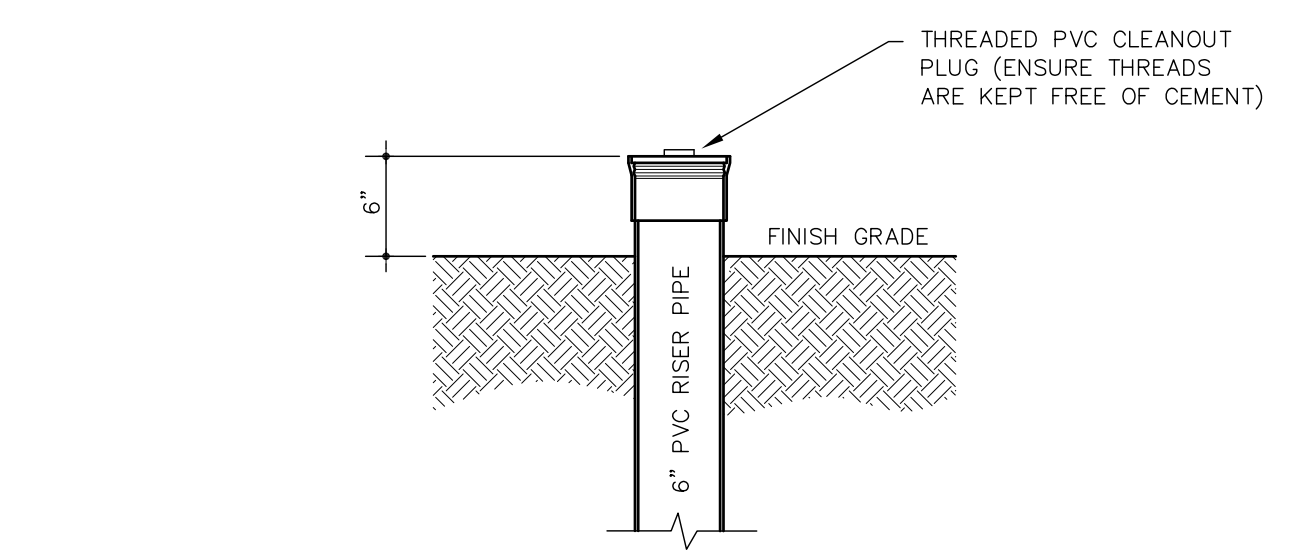
- DESIGN REFERENCES**
- UNH STORMWATER CENTER
  - EPA (1999A)
  - NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

**BIORETENTION POND (BIO #S 1 AND 2) NOT TO SCALE**



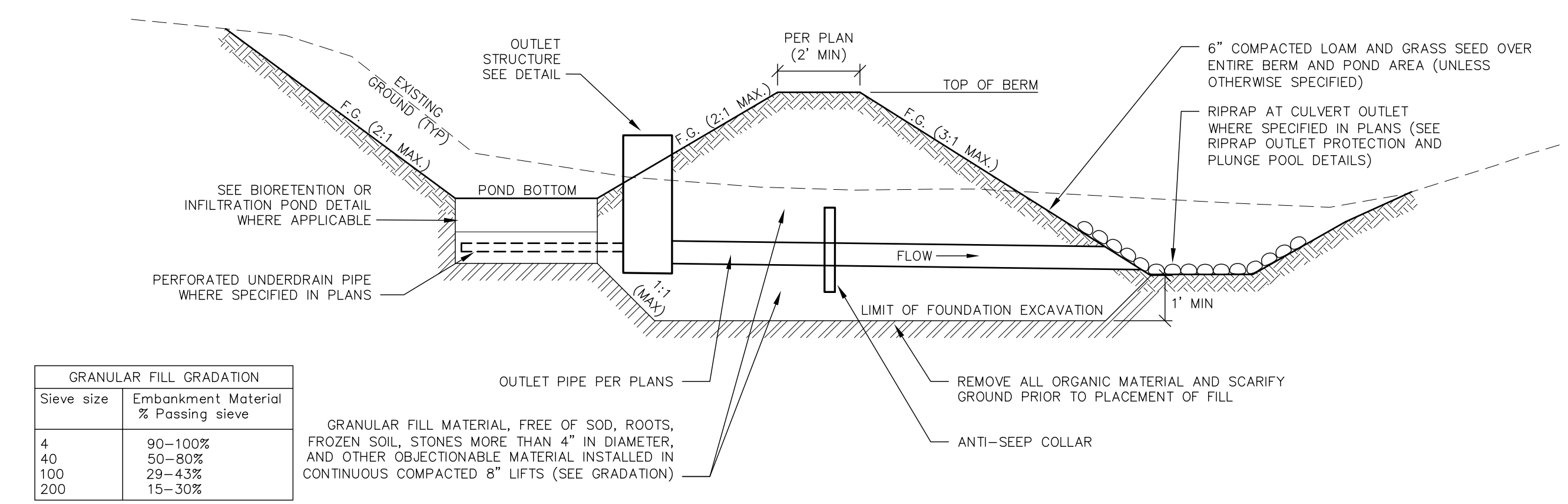
- NOTES:**
- ANTI-SEEP COLLARS SHALL BE CLAY, CONCRETE, PLASTIC (AGRI-DRAIN), OR EQUAL APPROVED BY THE ENGINEER.

**ANTI-SEEP COLLAR NOT TO SCALE**



- NOTES:**
- THIS DETAIL IS INTENDED FOR USE WITH BIORETENTION POND UNDERDRAINS ONLY. SEE OTHER DETAILS FOR CLEANOUTS IN OTHER AREAS.
  - CLEANOUT LOCATIONS ARE MARKED "C.O." ON STORMWATER MANAGEMENT PLANS.
  - CLEANOUTS MAY NOT BE SET TO FINISH GRADE WITHOUT APPROVAL FROM THE ENGINEER.

**BIORETENTION U.D. CLEANOUT ("CO") NOT TO SCALE**



- Construction Criteria**
- Foundation Preparation** -- The foundation shall be cleared of trees, logs, stumps, roots, brush, boulders, sod, and rubbish. If suitable for reuse, the topsoil and sod shall be stockpiled and spread on the completed embankment and spillways. Foundation surfaces shall be sloped no steeper than 1:1. The foundation area shall be thoroughly scarified before placement of fill material. The surface shall have moisture added and/or it shall be compacted if necessary so that the first layer of fill can be bonded to the foundation. The cutoff trench and any other required excavations shall be dug to the lines and grades shown on the plans or as staked in the field. If they are suitable, excavated materials shall be used in the permanent fill. Existing stream channels in the foundation area shall be sloped no steeper than 1:1 and deepened and widened as necessary to remove all stones, gravel, sand, stumps, roots, and other objectionable material and to accommodate compaction equipment. Foundation areas shall be kept free of standing water when fill is being placed on them.
  - Granular Fill Placement** -- The material placed in the fill shall be free of sod, roots, frozen soil, stones more than 4 inches in diameter and other objectionable material. Selected backfill material shall be placed around structures, pipe conduits, and drainage diaphragm at about the same rate on all sides to prevent damage from unequal loading. The placing and spreading of fill material shall be started at the lowest point of the foundation and the fill brought up in horizontal layers of such thickness that the required compaction can be obtained. The fill shall be constructed in 8" continuous horizontal layers except where openings or sectionalized fills are required. In those cases, the slope of the bonding surfaces between the embankment in place and the embankment to be placed shall not be steeper than 3 horizontal to 1 vertical. The bonding surface shall be treated the same as that specified for the foundation so as to insure a good bond with the new fill. The distribution and gradation of materials shall be such that no lenses, pockets, streaks, or layers of material differ substantially in texture or gradation from the surrounding material. If it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the center and upstream parts of the fill. If zoned fills of substantially differing materials are specified, the zones shall be placed according to the lines and grades shown on the drawings or as staked in the field.
  - Moisture Control** -- The moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall have water added and mixed until the requirement is met.
  - Compaction** -- Construction equipment shall be operated over the areas of each layer of fill to insure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction. Fill material shall be compacted to not less than 95% of AASHTO T99 Method C compaction method. Fill adjacent to structures, pipe conduits, and drainage diaphragm shall be compacted to a density equivalent to that of the surrounding fill by means of hand tamping or manually directed power tamper or plate vibrators. Fill adjacent to concrete structures shall not be compacted until the concrete is strong enough to support the load.
  - Protection** -- A protective cover of vegetation shall be established on all exposed surfaces of the embankment, spillway, and borrow area in accordance with the plans. If soil or climatic conditions preclude the use of vegetation and protection is needed, non-vegetative means, such as mulches or gravel, may be used. In some places, temporary vegetation may be used until conditions permit establishment of permanent vegetation.

**Maintenance**

Maintenance is necessary if detention/retention basins are to continue to function as originally designed. A local government, a designated group such as a homeowners' association, or an individual must be assigned responsibility for maintaining the structures and the basin area. A maintenance plan should be developed that outlines the maintenance operations and a schedule for carrying out the procedures.

The following should be considered in formulating a maintenance plan:

- Embankment -- The embankment should be inspected annually to determine if rodent burrows, wet areas, or erosion of the fill is taking place.
- Vegetation -- The vegetated areas of the structure should be protected from damage by fire, grazing, traffic, and dense weed growth. Lime and fertilizer should be applied as necessary as determined by soil tests. Trees and shrubs should be kept off the embankment and emergency spillway areas.
- Inlets -- Pipe inlets and spillway structures should be inspected annually and after every major storm. Accumulated debris and sediment should be removed.
- Outlets -- Pipe outlets should be inspected annually and after every major storm. The condition of the pipes should be noted and repairs made as necessary. If erosion is taking place, then measures should be taken to stabilize and protect the affected area.
- Sediment -- Sediment should be continually checked in the basin. When sediment accumulations reach the predetermined design elevation, then the sediment should be removed and properly disposed of.
- Safety Inspections -- All permanent impoundments should be inspected by a qualified professional engineer on a periodic basis. If there is potential for significant damage or loss of life downstream, then the inspection should be carried out annually.

**STORMWATER POND BERM DETAIL NOT TO SCALE**





*Wole*  
10/20/24

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM**

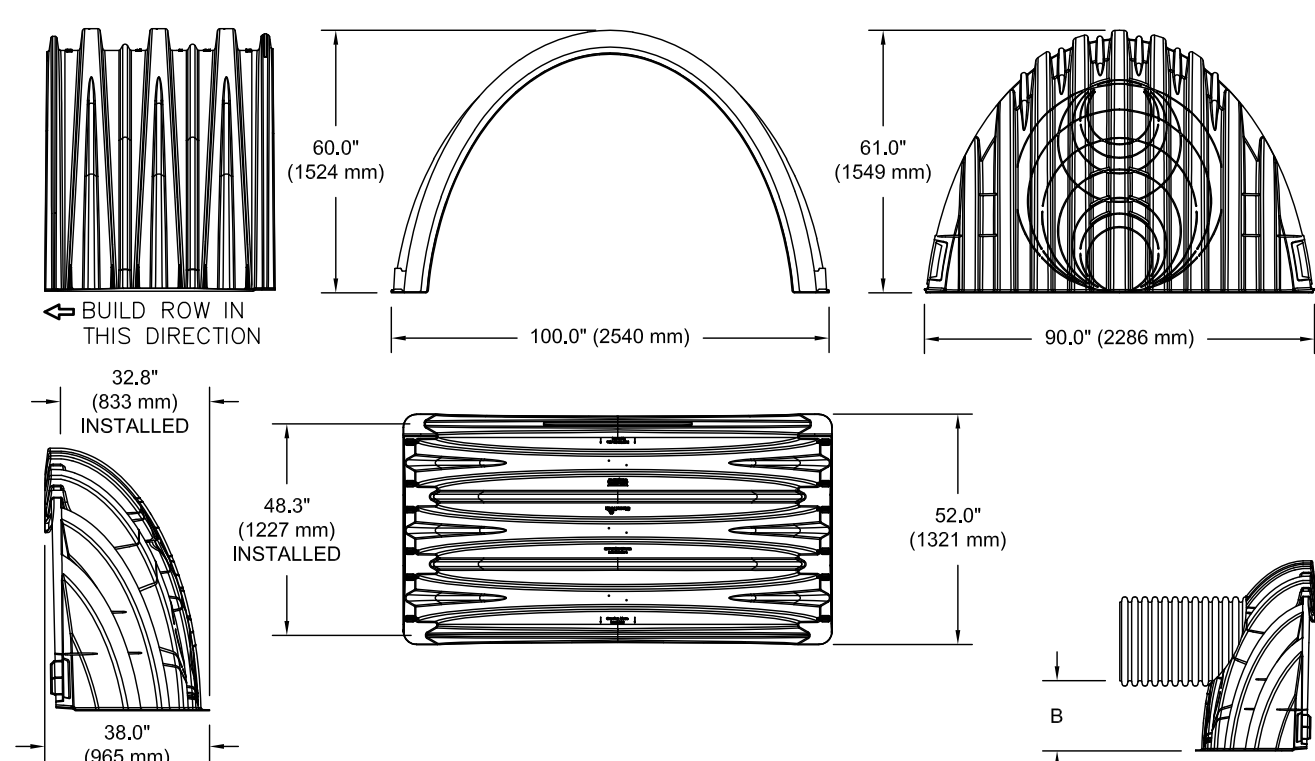
- STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

**NOTES FOR CONSTRUCTION EQUIPMENT**

- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER Tired LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



**NOMINAL CHAMBER SPECIFICATIONS:**

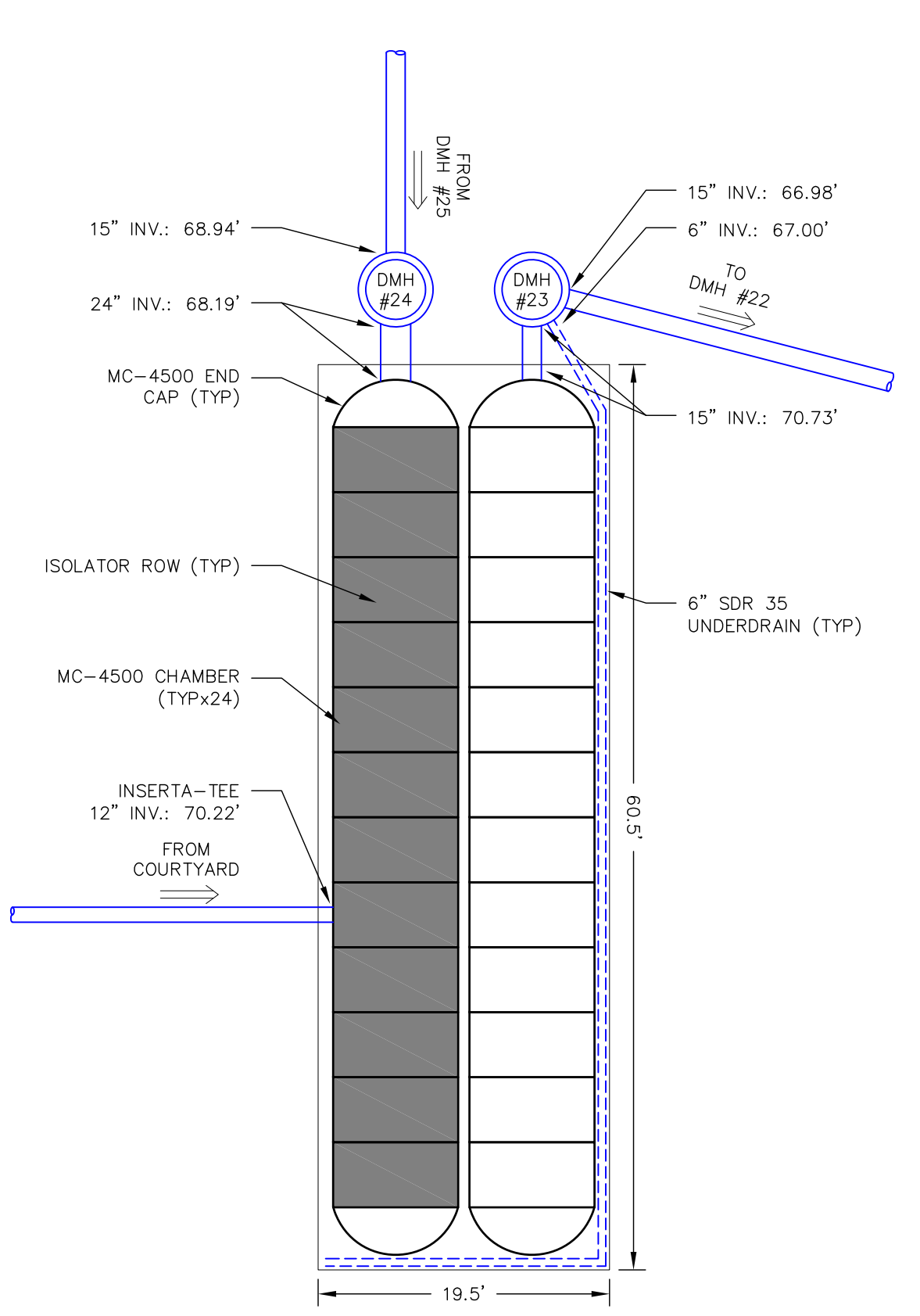
SIZE (W X H X INSTALLED LENGTH): 100.0" X 60.0" X 48.3"  
 CHAMBER STORAGE: 106.5 CUBIC FEET  
 MINIMUM INSTALLED STORAGE\*: 125.0 CUBIC FEET  
 WEIGHT: 125.0 lbs

\*ASSUMES 12" STONE ABOVE, 9" BELOW AND BETWEEN CHAMBERS, AND 12" STONE PERIMETER IN FRONT OF END CAPS w/40% STONE VOIDS

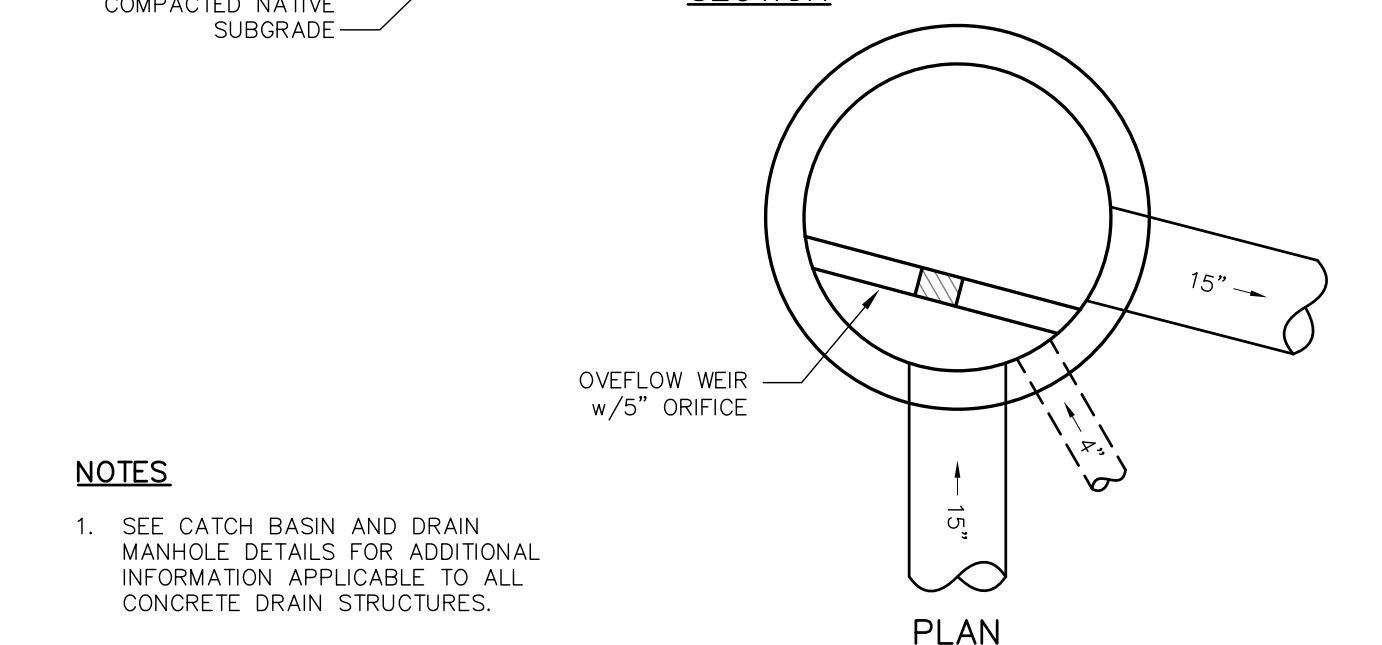
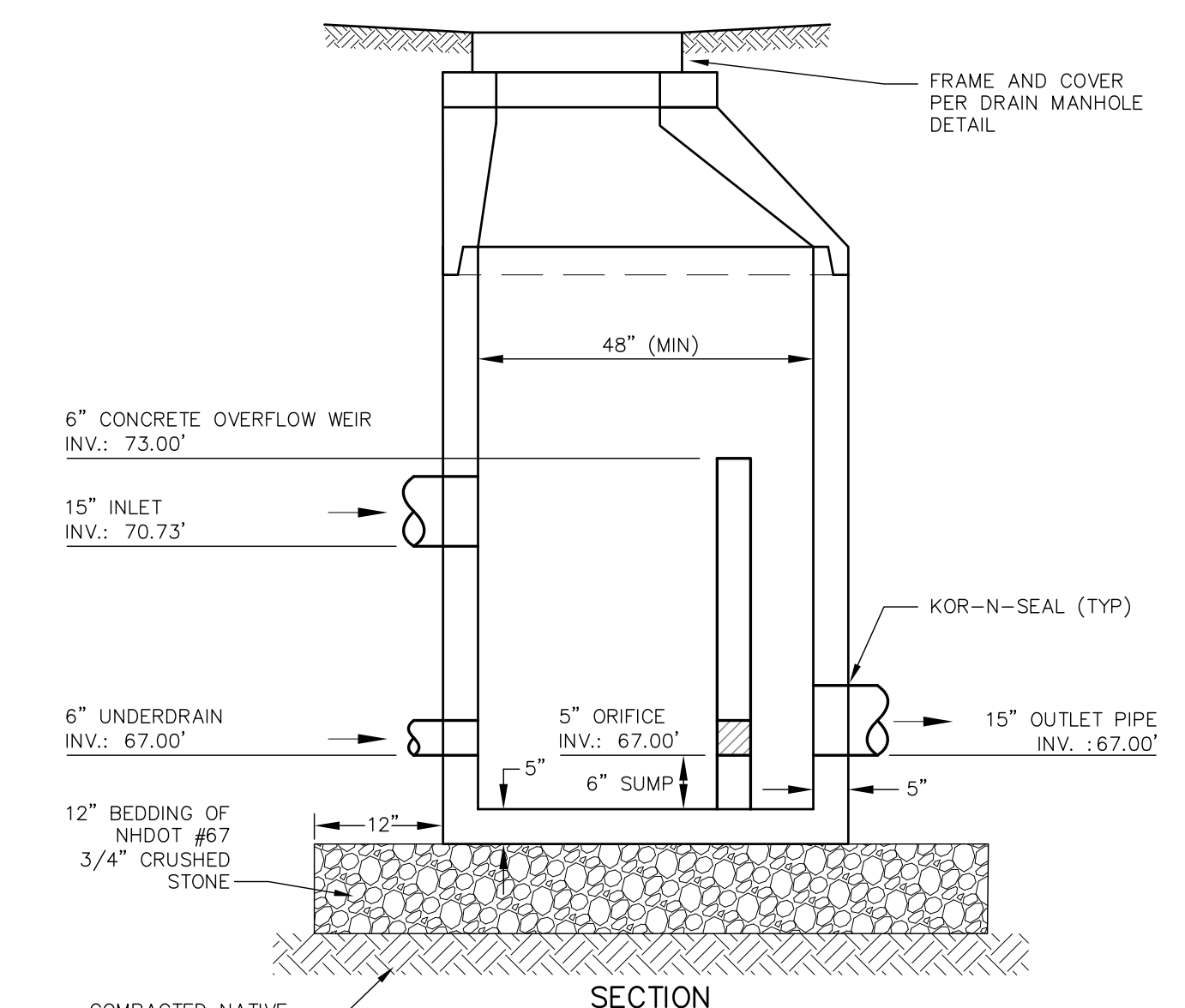
PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500EPP06T	6" (150 mm)	42.54" (1081 mm)	0.88" (22 mm)
MC4500EPP06B	---	---	---
MC4500EPP08T	8" (200 mm)	40.50" (1029 mm)	1.01" (26 mm)
MC4500EPP08B	---	---	---
MC4500EPP10T	10" (250 mm)	38.37" (975 mm)	1.33" (34 mm)
MC4500EPP10B	---	---	---
MC4500EPP12T	12" (300 mm)	35.69" (907 mm)	1.55" (39 mm)
MC4500EPP12B	---	---	---
MC4500EPP15T	15" (375 mm)	32.72" (831 mm)	1.70" (43 mm)
MC4500EPP15B	---	---	---
MC4500EPP18T	18" (450 mm)	29.36" (746 mm)	---
MC4500EPP18B	---	---	1.97" (50 mm)
MC4500EPP18BW	---	---	---
MC4500EPP24T	24" (600 mm)	23.05" (585 mm)	---
MC4500EPP24B	---	---	2.26" (57 mm)
MC4500EPP24BW	---	---	---
MC4500EPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500EPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500EPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



**STORMTECH SYSTEM #1 - PLAN** NOT TO SCALE



**DRAIN MANHOLE DMH #23** NOT TO SCALE

**STORMTECH GENERAL NOTES** NOT TO SCALE

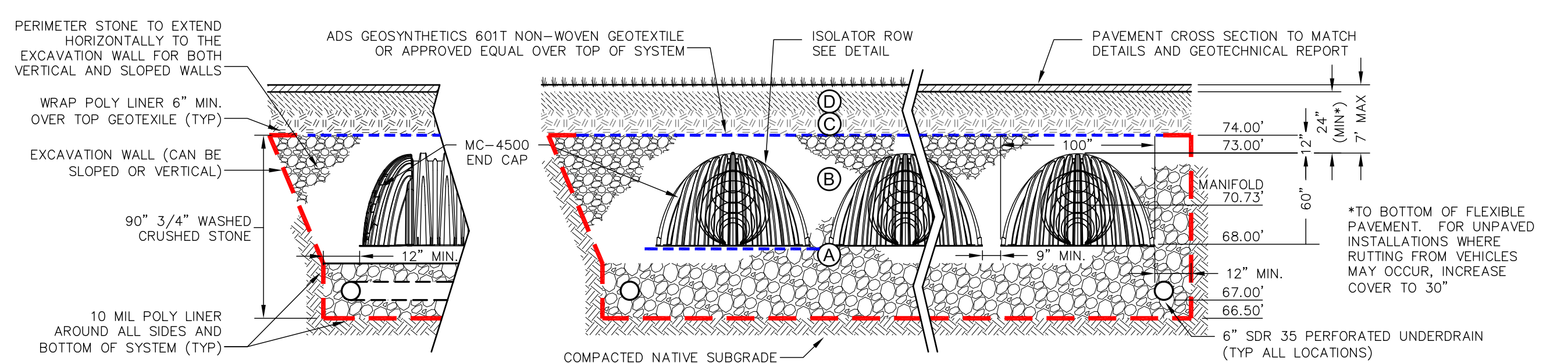
**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT:
- A. INSPECTION PORTS
- REMOVE/OPEN LID ON INSPECTION PORT.
  - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG.
  - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL).
  - IF SEDIMENT IS AT, OR ABOVE, 3" PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS:
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS.
  - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE.
  - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY.
    - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE.
  - IF SEDIMENT IS AT, OR ABOVE, 3" PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

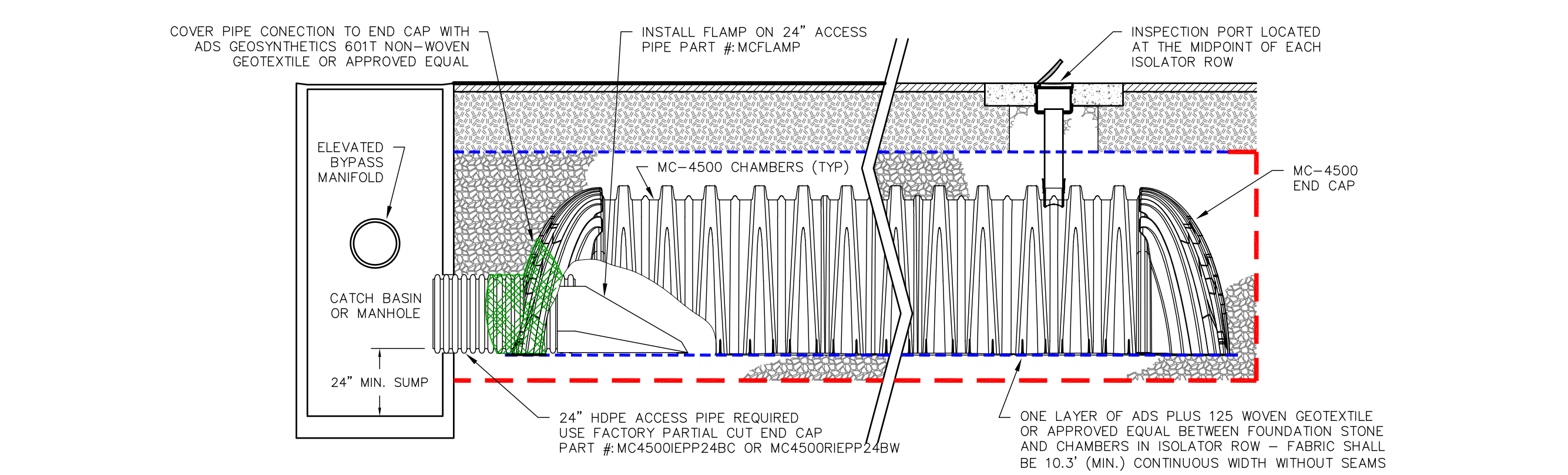
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS:
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° OR MORE IS PREFERRED.
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN.
  - VACUUM STRUCTURE SUMP AS REQUIRED.
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

- NOTES**
- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
  - CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

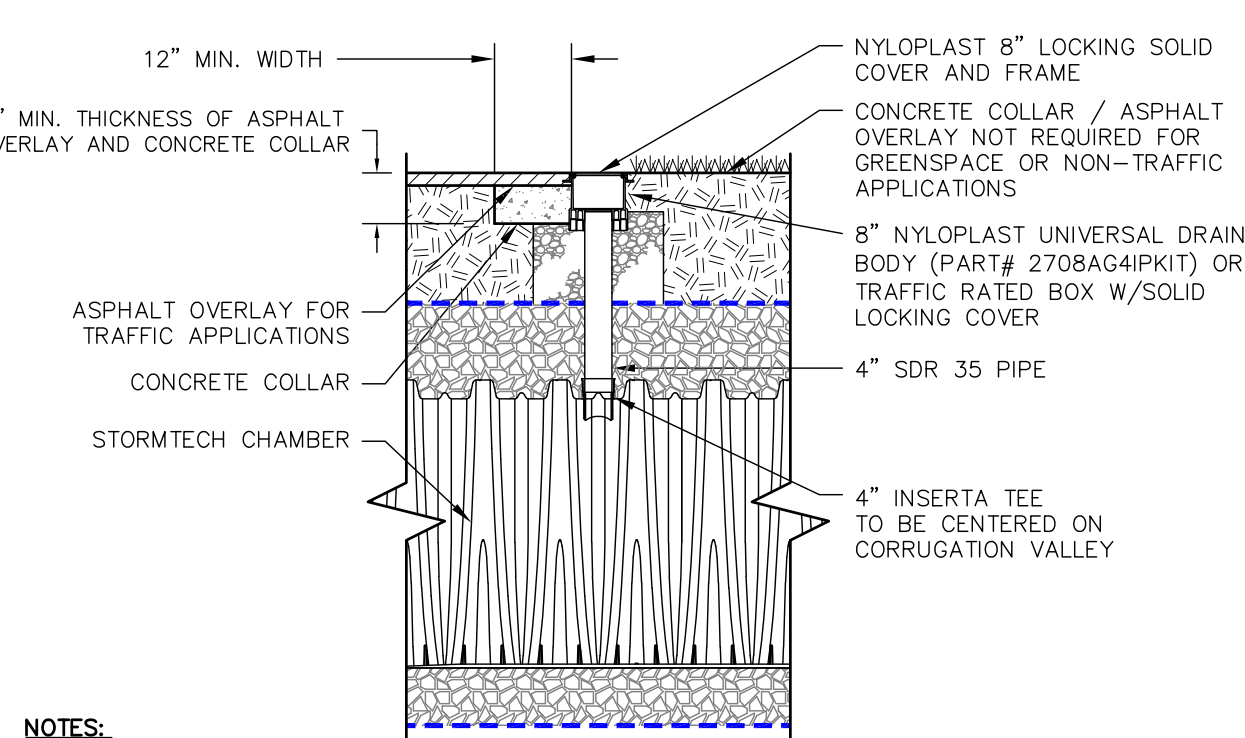
- NOTES -**
- SEE STORMTECH SYSTEM #1 CROSS SECTION FOR ADDITIONAL PERTINENT INFORMATION.
  - THIS CROSS SECTION IS INTENDED TO BE GENERALLY REPRESENTATIVE OF THE REQUIRED INSTALLATION BUT MAY NOT DEPICT THE FINAL DESIGN CONFIGURATION. SEE PLANS FOR SYSTEM LAYOUT, INCLUDING DIMENSIONS, NUMBER OF CHAMBER ROWS, PIPE CONFIGURATION, ETC.



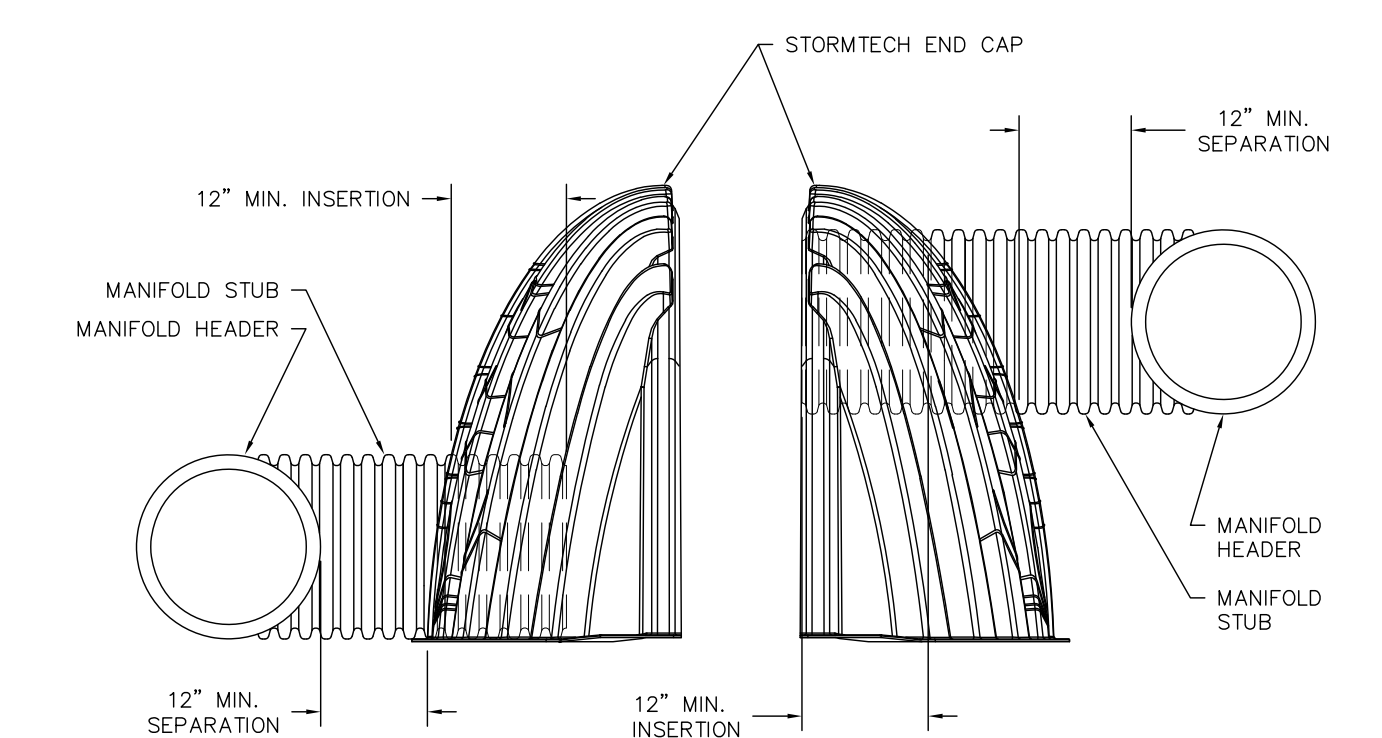
**STORMTECH SYSTEM #2 - CROSS SECTION** NOT TO SCALE



**MC-4500 ISOLATOR ROW PLUS** NOT TO SCALE



**4" INSPECTION PORT** NOT TO SCALE



**MC-4500 END CAP INSERTION DETAIL** NOT TO SCALE

**NOT FOR CONSTRUCTION**

ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

**REVISIONS**

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24

DRAWN BY: EBS  
 APPROVED BY: EBS  
 DRAWING FILE: 5015-SITE.dwg

**SCALE:**  
 24" x 36" - 1" = NOT TO SCALE  
 11" x 17" - 1" = NOT TO SCALE

**OWNER:**  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

**APPLICANT:**  
 RIVERWOODS COMPANY  
 AT EXETER  
 7 RIVERWOODS DRIVE  
 EXETER, NH 03833

**PROJECT:**  
 RIVERWOODS  
 SUPPORTIVE LIVING  
 HEATH CENTER  
 TAX MAP 97 LOT 23  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833

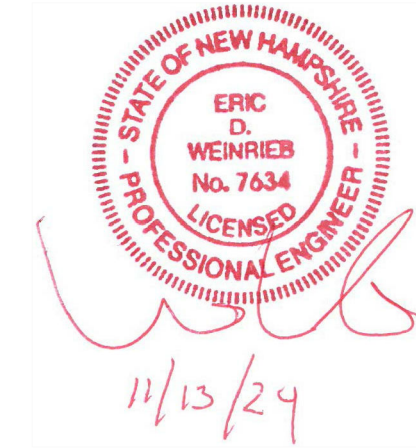
**TITLE:**

**DETAIL SHEET**

**SHEET NUMBER:**

**C-16**





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ISSUED FOR: REVIEW

ISSUE DATE: NOVEMBER 13, 2024

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24
2	REVISED PER COMMENTS	EBS	11/23/24

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APPROVED BY: EBS  
DRAWING FILE: 5015-SITE.dwg

SCALE:  
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OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
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7 RIVERWOODS DRIVE  
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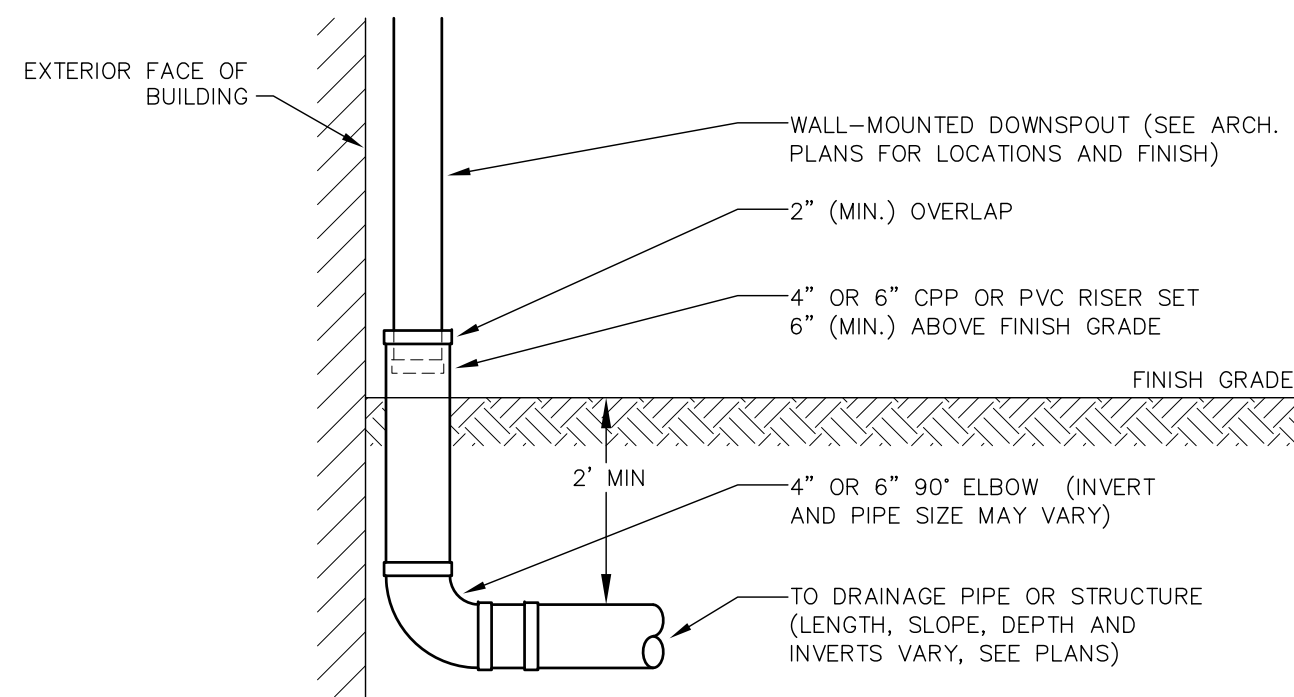
TITLE:

DETAIL SHEET

SHEET NUMBER:

C-17

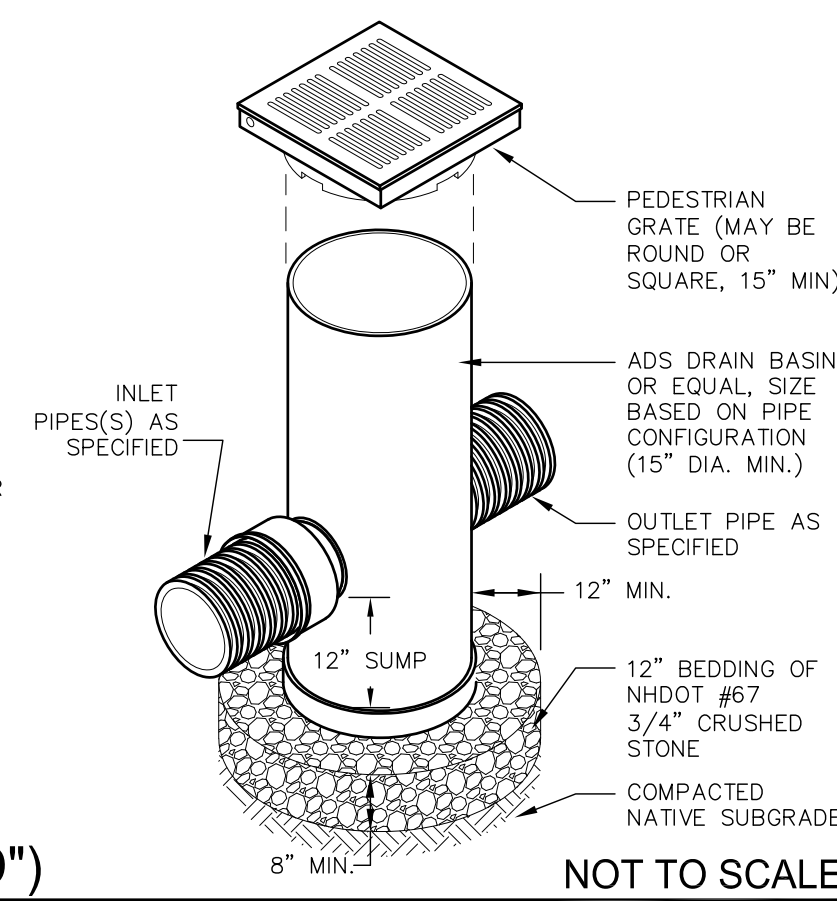
P8015



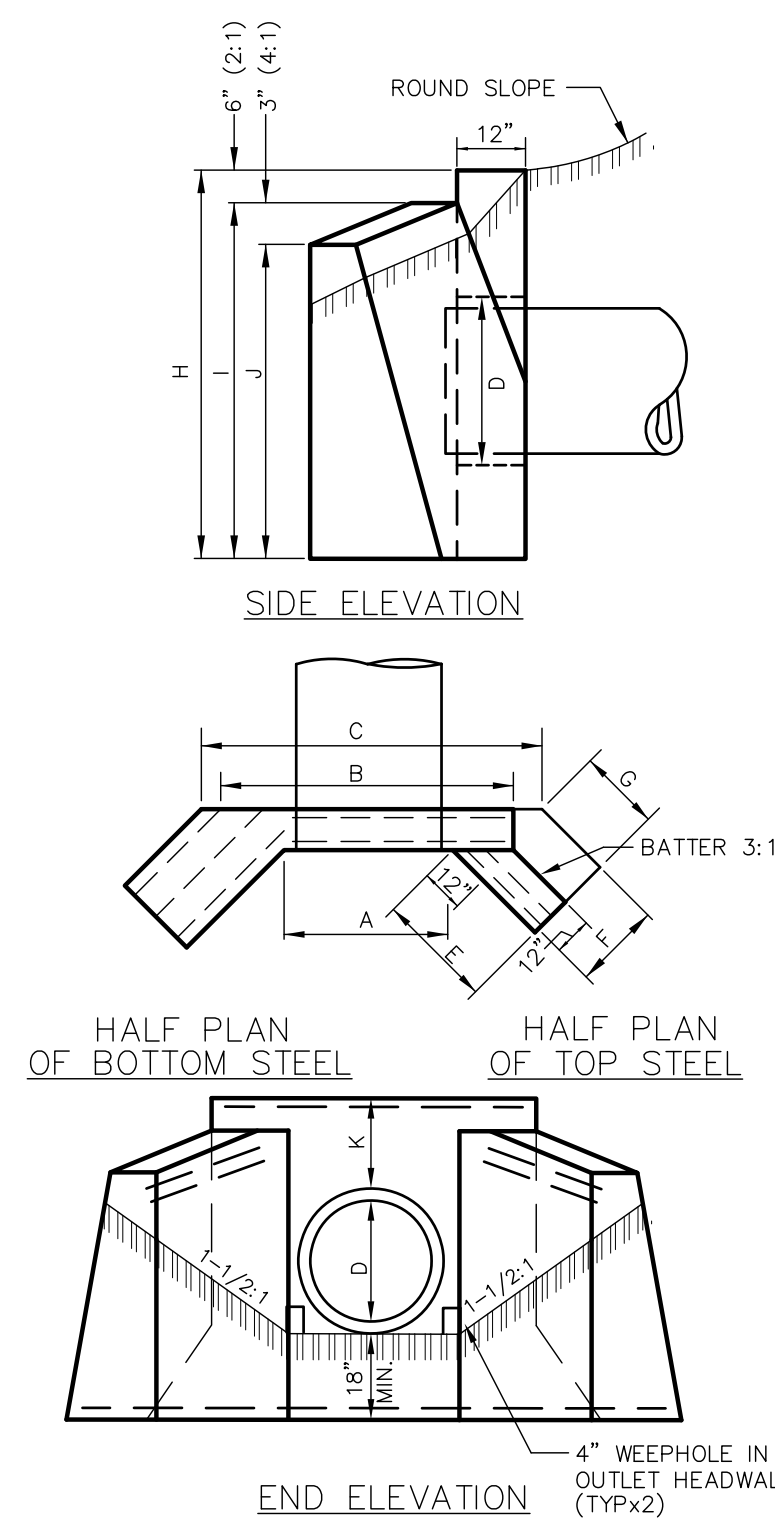
EXTERIOR ROOF DRAIN CONNECTION NOT TO SCALE

NOTES:

- FRAMES AND GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN AND DETAILS.
- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE, N-12HP AND PVC SEWER.
- INLINE DRAIN TO BE PVC, DIAMETER AS SPECIFIED AND AS MANUFACTURED BY ADS OR APPROVED EQUAL.
- THE CONTRACTOR SHALL INSTALL THE DRAIN BASIN PER THE MANUFACTURER'S RECOMMENDATIONS AND AS SHOWN ON THE DRAWINGS.
- FOR INSTALLATION IN PEDESTRIAN AND LANDSCAPE AREAS ONLY.

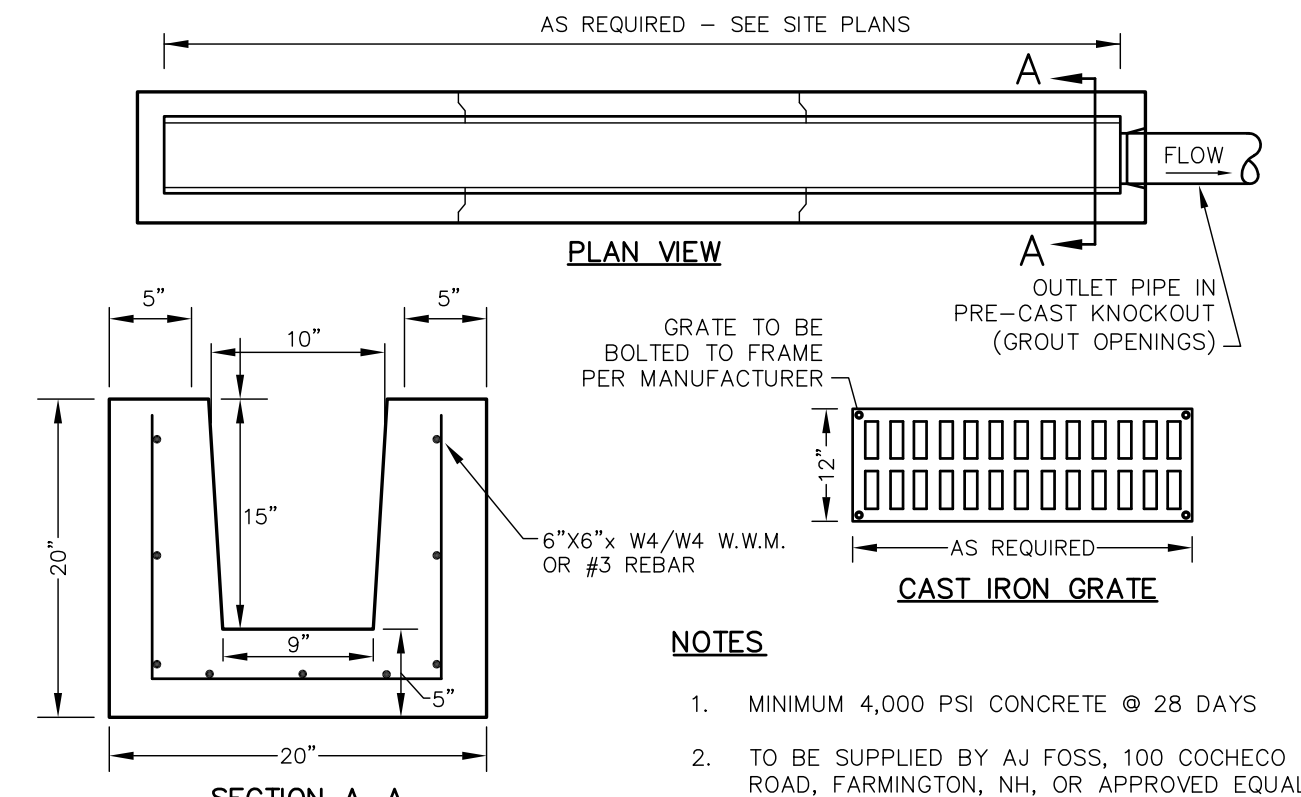


YARD DRAIN ("YD") NOT TO SCALE

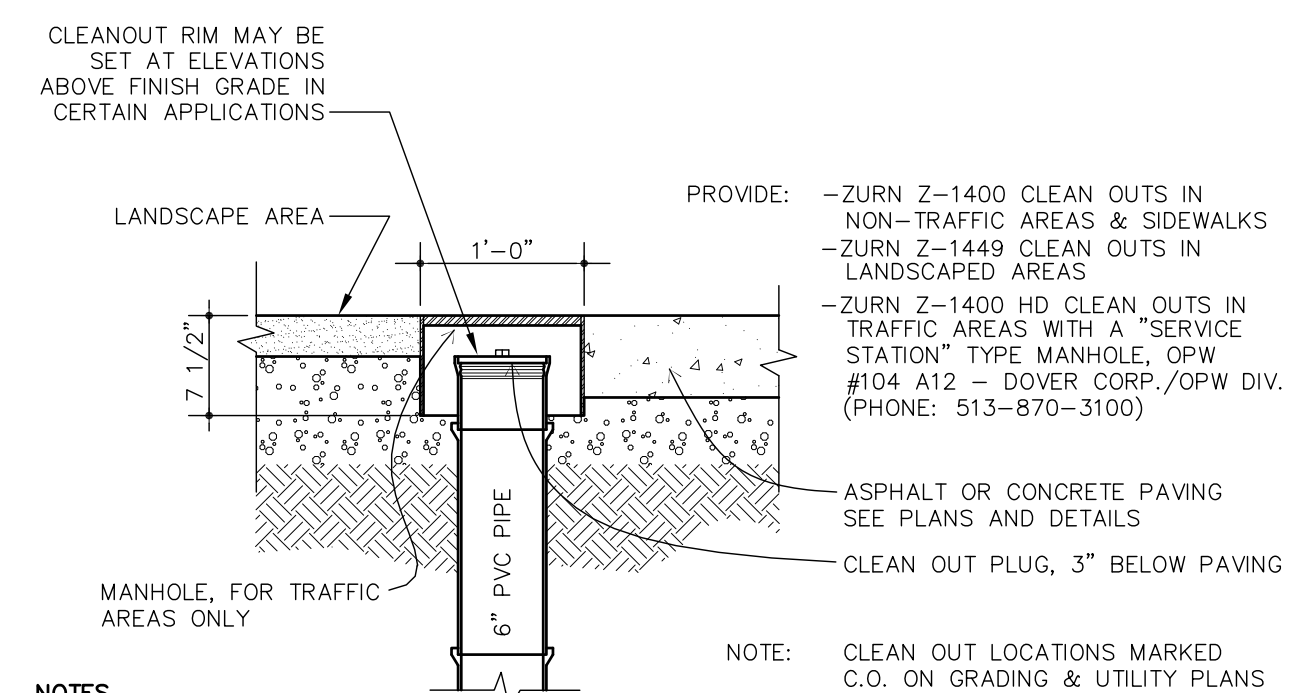


D (PIPE DIA.)	D I M E N S I O N S (2:1 SLOPE)										
	A	B	C	E	F	G	H	I	J	K	
18"	2'-6"	5'-4"	6'-7"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"	
24"	2'-6"	5'-4"	6'-7"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"	

CONCRETE HEADWALL w/WINGWALLS NOT TO SCALE



TRENCH DRAIN ("TD") NOT TO SCALE



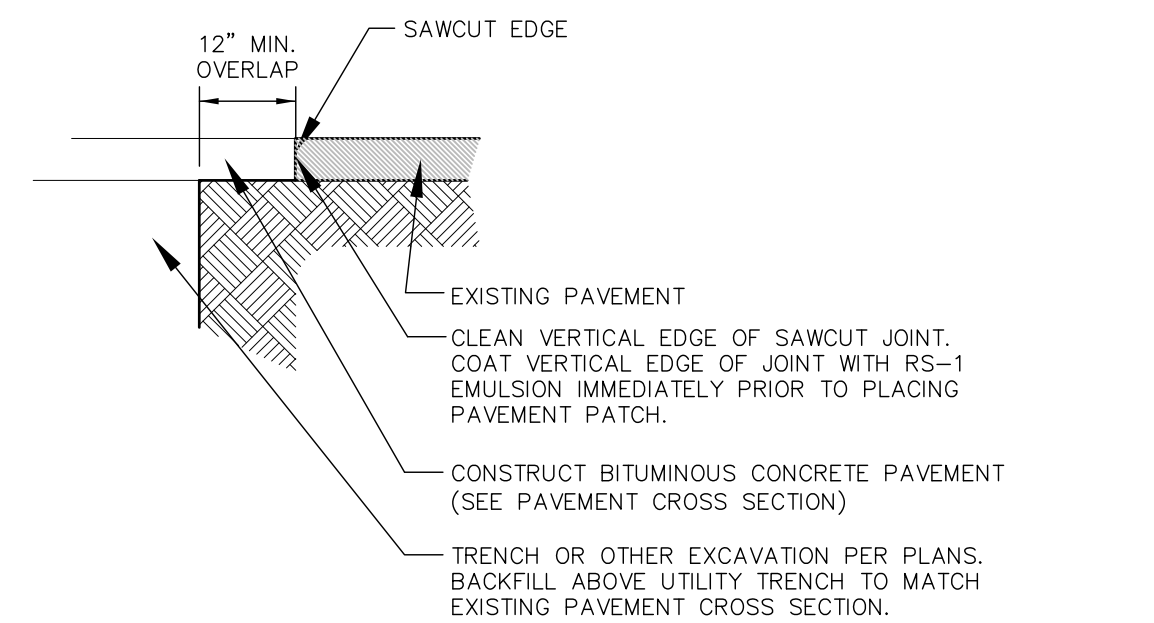
- NOTES:
- THIS DETAIL IS NOT INTENDED FOR USE WITH BIORETENTION POND UNDERDRAINS.
  - CLEANOUT LOCATIONS ARE MARKED "C.O." ON STORMWATER MANAGEMENT PLANS.

STORMWATER CLEANOUT ("CO") NOT TO SCALE

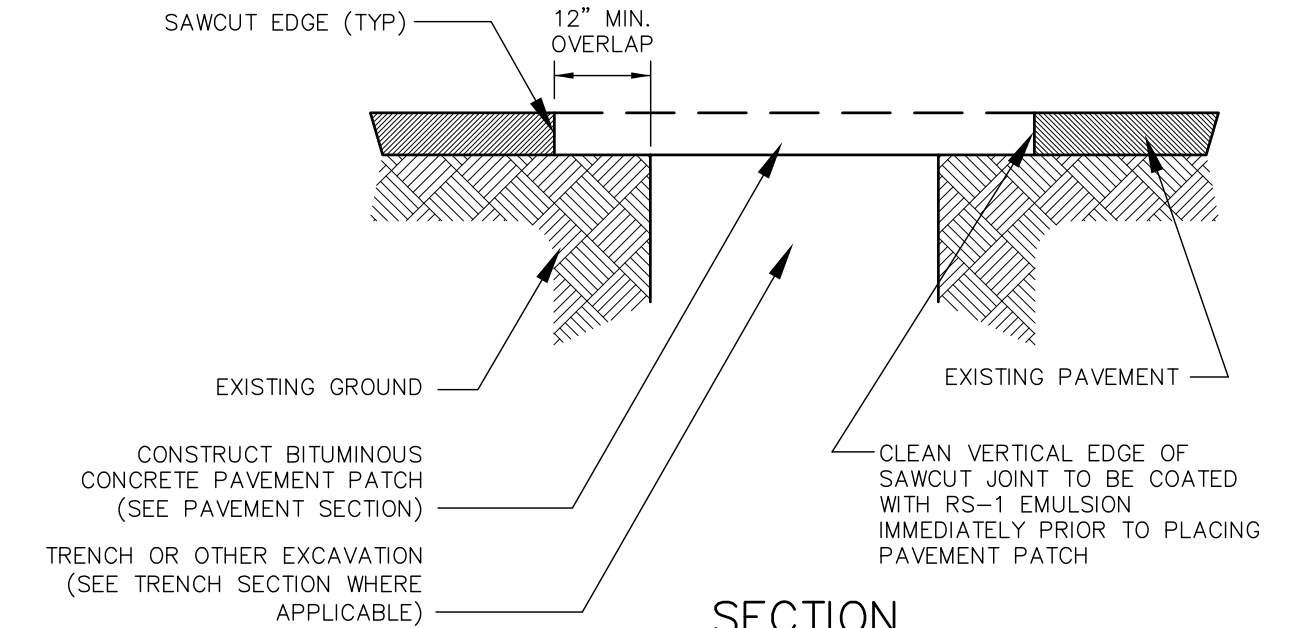
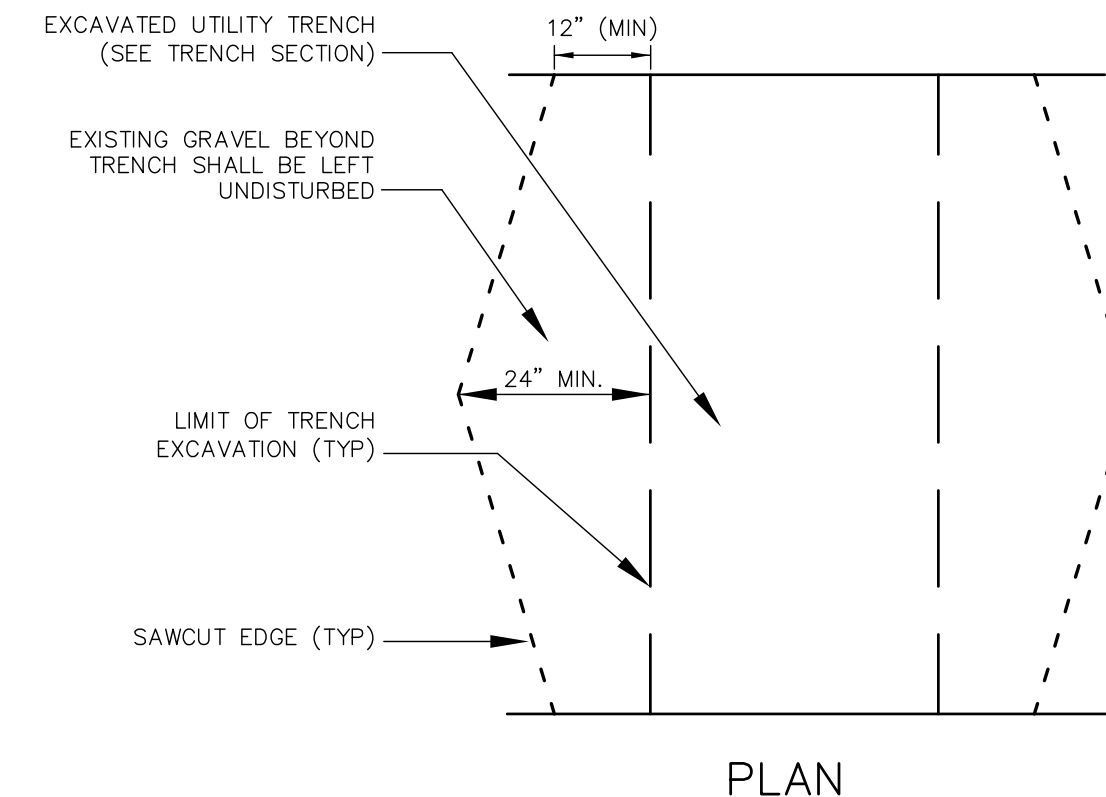
NOTES:

- A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHALL BE MAINTAINED BETWEEN WATER AND SEWER MAINS. A MINIMUM VERTICAL DISTANCE WITH WATER ABOVE SEWER SHALL BE MAINTAINED.
- SEWER PIPE JOINTS SHALL BE LOCATED A MINIMUM OF 6 FEET HORIZONTALLY FROM WATER MAIN.
- IF THE REQUIRED CONFIGURATION CANNOT BE MET, THE SEWER MAIN SHALL BE CONSTRUCTED TO MEET THE NHDES REQUIREMENTS FOR FORCE MAIN CONSTRUCTION.

WATER MAIN / SEWER CROSSING NOT TO SCALE



TYPICAL PAVEMENT SAWCUT NOT TO SCALE



NOTES:

- MACHINE CUT EXISTING PAVEMENT.
- ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
- DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY AND SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH NOT TO SCALE





*Wale*  
10/22/24

NOT FOR CONSTRUCTION

ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

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NO. DESCRIPTION BY DATE  
0 INITIAL SUBMISSION EBS 09/10/24  
1 REVISED PER COMMENTS EBS 10/23/24

DRAWN BY: EBS

APPROVED BY: EBS

DRAWING FILE: 5015-SITE.dwg

SCALE:  
24" x 36" - 1" = NOT TO SCALE  
11" x 17" - 1" = NOT TO SCALE

OWNER:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

APPLICANT:  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

PROJECT:  
RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER

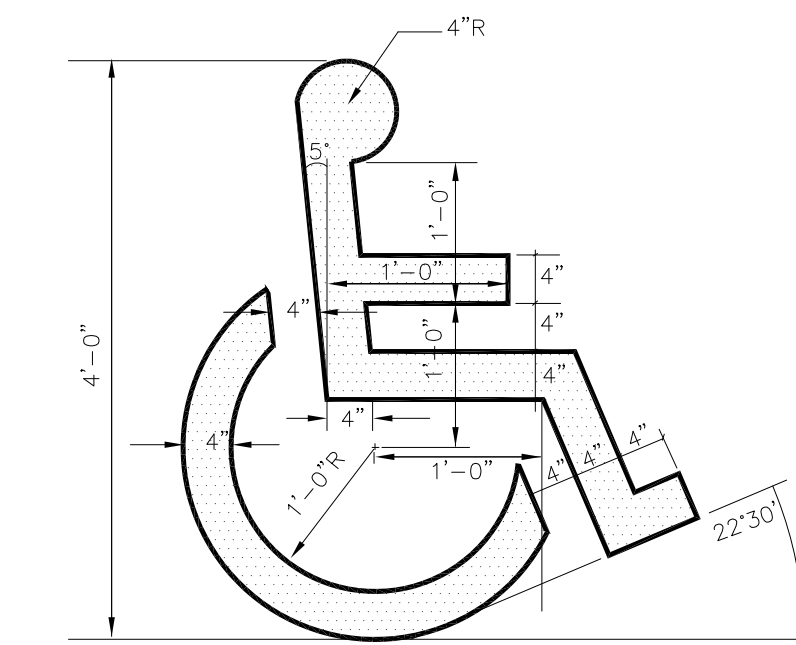
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:

DETAIL SHEET

SHEET NUMBER:

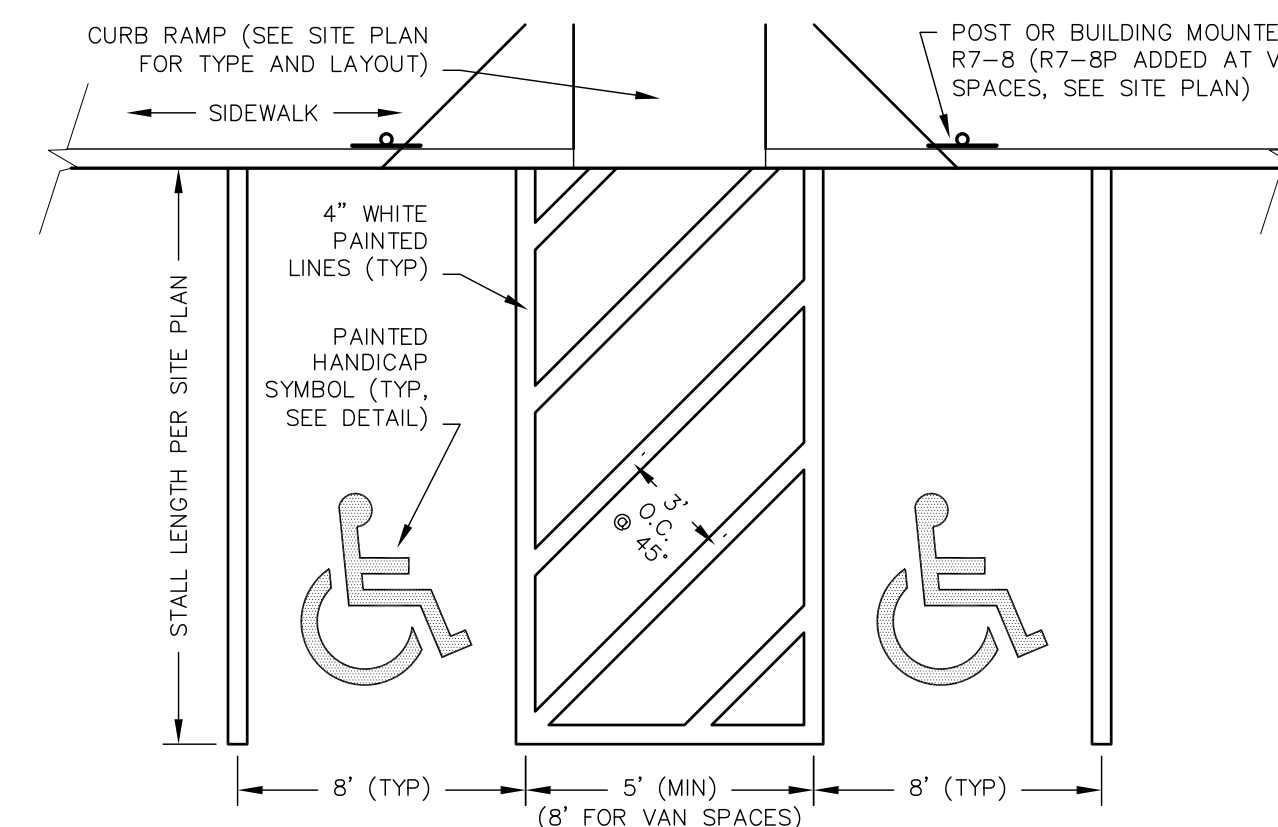
C-18



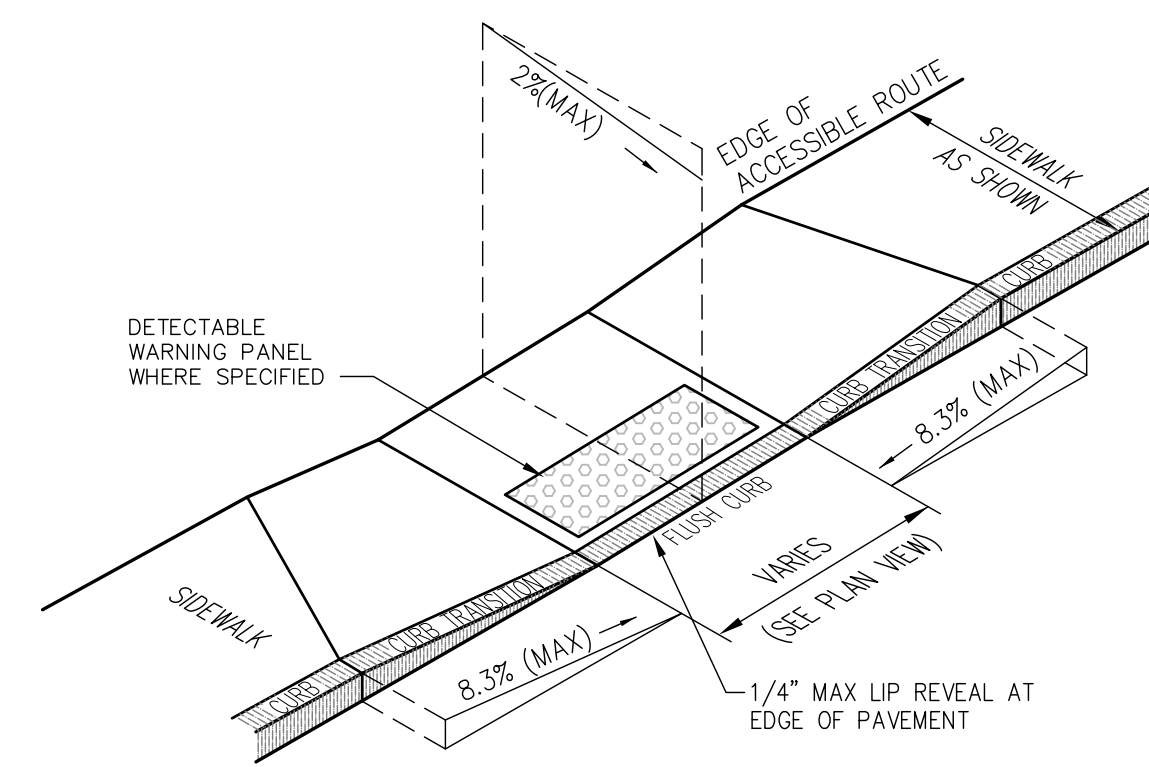
**NOTES**

1. SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES IN WHITE PAINT (BLUE-PAINTED SQUARE BACKGROUND AND WHITE BORDER OPTIONAL).

**PAINTED HANDICAP SYMBOL NOT TO SCALE**

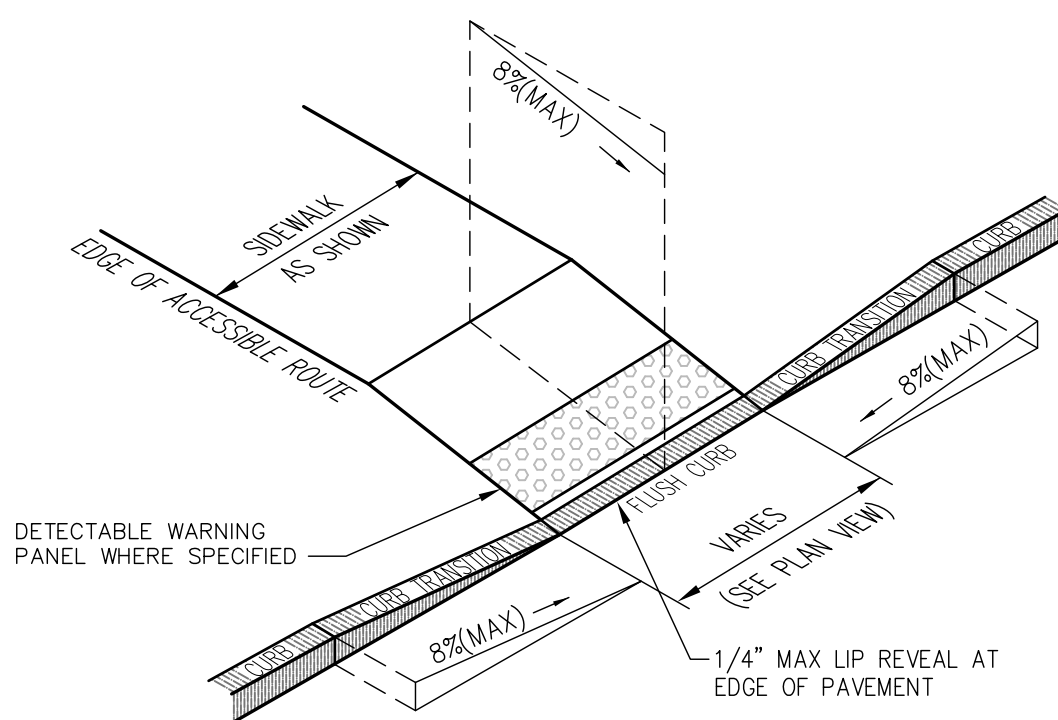


**HANDICAP PARKING STALL LAYOUT NOT TO SCALE**



**CURB RAMP (TYPE 'A') NOT TO SCALE**

**CURB RAMP (TYPE 'B') NOT TO SCALE**



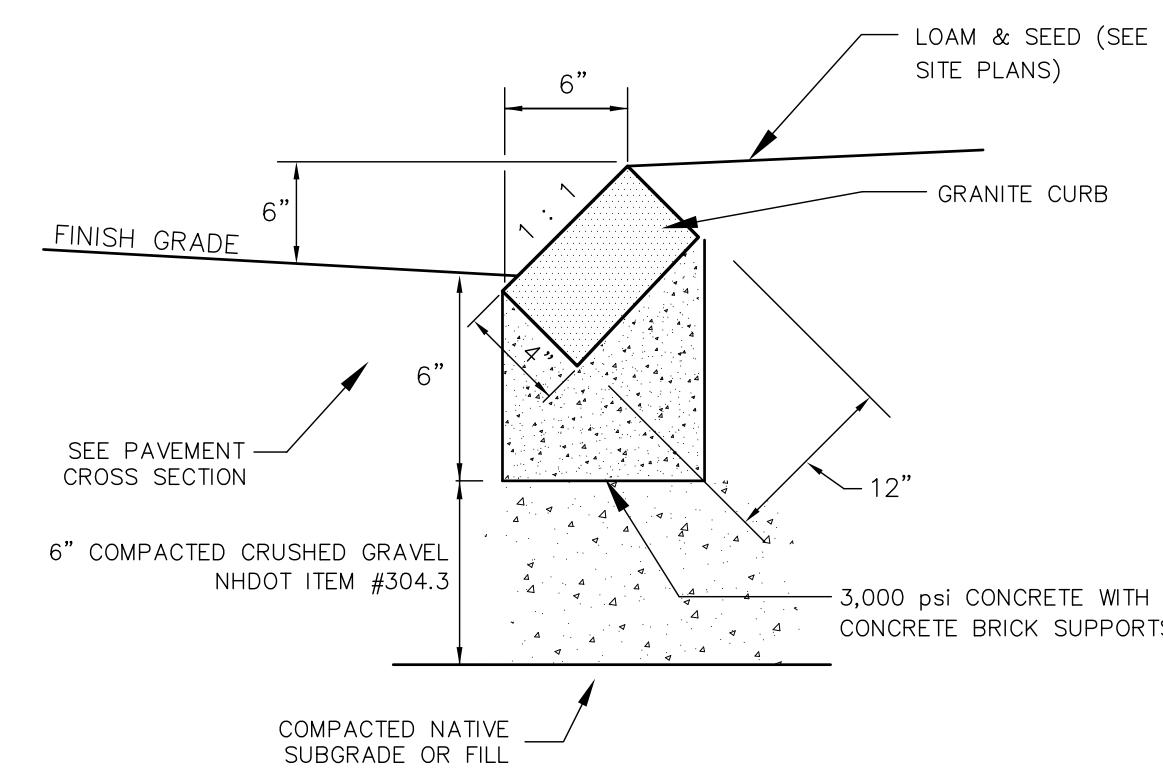
**CURB RAMP (TYPE 'F') NOT TO SCALE**

**CURB RAMP (TYPE 'G') NOT TO SCALE**

**NOTES APPLICABLE TO ALL CURB RAMPS:**

1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 2%.
2. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) CURB RAMP SHALL BE 8.3% FOR A MAXIMUM ELEVATION CHANGE OF 6".
4. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
5. BASE OF RAMP SHALL BE GRADED TO PREVENT THE PONDING OF WATER (2% MAX. SLOPE).
6. SEE CONCRETE SIDEWALK SECTION FOR RAMP CONSTRUCTION.
7. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA) AND ALL APPLICABLE CODES.
8. FLUSH CURB SECTIONS SHALL HAVE A MAXIMUM LIP REVEAL OF 1/4" WITH A BEVEL AT THE EDGE OF PAVEMENT.
9. EDGES OF CONCRETE SIDEWALK FOOTINGS ALONG FLUSH CURBS SHALL BE HAUNCHED SO AS TO EXTEND TO A MINIMUM DEPTH OF 1" BELOW FINISH GRADE.
10. NO RAMP SHALL BE LESS THAN 4' IN WIDTH.
11. CURB RAMPS SHALL HAVE A FLAT 2% MAX LANDING AT THE TOP AND BOTTOM OF THE RAMPS WHEN THERE IS A CHANGE IN DIRECTION.

**CURB RAMP NOTES NOT TO SCALE**

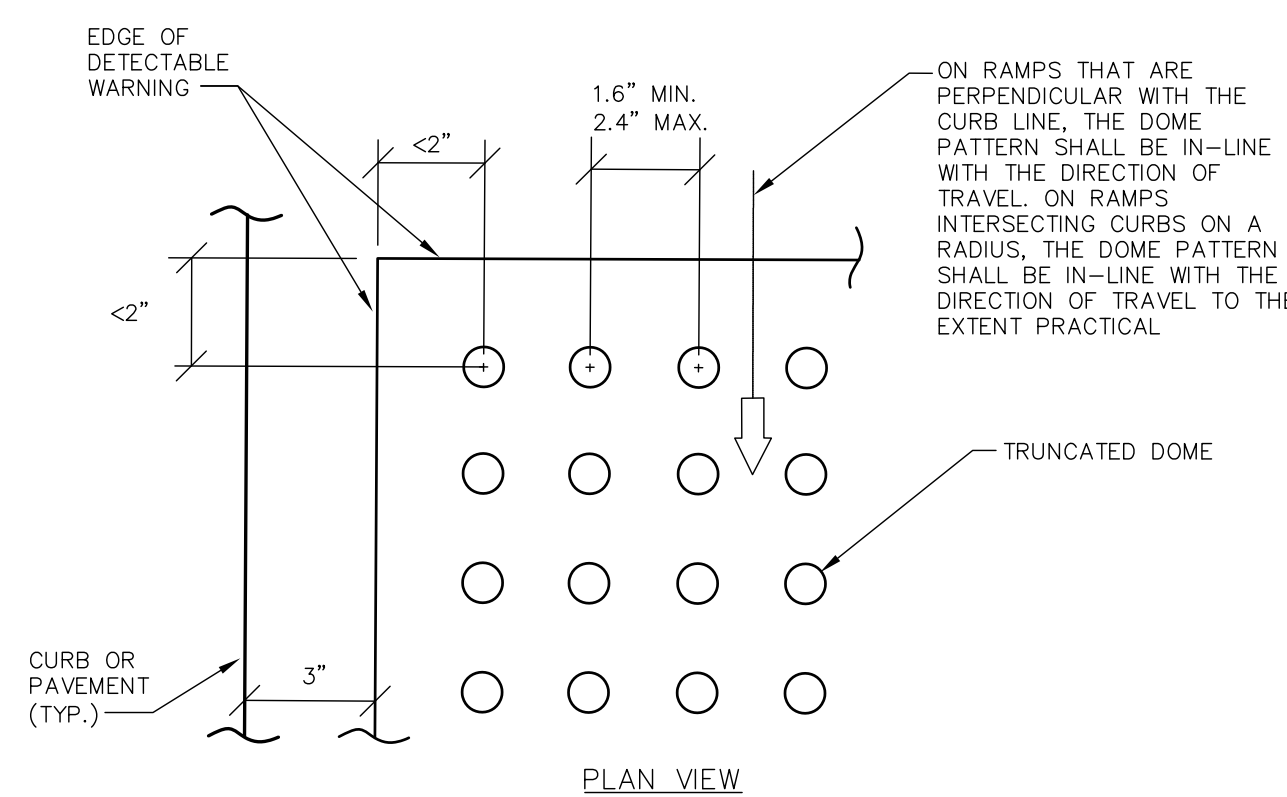


**NOTES**

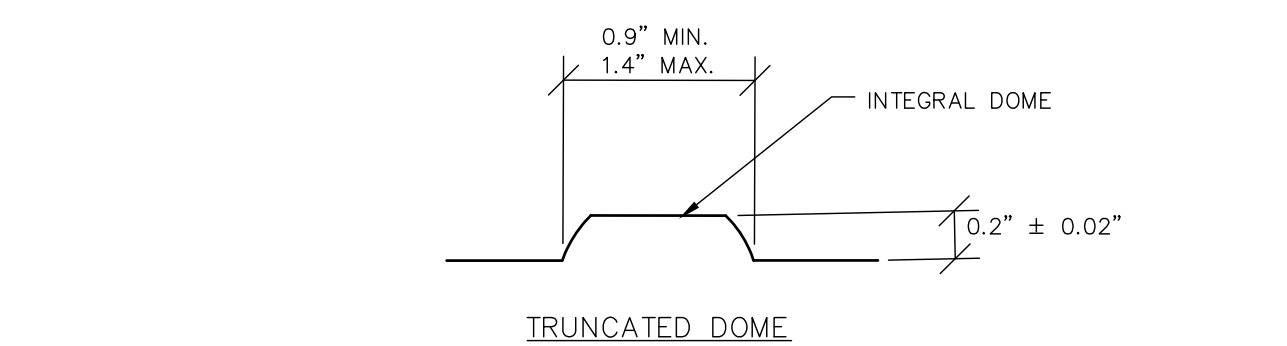
1. SEE SITE PLAN FOR LIMITS OF CURBING
2. ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
OVER 110'	8'

**SLOPED GRANITE CURB NOT TO SCALE**



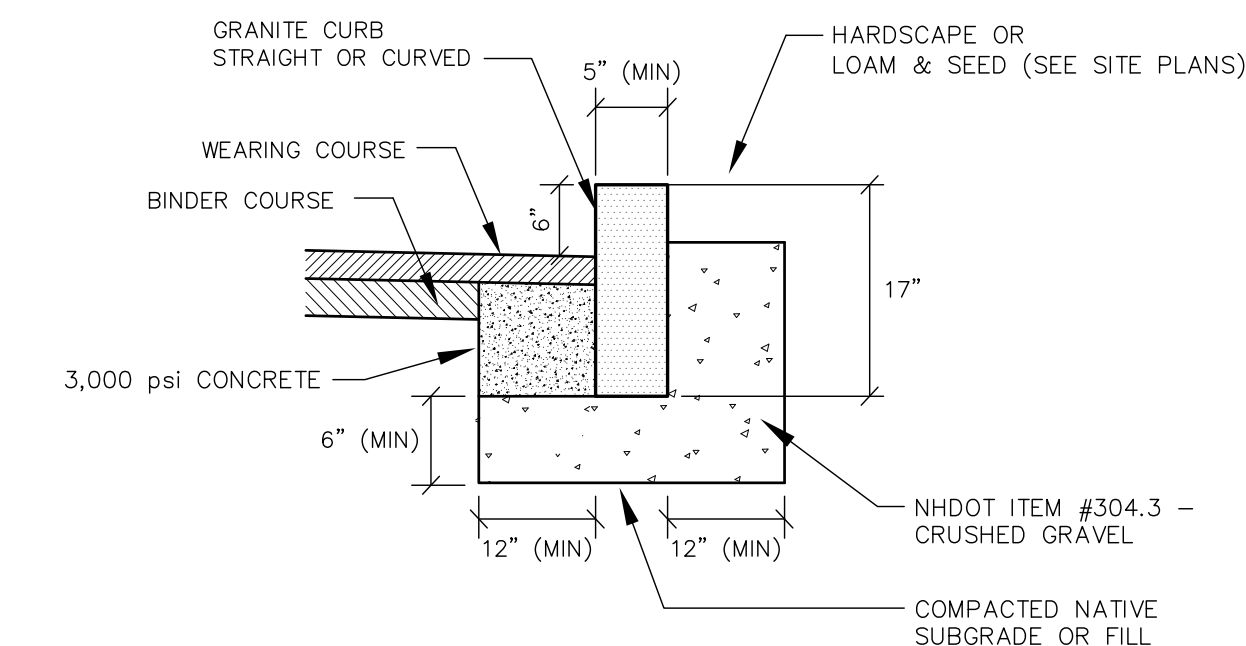
**DETECTABLE WARNING PANEL NOT TO SCALE**



**DETECTABLE WARNING PANEL NOTES:**

1. BASE-TO-BASE SPACING SHALL BE 0.65" MINIMUM BETWEEN DOMES.
2. WHERE SPECIFIED, SIDEWALK CURB RAMPS SHALL HAVE DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND 2' DEPTH IN THE DIRECTION OF TRAVEL.
3. THE TOP WIDTH OF THE DOME SHALL BE A MINIMUM OF 50% AND A MAXIMUM OF 65% OF THE BASE DIAMETER.
4. WARNING PANELS TO BE CAST IRON.
5. PANEL SHALL BE INSTALLED SO THAT THE EDGE IS 3" FROM THE CURB LINE OR GUTTER.

**DETECTABLE WARNING PANEL NOT TO SCALE**

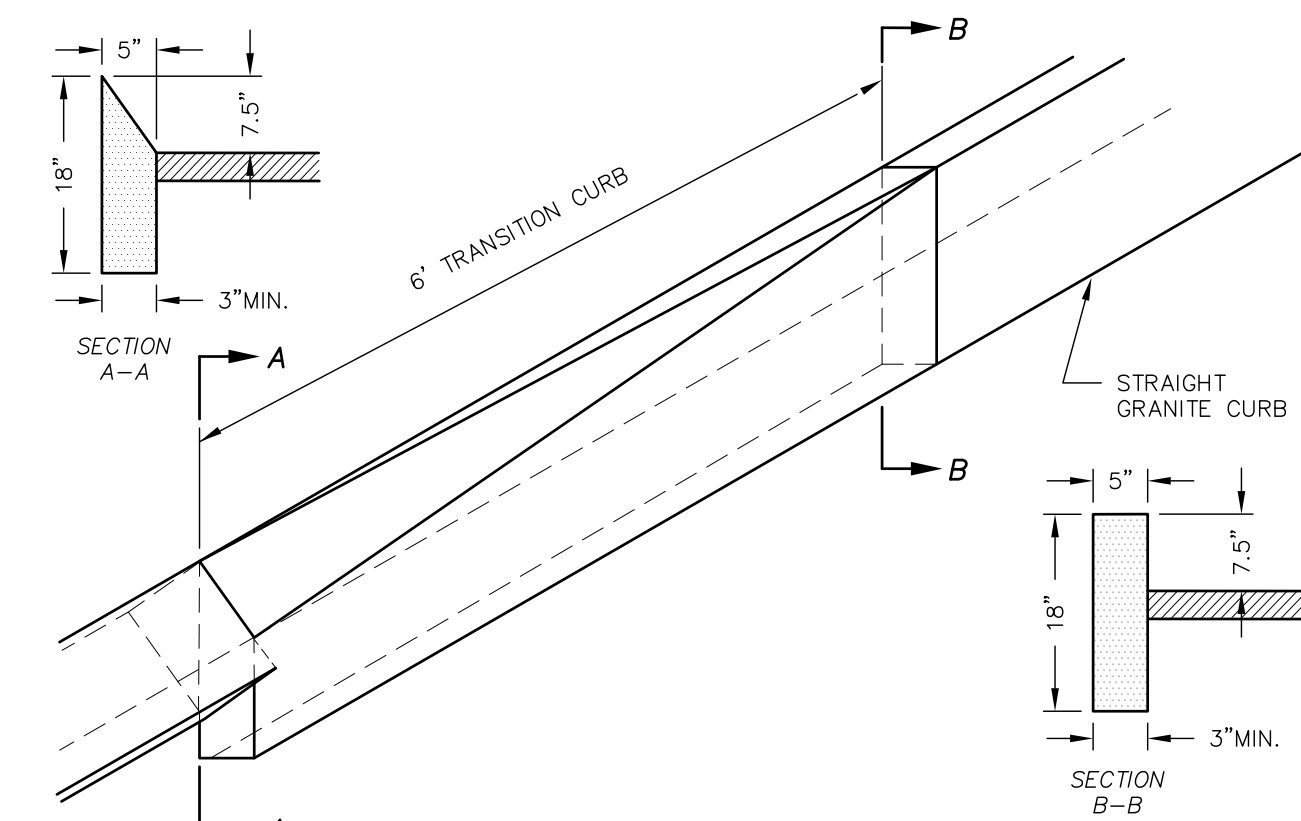


**NOTES:**

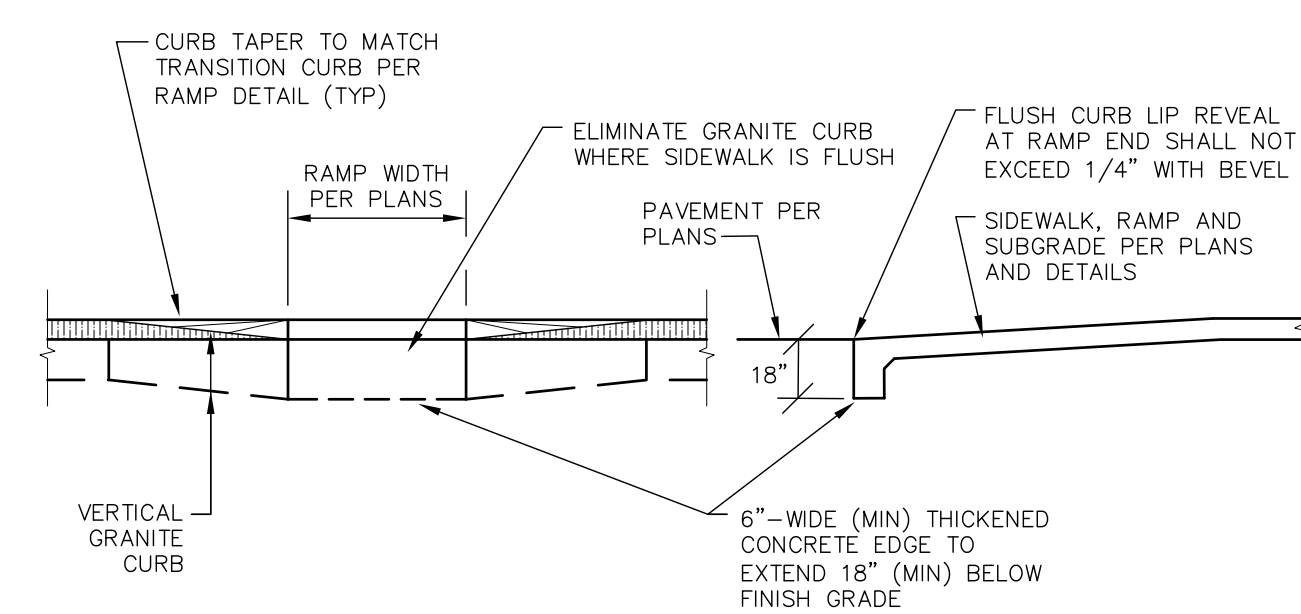
1. SEE PLANS FOR CURB LOCATION.
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF CURB STONES = 3'
4. MAXIMUM LENGTH OF CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART.
6. CURB ENDS TO ROUNDED AND BATTERED FACES TO BE CUT WHEN CALLED FOR ON THE PLANS.

RADIUS	MAX. LENGTH
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

**VERTICAL GRANITE CURB NOT TO SCALE**



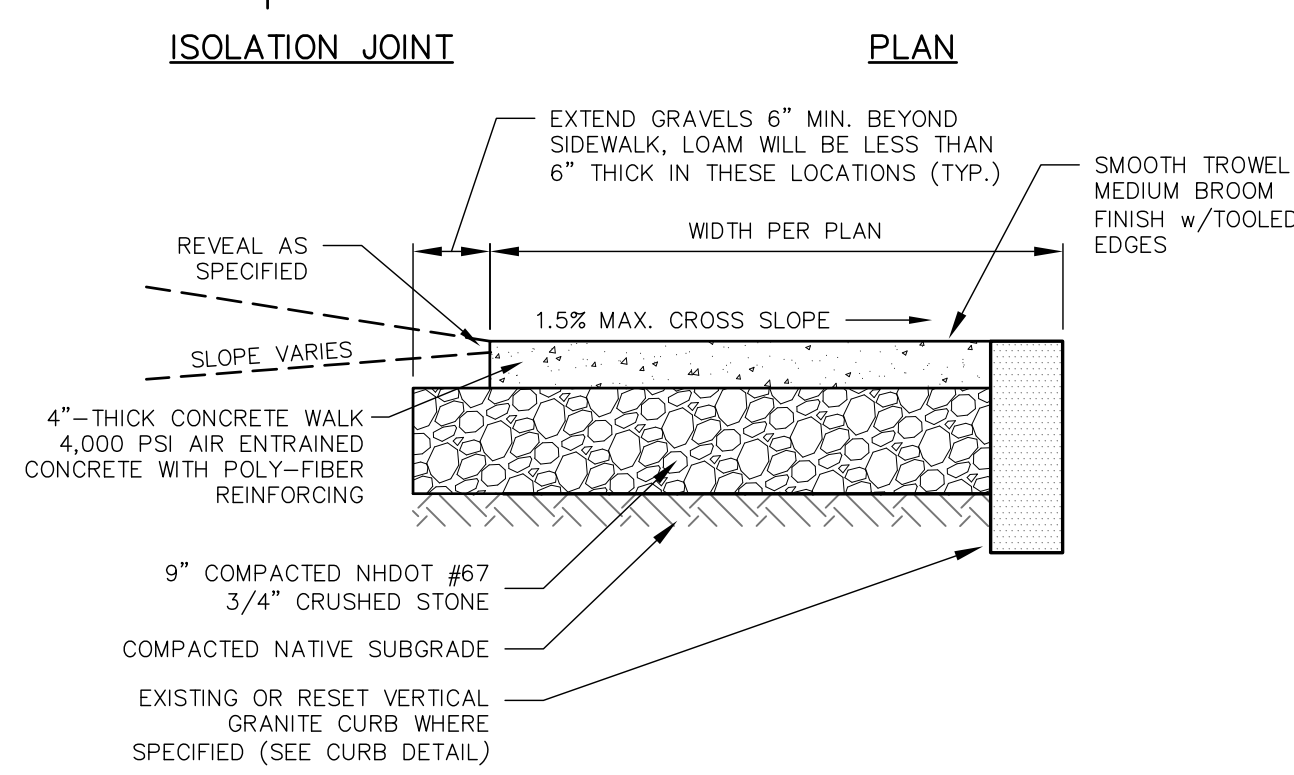
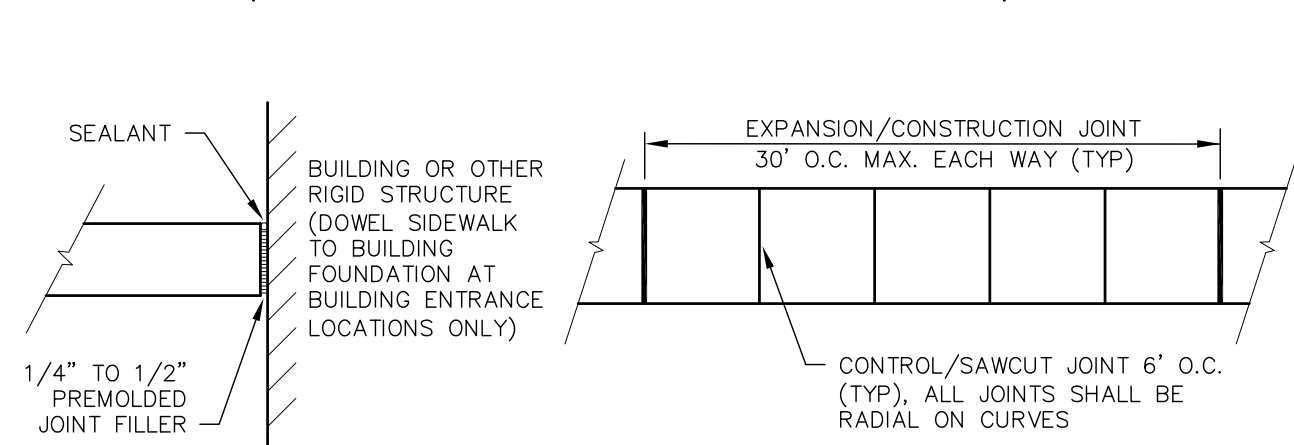
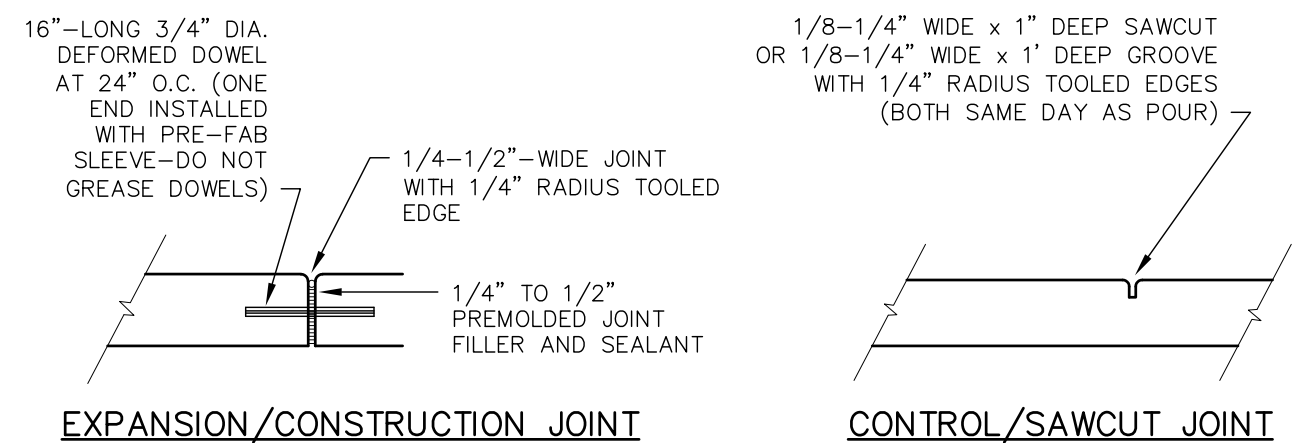
**STRAIGHT TO SLOPE CURB TRANSITION NOT TO SCALE**



**FLUSH CURB AT RAMP DETAIL NOT TO SCALE**

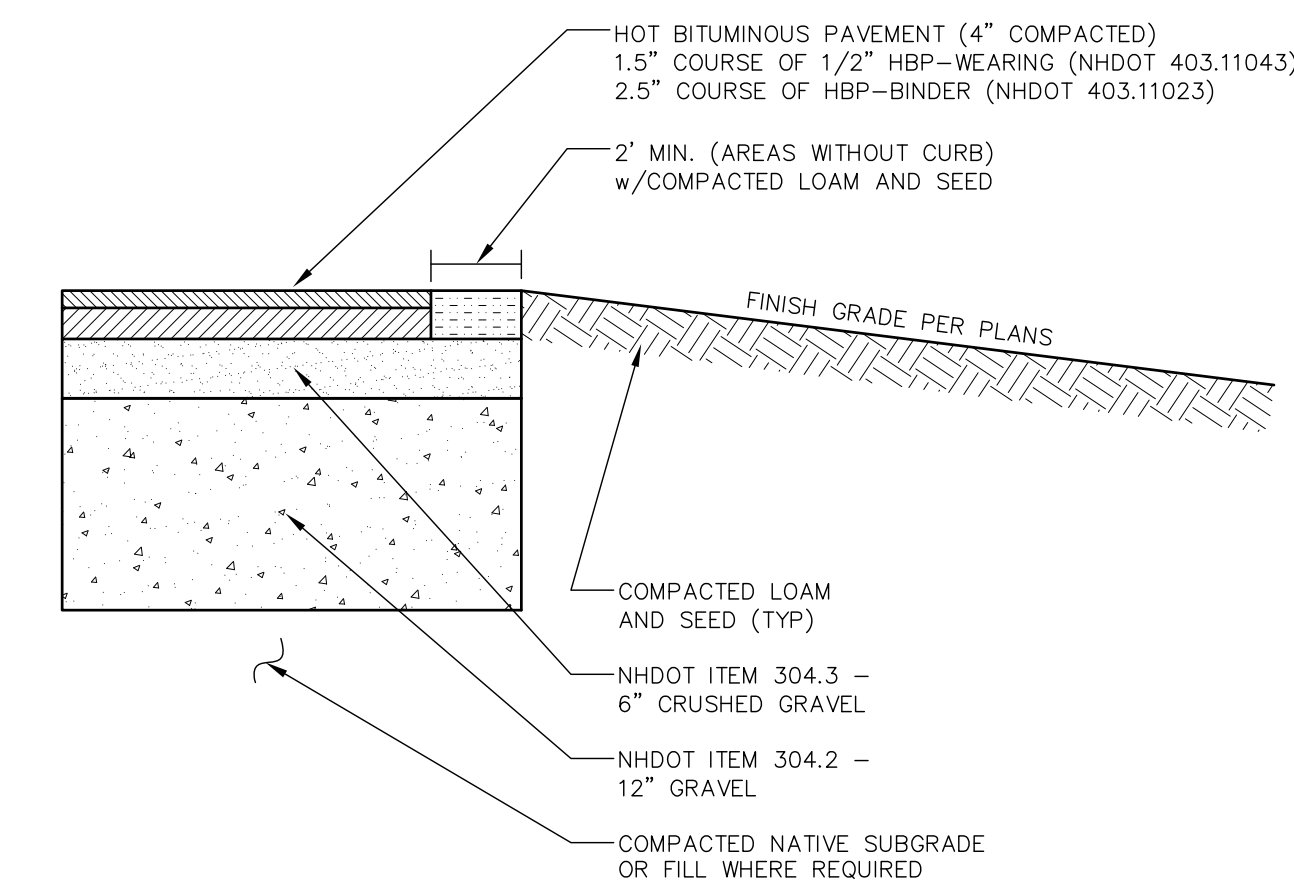
**CURB RAMP (TYPE 'L') NOT TO SCALE**





**NOTE**  
1. JOINTS IN CONCRETE SIDEWALKS SHALL CONFORM TO THE TYPES AND LOCATIONS SHOWN IN THE HEAVY-DUTY CONCRETE PAVEMENT DETAIL.

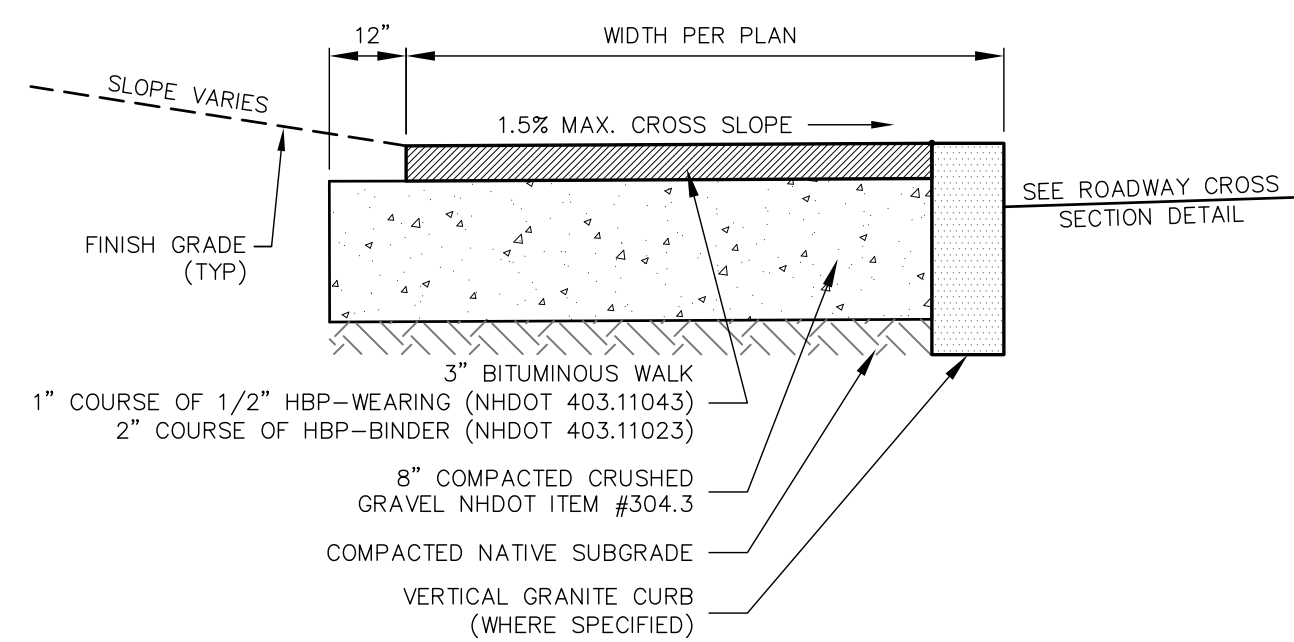
**CONCRETE SIDEWALK NOT TO SCALE**



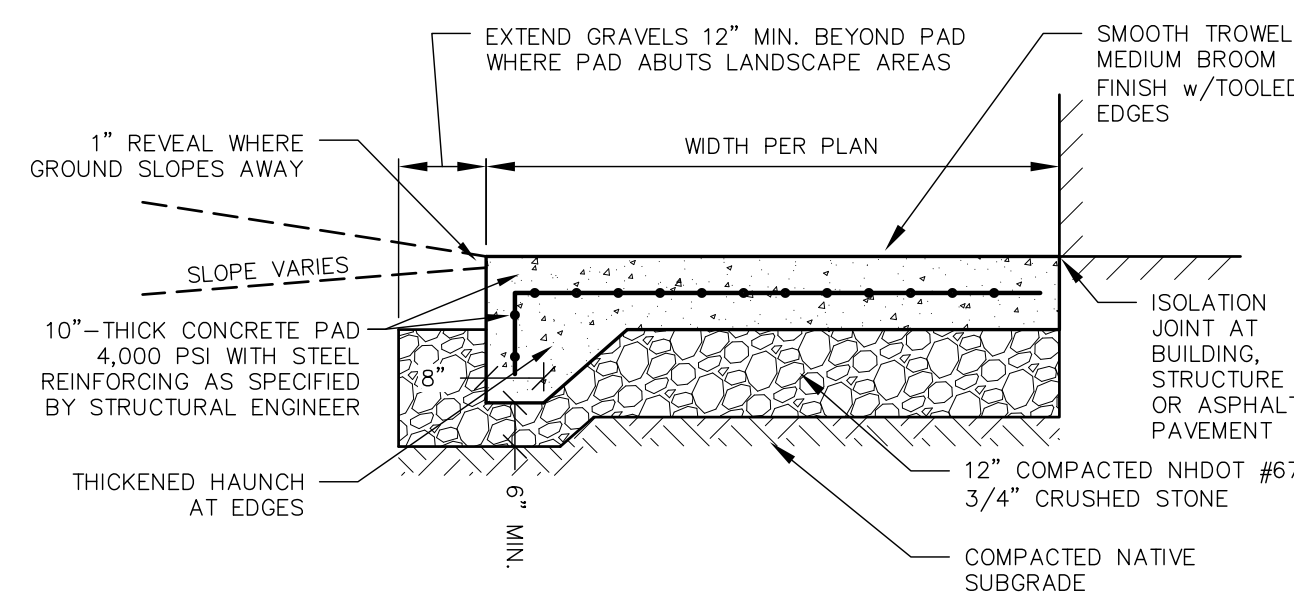
**NOTES FOR STANDARD AND HEAVY DUTY ASPHALT PAVEMENT**

- PROJECT GEOTECHNICAL REPORT MAY REQUIRE A DIFFERENT PAVEMENT CROSS SECTION(S). THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND FOLLOWING ALL RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. IN THE EVENT THAT THE REPORT AND CIVIL PLANS DIFFER, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
- REMOVE ALL LOAM, CLAY, MUCK, ORGANIC, YIELDING OR OTHERWISE UNSTABLE MATERIAL TO A MINIMUM OF 24" BELOW FINISH GRADE. ADDITIONAL DEPTH MAY BE REQUIRED BY THE GEOTECHNICAL REPORT (IF AVAILABLE) OR THE ENGINEER. SUCH ADDITIONAL REMOVAL SHALL REQUIRE THE PLACEMENT OF COMPACTED SAND OR GRAVEL BORROW APPROVED BY THE ENGINEER TO THE BOTTOM OF SUBGRADE.
- SUBGRADE SHALL BE PROOF-ROLLED A MINIMUM OF 6 PASSES WITH A 10-TON VIBRATORY COMPACTOR OPERATING AT PEAK RATED FREQUENCY OR BY OTHER MEANS APPROVED BY THE ENGINEER.
- FILL BELOW PAVEMENT SUBGRADE SHALL BE SAND OR GRANULAR BORROW COMPACTED PER DOT REQUIREMENTS.
- SITWORK CONTRACTOR SHALL COORDINATE GEOTECHNICAL ENGINEERING INSPECTIONS WITH THE CONSTRUCTION MANAGER PRIOR TO PLACING GRAVELS.
- BITUMINOUS PAVEMENT SHALL BE COMPACTED TO 90 TO 97 PERCENT OF ITS THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041. THE BASE AND SUBBASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THEIR MAXIMUM DRY DENSITIES AS DETERMINED BY ASTM D-1557. COMPACTION TESTING SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER FOR ALL MATERIAL COURSES AND THE RESULTS APPROVED BY THE ENGINEER PRIOR TO PLACING THE SUBSEQUENT COURSE.
- TACK COAT SHALL BE APPLIED BETWEEN SUCCESSIVE LIFTS OF ASPHALT.

**STANDARD DUTY ASPHALT PAVEMENT NOT TO SCALE**

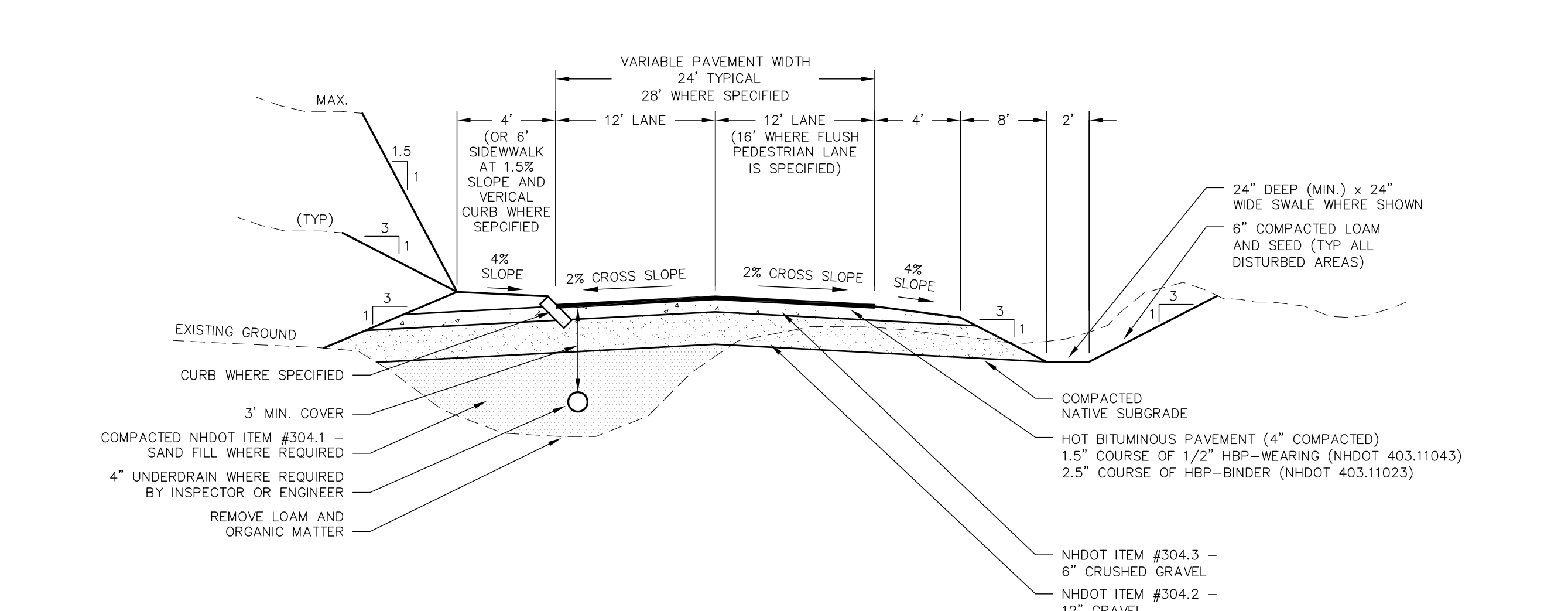


**BITUMINOUS SIDEWALK NOT TO SCALE**



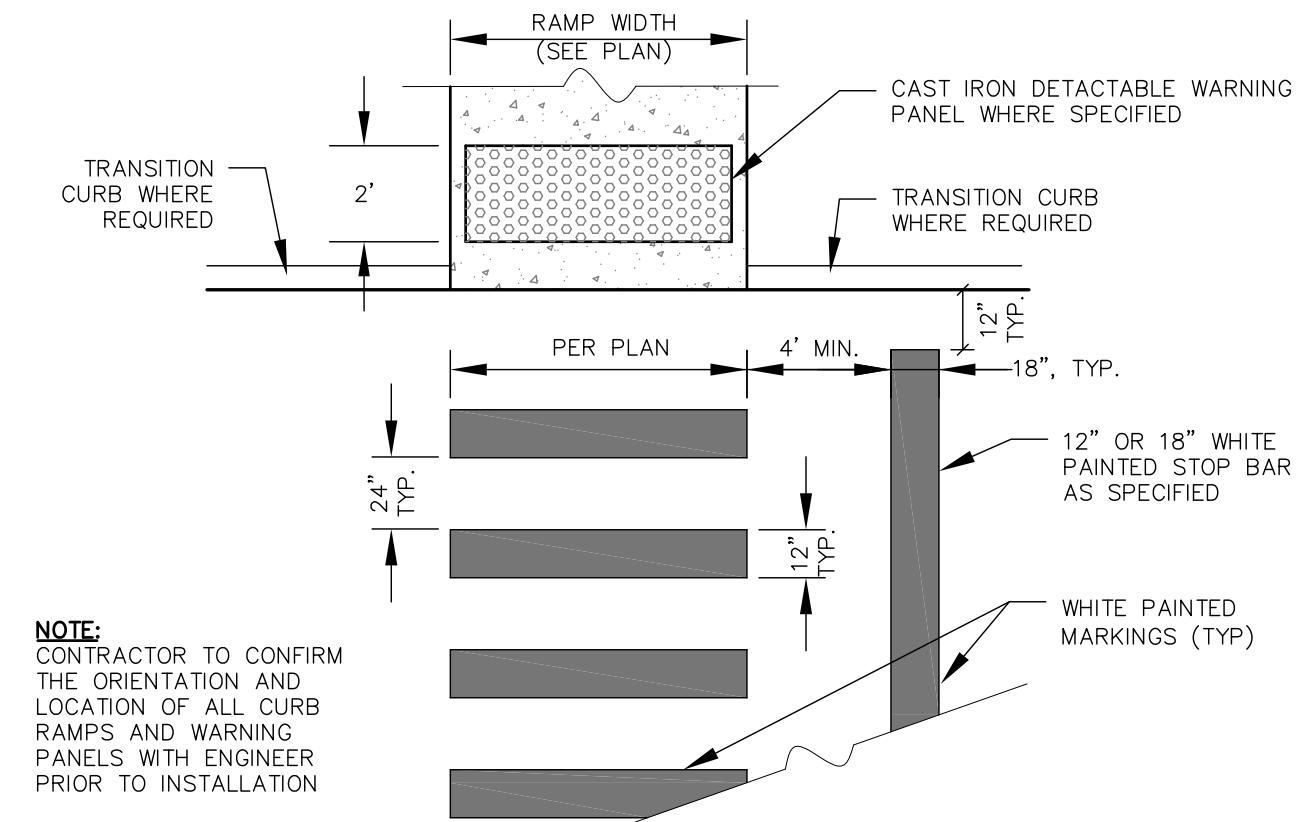
- NOTES**
- PROJECT GEOTECHNICAL REPORT MAY REQUIRE A DIFFERENT PAVEMENT CROSS SECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND FOLLOWING ALL RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. IN THE EVENT THAT THE REPORT AND CIVIL PLANS DIFFER, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
  - ISOLATION JOINT TO BE INSTALLED IN ALL LOCATIONS WHERE PAD ABUTS ANY OTHER STRUCTURE OR PAVEMENT. ALL OTHER EXPANSION, ISOLATION AND CONTROL JOINTS TO BE INSTALLED PER THE RECOMMENDATIONS OF THE STRUCTURAL ENGINEER.

**HEAVY-DUTY CONCRETE PAVEMENT NOT TO SCALE**



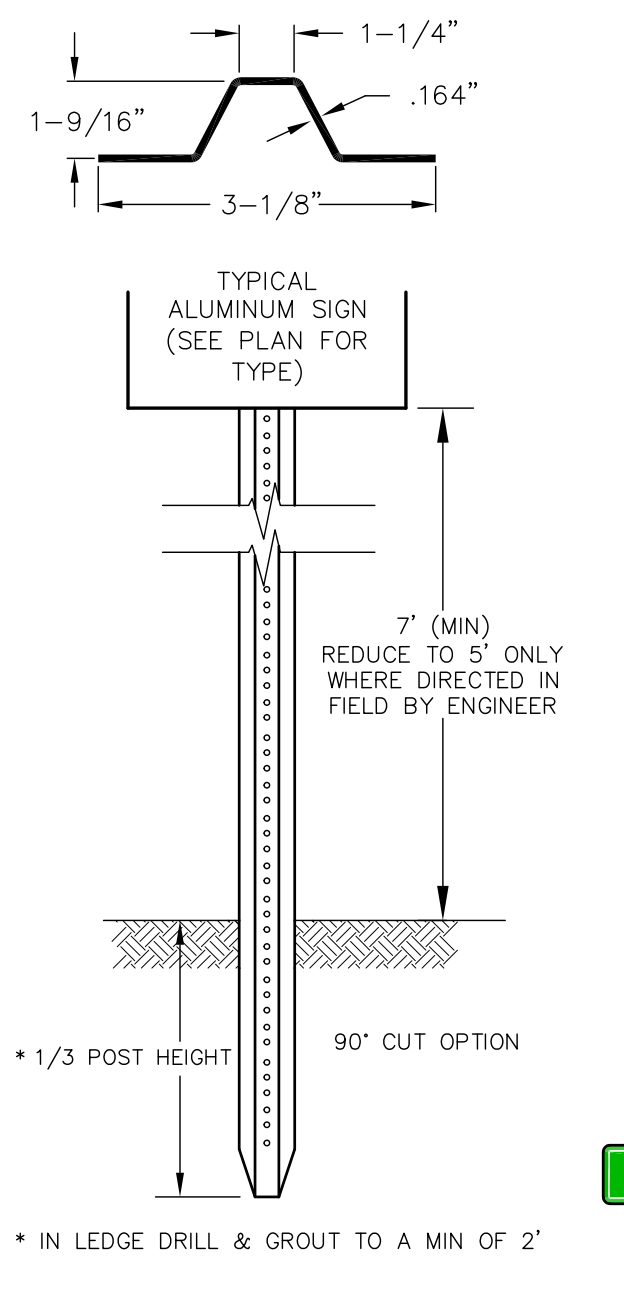
- NOTES**
- EACH GRAVEL BASE COURSE TO BE CONSTRUCTED AT THE PAVEMENT CROSS SLOPE.
  - REMOVE LEDGE 18" BELOW LOWEST WORK BEING INSTALLED.
  - REMOVE ALL LOAM, CLAY, MUCK, ORGANIC, YIELDING OR OTHERWISE UNSTABLE MATERIAL TO A MINIMUM OF 24" BELOW FINISH GRADE. ADDITIONAL DEPTH MAY BE REQUIRED BY THE GEOTECHNICAL REPORT (IF AVAILABLE) OR THE ENGINEER. SUCH ADDITIONAL REMOVAL SHALL REQUIRE THE PLACEMENT OF COMPACTED SAND OR GRAVEL BORROW APPROVED BY THE ENGINEER TO THE BOTTOM OF SUBGRADE.
  - THE OVER-EXCAVATION OF UNSUITABLE MATERIAL BEYOND THAT SPECIFIED ABOVE, THE INSTALLATION OF UNDERDRAINAGE, AND/OR THE INSTALLATION OF GEOTEXTILE FABRIC SHALL BE PROVIDED UPON DETERMINATION OF THE ENGINEER.
  - FILL BELOW PAVEMENT SUBGRADE SHALL BE SAND OR GRANULAR BORROW COMPACTED PER DOT REQUIREMENTS.
  - SITWORK CONTRACTOR SHALL COORDINATE GEOTECHNICAL ENGINEERING INSPECTIONS PRIOR TO PLACING GRAVELS.
  - SUBGRADE SHALL BE FREE OF VOIDS THAT ALLOW MOVEMENT AND/OR SETTLEMENT OF MATERIALS.
  - SUBGRADE SHALL BE ROLLED WITH A MINIMUM OF SIX PASSES OF A 10-TON VIBRATORY COMPACTOR OPERATING AT PEAK RATED FREQUENCY OR BY OTHER MEANS APPROVED BY THE ENGINEER.
  - SUBGRADE SHALL BE PROOF-ROLLED WITH A FULLY LOADED DUMP TRUCK PRIOR TO PLACEMENT OF SELECT GRAVELS. PROOF-ROLLING SHALL BE WITNESSED AND APPROVED BY THE ENGINEER.
  - BITUMINOUS PAVEMENT SHALL BE COMPACTED TO 90 TO 97 PERCENT OF ITS THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041. THE BASE AND SUBBASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THEIR MAXIMUM DRY DENSITIES AS DETERMINED BY ASTM D-1557. COMPACTION TESTING SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER FOR ALL MATERIAL COURSES AND THE RESULTS APPROVED BY THE ENGINEER PRIOR TO PLACING THE SUBSEQUENT COURSE.
  - TACK COAT SHALL BE APPLIED BETWEEN SUCCESSIVE LIFTS OF ASPHALT PAVEMENT.

**TYPICAL ROADWAY CROSS SECTION NOT TO SCALE**



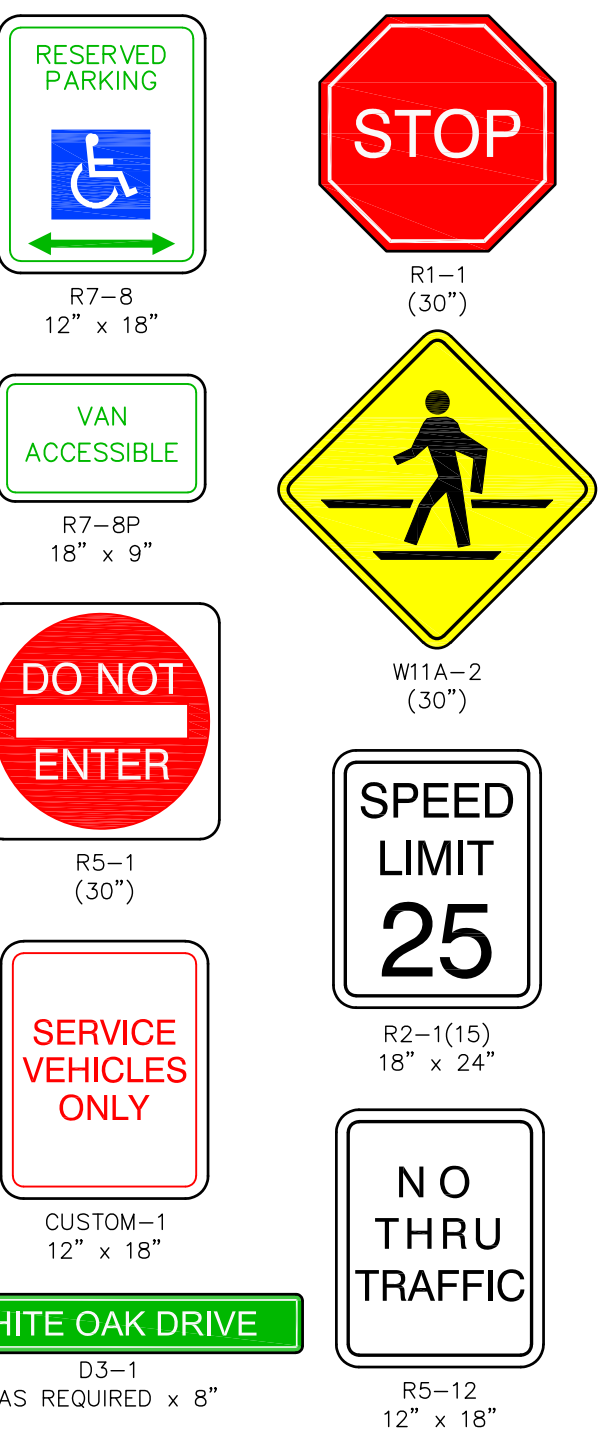
**CROSSWALK NOT TO SCALE**

**NOTE:**  
CONTRACTOR TO CONFIRM THE ORIENTATION AND LOCATION OF ALL CURB RAMPS AND WARNING PANELS WITH ENGINEER PRIOR TO INSTALLATION.

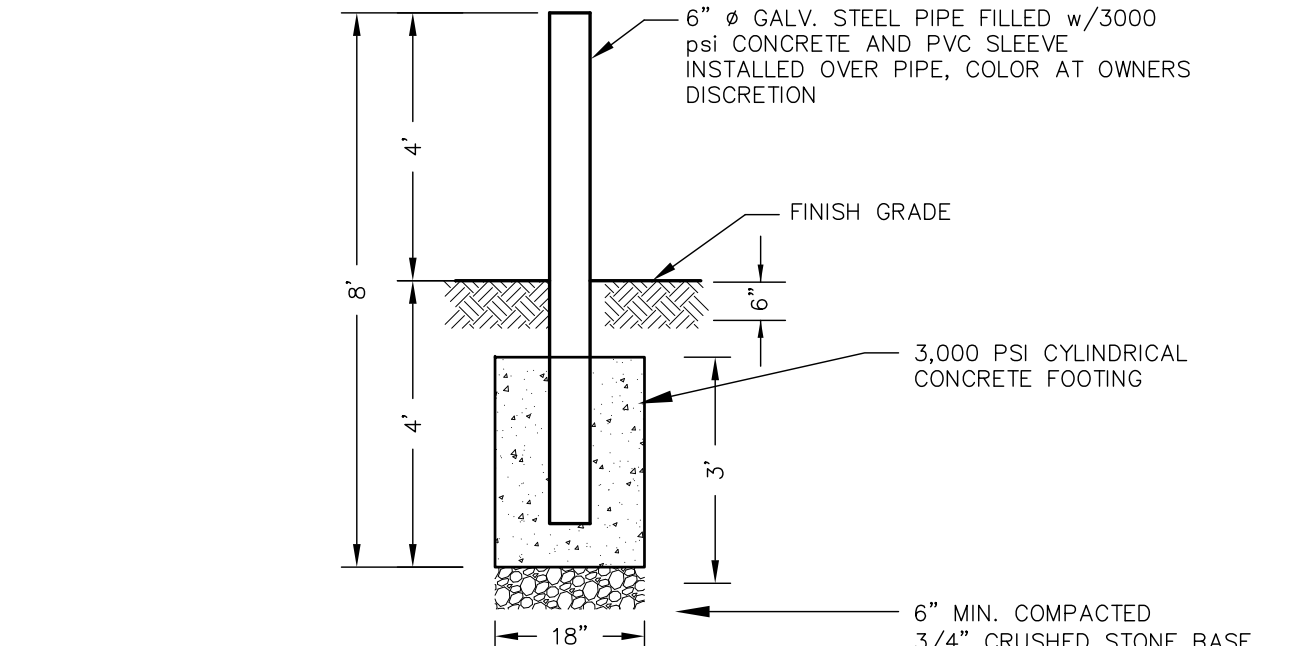


**LENGTH:** AS REQUIRED  
**WEIGHT PER LINEAR FOOT:** 2.50 LBS (MIN.)  
**HOLES:** 3/8" DIAMETER, 1" C-C FULL LENGTH  
**STEEL:** SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)

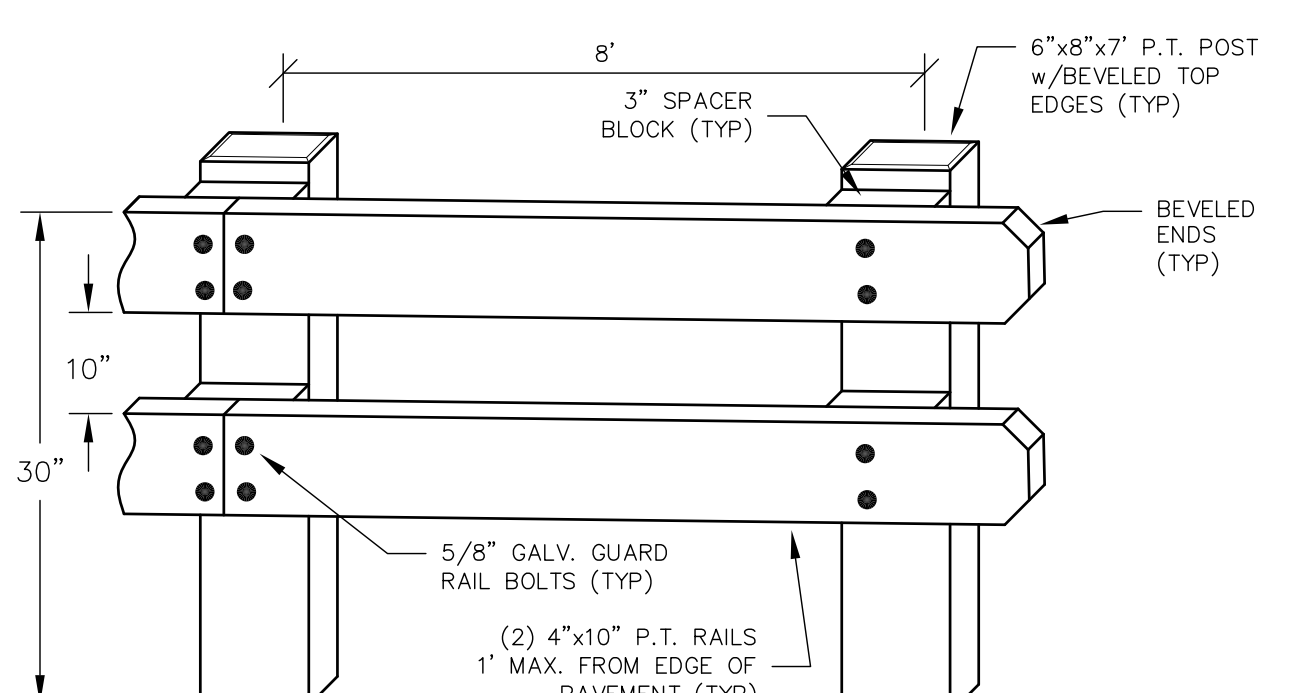
**SIGN DETAILS NOT TO SCALE**



- NOTES**
- ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
  - WHEN PLACED PERPENDICULAR TO A TRAVELLED WAY OR SIDEWALK, SIGN EDGE SHALL BE NO CLOSER THAN 2' TO THE EDGE OF PAVEMENT. GREATER MINIMUM DISTANCE MAY BE REQUIRED IN CERTAIN LOCATIONS.

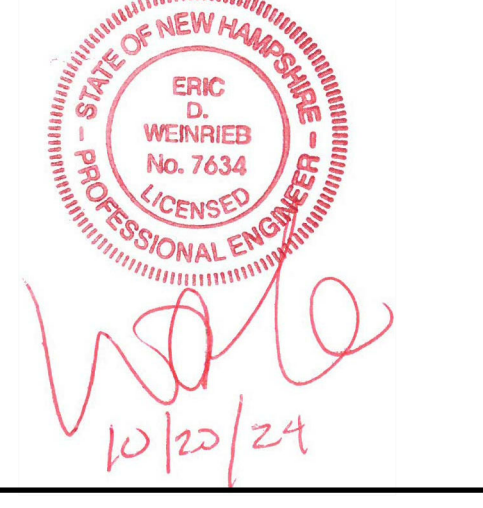


**BOLLARD NOT TO SCALE**



- NOTES**
- ALL POST AND RAIL MATERIAL SHALL BE PRESSURE TREATED (PT). PT POSTS SHALL BE RATED FOR GROUND CONTACT.

**WOOD BEAM GUARDRAIL NOT TO SCALE**



**NOT FOR CONSTRUCTION**

**ISSUED FOR:** REVIEW  
**ISSUE DATE:** OCTOBER 23, 2024

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EBS	09/10/24
1	REVISED PER COMMENTS	EBS	10/23/24

**DRAWN BY:** EBS  
**APPROVED BY:** EBS  
**DRAWING FILE:** 5015-SITE.dwg

**SCALE:**  
24" x 36" - 1" = NOT TO SCALE  
11" x 17" - 1" = NOT TO SCALE

**OWNER:**  
RIVERWOODS COMPANY AT EXETER  
7 RIVERWOODS DRIVE EXETER, NH 03833

**APPLICANT:**  
RIVERWOODS COMPANY AT EXETER  
7 RIVERWOODS DRIVE EXETER, NH 03833

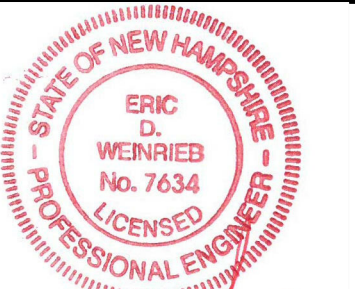
**PROJECT:**  
RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE EXETER, NH 03833

**TITLE:**

**DETAIL SHEET**

**SHEET NUMBER:**  
C-19





*note*  
10/20/24

**NOT FOR CONSTRUCTION**

ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

REVISIONS	
NO. DESCRIPTION	BY DATE
0 INITIAL SUBMISSION	EBS 09/10/24
1 REVISED PER COMMENTS	EBS 10/23/24

DRAWN BY: EBS

APPROVED BY: EBS

DRAWING FILE: 5015-SITE.dwg

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AT EXETER**  
  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

APPLICANT:  
**RIVERWOODS COMPANY  
AT EXETER**  
  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

PROJECT:  
**RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER**

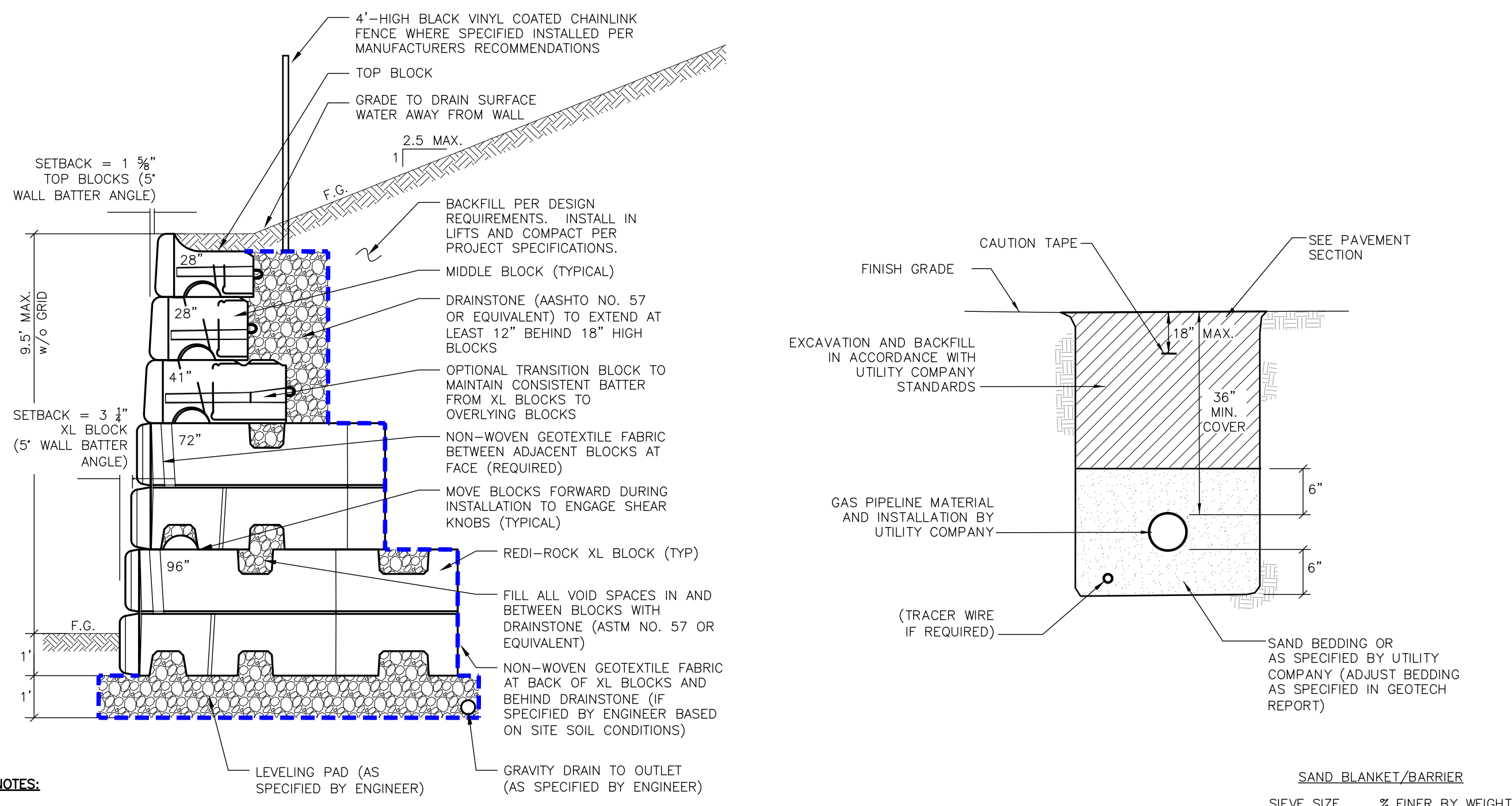
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:

DETAIL SHEET

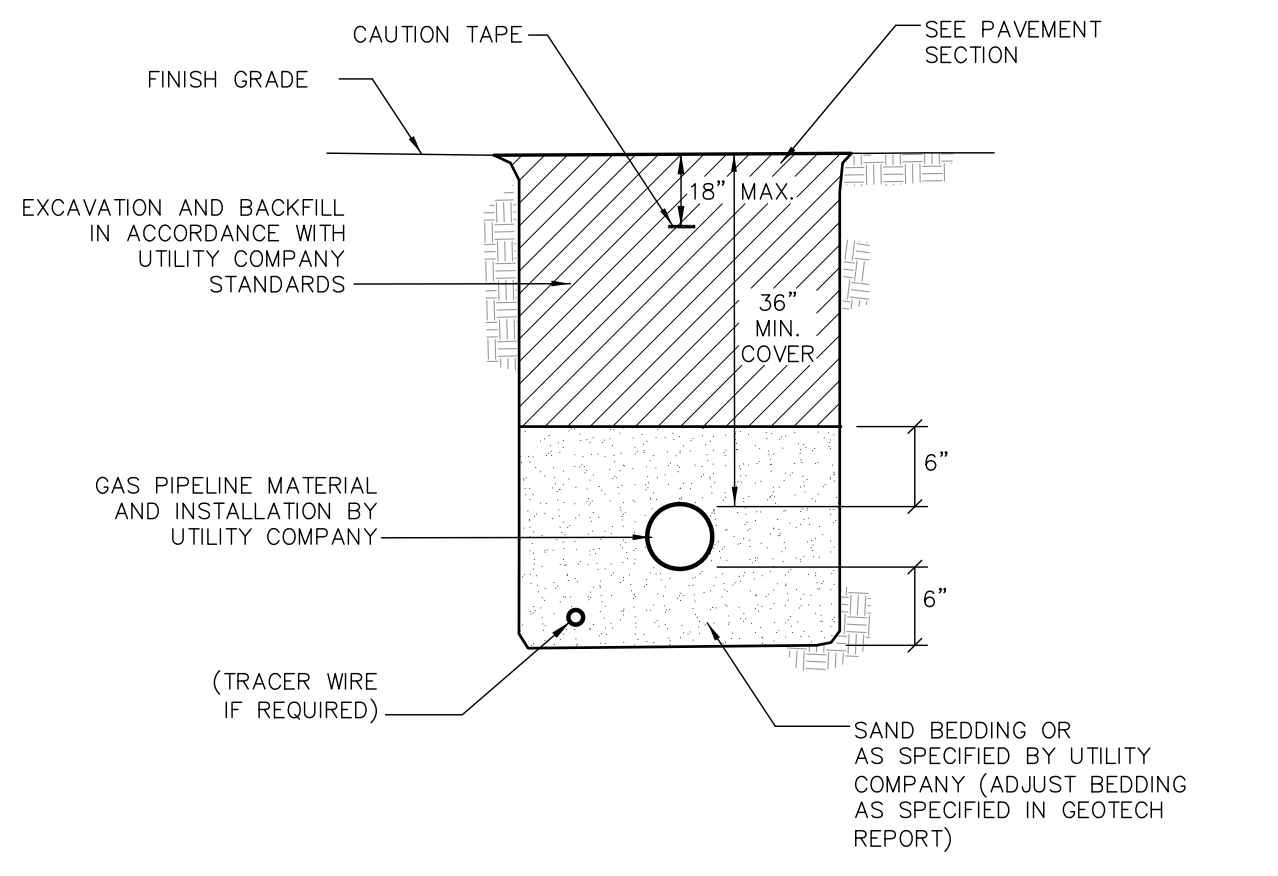
SHEET NUMBER:

**C-20**



- NOTES:**
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SHORING, SHEETING AND/OR BRACING OF EXCAVATION WALLS AGAINST PROPERTY LINES OR OTHER AREAS THAT ARE NOT TO BE UNDERSERVED.
  - WALL SHALL BE REDI-ROCK OR APPROVED EQUAL. ALTERNATE WALL TYPES AND MANUFACTURERS MAY BE APPROVED FOR USE AT THE DISCRETION OF THE ENGINEER.
  - NO RETAINING WALL WORK SHALL EXTEND BEYOND THE LIMITS OF THE PROJECT SITE.
  - THIS DRAWING IS FOR REFERENCE ONLY. FINAL PROJECT DESIGNS, INCLUDING ALL CONSTRUCTION DETAILS, SHALL BE PREPARED BY A NH LICENSED PROFESSIONAL STRUCTURAL ENGINEER USING THE ACTUAL CONDITIONS OF THE PROPOSED SITE. FINAL WALL DESIGN MUST ADDRESS BOTH INTERNAL AND EXTERNAL DRAINAGE AND ALL MODES OF WALL STABILITY.
  - FINAL WALL DESIGN PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

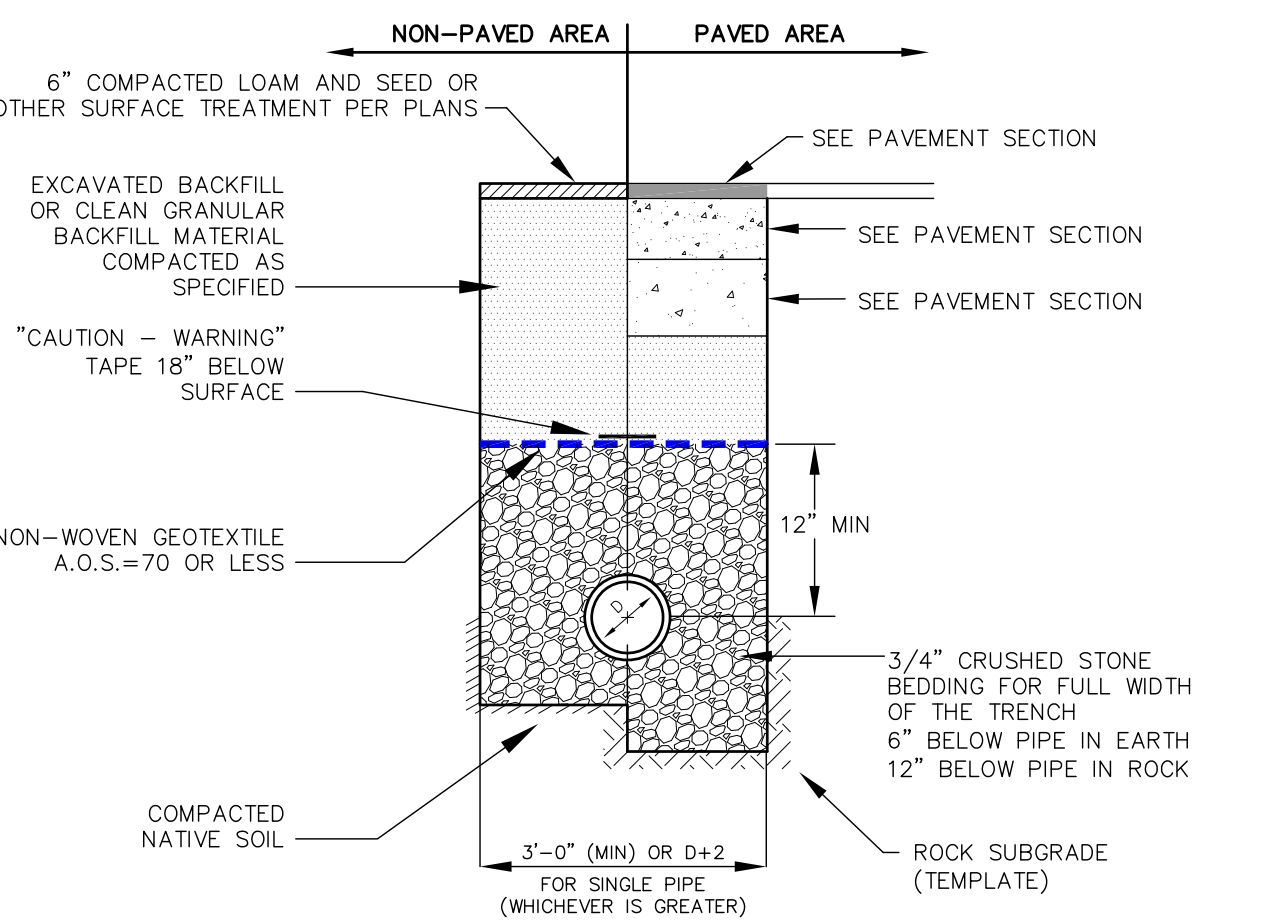
**MODULAR BLOCK RETAINING WALL NOT TO SCALE**



SAND BLANKET/BARRIER	
SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

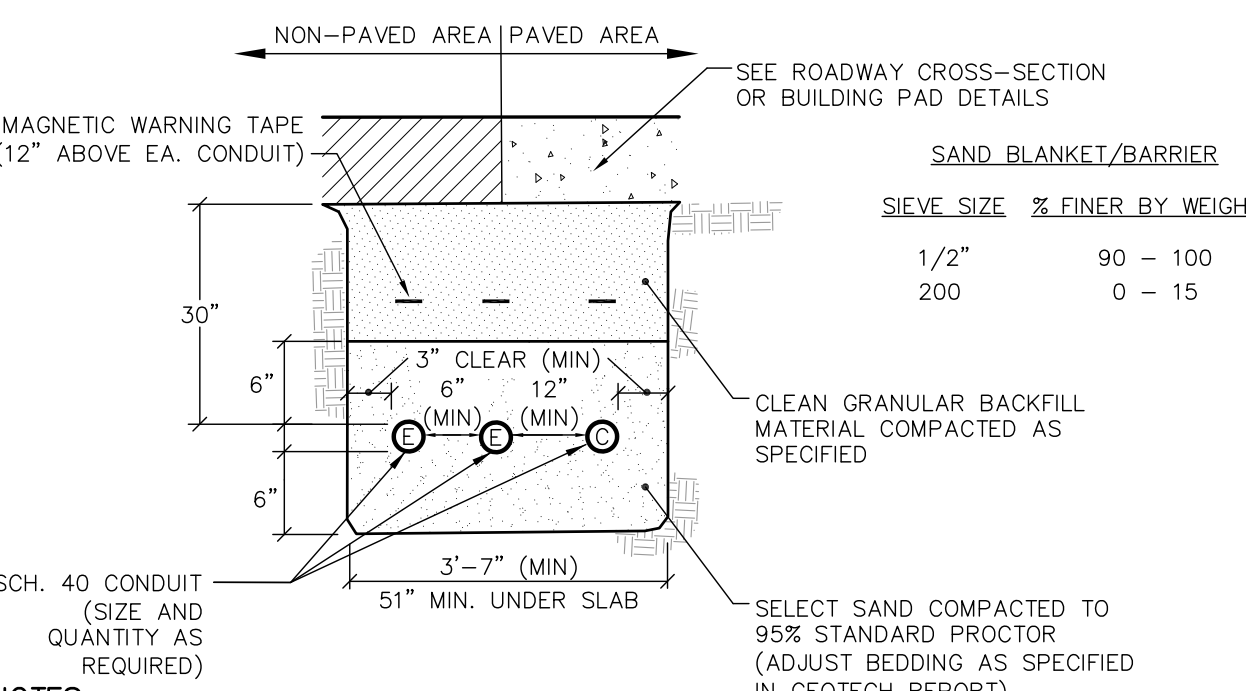
- NOTES:**
- CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND PROVIDE ALL EXCAVATION, COMPACTION AND BACKFILL REQUIRED FOR PIPE INSTALLATION.
  - BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

**GAS TRENCH NOT TO SCALE**



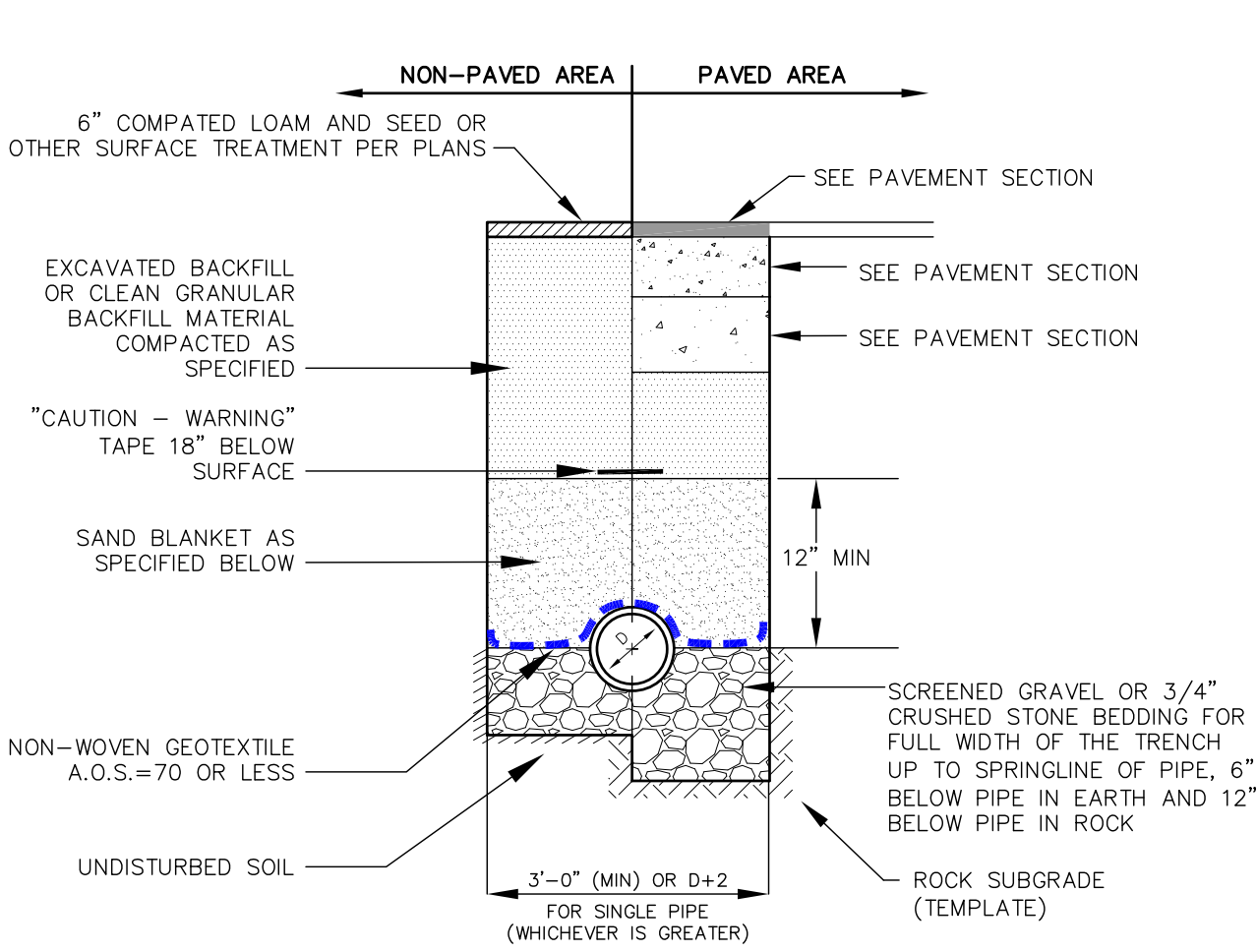
- NOTES:**
- BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
  - INSULATE GRAVITY SEWER AND FORCEMAINS WHERE THERE IS LESS THAN 5'-0" OF COVER WITH 2" THICK CLOSED CELL RIGID BOARD INSULATION, 18" ON EACH SIDE OF PIPE.
  - MAINTAIN 12" MINIMUM HORIZONTAL SEPARATION AND WIDEN TRENCH ACCORDINGLY IF MULTIPLE PIPES ARE IN TRENCH.

**SEWER TRENCH NOT TO SCALE**



- NOTES:**
- ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A 10'-FOOT HORIZONTAL SECTION OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP, UNLESS IN THE OPINION OF THE SERVICE PROVIDER DESIGNER, THE SWEEP-PVC JOINT IS NOT SUBJECT TO FAILURE DURING PULLING OF THE CABLE. ALL JOINTS ARE TO BE WATERTIGHT.
  - ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY CABLES AND 24 INCHES FOR SECONDARY CABLES.
  - BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY SERVICE PROVIDER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE IN 6-INCH LAYERS AND THOROUGHLY COMPACTED.
  - A SUITABLE PULLING STRING, CAPABLE OF 300 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE SERVICE PROVIDER IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT. A MINIMUM OF TWENTY-FOUR (24") INCHES OF ROPE SLACK SHALL REMAIN AT THE END OF EACH DUCT. PULL ROPE SHALL BE INSTALLED IN ALL CONDUIT FOR FUTURE PULLS. PULL ROPE SHALL BE NYLON ROPE HAVING A MINIMUM TENSILE STRENGTH OF THREE HUNDRED (300#) LBS.
  - SERVICE PROVIDER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT ALL CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD SERVICE PROVIDER BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
  - TYPICAL CONDUIT SIZES ARE 3-INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4-INCH FOR THREE PHASE SECONDARY, AND 5-INCH FOR THREE PHASE PRIMARY. HOWEVER, SERVICE PROVIDERS MAY REQUIRE DIFFERENT NUMBERS, TYPES AND SIZES OF CONDUIT THAN THOSE SHOWN HERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL CONDUIT SIZES, TYPES AND NUMBERS WITH EACH SERVICE PROVIDER PRIOR TO ORDERING THEM.
  - ROUTING OF CONDUIT, LOCATION OF MANHOLES, TRANSFORMERS, CABINETS, HANDHOLES, ETC., SHALL BE DETERMINED BY SERVICE PROVIDER DESIGN PERSONNEL. THE CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS PRIOR TO THE INSTALLATION OF ANY CONDUIT.
  - ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE, WHERE REQUIRED BY UTILITY PROVIDER. CONDUIT SHALL BE SUPPORTED IN PLACE USING PIPE STANCHIONS PLACED EVERY FIVE (5') FEET ALONG THE CONDUIT RUN.
  - UNDER A BUILDING SLAB THE CONDUIT SHALL BE ENCASED IN 8" OF CONCRETE ON ALL SIDES.
  - ALL CONDUIT TERMINATIONS SHALL BE CAPPED TO PREVENT DEBRIS FROM ENTERING CONDUIT.

**ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE**

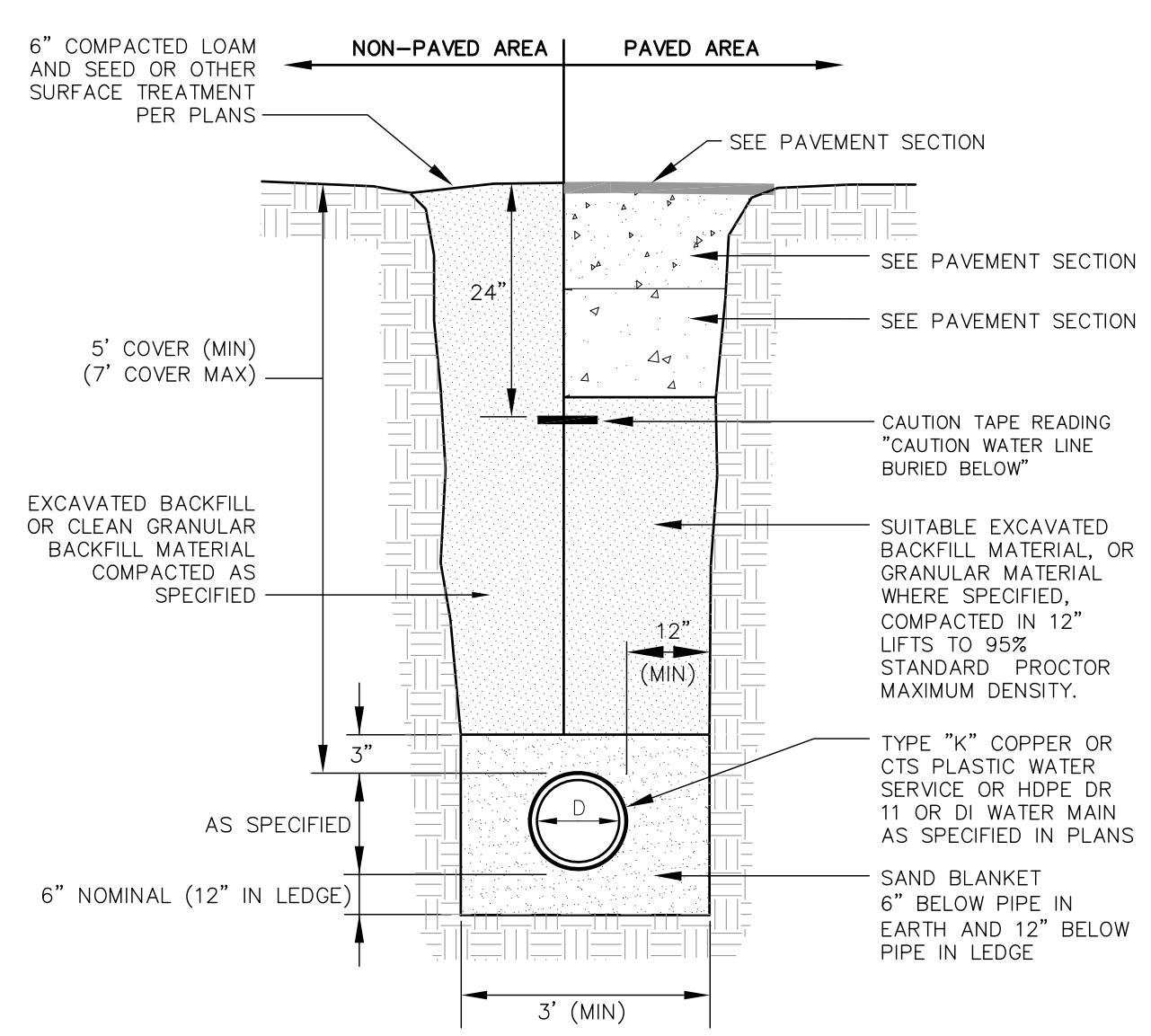


- NOTES:**
- BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
  - INSULATE GRAVITY SEWER AND FORCEMAINS WHERE THERE IS LESS THAN 5'-0" OF COVER WITH 2" THICK CLOSED CELL RIGID BOARD INSULATION, 18" ON EACH SIDE OF PIPE.
  - MAINTAIN 12" MINIMUM HORIZONTAL SEPARATION AND WIDEN TRENCH ACCORDINGLY IF MULTIPLE PIPES ARE IN TRENCH.

SAND BLANKET/BARRIER		SCREENED GRAVEL OR CRUSHED STONE BEDDING*	
SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
1/2"	90 - 100	1"	100
200	0 - 15	3/4"	90 - 100
		3/8"	20 - 55
		# 4	0 - 10
		# 8	0 - 5

\* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

**DRAINAGE TRENCH NOT TO SCALE**



SAND BLANKET/BARRIER	
SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

- NOTES:**
- BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
  - ALL TRENCHING AND BACKFILL SHALL CONFORM WITH THE STANDARDS OF EXETER DPW.

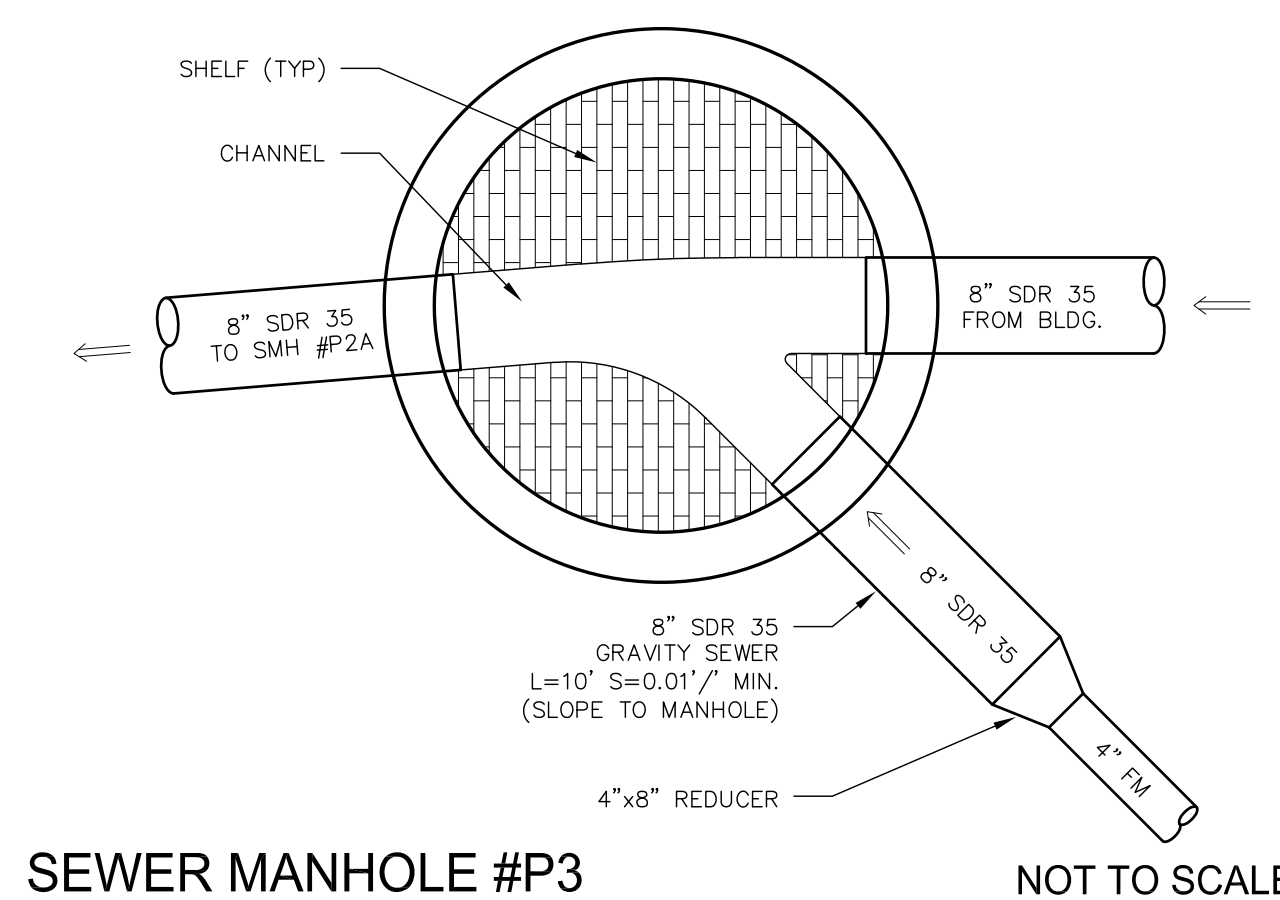
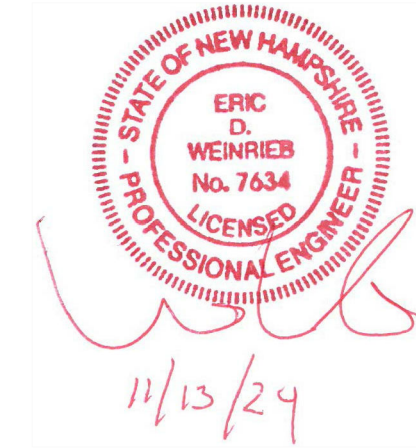
**WATER MAIN TRENCH NOT TO SCALE**

**STANDARD TRENCH NOTES**

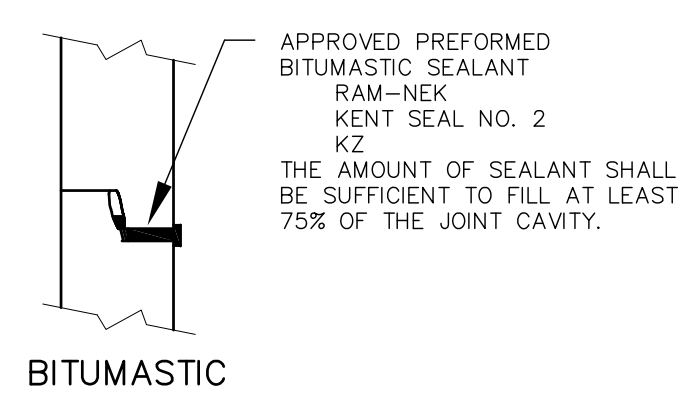
- ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWING.
- BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2" INCH TO 1/2" INCH SHALL BE USED.
- SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. BLANKET MAY BE REPLACED WITH BEDDING MATERIAL FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE AND THE GEOTEXTILE IS RELOCATED ACCORDINGLY.
- SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT, OR CLAY, ALL EXCAVATED LEDGE MATERIAL, ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT ONLY IF SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION WILL BE PRESERVED.
- BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES - DIVISIONS 300 AND 400 RESPECTIVELY.
- SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
- W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL, FILL AND/OR LOAM SHALL BE MOUND TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DOT STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#) CONCRETE AS FOLLOWS:  
CEMENT: 6.0 BAGS PER CUBIC YARD  
WATER: 5.75 GALLONS PER BAG  
CEMENT MAXIMUM SIZE OF AGGREGATE: 1 INCH  
CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
- CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
- NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO CITY STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.
- THE CONTRACTOR SHALL INSTALL TRENCH DAMS IN ACCORDANCE WITH NHDES REGULATIONS.
- SEWER TRENCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER FACILITIES, LATEST EDITION.

**LIGHTING TRENCH SECTION NOT TO SCALE**





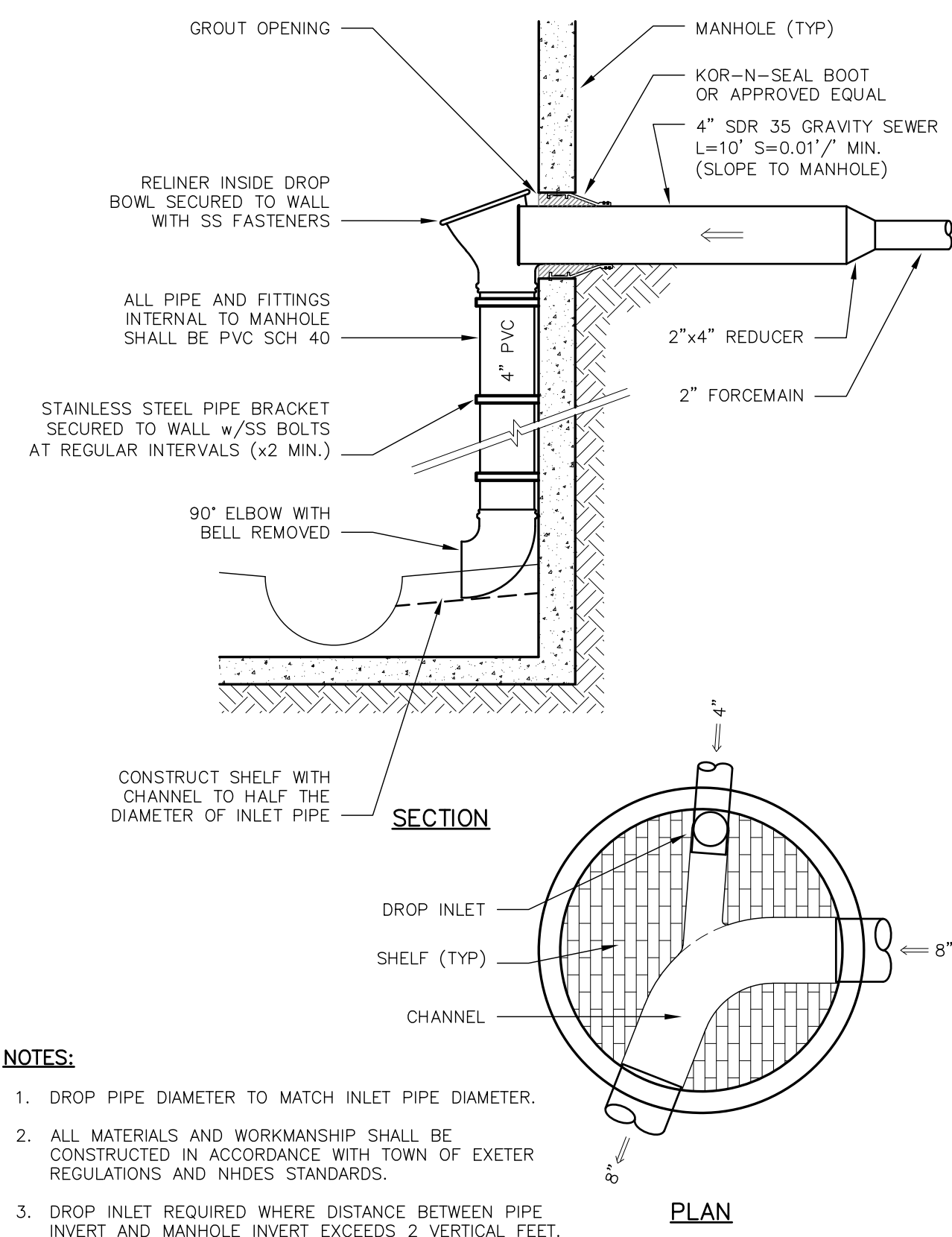
**SEWER MANHOLE #P3** NOT TO SCALE



**BITUMASTIC**

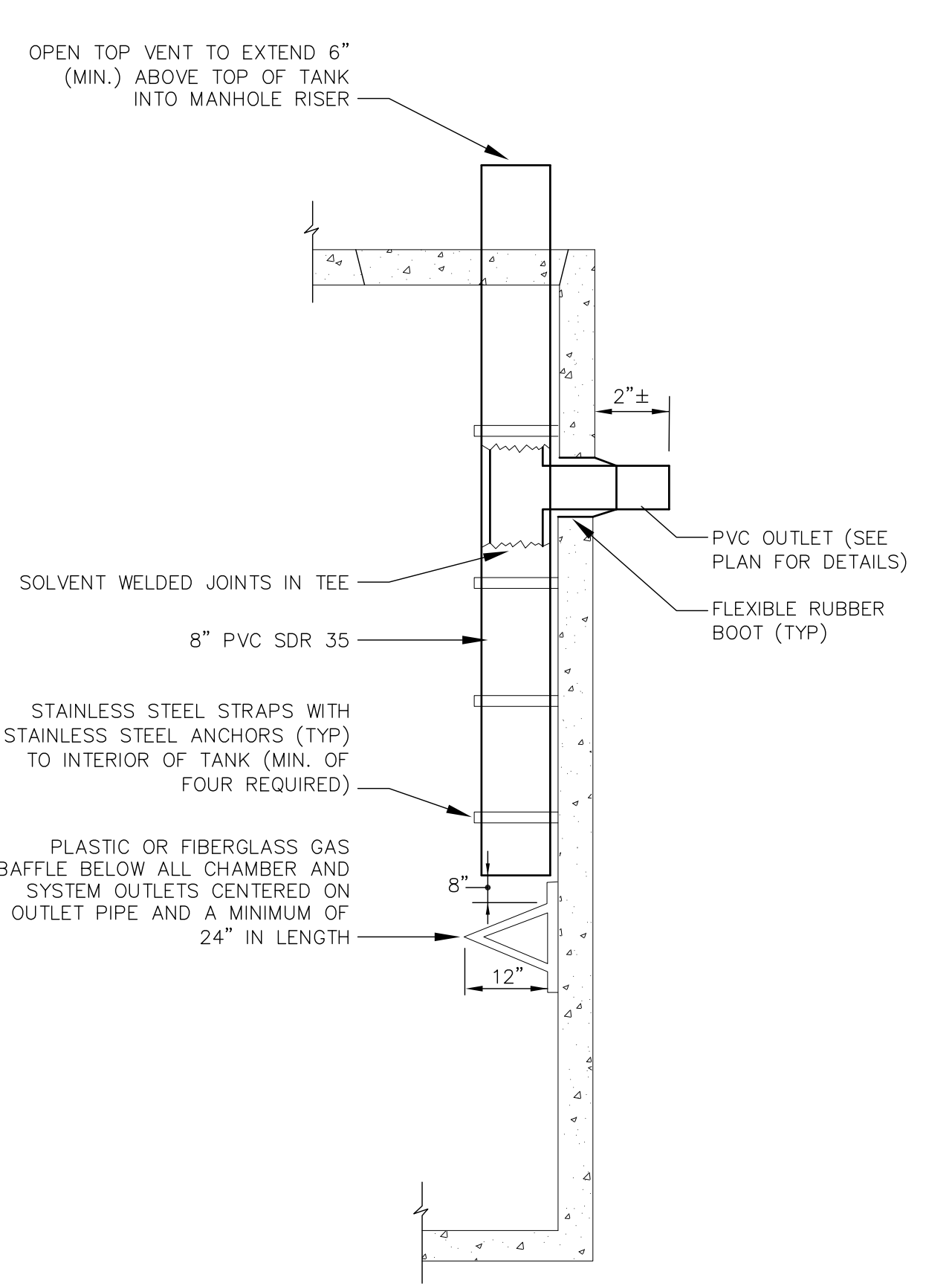
NOTE: ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

**SEWER MANHOLE DETAIL B** NOT TO SCALE

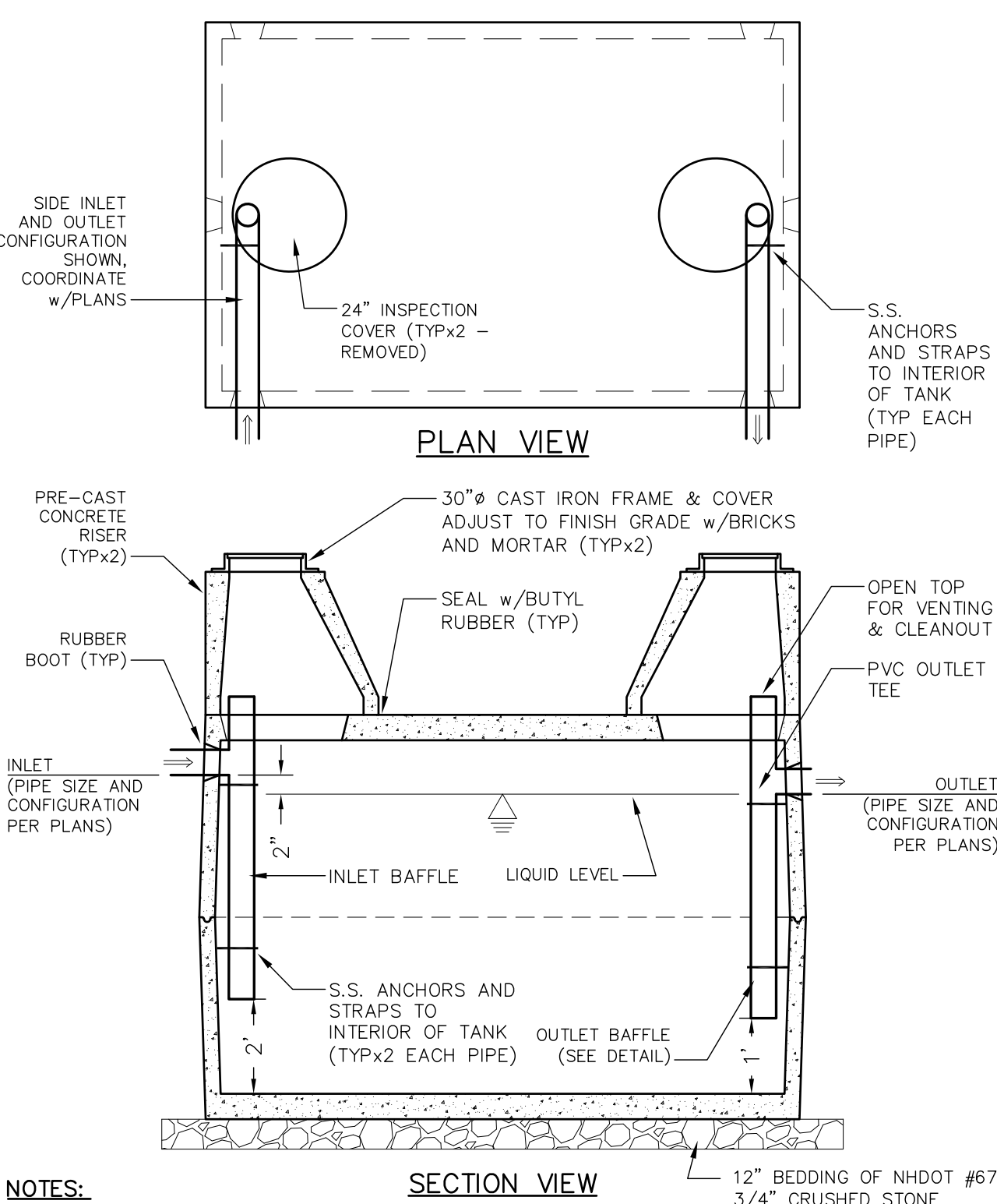


- NOTES:**
- DROP PIPE DIAMETER TO MATCH INLET PIPE DIAMETER.
  - ALL MATERIALS AND WORKMANSHIP SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF EXETER REGULATIONS AND NHDES STANDARDS.
  - DROP INLET REQUIRED WHERE DISTANCE BETWEEN PIPE INVERT AND MANHOLE INVERT EXCEEDS 2 VERTICAL FEET.
  - ANCHOR STRAPS AND BOLTS SHALL BE TYPE 316 STAINLESS STEEL AND EVENLY SPACED 1'-4" ON CENTER. STRAPS - 1" WIDE MIN. BOLTS - 1/2" X 2-1/2" LONG

**SEWER MANHOLE #P2A / INTERNAL DROP** NOT TO SCALE

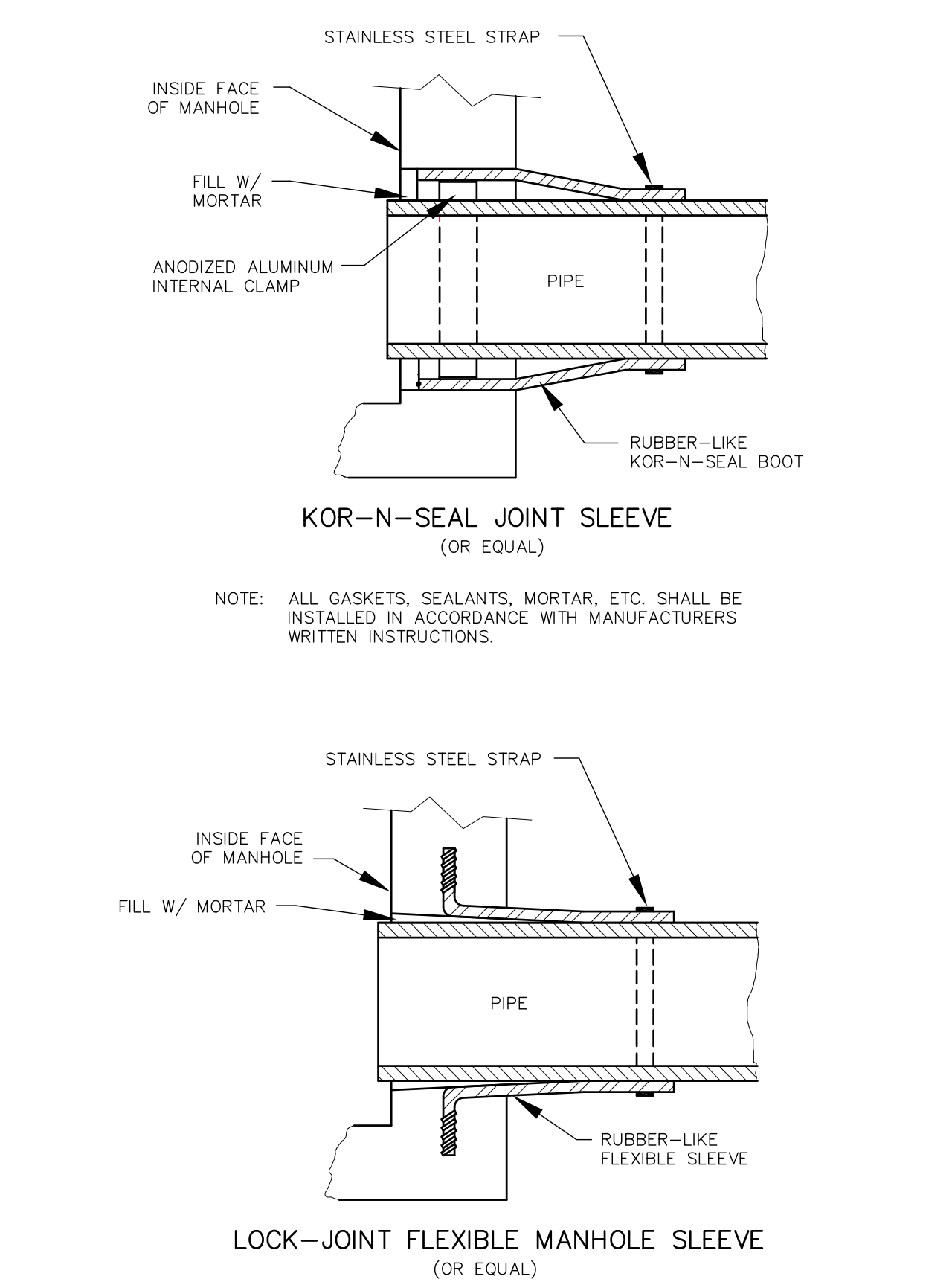


**GREASE TRAP OUTLET BAFFLE DETAIL** NOT TO SCALE

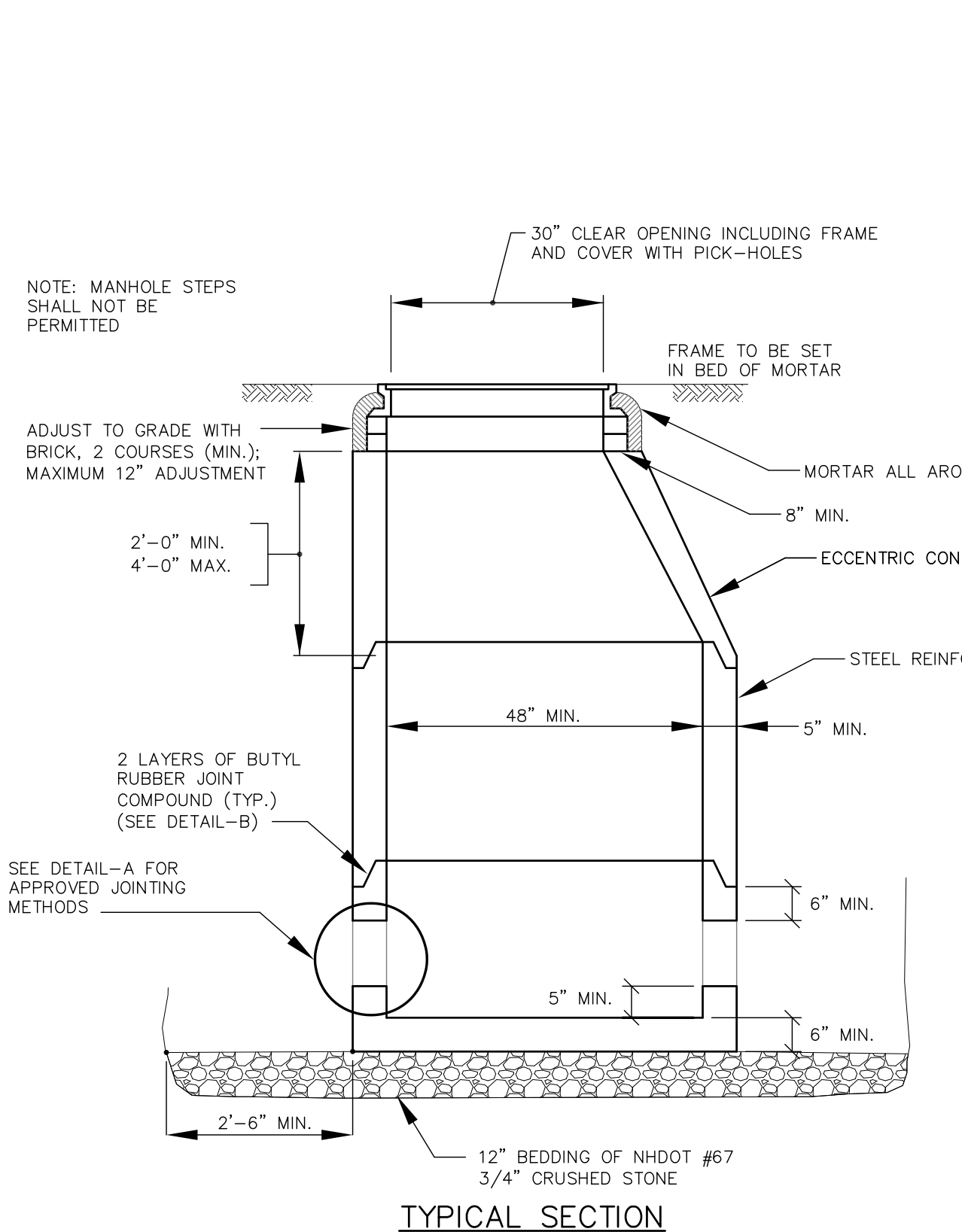


- NOTES:**
- TANK SHALL BE 4,000 PSI (MIN.) STEEL REINFORCED CONCRETE CAPABLE OF H-20 LOADING.
  - KEYED TANK JOINTS SHALL BE SEALED WITH BUTYL RUBBER.
  - TANK SHALL BE MANUFACTURED BY EF SHEA OR APPROVED EQUAL TO THE CAPACITY SHOWN. TANK DIMENSIONS MAY VARY DEPENDING ON THE MANUFACTURER.
  - INLET AND OUTLET PIPE SIZES AND CONFIGURATION SHALL BE CONSTRUCTED PER THE PLANS.

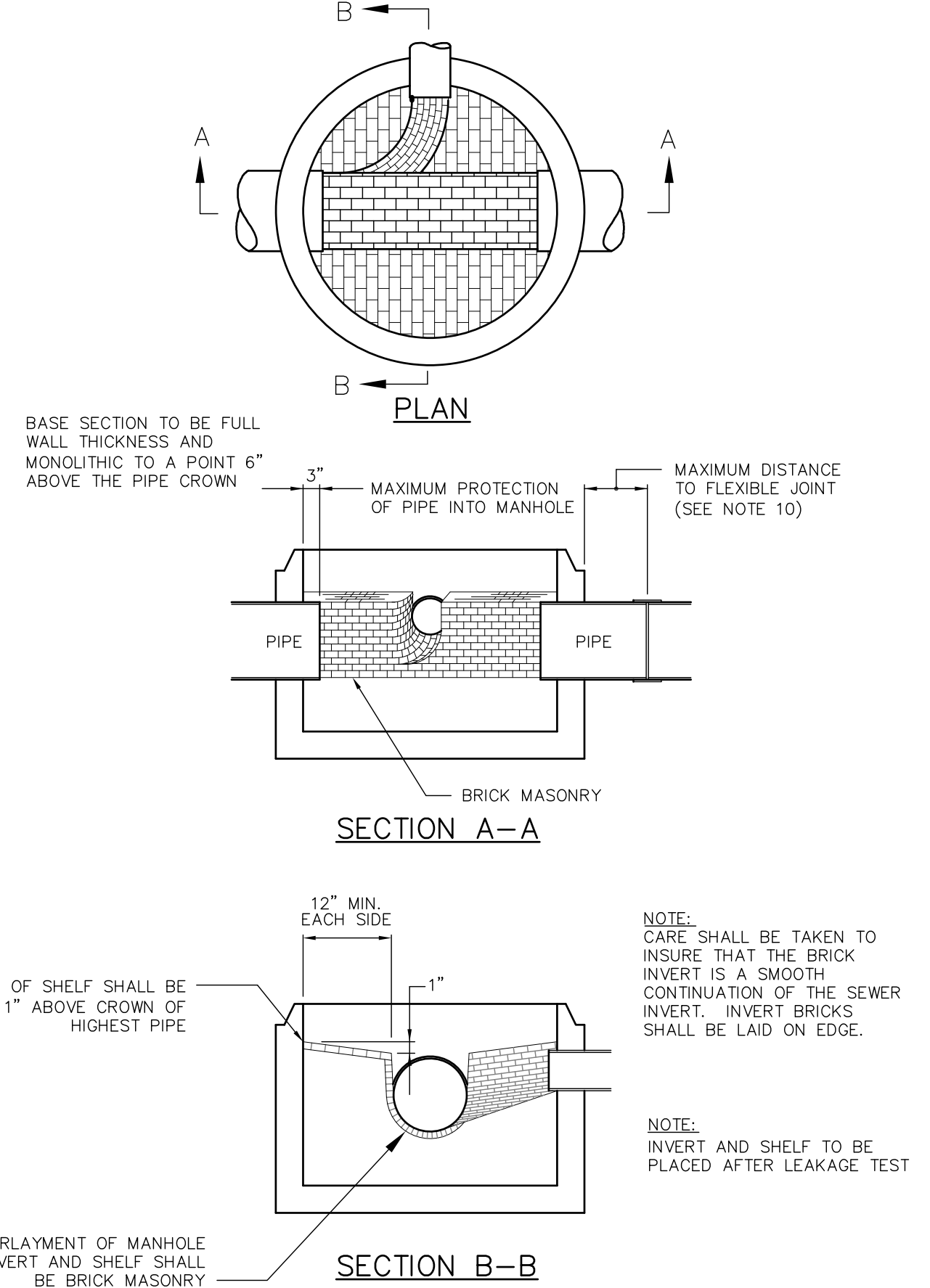
**1,000 GALLON GREASE TRAP** NOT TO SCALE



**SEWER MANHOLE DETAIL A** NOT TO SCALE



**SEWER MANHOLE** NOT TO SCALE



**MANHOLE NOTES:**

- MANHOLE NOTES:**
- IT IS THE INTENTION OF THE NHDES THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE COMMISSION FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT IN ANY APPROVED MANHOLE. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MAN-HOLE CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE, A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
  - BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED.
  - PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.
  - LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN'S STANDARD SPECIFICATIONS AND WITH NHDES Env-Wq 704.17.
  - INVERTS AND SHELVES MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES, OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. BRICK MASONRY SHALL CONFORM WITH ASTM C32.
  - MORTAR USED FOR MANHOLE CONSTRUCTION SHALL CONFORM WITH NHDES Env-Wq 704.13.
  - FRAMES AND COVERS MANHOLE FRAMES AND COVERS SHALL CONFORM WITH ASTM A48/48M, BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) LETTER "S" FOR SEWERS OR "D" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
  - BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33.
 

100% PASSING 1 INCH SCREEN	0-10% PASSING #4 SIEVE
90-100% PASSING 3/4 INCH SCREEN	0-5% PASSING #8 SIEVE
20-55% PASSING 3/8 INCH SCREEN	

 WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2" TO 1/2" SHALL BE USED.
  - CONCRETE FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000 LBS.) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:
 

CEMENT	6.0 BAGS PER CUBIC YARD
WATER	5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE	1 INCH 9.
  - FLEXIBLE JOINT A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
 

PVC PIPE - 60'
RCP & CI PIPE - ALL SIZES - 48'
AC & VC PIPE - UP THROUGH 12" DIAMETER - 18'
AC & VC PIPE - LARGER THAN 12" DIAMETER - 36'
  - SHALLOW MANHOLE IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

DRAWN BY: \_\_\_\_\_ EBS  
APPROVED BY: \_\_\_\_\_ EBS  
DRAWING FILE: \_\_\_\_\_ 5015-SITE.dwg

**SCALE:**  
24" x 36" - 1" = NOT TO SCALE  
11" x 17" - 1" = NOT TO SCALE

**OWNER:**  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

**APPLICANT:**  
RIVERWOODS COMPANY  
AT EXETER  
7 RIVERWOODS DRIVE  
EXETER, NH 03833

**PROJECT:**  
RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

**TITLE:**

**DETAIL SHEET**

**SHEET NUMBER:**  
C-21

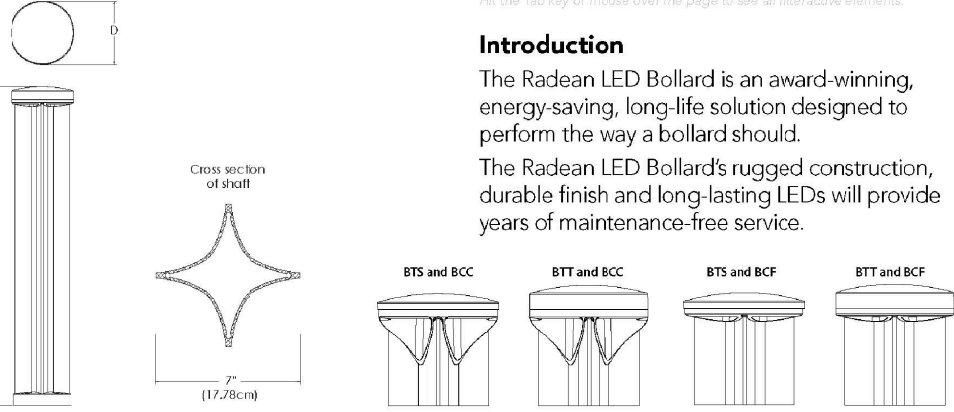




### RADEAN Bollard LED Site Luminaire

Ordering information form for RADEAN Bollard LED Site Luminaire

Specifications: Diameter: 4" x 4.25" (20.96cm), Height: 41" x 41.5" Standard (105.41cm), Weight (max): 20 lbs (9.07kg)



Introduction: The Radean LED Bollard is an award-winning, energy-saving, long-life solution designed to perform the way a bollard should.

#### Ordering Information

Table with columns: Series, Performance Package, Color Temperature, Distribution, Voltage, Control options, and Bulb Top (options).

Table with columns: Bulb Top (options), Flat Crown, Other options, and Finish (options).

Accessories table listing various add-on components like bollard caps and emergency backup options.

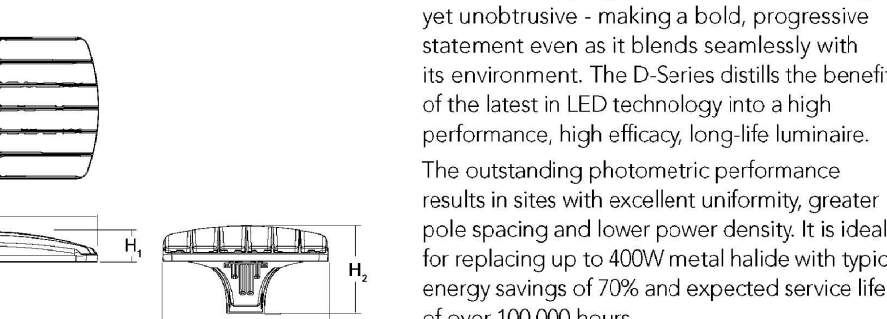
Notes and contact information for Lithonia Lighting Commercial Outdoor.



### D-Series Size 0 LED Area Luminaire

Ordering information form for D-Series Size 0 LED Area Luminaire

Specifications: EPA: 0.95 ft (29cm), Length: 26" (66cm), Width: 12" (30cm), Height: 2" (5cm), Weight (max): 16 lbs (7.2kg)



Introduction: The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

#### Ordering Information

Table with columns: Series, LEDs, Color Temperature, Distribution, Voltage, and Mounting.

Table with columns: Control options, Shipped installed, Other options, and Finish (options).

Accessories table listing various add-on components like bollard caps and emergency backup options.

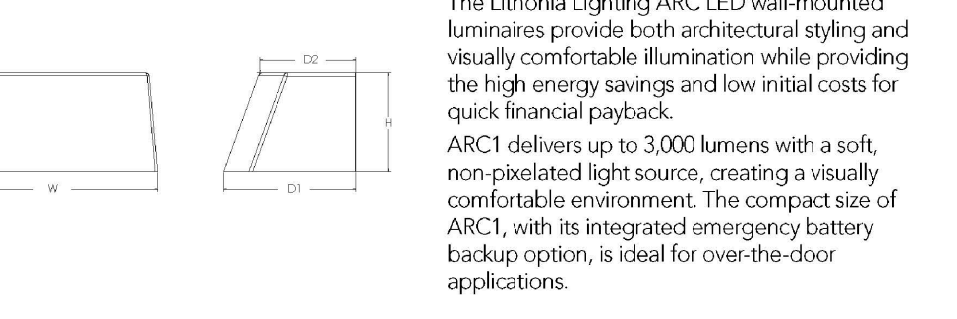
Notes and contact information for Lithonia Lighting Commercial Outdoor.



### ARC LED Architectural Wall Luminaire

Ordering information form for ARC LED Architectural Wall Luminaire

Specifications: Depth (D1): 6.5", Depth (D2): 4.75", Height: 5", Width: 11", Weight (without options): 7 lbs



Introduction: The Lithonia Lighting ARC LED wall-mounted luminaires provide both architectural styling and visually comfortable illumination while providing the high energy savings and low initial costs for quick financial payback.

#### ARC LED Family Overview

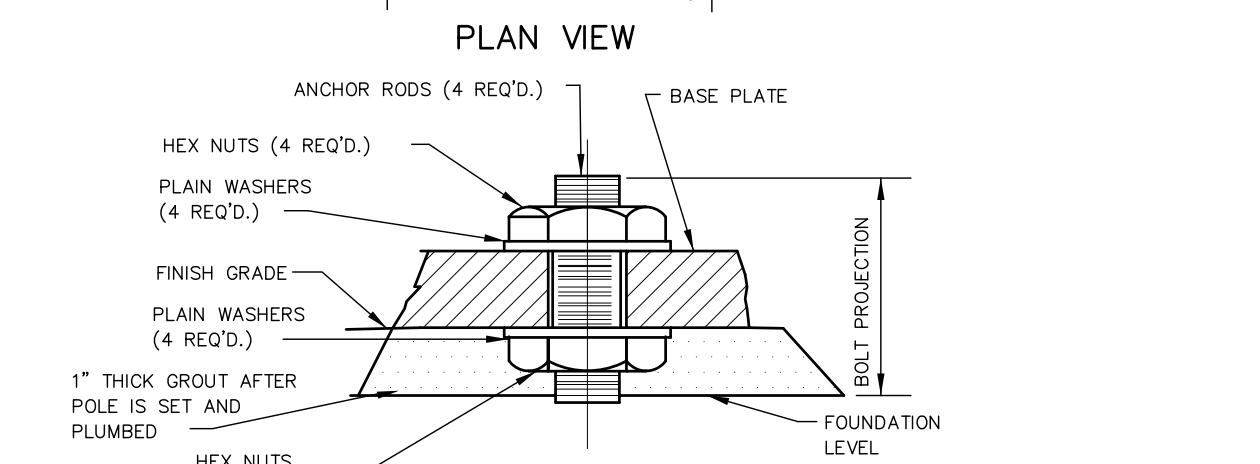
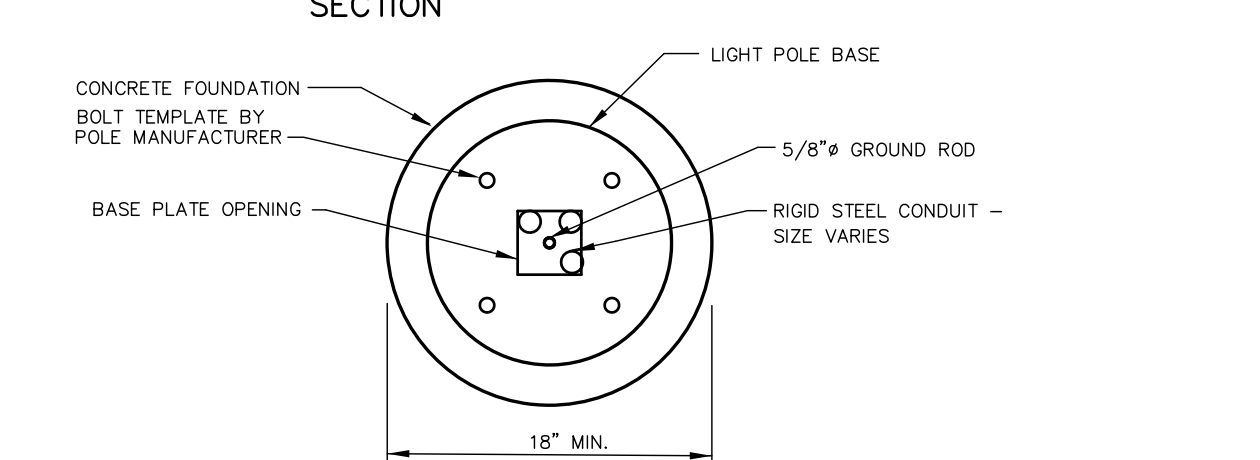
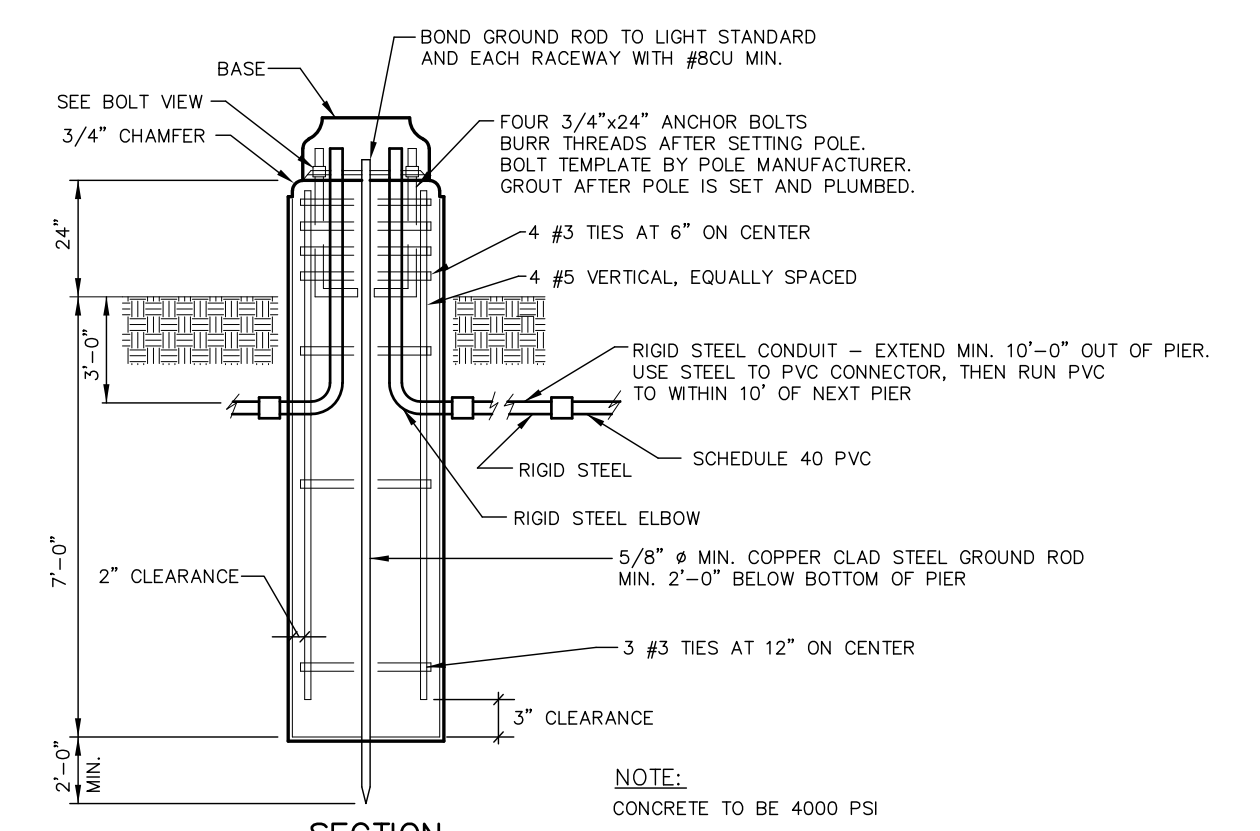
Summary table of ARC LED luminaire models and their specifications.

#### Ordering Information

Table with columns: Series, Package, Color Temperature, Voltage, Options, and Finish.

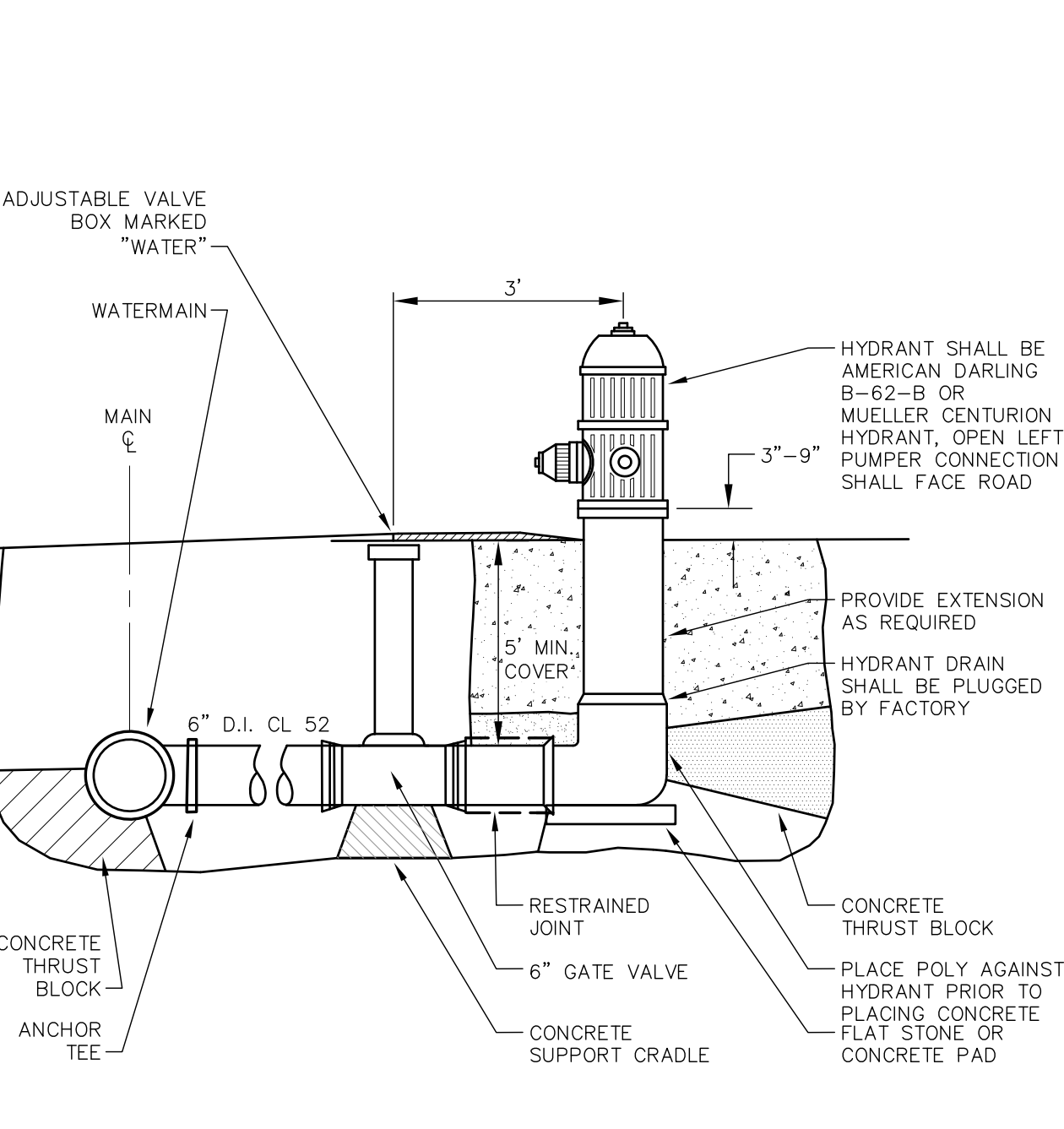
Accessories table listing various add-on components like bollard caps and emergency backup options.

Notes and contact information for Lithonia Lighting Commercial Outdoor.



### LIGHT POLE BASE

NOT TO SCALE



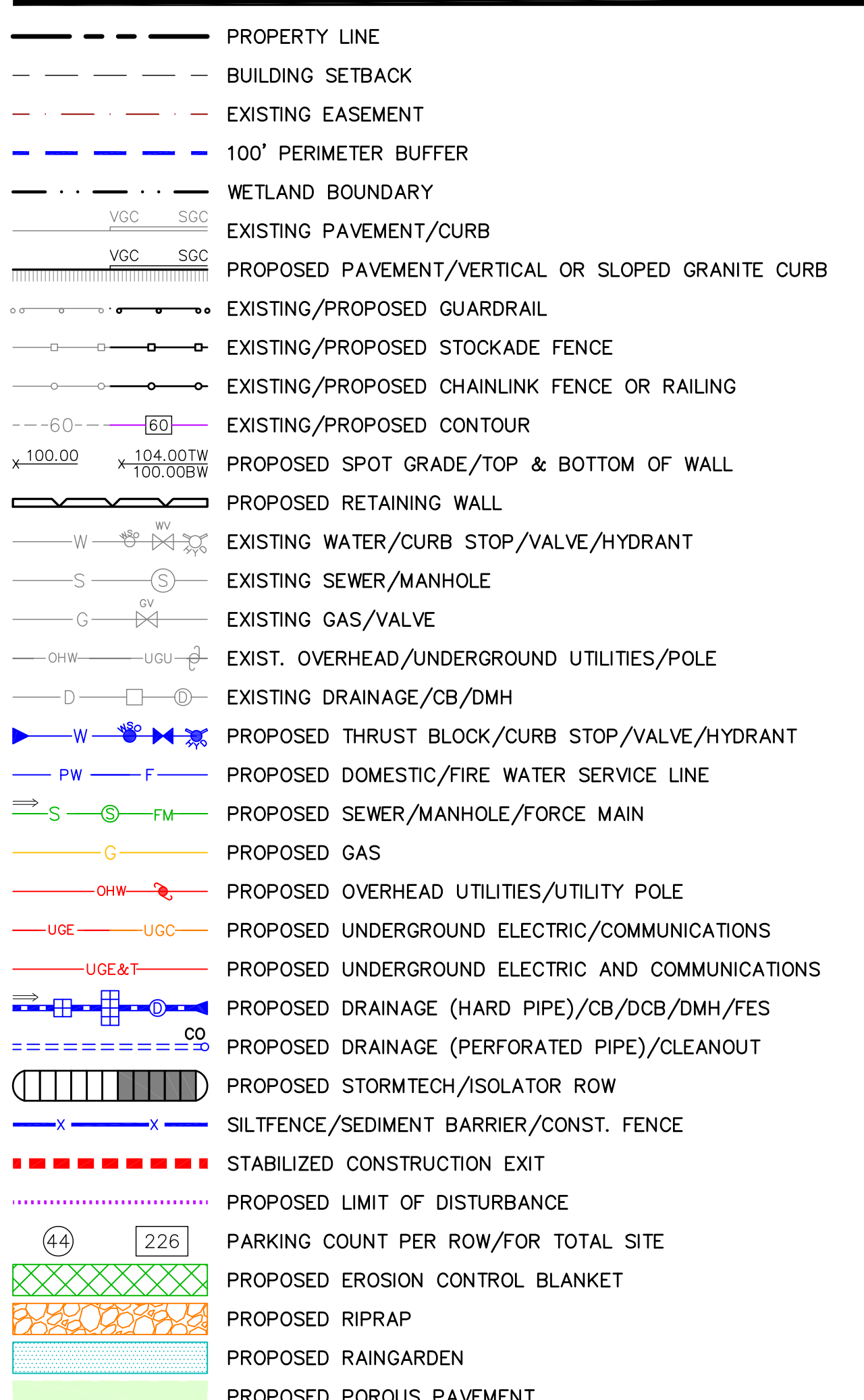
### FIRE HYDRANT

NOT TO SCALE

- Notes for fire hydrant installation and operation, including requirements for hydrant placement and gate valve operation.

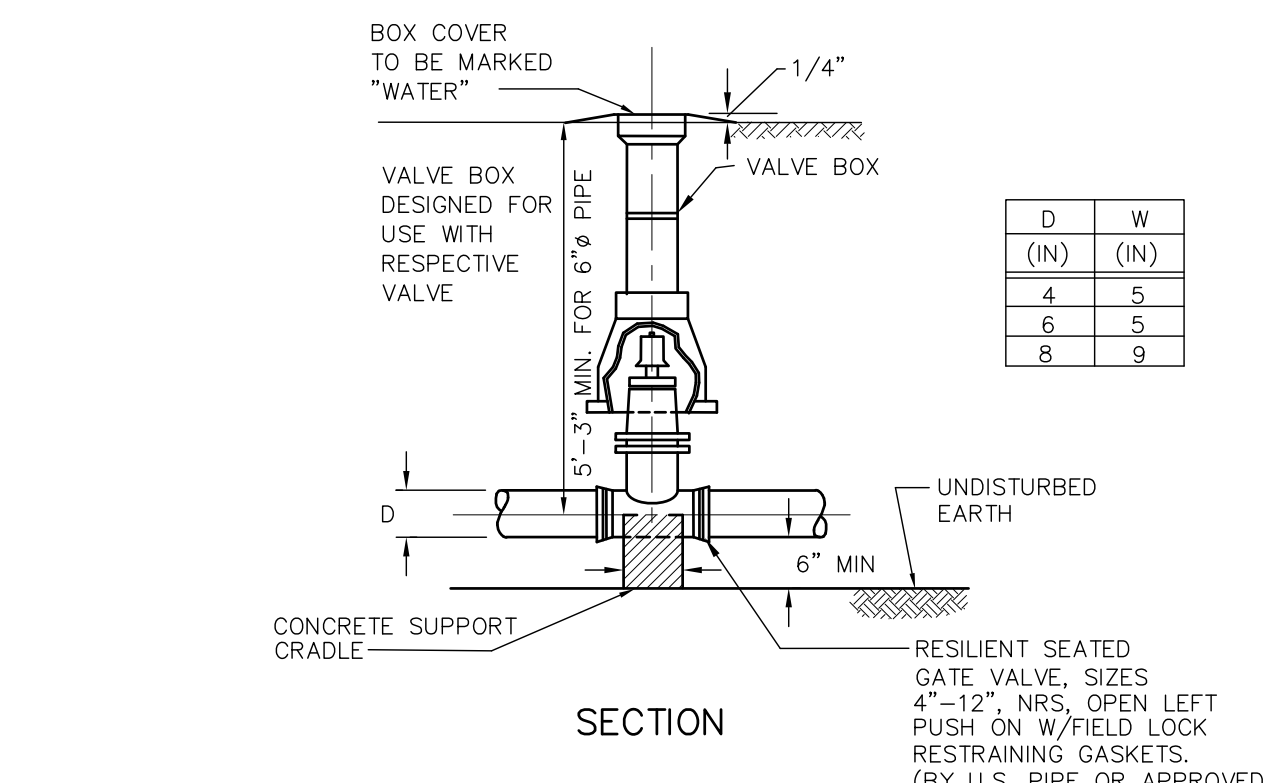
### LIGHT FIXTURE CUT SHEETS

#### LEGEND



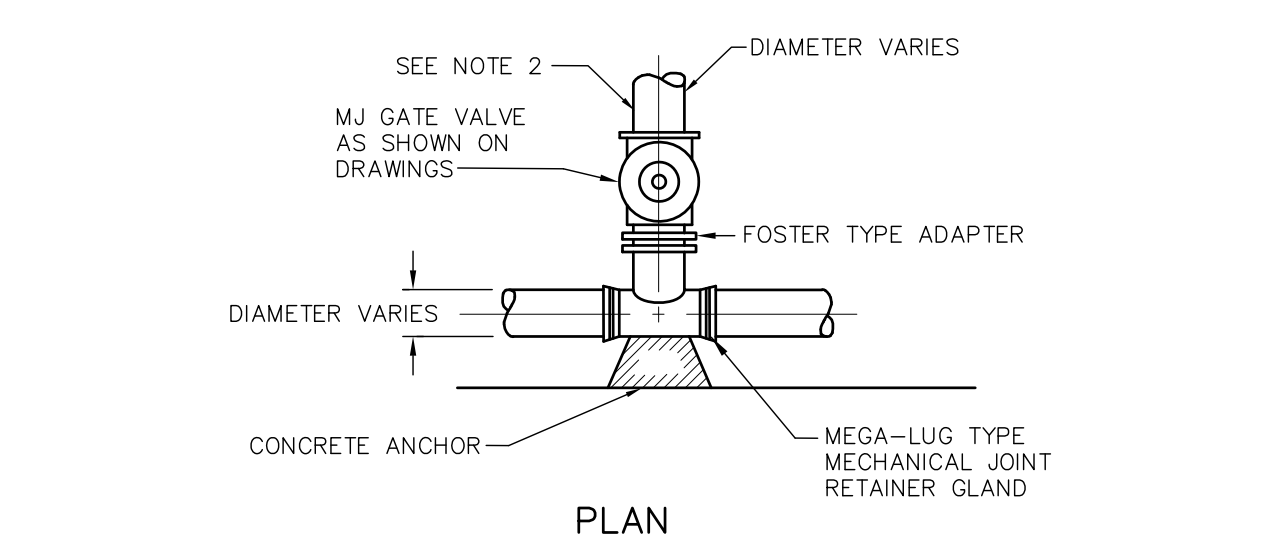
### WATER VALVE

NOT TO SCALE



### TEE & GATE VALVE ASSEMBLY

NOT TO SCALE



- Notes for tee and gate valve assembly, including requirements for gate valve operation and branch piping.

### THRUST BLOCKING

NOT TO SCALE

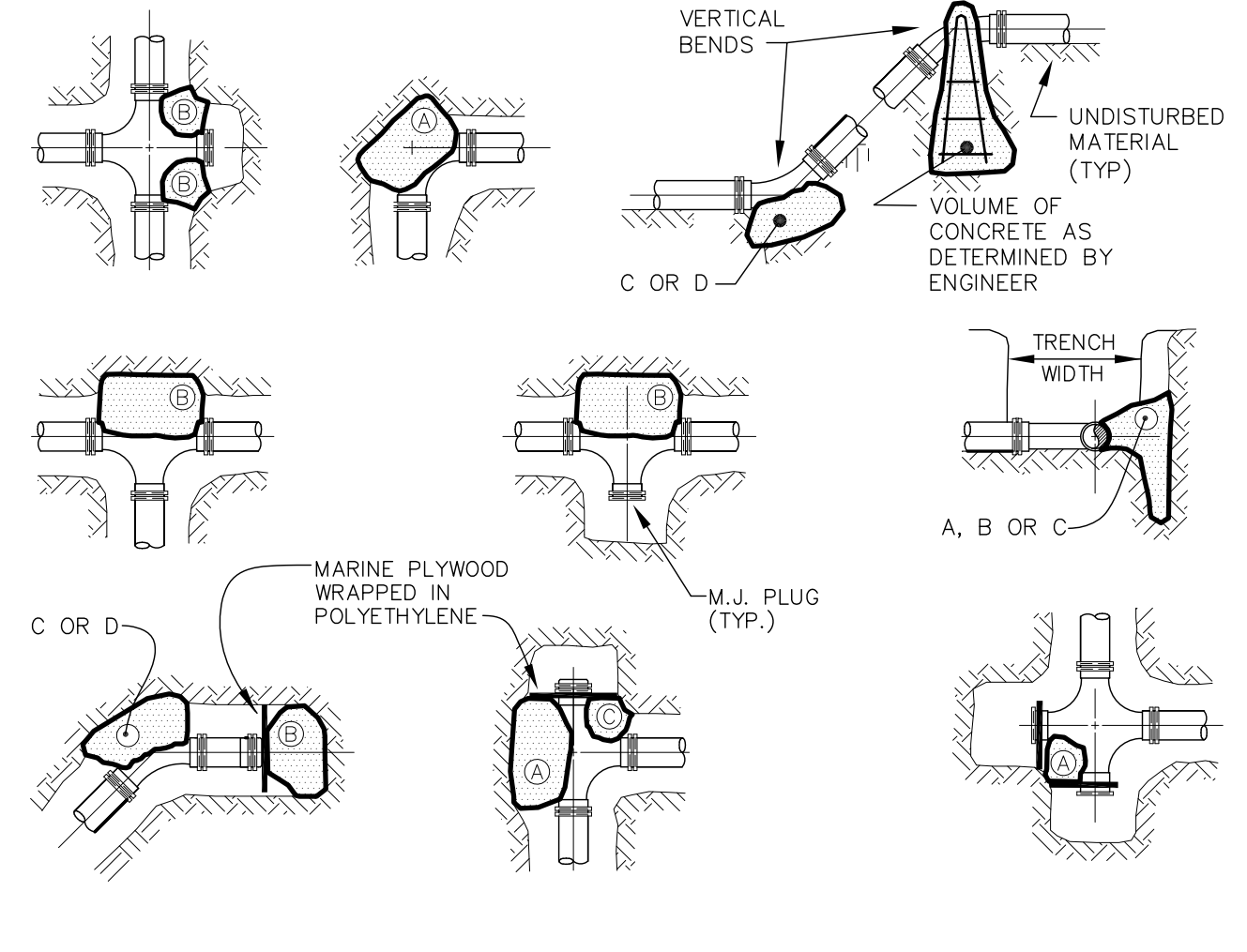
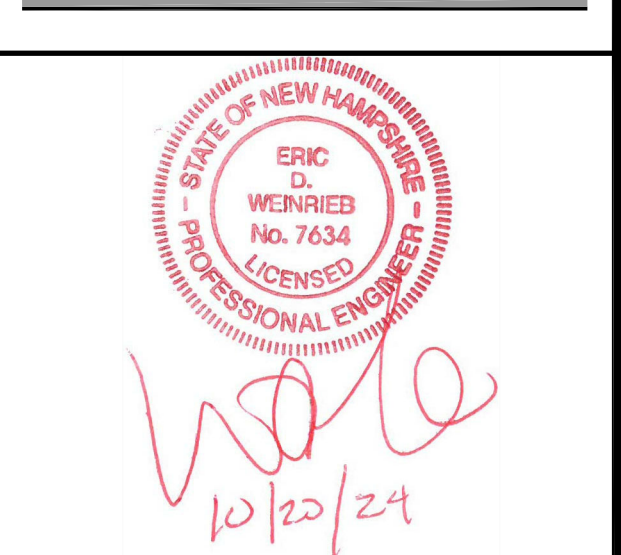
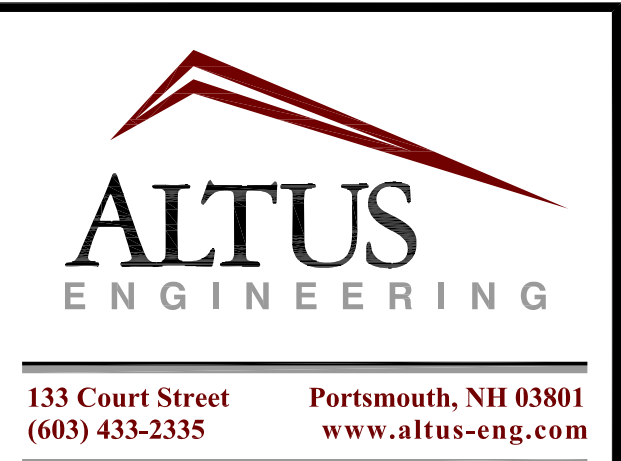


Table showing square feet of concrete thrust blocking material required for different pipe sizes and reaction types.

- Notes for thrust blocking, including requirements for concrete placement and joint treatment.



Wade 10/20/24

### NOT FOR CONSTRUCTION

#### ISSUED FOR: REVIEW

ISSUE DATE: OCTOBER 23, 2024

Revisions table with columns: NO., DESCRIPTION, BY, DATE.

Drawn by: EBS, Approved by: EBS, Drawing file: 5015-SITE.dwg

#### SCALE:

24" x 36" - 1" = NOT TO SCALE, 11" x 17" - 1" = NOT TO SCALE

#### OWNER:

RIVERWOODS COMPANY AT EXETER, 7 RIVERWOODS DRIVE, EXETER, NH 03833

#### APPLICANT:

RIVERWOODS COMPANY AT EXETER, 7 RIVERWOODS DRIVE, EXETER, NH 03833

#### PROJECT:

RIVERWOODS SUPPORTIVE LIVING HEATH CENTER

TAX MAP 97 LOT 23, 5 WHITE OAK DRIVE, EXETER, NH 03833

#### TITLE:

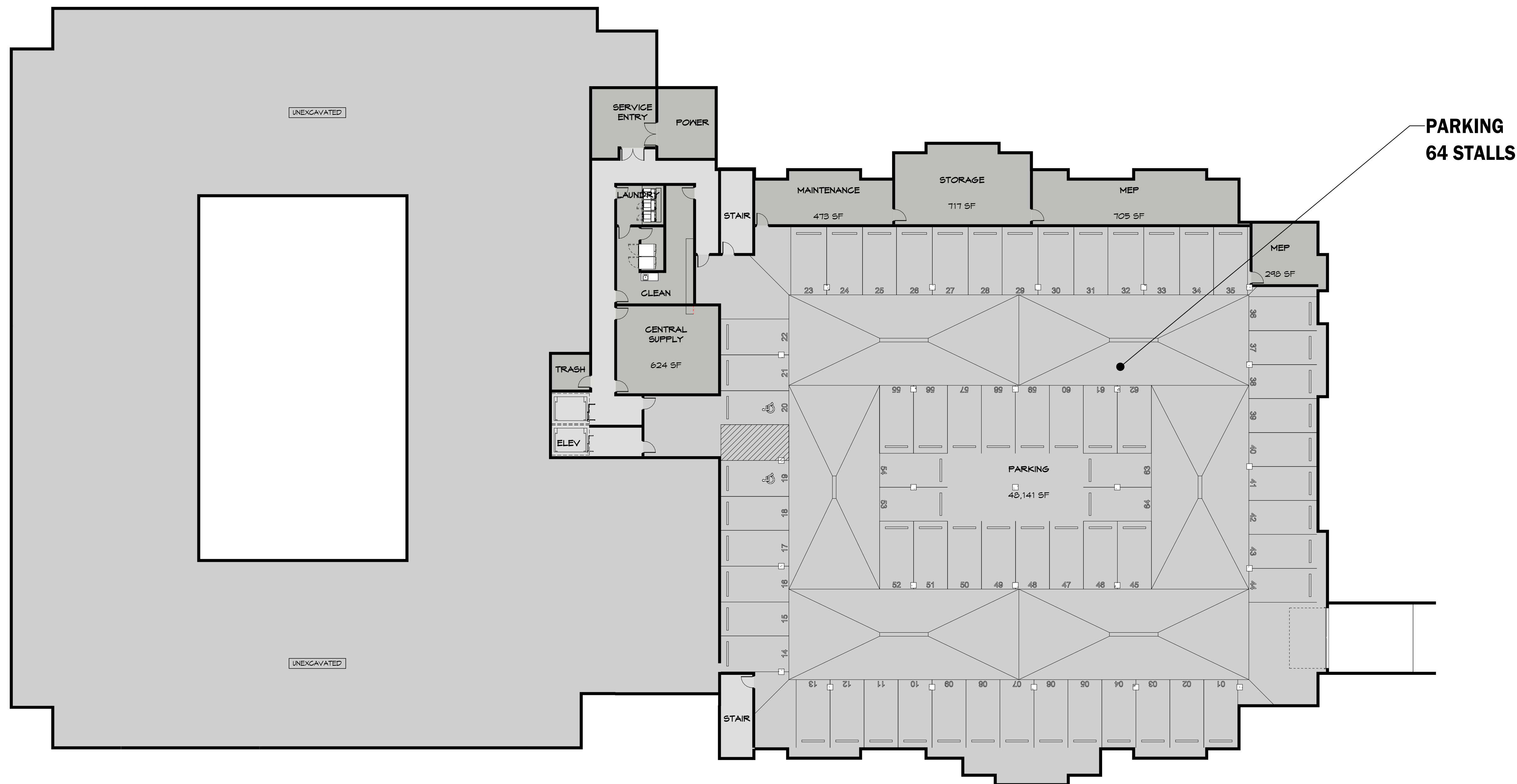
DETAIL SHEET

SHEET NUMBER: C-22









Legend

- MEP / SUPPORT
- SUPPORT CIRCULATION
- PARKING

HEALTHCARE BUILDING INFO

TOTAL BUILDING AREA = 173,893 SQFT  
 COMMONS = 42,499 SQ FT (337 SF/UNIT)  
 AL = 30,351 SQ FT (1084 SF/UNIT)  
 AL-2 = 34,845 SQ FT (645 SF/UNIT)  
 MS = 21,106 SQ FT (879 SF/UNIT)  
 SNF = 21,106 SQ FT (1055 SF/UNIT)  
 PARKING = 23,986 SQ FT  
 BUILDING FOOTPRINT = 51,558 SQ FT  
 LEASABLE AREA = 59,186 SQ FT  
 AL = 19,020; (5) 1.1 S, (14) 1.1 SD, (9) 2.2 D  
 AL-2 = 21,033  
 MS = 10,370  
 SNF = 8,763



# RiverWoods Exeter Health Center

Exeter, New Hampshire

## LOWER LEVEL FLOOR PLAN

OCTOBER 2024

1/16" = 1'-0"



AG ARCHITECTURE  
Bright Vision. Bold Communities.



**ASSISTED LIVING  
14 UNITS**

**MEMORY SUPPORT  
HOUSEHOLD 2  
12 UNITS**

**MEMORY SUPPORT  
HOUSEHOLD 1  
12 UNITS**

Legend

- AL 1 BED DELUXE
- AL 2 BED DELUXE
- ASSISTED LIVING
- COMMONS CIRCULATION
- MC CIRCULATION
- MEP / SUPPORT
- SUPPORT CIRCULATION
- AL 1 BED STANDARD
- AL CIRCULATION
- COMMONS
- MEMORY CARE

**HEALTHCARE BUILDING INFO**  
 TOTAL BUILDING AREA = 173,893 SQFT  
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 AL-2 = 21,033  
 MS = 10,370  
 SNF = 8,763



# RiverWoods Exeter Health Center

Exeter, New Hampshire

## FIRST FLOOR PLAN

JULY 2024  
 1/16" = 1'-0"







**ASSISTED LIVING  
14 UNITS**

**SKILLED NURSING  
20 UNITS**

**Legend**

- |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| <span style="display:inline-block; width:15px; height:15px; background-color:#2e8b57; border:1px solid black;"></span> AL 1 BED DELUXE   | <span style="display:inline-block; width:15px; height:15px; background-color:#add8e6; border:1px solid black;"></span> AL 2 BED DELUXE | <span style="display:inline-block; width:15px; height:15px; background-color:#4169e1; border:1px solid black;"></span> ASSISTED LIVING | <span style="display:inline-block; width:15px; height:15px; background-color:#ff8c00; border:1px solid black;"></span> COMMONS | <span style="display:inline-block; width:15px; height:15px; background-color:#ffcc99; border:1px solid black;"></span> COMMONS CIRCULATION | <span style="display:inline-block; width:15px; height:15px; background-color:#a9a9a9; border:1px solid black;"></span> MEP / SUPPORT       | <span style="display:inline-block; width:15px; height:15px; background-color:#90ee90; border:1px solid black;"></span> SKILLED NURSING |
| <span style="display:inline-block; width:15px; height:15px; background-color:#90ee90; border:1px solid black;"></span> AL 1 BED STANDARD | <span style="display:inline-block; width:15px; height:15px; background-color:#add8e6; border:1px solid black;"></span> AL CIRCULATION  | <span style="display:inline-block; width:15px; height:15px; background-color:#c8e6c9; border:1px solid black;"></span> BALCONY         |  |  | <span style="display:inline-block; width:15px; height:15px; background-color:#c8e6c9; border:1px solid black;"></span> SKILLED CIRCULATION |  |

**HEALTHCARE BUILDING INFO**

**TOTAL BUILDING AREA = 173,893 SQFT**  
**COMMONS = 42,499 SQ FT (337 SF/UNIT)**  
**AL = 30,351 SQ FT (1084 SF/UNIT)**  
**AL-2 = 34,845 SQ FT (645 SF/UNIT)**  
**MS = 21,106 SQ FT (879 SF/UNIT)**  
**SNF = 21,106 SQ FT (1055 SF/UNIT)**  
**PARKING = 23,986 SQ FT**  
**BUILDING FOOTPRINT = 51,558 SQ FT**  
**LEASABLE AREA = 59,186 SQ FT**  
**AL = 19,020; (5) 1.1 S, (14) 1.1 SD, (9) 2.2 D**  
**AL-2 = 21,033**  
**MS = 10,370**  
**SNF = 8,763**



# RiverWoods Exeter Health Center

Exeter, New Hampshire

## SECOND FLOOR PLAN

JULY 2024

1/16" = 1'-0"



**AG ARCHITECTURE**  
Bright Vision. Bold Communities.







# RiverWoods Exeter Health Center

Exeter, New Hampshire

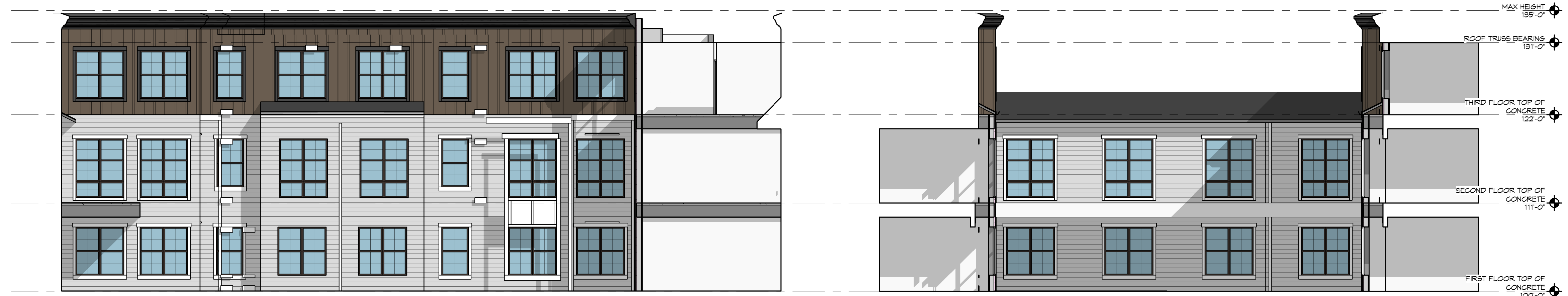
## EXTERIOR ELEVATIONS

JULY 2024

1/8" = 1'-0"



**AG ARCHITECTURE**  
Bright Vision. Bold Communities.



# RiverWoods Exeter Health Center

Exeter, New Hampshire

## EXTERIOR ELEVATIONS

JULY 2024

1/8" = 1'-0"



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# RiverWoods Exeter Health Center

Exeter, New Hampshire

**FRONT ENTRY**

JULY 2024



**AG ARCHITECTURE**  
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# DRAINAGE ANALYSIS

FOR

## RiverWoods Supportive Living Health Center

5 White Oak Drive  
Exeter, NH

Tax Map 97 Lot 3

September 10, 2024

October 23, 2024

Revised Through November 13, 2024

*Prepared For:*

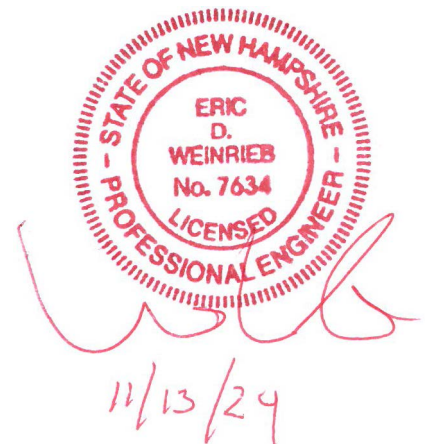
**The RiverWoods Company at Exeter**

7 Riverwoods Drive  
Exeter, NH 03833

*Prepared By:*

**Altus Engineering**

133 Court Street  
Portsmouth, NH 03801  
Phone: (603) 433-2335



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	Site Specific Soil Survey
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Section 7	BMP and Riprap Sizing Calculations
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# Section 1

## Narrative

## PROJECT DESCRIPTION

The RiverWoods Company at Exeter is proposing to construct a new healthcare facility on a previously developed portion of the RiverWoods campus in Exeter, New Hampshire. The 205.33-acre property is identified as Assessor's Map 97, Lot 23 and is located in the Residential 1 (R-1) District. The project site currently hosts the RiverWoods administration building, a parking lot, a single-family home, small park and sections of primarily wooded wetland. Access is from NH 111 via the existing White Oak Drive which serves two of the three major RiverWoods communities. A natural gas pipeline, numerous utilities and a paved residential driveway also traverse the site.

The proposal includes a new three story, ±51,874 sf footprint healthcare facility serviced by municipal water and sewer, paved accessways and parking areas, an underground parking garage, utilities and stormwater infrastructure. These measures will include two bioretention ponds, two sections of porous pavement and a subsurface chamber system. Pretreatment will be provided by catch basins with deep sumps and grease hoods, PRETX units and Stormtech isolator rows. This proposed stormwater management system will reduce peak flows and treat runoff from the site's impervious areas prior to leaving the site.

### *Site Soils*

Gove Environmental Services completed a site-specific soil survey (SSSS) for the project site. This survey indicates that the subject property can be broken into hydrologic soils groups (HSG) B and C. Geotechnical investigations indicate that underlying soils are comprised of alternating layers of sand and silt overlying clay with groundwater encountered at depths varying from five to ten feet deep. Information on soils in offsite contributing areas was taken from a high intensity soil survey (HISS) done for the adjacent RiverWoods Ridge campus in 2003.

### *Pre-Development (Existing Conditions)*

Several pockets of disturbed wetland extend into the middle of the site through which runoff generally flows in a southerly direction. Another larger wetland is located on the site's eastern perimeter, also draining to the south. Both wetlands combine into an offsite wetland ultimately tributary to Scamman Brook. A small section along NH 111 on the western boundary drains to a NHDOT catch basin which discharges across the highway to the west. A final small section in the northwest corner flows to offsite woodlands. The site hydrology is characterized by thirteen existing subcatchments as delineated on the accompanying "Pre-Development Watershed Plan". Site runoff was analyzed at four points of analysis (POA) as described above.



### ***Post-Development (Proposed Conditions)***

The post-development conditions were analyzed at the same discharge points as the pre-development conditions. The post-development watersheds are delineated on the accompanying “Post-Development Watershed Plan”. Modifications to the delineated areas and associated ground cover were made to sub-catchments to account for the improvements to the property.

As shown on the attached Post-Development Watershed Plan, the site was divided into thirty-three post-development subcatchment areas. Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plan set. Recommended erosion control measures are based upon the December 2008 edition of the “*New Hampshire Stormwater Manual Volumes 1 through 3*” prepared by NHDES and Comprehensive Environmental, Inc. as amended.

### **CALCULATION METHODS**

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method with automated calculation of tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25 and 50 year - 24-hour storm events using rainfall data provided by the Northeast Regional Climate Center (NRCC). As the project site lies within a Coastal and Great Bay Community identified by NHDES Alteration of Terrain, all rainfall amounts were increased by 15% to account for potential future increases in rainfall due to climate change. A time span of 0 to 48 hours was analyzed at 0.01-hour increments. Design infiltration rates used in the analysis were calculated from the SSSNNE publication *Ksat for New Hampshire Soils* using the average of the lowest rates in the C-horizon of the soil subtypes comprising the in-situ material divided by two.

### ***Disclaimer***

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations

than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

**Drainage Analysis**

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the Point of Analysis identified on the plans for the 2, 10, 25 and 50-year storm events:

**Stormwater Modeling Summary  
Peak Q (cfs) for Type III 24-Hour Storm Events**

	<b>2-Yr Storm (3.67 inch)</b>	<b>10-Yr Storm (5.61 inch)</b>	<b>25-Yr Storm (7.14 inch)</b>	<b>50-Yr Storm (8.58 inch)</b>
<b>POA #1 (West to CB)</b>				
Pre	0.86	2.10	2.91	3.02
Post	0.82	2.00	2.88	3.00
<b>Change</b>	<b>-0.04</b>	<b>-0.10</b>	<b>-0.03</b>	<b>-0.02</b>
<b>POA #2 (South to Wetland)</b>				
Pre	4.31	10.80	15.36	19.83
Post	2.08	6.56	10.12	18.46
<b>Change</b>	<b>-2.23</b>	<b>-4.24</b>	<b>-5.24</b>	<b>-1.37</b>
<b>POA #3 (South to Wetland)</b>				
Pre	10.38	20.27	25.88	30.42
Post	9.66	20.04	25.51	29.56
<b>Change</b>	<b>-0.72</b>	<b>-0.23</b>	<b>-0.37</b>	<b>-0.86</b>
<b>POA #4 (Northwest to Offsite)</b>				
Pre	0.43	1.05	1.59	2.13
Post	0.43	1.05	1.59	2.13
<b>Change</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

As the above table demonstrates, the proposed peak rates of runoff at the point of analysis will be decreased from the existing conditions for all analyzed storm events.



## POLLUTANT REMOVAL

Based on the New Hampshire Stormwater Manual (Volume 2), the following pollutant removal rates would be expected from the implementation of the proposed stormwater BMPs:

<u>BMP</u>	<u>Pollutant</u>	<u>Removal Efficiency</u>
Deep Sump Catch Basin -		
	Total Suspended Solids (TSS)	15%
	Total Nitrogen (TN)	5%
	Total Phosphorus (TP)	5%
PRETX (removal is TBD per NHDES but expected to be similar to a catch basin) -		
	Total Suspended Solids (TSS)	TBD (15%?)
	Total Nitrogen (TN)	TBD (5%?)
	Total Phosphorus (TP)	TBD (5%?)
Bioretention Pond -		
	Total Suspended Solids (TSS)	90%
	Total Nitrogen (TN)	65%
	Total Phosphorus (TP)	65%
Porous Pavement -		
	Total Suspended Solids (TSS)	90%
	Total Nitrogen (TN)	60%
	Total Phosphorus (TP)	65%

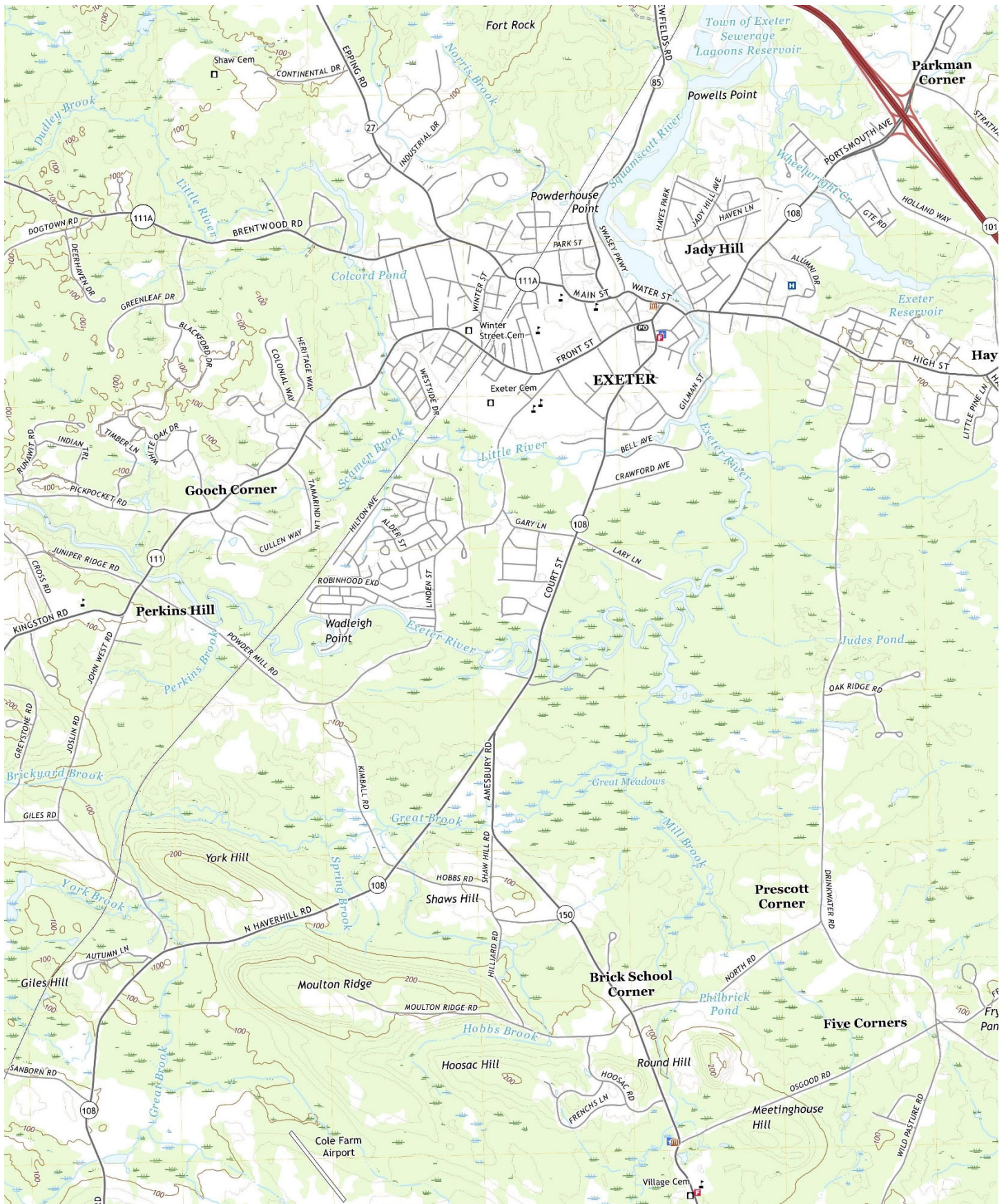
## CONCLUSION

This proposed site development of property located at 5 White Oak Drive in Exeter, New Hampshire will have minimal adverse effect on abutting properties and infrastructure as a result of stormwater runoff or siltation. Post-construction peak rates of runoff from the site will be lower than the existing conditions for all analyzed storm events. The new stormwater management system will also provide appropriate treatment to runoff from the proposed on-site impervious surfaces. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the use of temporary and permanent Best Management Practices for sediment and erosion control, including deep sump catch basins with grease hoods, PRETX units, bioretention ponds, porous pavement and a subsurface chamber system.

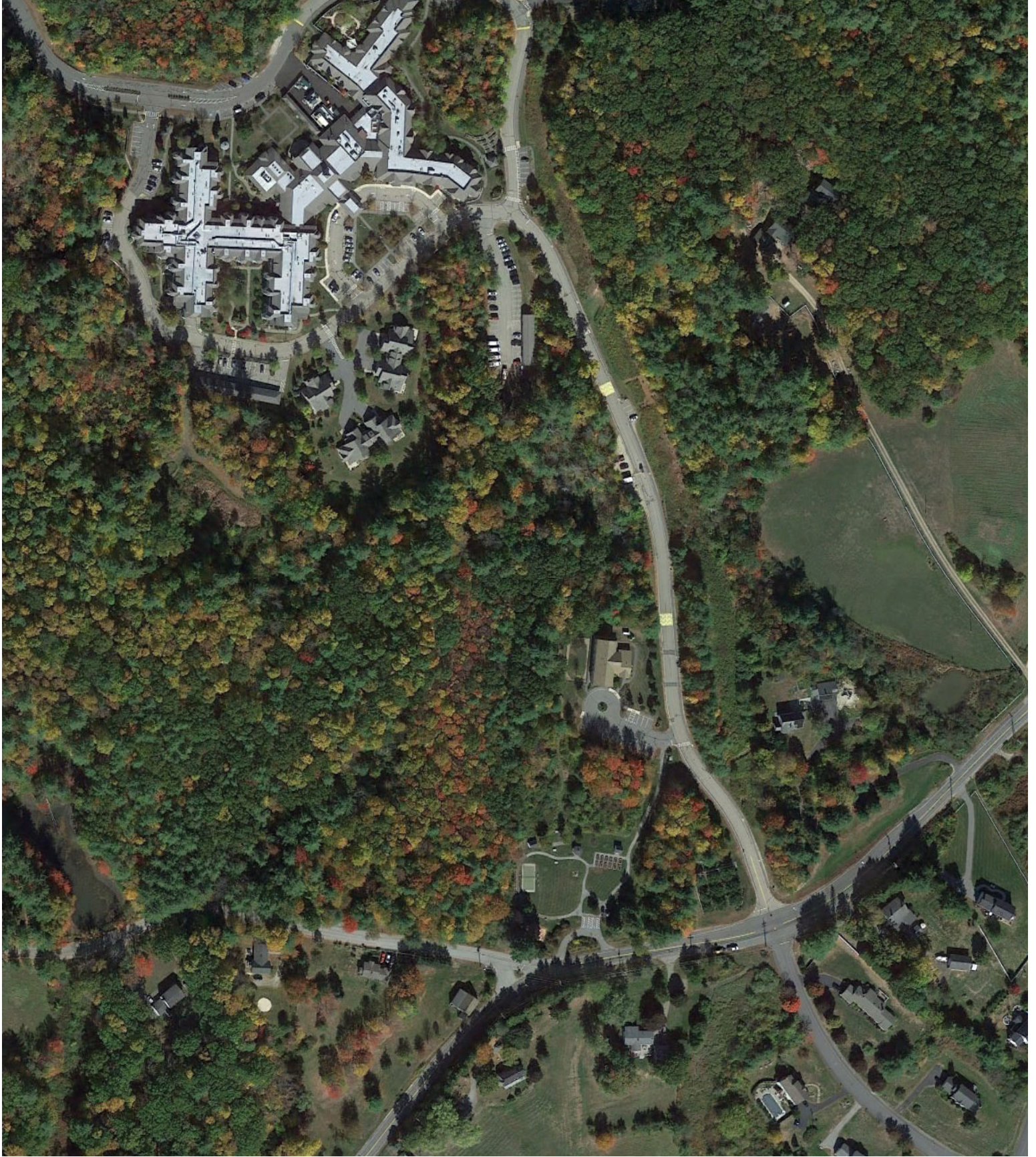
## Section 2

# Aerial Photo and USGS Map











## Section 3

# Drainage Calculations

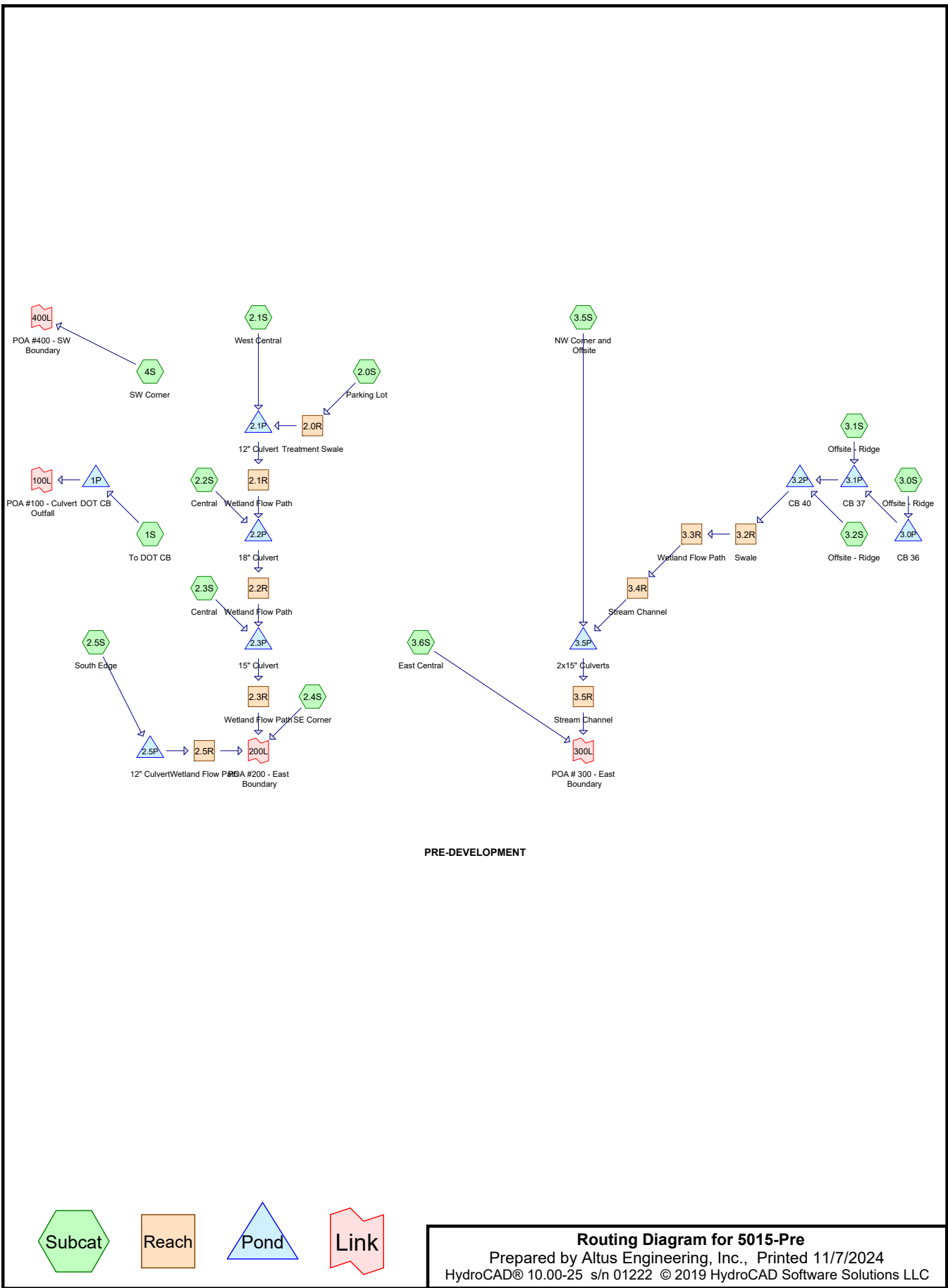
Pre-Development

2-Year, 24-Hour Summary

10-Year, 24-Hour Complete

25-Year, 24-Hour Summary

50-Year, 24-Hour Summary





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Type III 24-hr 2-year Rainfall=3.67"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=47,076 sf 26.00% Impervious Runoff Depth=1.06" Flow Length=191' Tc=18.2 min CN=69 Runoff=0.86 cfs 0.095 af
<b>Subcatchment 2.0S: Parking Lot</b>	Runoff Area=14,408 sf 78.73% Impervious Runoff Depth=2.61" Flow Length=234' Tc=6.0 min CN=90 Runoff=0.99 cfs 0.072 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=67,904 sf 5.82% Impervious Runoff Depth=0.74" Flow Length=382' Tc=16.7 min CN=63 Runoff=0.79 cfs 0.097 af
<b>Subcatchment 2.2S: Central</b>	Runoff Area=40,042 sf 17.46% Impervious Runoff Depth=1.00" Flow Length=255' Tc=6.0 min CN=68 Runoff=0.98 cfs 0.077 af
<b>Subcatchment 2.3S: Central</b>	Runoff Area=45,171 sf 12.61% Impervious Runoff Depth=0.79" Flow Length=235' Tc=6.0 min CN=64 Runoff=0.81 cfs 0.069 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=44,106 sf 21.78% Impervious Runoff Depth=1.17" Flow Length=305' Tc=6.0 min CN=71 Runoff=1.32 cfs 0.099 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=38,329 sf 39.29% Impervious Runoff Depth=1.42" Flow Length=466' Tc=6.0 min CN=75 Runoff=1.43 cfs 0.104 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=2.08" Flow Length=154' Slope=0.0200 '/' Tc=6.0 min CN=84 Runoff=0.55 cfs 0.039 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=2.51" Flow Length=232' Slope=0.0200 '/' Tc=6.0 min CN=89 Runoff=0.29 cfs 0.021 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=2.70" Flow Length=145' Slope=0.0200 '/' Tc=6.0 min CN=91 Runoff=0.42 cfs 0.031 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=397,781 sf 12.69% Impervious Runoff Depth=1.23" Flow Length=967' Tc=18.5 min CN=72 Runoff=8.72 cfs 0.939 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=86,620 sf 16.22% Impervious Runoff Depth=0.84" Flow Length=491' Tc=6.0 min CN=65 Runoff=1.69 cfs 0.140 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=1.06" Flow Length=92' Tc=6.0 min CN=69 Runoff=0.43 cfs 0.033 af
<b>Reach 2.0R: Treatment Swale</b>	Avg. Flow Depth=0.22' Max Vel=0.88 fps Inflow=0.99 cfs 0.072 af n=0.040 L=100.0' S=0.0050 '/' Capacity=14.81 cfs Outflow=0.96 cfs 0.072 af
<b>Reach 2.1R: Wetland Flow Path</b>	Avg. Flow Depth=0.43' Max Vel=1.40 fps Inflow=1.30 cfs 0.169 af n=0.080 L=104.0' S=0.0324 '/' Capacity=7.99 cfs Outflow=1.30 cfs 0.169 af
<b>Reach 2.2R: Wetland Flow Path</b>	Avg. Flow Depth=0.21' Max Vel=1.80 fps Inflow=1.82 cfs 0.245 af n=0.080 L=77.0' S=0.0955 '/' Capacity=34.57 cfs Outflow=1.82 cfs 0.245 af

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Type III 24-hr 2-year Rainfall=3.67"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.23' Max Vel=2.05 fps Inflow=2.28 cfs 0.314 af n=0.050 L=223.0' S=0.0436 '/ Capacity=37.37 cfs Outflow=2.28 cfs 0.314 af
<b>Reach 2.5R: Wetland Flow Path</b>	Avg. Flow Depth=0.13' Max Vel=1.14 fps Inflow=1.43 cfs 0.104 af n=0.080 L=17.0' S=0.0659 '/ Capacity=63.77 cfs Outflow=1.43 cfs 0.104 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.16' Max Vel=3.22 fps Inflow=1.26 cfs 0.090 af n=0.035 L=177.0' S=0.0876 '/ Capacity=44.72 cfs Outflow=1.24 cfs 0.090 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.14' Max Vel=1.55 fps Inflow=1.24 cfs 0.090 af n=0.050 L=252.0' S=0.0516 '/ Capacity=65.79 cfs Outflow=1.17 cfs 0.090 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.23' Max Vel=1.09 fps Inflow=1.17 cfs 0.090 af n=0.050 L=94.0' S=0.0119 '/ Capacity=17.53 cfs Outflow=1.15 cfs 0.090 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.42' Max Vel=2.93 fps Inflow=9.46 cfs 1.029 af n=0.050 L=55.0' S=0.0407 '/ Capacity=47.37 cfs Outflow=9.46 cfs 1.029 af
<b>Pond 1P: DOT CB</b>	Peak Elev=71.44' Storage=8 cf Inflow=0.86 cfs 0.095 af 8.0" Round Culvert n=0.012 L=40.0' S=0.0090 '/ Outflow=0.86 cfs 0.095 af
<b>Pond 2.1P: 12" Culvert</b>	Peak Elev=75.09' Storage=397 cf Inflow=1.52 cfs 0.169 af 12.0" Round Culvert n=0.012 L=22.0' S=0.0127 '/ Outflow=1.30 cfs 0.169 af
<b>Pond 2.2P: 18" Culvert</b>	Peak Elev=71.45' Storage=236 cf Inflow=1.83 cfs 0.245 af 18.0" Round Culvert n=0.012 L=57.0' S=0.0175 '/ Outflow=1.82 cfs 0.245 af
<b>Pond 2.3P: 15" Culvert</b>	Peak Elev=63.06' Storage=14 cf Inflow=2.28 cfs 0.314 af 15.0" Round Culvert n=0.012 L=58.0' S=0.0466 '/ Outflow=2.28 cfs 0.314 af
<b>Pond 2.5P: 12" Culvert</b>	Peak Elev=52.93' Storage=15 cf Inflow=1.43 cfs 0.104 af Outflow=1.43 cfs 0.104 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.61' Storage=5 cf Inflow=0.55 cfs 0.039 af 12.0" Round Culvert n=0.012 L=67.0' S=0.0060 '/ Outflow=0.55 cfs 0.039 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.54' Storage=11 cf Inflow=0.84 cfs 0.060 af 12.0" Round Culvert n=0.012 L=112.0' S=0.0196 '/ Outflow=0.84 cfs 0.060 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.07' Storage=9 cf Inflow=1.26 cfs 0.090 af 12.0" Round Culvert n=0.012 L=100.0' S=0.0050 '/ Outflow=1.26 cfs 0.090 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=57.00' Storage=2,064 cf Inflow=9.79 cfs 1.029 af Outflow=9.46 cfs 1.029 af
<b>Link 100L: POA #100 - Culvert Outfall</b>	Inflow=0.86 cfs 0.095 af Primary=0.86 cfs 0.095 af
<b>Link 200L: POA #200 - East Boundary</b>	Inflow=4.31 cfs 0.517 af Primary=4.31 cfs 0.517 af
<b>Link 300L: POA # 300 - East Boundary</b>	Inflow=10.38 cfs 1.169 af Primary=10.38 cfs 1.169 af



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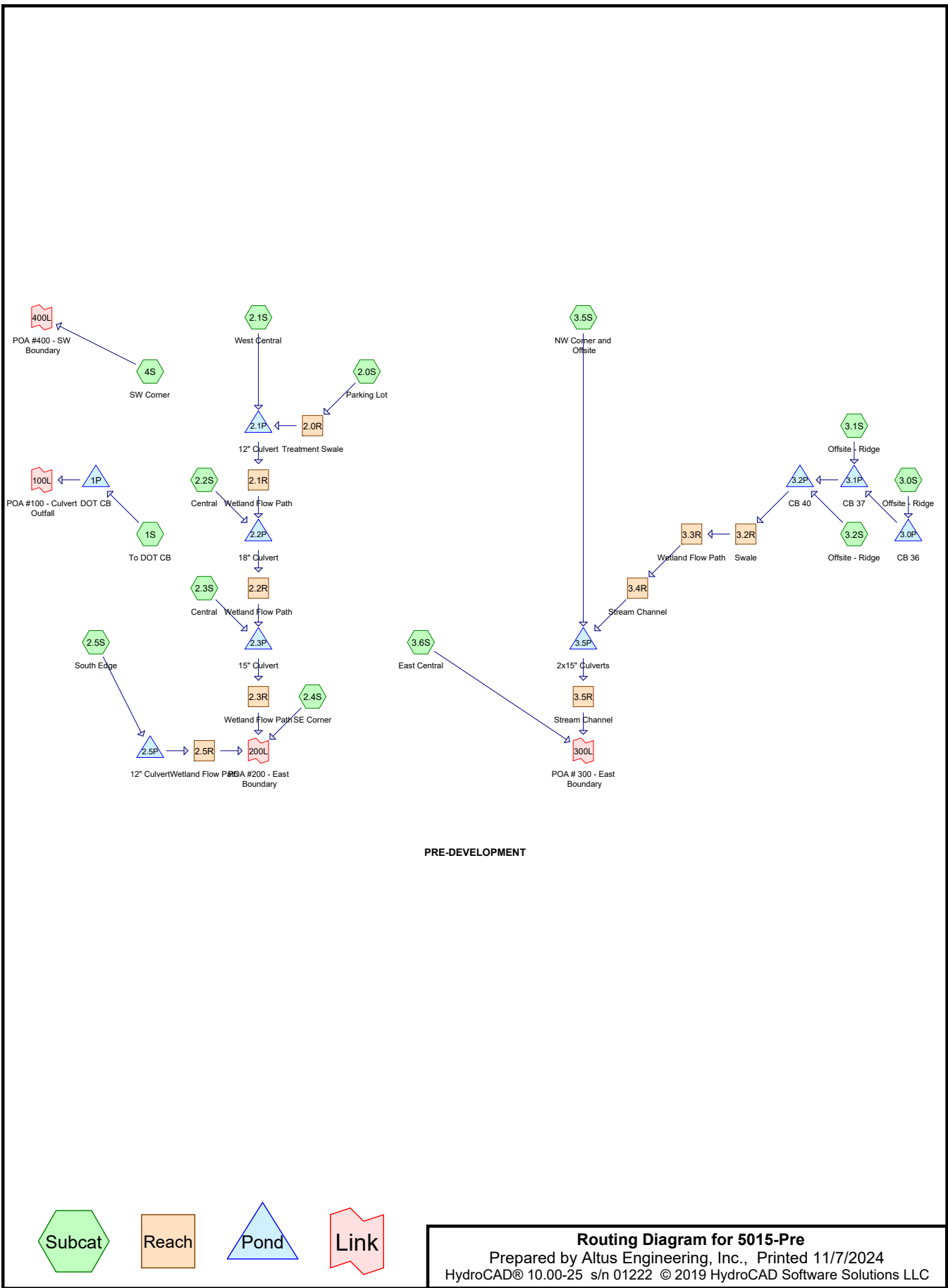
*Type III 24-hr 2-year Rainfall=3.67"*

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**Link 400L: POA #400 - SW Boundary**

Inflow=0.43 cfs 0.033 af  
Primary=0.43 cfs 0.033 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 1.814 af   Average Runoff Depth = 1.16"**  
**82.35% Pervious = 15.460 ac   17.65% Impervious = 3.313 ac**





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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
4.241	61	>75% Grass cover, Good, HSG B (1S, 2.0S, 2.1S, 2.2S, 2.3S, 2.4S, 2.5S, 3.5S, 3.6S, 4S)
2.221	74	>75% Grass cover, Good, HSG C (2.1S, 2.2S, 2.3S, 2.4S, 3.0S, 3.1S, 3.2S, 3.5S)
0.365	98	Paved parking, HSG B (1S, 2.0S, 2.1S)
0.095	98	Paved parking, HSG C (3.2S)
1.444	98	Paved roads w/curbs & sewers, HSG B (1S, 2.2S, 2.3S, 2.4S, 2.5S, 3.5S, 3.6S, 4S)
0.936	98	Paved roads w/curbs & sewers, HSG C (3.0S, 3.1S, 3.5S, 3.6S)
0.167	98	Roofs, HSG B (2.0S, 2.1S, 2.3S, 2.4S, 3.5S, 3.6S)
0.306	98	Roofs, HSG C (3.0S, 3.5S)
3.732	55	Woods, Good, HSG B (1S, 2.1S, 2.2S, 2.3S, 2.4S, 2.5S, 3.5S, 3.6S)
5.266	70	Woods, Good, HSG C (2.1S, 2.2S, 2.3S, 2.4S, 3.5S, 3.6S)
<b>18.773</b>	<b>70</b>	<b>TOTAL AREA</b>

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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
9.949	HSG B	1S, 2.0S, 2.1S, 2.2S, 2.3S, 2.4S, 2.5S, 3.5S, 3.6S, 4S
8.824	HSG C	2.1S, 2.2S, 2.3S, 2.4S, 3.0S, 3.1S, 3.2S, 3.5S, 3.6S
0.000	HSG D	
0.000	Other	
<b>18.773</b>		<b>TOTAL AREA</b>



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Type III 24-hr 10-year Rainfall=5.61"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=47,076 sf 26.00% Impervious Runoff Depth=2.41" Flow Length=191' Tc=18.2 min CN=69 Runoff=2.10 cfs 0.217 af
<b>Subcatchment 2.0S: Parking Lot</b>	Runoff Area=14,408 sf 78.73% Impervious Runoff Depth=4.47" Flow Length=234' Tc=6.0 min CN=90 Runoff=1.66 cfs 0.123 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=67,904 sf 5.82% Impervious Runoff Depth=1.91" Flow Length=382' Tc=16.7 min CN=63 Runoff=2.40 cfs 0.248 af
<b>Subcatchment 2.2S: Central</b>	Runoff Area=40,042 sf 17.46% Impervious Runoff Depth=2.33" Flow Length=255' Tc=6.0 min CN=68 Runoff=2.47 cfs 0.178 af
<b>Subcatchment 2.3S: Central</b>	Runoff Area=45,171 sf 12.61% Impervious Runoff Depth=1.99" Flow Length=235' Tc=6.0 min CN=64 Runoff=2.33 cfs 0.172 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=44,106 sf 21.78% Impervious Runoff Depth=2.59" Flow Length=305' Tc=6.0 min CN=71 Runoff=3.05 cfs 0.218 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=38,329 sf 39.29% Impervious Runoff Depth=2.95" Flow Length=466' Tc=6.0 min CN=75 Runoff=3.05 cfs 0.216 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=3.83" Flow Length=154' Slope=0.0200 '/' Tc=6.0 min CN=84 Runoff=0.99 cfs 0.071 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=4.36" Flow Length=232' Slope=0.0200 '/' Tc=6.0 min CN=89 Runoff=0.50 cfs 0.037 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=4.58" Flow Length=145' Slope=0.0200 '/' Tc=6.0 min CN=91 Runoff=0.69 cfs 0.052 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=397,781 sf 12.69% Impervious Runoff Depth=2.68" Flow Length=967' Tc=18.5 min CN=72 Runoff=19.82 cfs 2.037 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=86,620 sf 16.22% Impervious Runoff Depth=2.07" Flow Length=491' Tc=6.0 min CN=65 Runoff=4.69 cfs 0.343 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=2.41" Flow Length=92' Tc=6.0 min CN=69 Runoff=1.05 cfs 0.075 af
<b>Reach 2.0R: Treatment Swale</b>	Avg. Flow Depth=0.30' Max Vel=1.05 fps Inflow=1.66 cfs 0.123 af n=0.040 L=100.0' S=0.0050 '/' Capacity=14.81 cfs Outflow=1.62 cfs 0.123 af
<b>Reach 2.1R: Wetland Flow Path</b>	Avg. Flow Depth=0.55' Max Vel=1.66 fps Inflow=2.27 cfs 0.371 af n=0.080 L=104.0' S=0.0324 '/' Capacity=7.99 cfs Outflow=2.27 cfs 0.371 af
<b>Reach 2.2R: Wetland Flow Path</b>	Avg. Flow Depth=0.31' Max Vel=2.27 fps Inflow=3.70 cfs 0.549 af n=0.080 L=77.0' S=0.0955 '/' Capacity=34.57 cfs Outflow=3.69 cfs 0.549 af

**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.37' Max Vel=2.72 fps Inflow=5.65 cfs 0.721 af n=0.050 L=223.0' S=0.0436 '/ Capacity=37.37 cfs Outflow=5.61 cfs 0.721 af
<b>Reach 2.5R: Wetland Flow Path</b>	Avg. Flow Depth=0.20' Max Vel=1.46 fps Inflow=2.99 cfs 0.216 af n=0.080 L=17.0' S=0.0659 '/ Capacity=63.77 cfs Outflow=2.99 cfs 0.216 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.21' Max Vel=3.83 fps Inflow=2.17 cfs 0.159 af n=0.035 L=177.0' S=0.0876 '/ Capacity=44.72 cfs Outflow=2.16 cfs 0.159 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.19' Max Vel=1.85 fps Inflow=2.16 cfs 0.159 af n=0.050 L=252.0' S=0.0516 '/ Capacity=65.79 cfs Outflow=2.06 cfs 0.159 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.31' Max Vel=1.32 fps Inflow=2.06 cfs 0.159 af n=0.050 L=94.0' S=0.0119 '/ Capacity=17.53 cfs Outflow=2.03 cfs 0.159 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.61' Max Vel=3.59 fps Inflow=18.34 cfs 2.197 af n=0.050 L=55.0' S=0.0407 '/ Capacity=47.37 cfs Outflow=18.33 cfs 2.197 af
<b>Pond 1P: DOT CB</b>	Peak Elev=73.02' Storage=28 cf Inflow=2.10 cfs 0.217 af 8.0" Round Culvert n=0.012 L=40.0' S=0.0090 '/ Outflow=2.10 cfs 0.217 af
<b>Pond 2.1P: 12" Culvert</b>	Peak Elev=75.48' Storage=1,823 cf Inflow=3.57 cfs 0.371 af 12.0" Round Culvert n=0.012 L=22.0' S=0.0127 '/ Outflow=2.27 cfs 0.371 af
<b>Pond 2.2P: 18" Culvert</b>	Peak Elev=71.81' Storage=488 cf Inflow=3.88 cfs 0.549 af 18.0" Round Culvert n=0.012 L=57.0' S=0.0175 '/ Outflow=3.70 cfs 0.549 af
<b>Pond 2.3P: 15" Culvert</b>	Peak Elev=63.60' Storage=117 cf Inflow=5.71 cfs 0.721 af 15.0" Round Culvert n=0.012 L=58.0' S=0.0466 '/ Outflow=5.65 cfs 0.721 af
<b>Pond 2.5P: 12" Culvert</b>	Peak Elev=53.69' Storage=63 cf Inflow=3.05 cfs 0.216 af Outflow=2.99 cfs 0.216 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.77' Storage=7 cf Inflow=0.99 cfs 0.071 af 12.0" Round Culvert n=0.012 L=67.0' S=0.0060 '/ Outflow=0.99 cfs 0.071 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.70' Storage=13 cf Inflow=1.49 cfs 0.108 af 12.0" Round Culvert n=0.012 L=112.0' S=0.0196 '/ Outflow=1.48 cfs 0.108 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.35' Storage=12 cf Inflow=2.18 cfs 0.159 af 12.0" Round Culvert n=0.012 L=100.0' S=0.0050 '/ Outflow=2.17 cfs 0.159 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=57.85' Storage=6,231 cf Inflow=21.63 cfs 2.197 af Outflow=18.34 cfs 2.197 af
<b>Link 100L: POA #100 - Culvert Outfall</b>	Inflow=2.10 cfs 0.217 af Primary=2.10 cfs 0.217 af
<b>Link 200L: POA #200 - East Boundary</b>	Inflow=10.80 cfs 1.156 af Primary=10.80 cfs 1.156 af
<b>Link 300L: POA # 300 - East Boundary</b>	Inflow=20.27 cfs 2.540 af Primary=20.27 cfs 2.540 af



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*Type III 24-hr 10-year Rainfall=5.61"*

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**Link 400L: POA #400 - SW Boundary**

Inflow=1.05 cfs 0.075 af  
Primary=1.05 cfs 0.075 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 3.989 af   Average Runoff Depth = 2.55"**  
**82.35% Pervious = 15.460 ac   17.65% Impervious = 3.313 ac**

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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 1S: To DOT CB**

Runoff = 2.10 cfs @ 12.26 hrs, Volume= 0.217 af, Depth= 2.41"

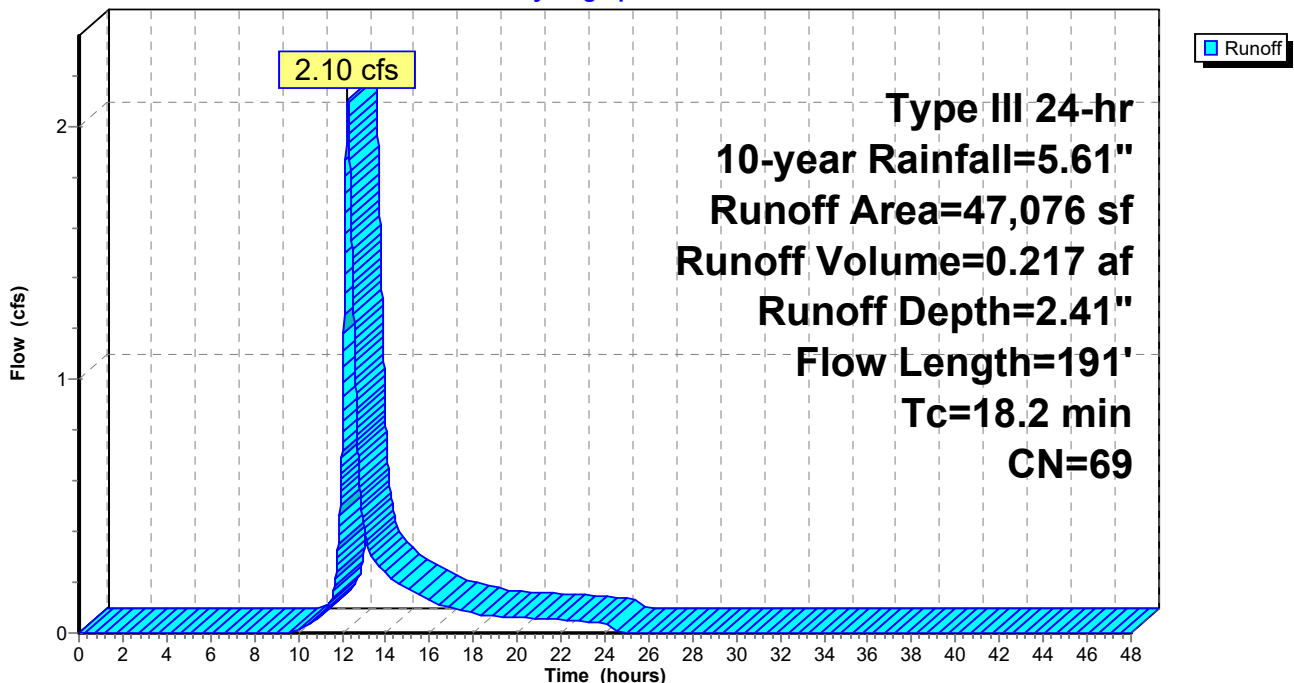
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
10,100	98	Paved roads w/curbs & sewers, HSG B
2,142	98	Paved parking, HSG B
23,602	61	>75% Grass cover, Good, HSG B
11,232	55	Woods, Good, HSG B
47,076	69	Weighted Average
34,834		74.00% Pervious Area
12,242		26.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.0263	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.67"
6.0	98	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.9	43	0.0030	0.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.2	191	Total			

**Subcatchment 1S: To DOT CB**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.0S: Parking Lot**

Runoff = 1.66 cfs @ 12.08 hrs, Volume= 0.123 af, Depth= 4.47"

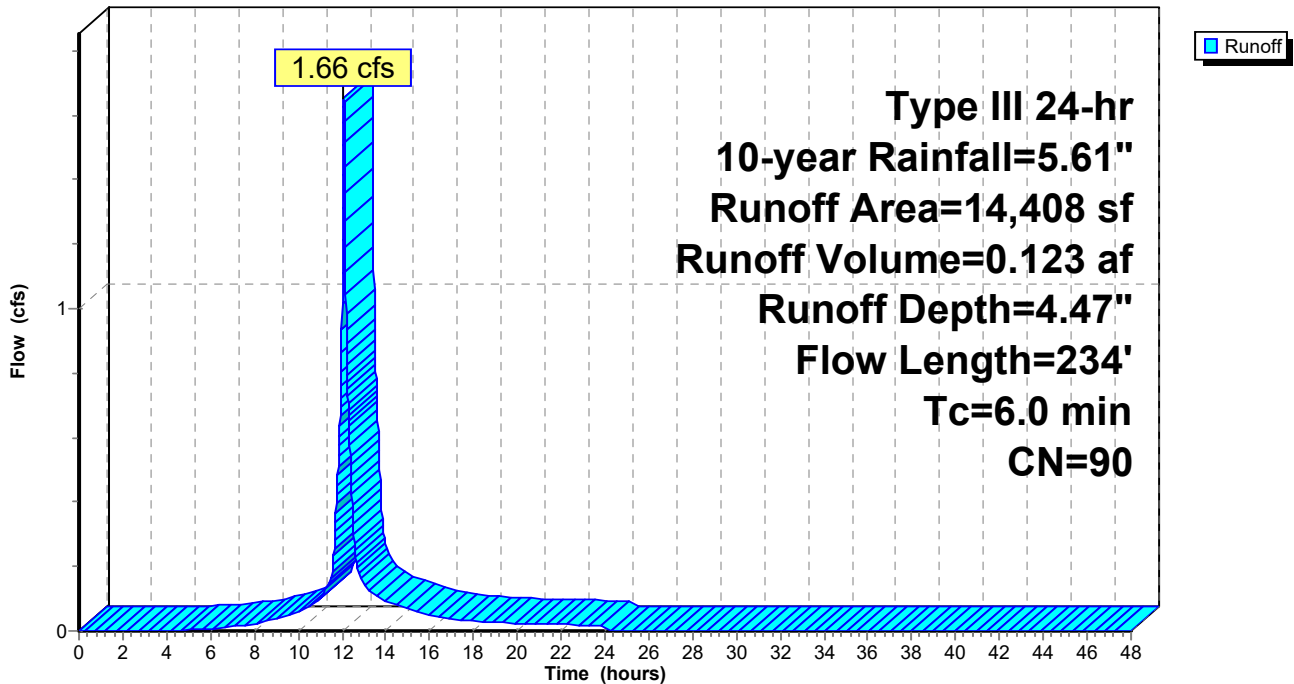
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,204	98	Roofs, HSG B
10,140	98	Paved parking, HSG B
3,064	61	>75% Grass cover, Good, HSG B
14,408	90	Weighted Average
3,064		21.27% Pervious Area
11,344		78.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	95	0.0150	1.30		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.9	139	0.0077	2.65	13.26	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.035 Earth, dense weeds
2.1	234	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 2.0S: Parking Lot**

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.1S: West Central**

Runoff = 2.40 cfs @ 12.24 hrs, Volume= 0.248 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
344	98	Roofs, HSG B
3,605	98	Paved parking, HSG B
24,335	61	>75% Grass cover, Good, HSG B
1,935	74	>75% Grass cover, Good, HSG C
26,936	55	Woods, Good, HSG B
10,749	70	Woods, Good, HSG C
67,904	63	Weighted Average
63,955		94.18% Pervious Area
3,949		5.82% Impervious Area

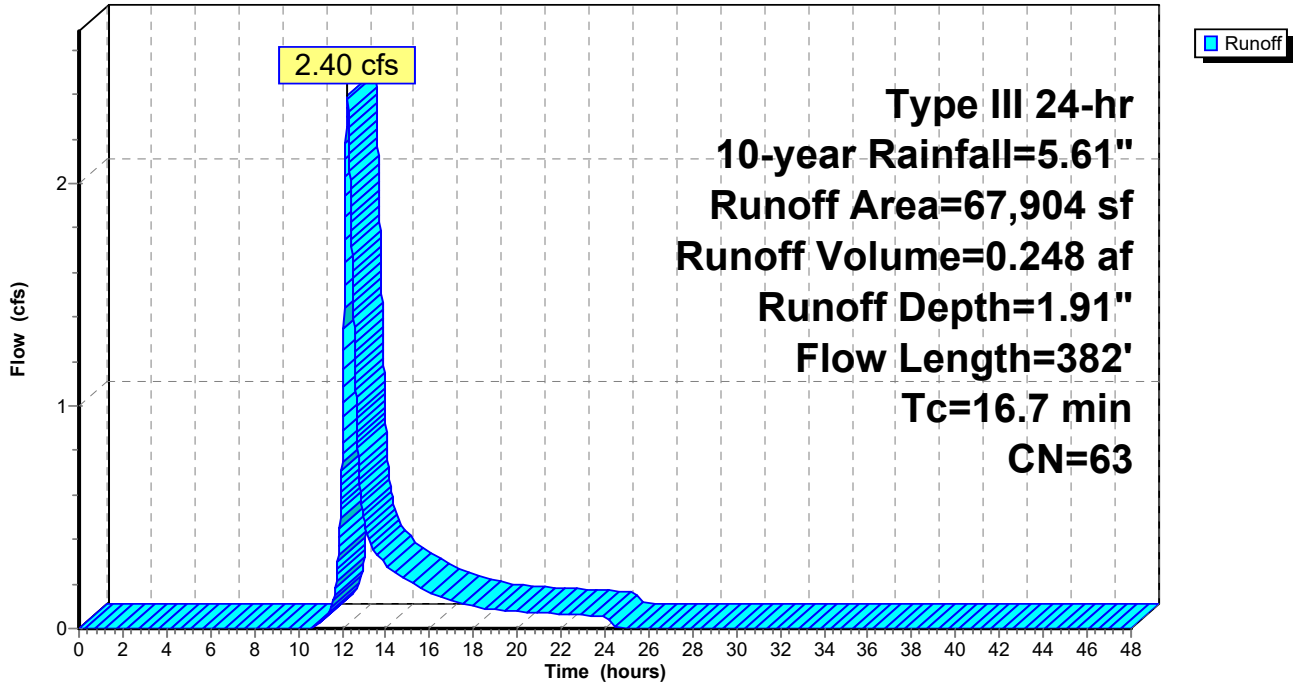
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	74	0.0179	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.67"
4.5	151	0.0064	0.56		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.7	157	0.0124	0.56		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
16.7	382	Total			



### Subcatchment 2.1S: West Central

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.2S: Central**

Runoff = 2.47 cfs @ 12.09 hrs, Volume= 0.178 af, Depth= 2.33"

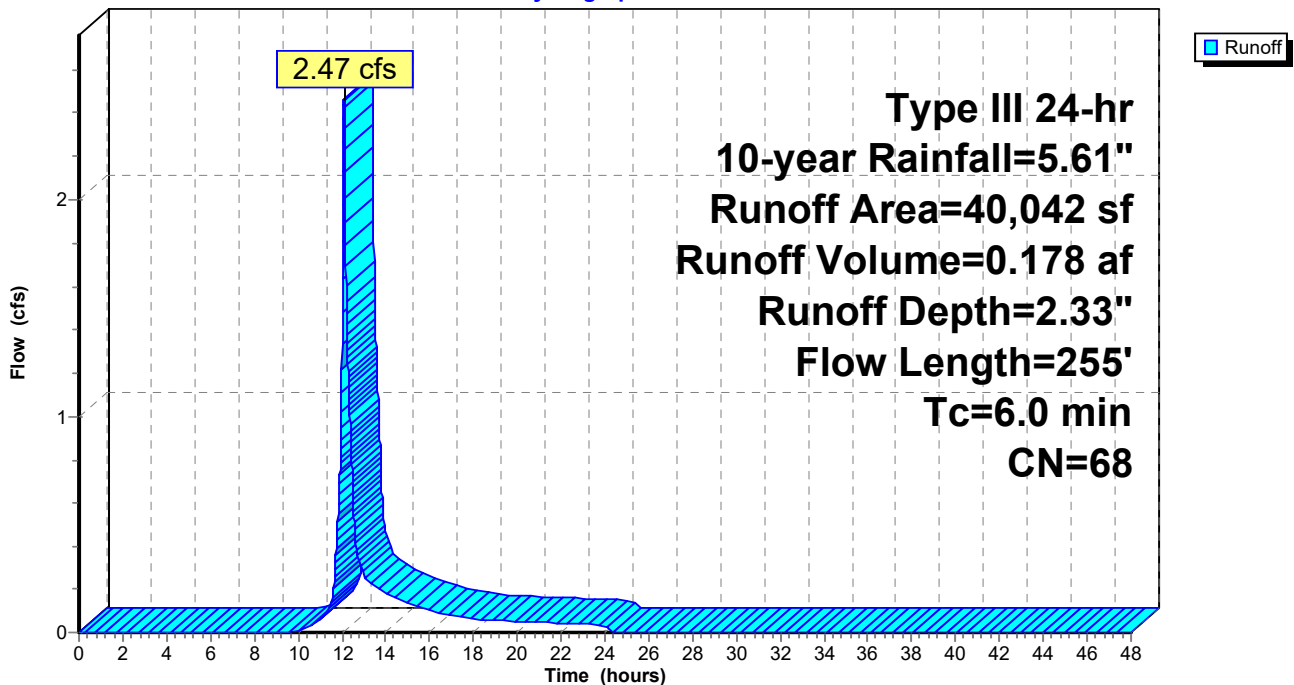
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
6,990	98	Paved roads w/curbs & sewers, HSG B
15,741	61	>75% Grass cover, Good, HSG B
474	74	>75% Grass cover, Good, HSG C
9,850	55	Woods, Good, HSG B
6,987	70	Woods, Good, HSG C
40,042	68	Weighted Average
33,052		82.54% Pervious Area
6,990		17.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	83	0.0200	1.42		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
2.3	172	0.0304	1.22		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.3	255	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 2.2S: Central**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.3S: Central**

Runoff = 2.33 cfs @ 12.09 hrs, Volume= 0.172 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

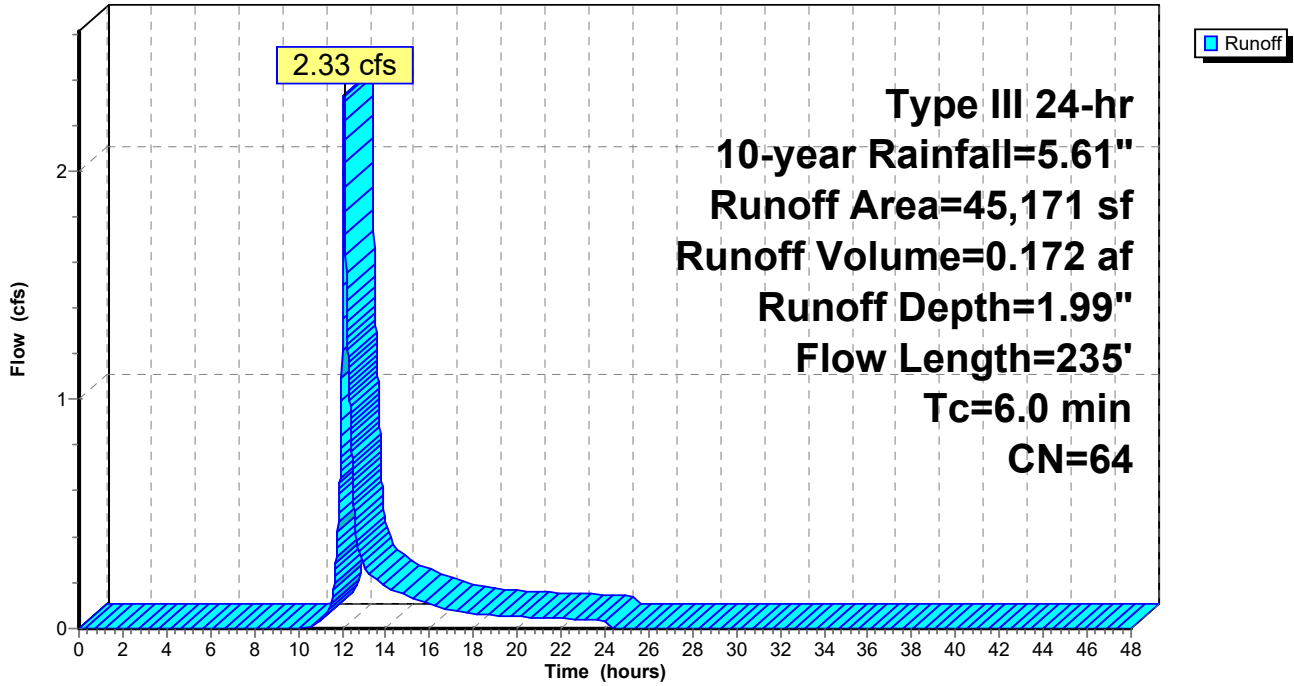
Area (sf)	CN	Description
800	98	Roofs, HSG B
4,896	98	Paved roads w/curbs & sewers, HSG B
847	74	>75% Grass cover, Good, HSG C
18,777	61	>75% Grass cover, Good, HSG B
2,886	70	Woods, Good, HSG C
16,965	55	Woods, Good, HSG B
45,171	64	Weighted Average
39,475		87.39% Pervious Area
5,696		12.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	19	0.0200	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
2.0	114	0.0187	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.3	39	0.1795	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.2	63	0.0955	4.32	34.57	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.00' D=1.00' Z= 4.0 ' Top.W=12.00' n= 0.080 Earth, long dense weeds
2.8	235	Total, Increased to minimum Tc = 6.0 min			



### Subcatchment 2.3S: Central

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.4S: SE Corner**

Runoff = 3.05 cfs @ 12.09 hrs, Volume= 0.218 af, Depth= 2.59"

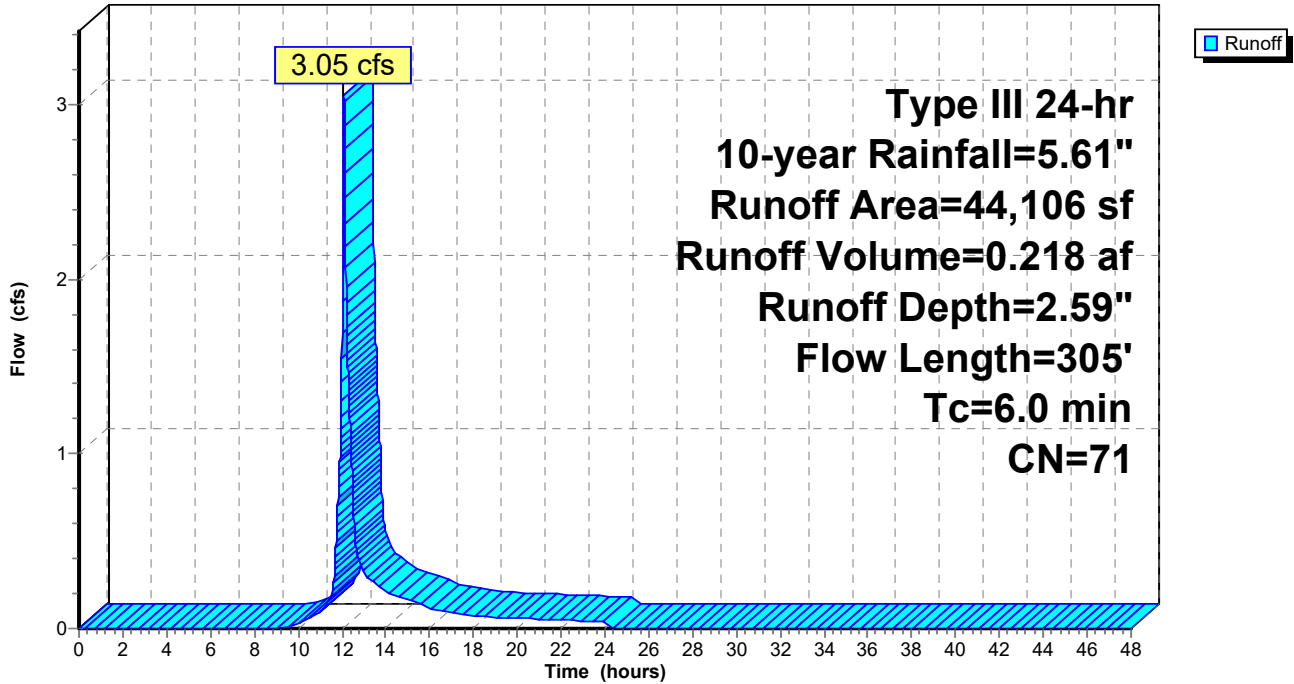
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
9,197	98	Paved roads w/curbs & sewers, HSG B
410	98	Roofs, HSG B
445	74	>75% Grass cover, Good, HSG C
10,040	61	>75% Grass cover, Good, HSG B
15,632	70	Woods, Good, HSG C
8,382	55	Woods, Good, HSG B
44,106	71	Weighted Average
34,499		78.22% Pervious Area
9,607		21.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0200	0.99		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.2	27	0.1852	2.15		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	44	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.8	220	0.0436	4.67	37.38	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.00' D=1.00' Z= 4.0 '/' Top.W=12.00' n= 0.050 Mountain streams w/large boulders
1.7	305	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2.4S: SE Corner

Hydrograph





### Summary for Subcatchment 2.5S: South Edge

Runoff = 3.05 cfs @ 12.09 hrs, Volume= 0.216 af, Depth= 2.95"

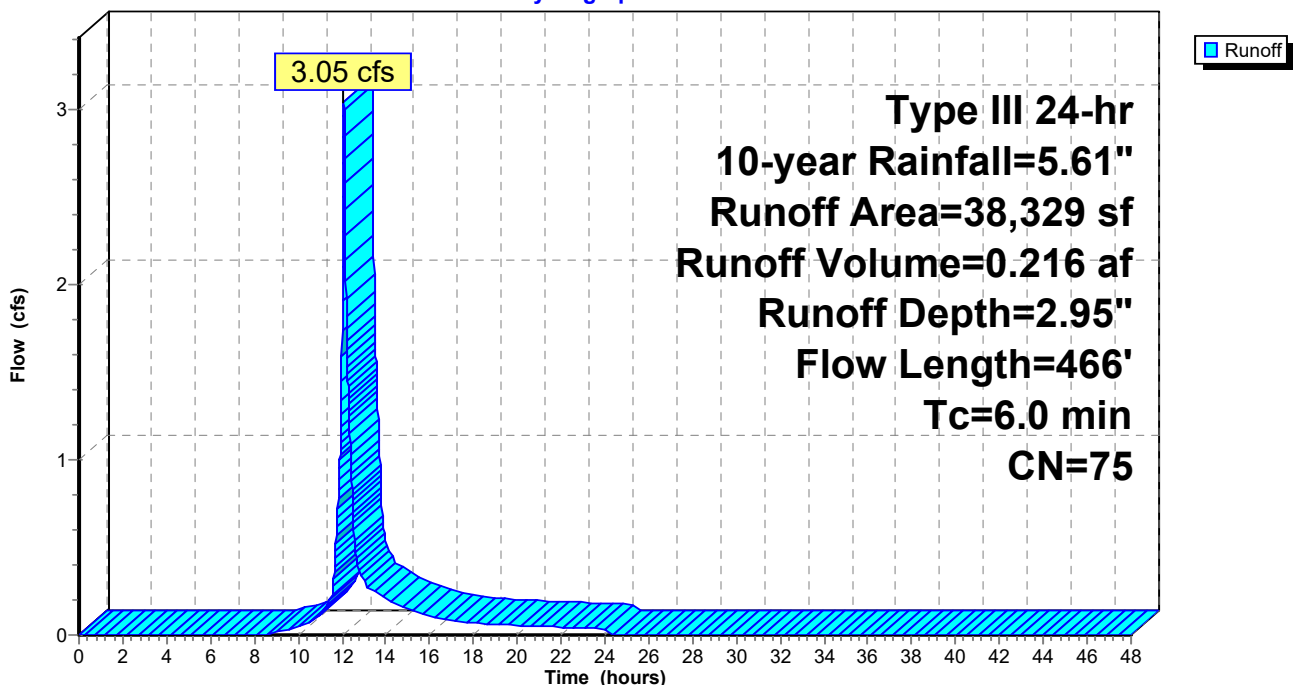
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
15,061	98	Paved roads w/curbs & sewers, HSG B
22,082	61	>75% Grass cover, Good, HSG B
1,186	55	Woods, Good, HSG B
38,329	75	Weighted Average
23,268		60.71% Pervious Area
15,061		39.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0200	1.33		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.2	33	0.0189	2.79		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.9	373	0.0585	7.02	56.13	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=2.00' D=1.00' Z= 6.0 '/' Top.W=14.00' n= 0.035 Earth, dense weeds
1.9	466	Total, Increased to minimum Tc = 6.0 min			

### Subcatchment 2.5S: South Edge

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.0S: Offsite - Ridge**

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 3.83"

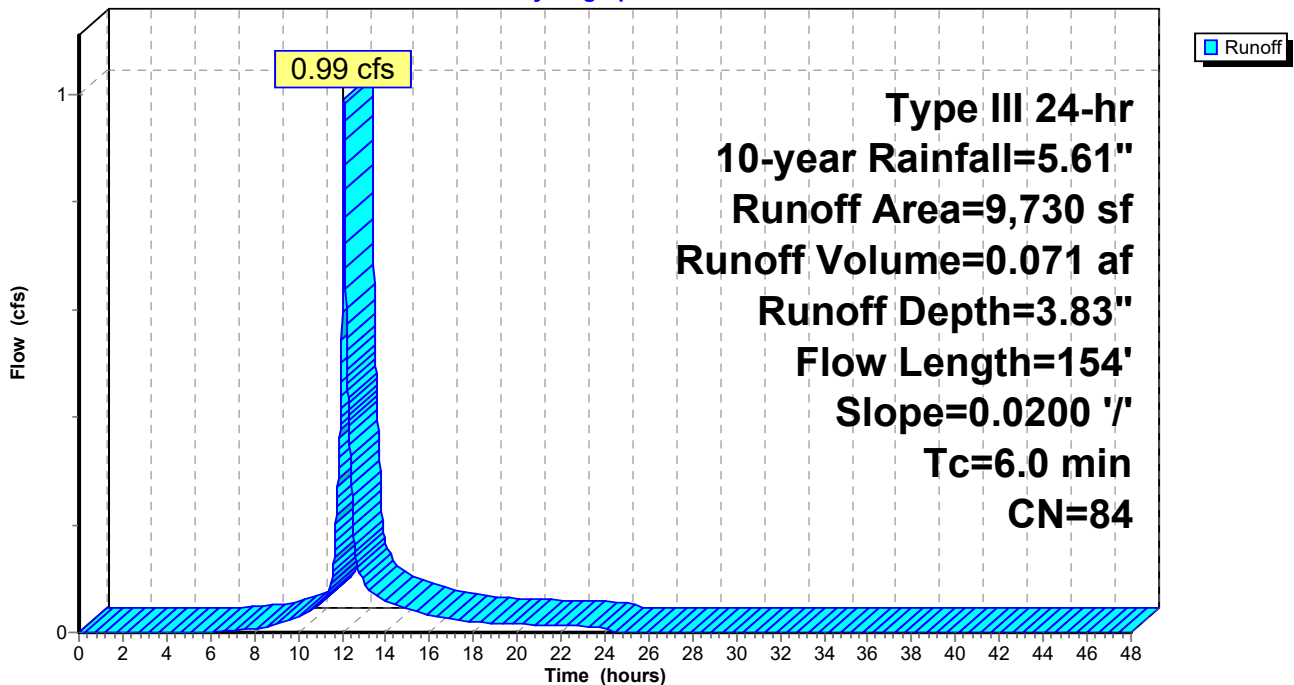
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
3,029	98	Paved roads w/curbs & sewers, HSG C
1,219	98	Roofs, HSG C
5,482	74	>75% Grass cover, Good, HSG C
9,730	84	Weighted Average
5,482		56.34% Pervious Area
4,248		43.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	37	0.0200	1.10		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.03"
0.7	117	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.3	154	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.0S: Offsite - Ridge**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.1S: Offsite - Ridge**

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 4.36"

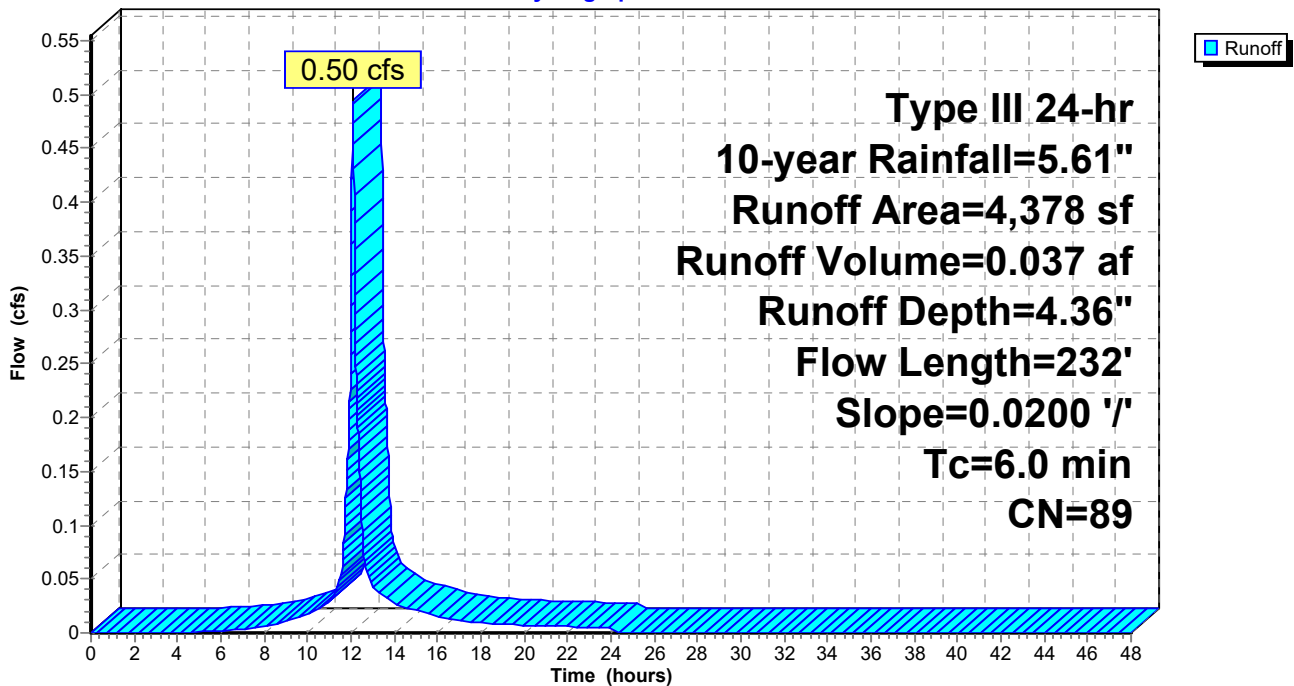
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
2,827	98	Paved roads w/curbs & sewers, HSG C
1,551	74	>75% Grass cover, Good, HSG C
4,378	89	Weighted Average
1,551		35.43% Pervious Area
2,827		64.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0200	1.05		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.2	214	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.5	232	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.1S: Offsite - Ridge**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.2S: Offsite - Ridge**

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.052 af, Depth= 4.58"

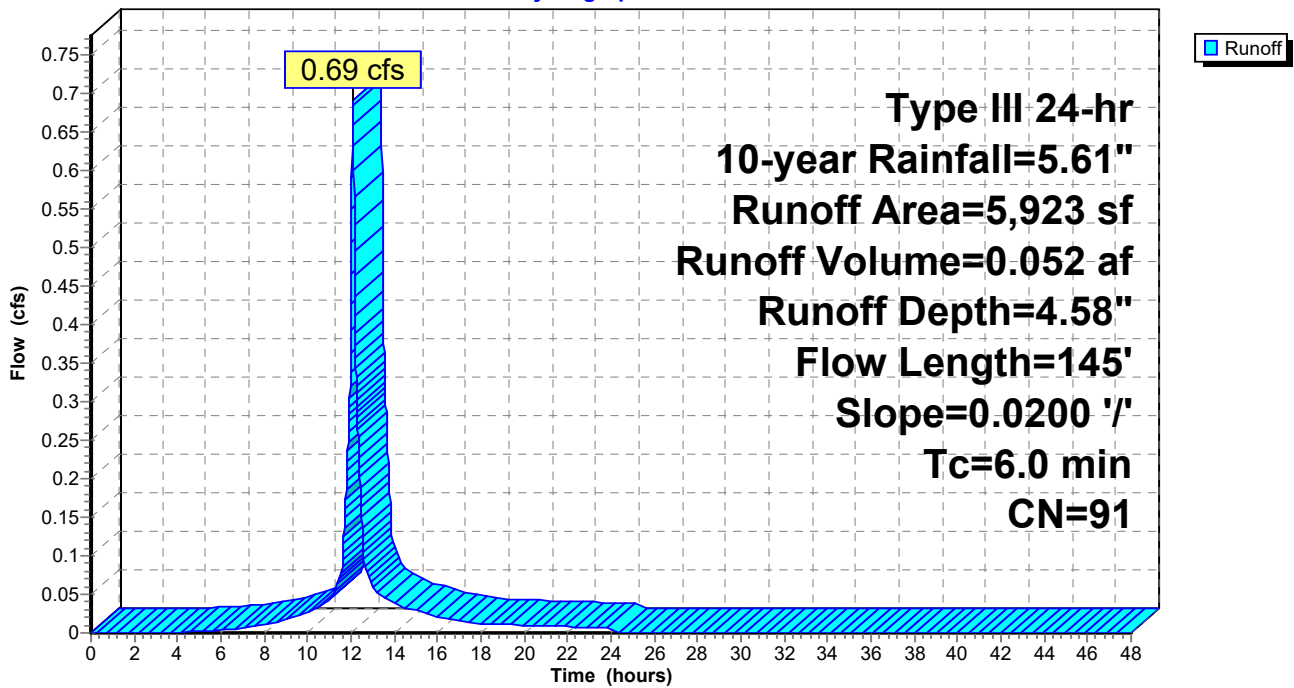
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
4,129	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
5,923	91	Weighted Average
1,794		30.29% Pervious Area
4,129		69.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.24		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.67"
0.6	102	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	145	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.2S: Offsite - Ridge**

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.5S: NW Corner and Offsite**

Runoff = 19.82 cfs @ 12.27 hrs, Volume= 2.037 af, Depth= 2.68"

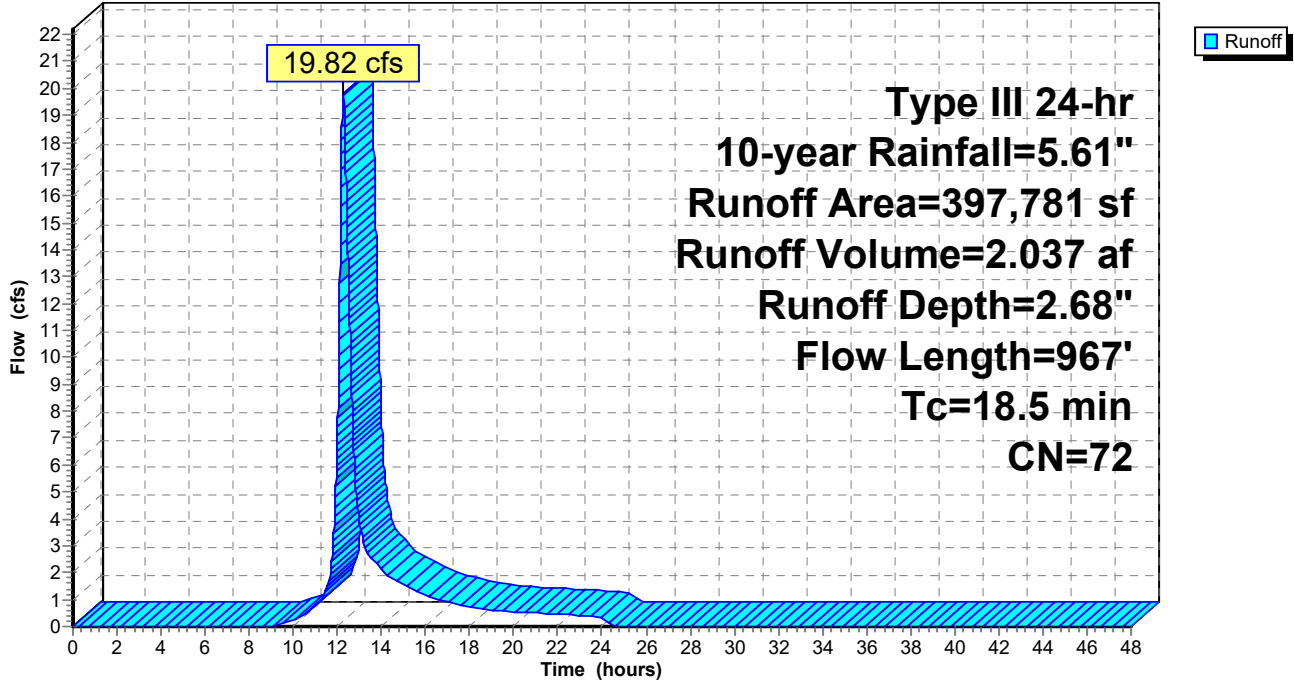
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
28,998	98	Paved roads w/curbs & sewers, HSG C
6,167	98	Paved roads w/curbs & sewers, HSG B
12,129	98	Roofs, HSG C
3,176	98	Roofs, HSG B
84,232	74	>75% Grass cover, Good, HSG C
23,221	61	>75% Grass cover, Good, HSG B
190,220	70	Woods, Good, HSG C
49,638	55	Woods, Good, HSG B
397,781	72	Weighted Average
347,311		87.31% Pervious Area
50,470		12.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	83	0.0200	1.42		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
3.0	154	0.0150	0.86		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.6	84	0.0952	2.16		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.8	108	0.0083	0.64		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.1	538	0.0262	0.81		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.5	967	Total			

### Subcatchment 3.5S: NW Corner and Offsite

Hydrograph





**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.6S: East Central**

Runoff = 4.69 cfs @ 12.09 hrs, Volume= 0.343 af, Depth= 2.07"

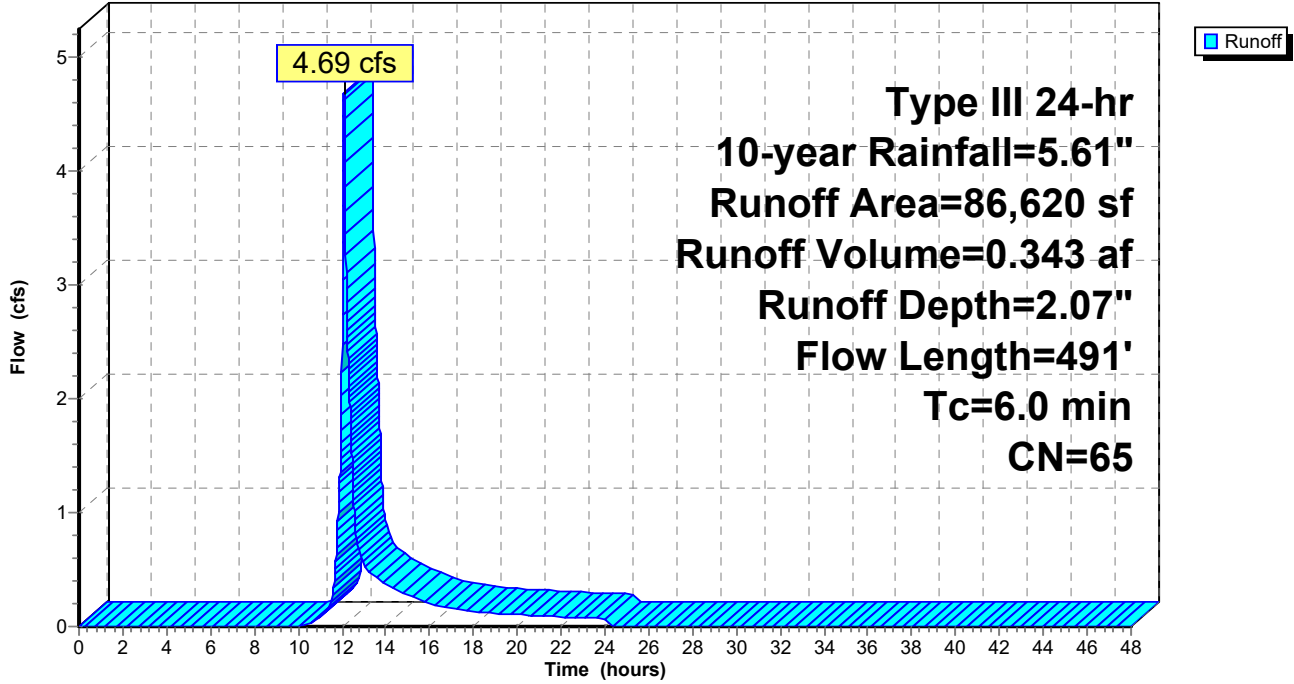
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
5,924	98	Paved roads w/curbs & sewers, HSG C
6,786	98	Paved roads w/curbs & sewers, HSG B
1,342	98	Roofs, HSG B
2,902	70	Woods, Good, HSG C
31,296	61	>75% Grass cover, Good, HSG B
38,370	55	Woods, Good, HSG B
86,620	65	Weighted Average
72,568		83.78% Pervious Area
14,052		16.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	48	0.0200	1.27		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
3.2	311	0.0532	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	132	0.0948	1.54		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.2	491	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3.6S: East Central

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 4S: SW Corner**

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 2.41"

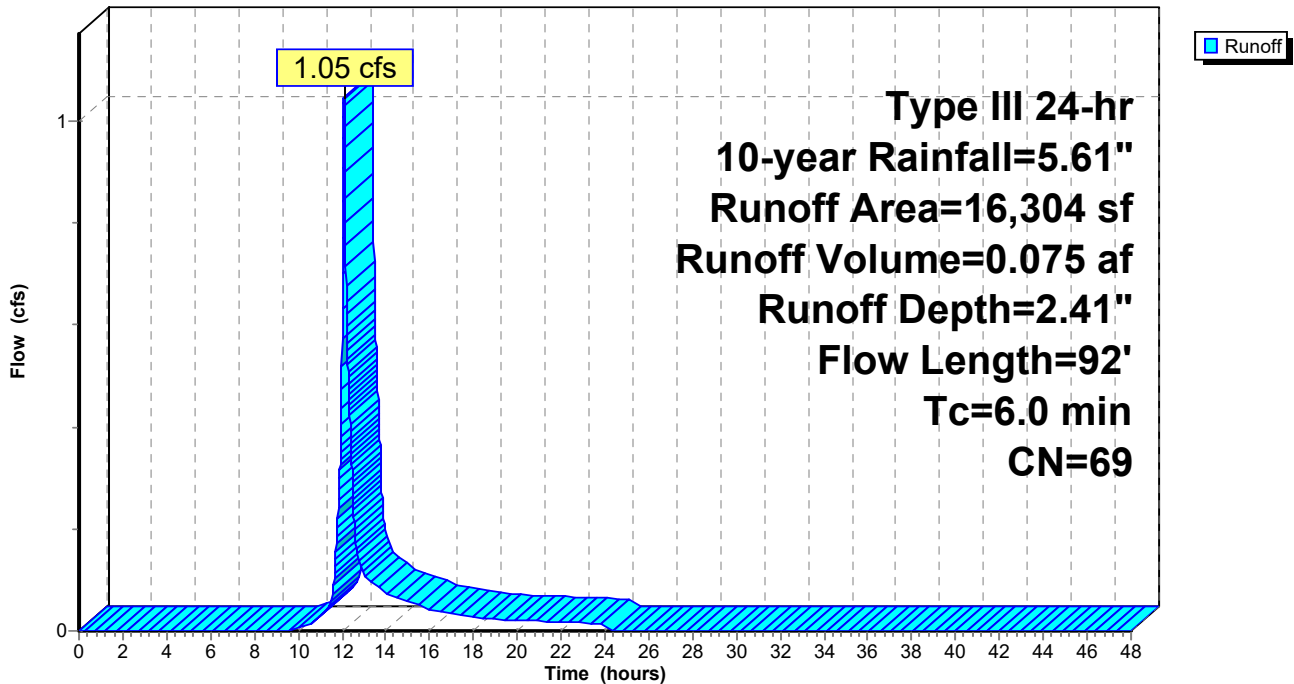
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
3,712	98	Paved roads w/curbs & sewers, HSG B
12,592	61	>75% Grass cover, Good, HSG B
16,304	69	Weighted Average
12,592		77.23% Pervious Area
3,712		22.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	17	0.0100	0.78		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.3	75	0.0185	0.95		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.7	92	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 4S: SW Corner**

Hydrograph





### Summary for Reach 2.0R: Treatment Swale

Inflow Area = 0.331 ac, 78.73% Impervious, Inflow Depth = 4.47" for 10-year event  
 Inflow = 1.66 cfs @ 12.08 hrs, Volume= 0.123 af  
 Outflow = 1.62 cfs @ 12.13 hrs, Volume= 0.123 af, Atten= 2%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.05 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.27 fps, Avg. Travel Time= 6.2 min

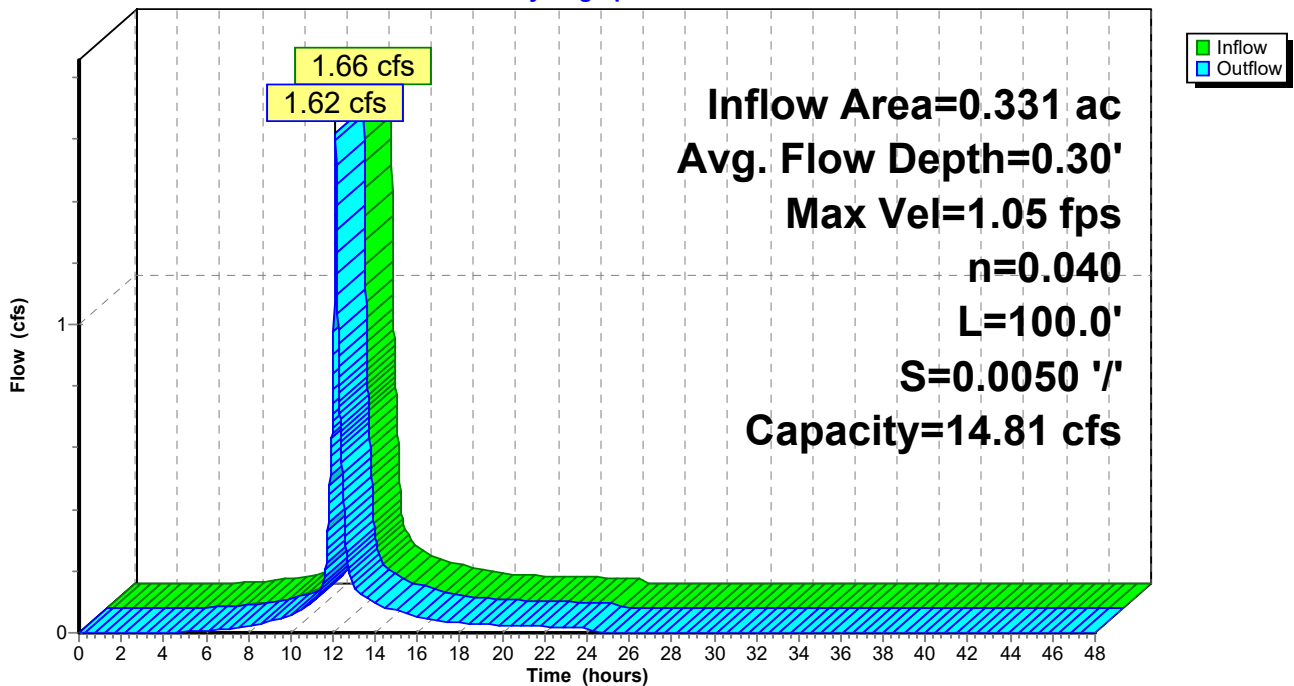
Peak Storage= 155 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 1.00' Flow Area= 7.3 sf, Capacity= 14.81 cfs

4.25' x 1.00' deep channel, n= 0.040  
 Side Slope Z-value= 3.0 '/ Top Width= 10.25'  
 Length= 100.0' Slope= 0.0050 '/  
 Inlet Invert= 74.90', Outlet Invert= 74.40'



### Reach 2.0R: Treatment Swale

Hydrograph



### Summary for Reach 2.1R: Wetland Flow Path

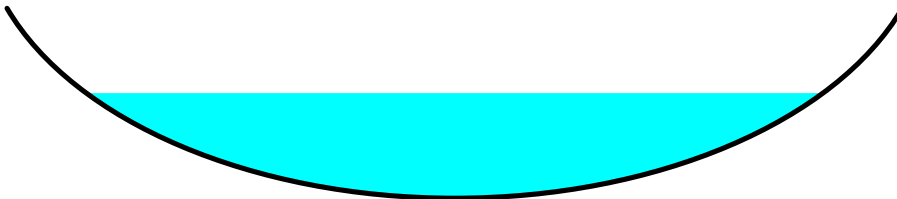
[79] Warning: Submerged Pond 2.1P Primary device # 1 INLET by 0.27'

Inflow Area =	1.890 ac, 18.58% Impervious, Inflow Depth = 2.36"	for 10-year event
Inflow =	2.27 cfs @ 12.44 hrs, Volume=	0.371 af
Outflow =	2.27 cfs @ 12.47 hrs, Volume=	0.371 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.66 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 3.1 min

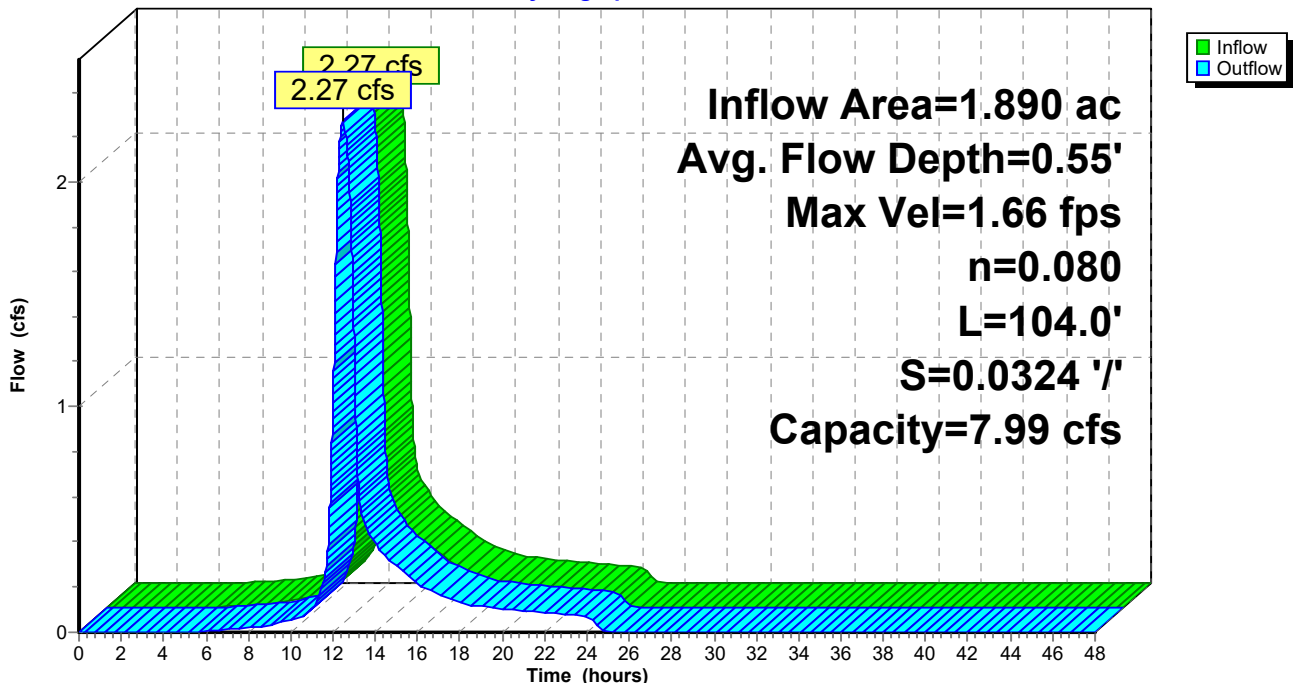
Peak Storage= 142 cf @ 12.45 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 1.00' Flow Area= 3.3 sf, Capacity= 7.99 cfs

5.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds  
 Length= 104.0' Slope= 0.0324 '/'  
 Inlet Invert= 74.12', Outlet Invert= 70.75'



### Reach 2.1R: Wetland Flow Path

Hydrograph



### Summary for Reach 2.2R: Wetland Flow Path

[79] Warning: Submerged Pond 2.2P Primary device # 1 OUTLET by 0.31'

Inflow Area =	2.809 ac, 18.21% Impervious, Inflow Depth = 2.35" for 10-year event
Inflow =	3.70 cfs @ 12.15 hrs, Volume= 0.549 af
Outflow =	3.69 cfs @ 12.17 hrs, Volume= 0.549 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.27 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 1.9 min

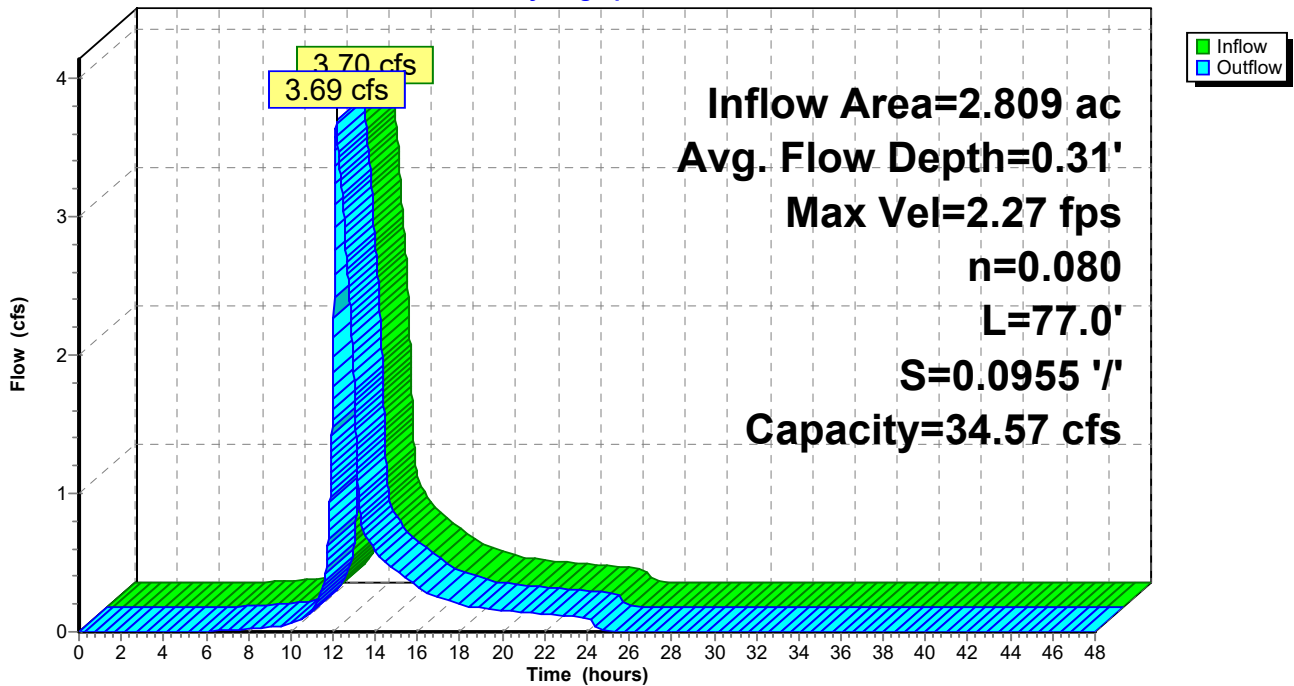
Peak Storage= 125 cf @ 12.16 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 34.57 cfs

4.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds  
 Side Slope Z-value= 4.0 '/ Top Width= 12.00'  
 Length= 77.0' Slope= 0.0955 '/  
 Inlet Invert= 69.75', Outlet Invert= 62.40'



### Reach 2.2R: Wetland Flow Path

Hydrograph





### Summary for Reach 2.3R: Wetland Flow Path

[79] Warning: Submerged Pond 2.3P Primary device # 1 OUTLET by 0.37'

Inflow Area =	3.846 ac, 16.70% Impervious,	Inflow Depth = 2.25"	for 10-year event
Inflow =	5.65 cfs @ 12.14 hrs,	Volume=	0.721 af
Outflow =	5.61 cfs @ 12.18 hrs,	Volume=	0.721 af, Atten= 1%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.72 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 4.8 min

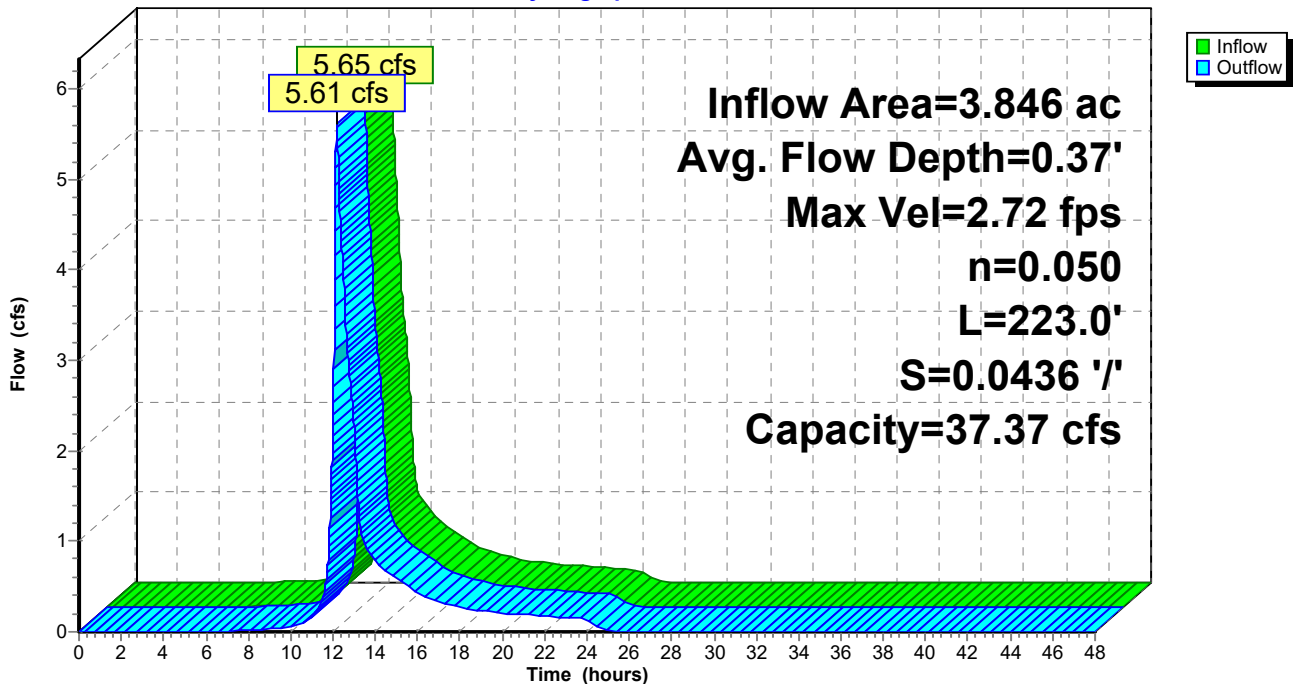
Peak Storage= 460 cf @ 12.16 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 37.37 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
 Side Slope Z-value= 4.0 '/' Top Width= 12.00'  
 Length= 223.0' Slope= 0.0436 '/'  
 Inlet Invert= 59.70', Outlet Invert= 49.98'



### Reach 2.3R: Wetland Flow Path

Hydrograph



### Summary for Reach 2.5R: Wetland Flow Path

Inflow Area = 0.880 ac, 39.29% Impervious, Inflow Depth = 2.95" for 10-year event  
 Inflow = 2.99 cfs @ 12.10 hrs, Volume= 0.216 af  
 Outflow = 2.99 cfs @ 12.11 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.46 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 0.7 min

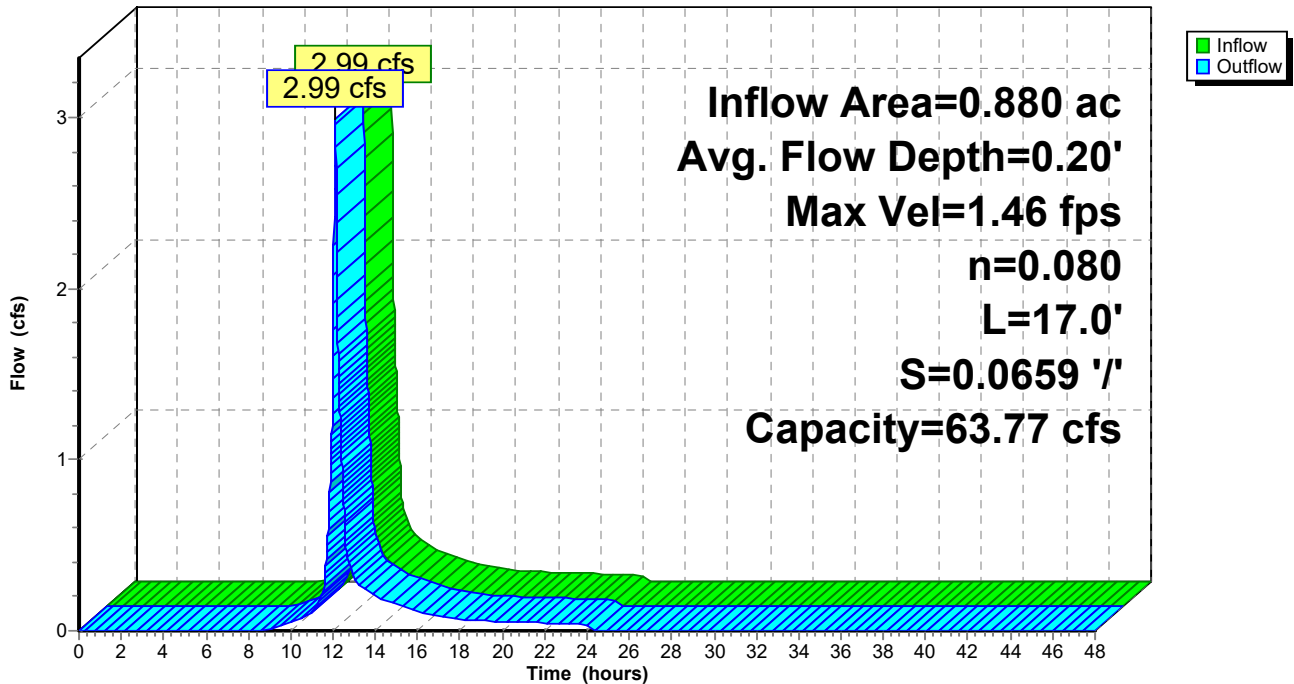
Peak Storage= 35 cf @ 12.11 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 63.77 cfs

8.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds  
 Side Slope Z-value= 10.0 ' / ' Top Width= 28.00'  
 Length= 17.0' Slope= 0.0659 ' / '  
 Inlet Invert= 51.07', Outlet Invert= 49.95'



### Reach 2.5R: Wetland Flow Path

Hydrograph



### Summary for Reach 3.2R: Swale

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
 Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af  
 Outflow = 2.16 cfs @ 12.11 hrs, Volume= 0.159 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 3.83 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 1.05 fps, Avg. Travel Time= 2.8 min

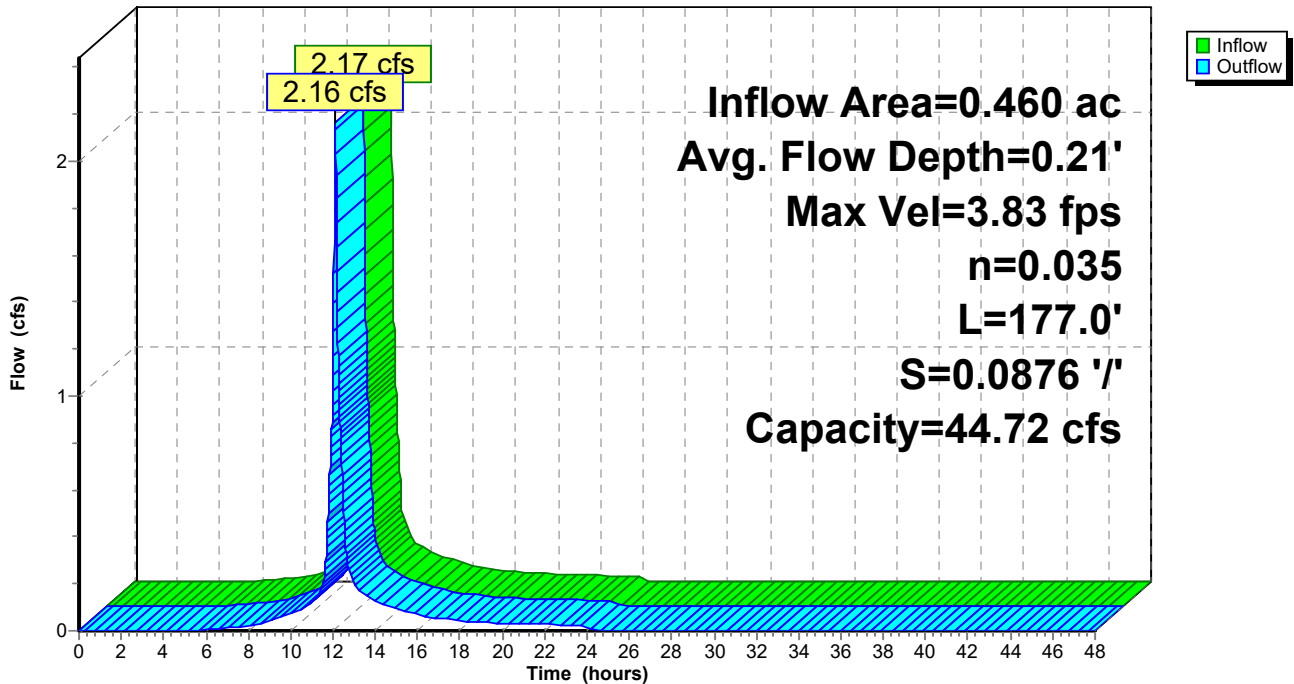
Peak Storage= 100 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 44.72 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'  
 Length= 177.0' Slope= 0.0876 '/'  
 Inlet Invert= 85.50', Outlet Invert= 70.00'



Reach 3.2R: Swale

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 3.3R: Wetland Flow Path**

[62] Hint: Exceeded Reach 3.2R OUTLET depth by 0.01' @ 12.21 hrs

Inflow Area =	0.460 ac, 55.93% Impervious,	Inflow Depth =	4.16"	for 10-year event
Inflow =	2.16 cfs @ 12.11 hrs,	Volume=	0.159 af	
Outflow =	2.06 cfs @ 12.17 hrs,	Volume=	0.159 af,	Atten= 5%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.85 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 8.0 min

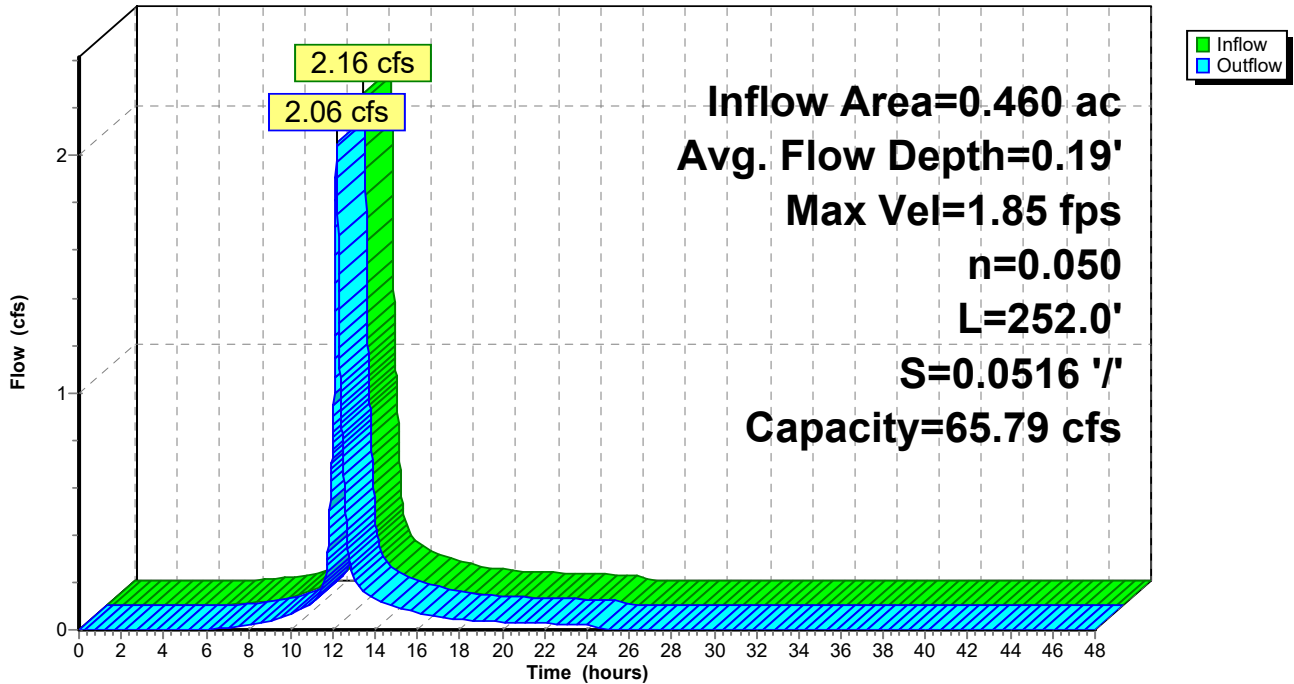
Peak Storage= 281 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 1.00' Flow Area= 14.0 sf, Capacity= 65.79 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
 Side Slope Z-value= 10.0 '/' Top Width= 24.00'  
 Length= 252.0' Slope= 0.0516 '/'  
 Inlet Invert= 70.00', Outlet Invert= 57.00'



**Reach 3.3R: Wetland Flow Path**

Hydrograph



### Summary for Reach 3.4R: Stream Channel

[62] Hint: Exceeded Reach 3.3R OUTLET depth by 0.14' @ 12.21 hrs

Inflow Area =	0.460 ac, 55.93% Impervious,	Inflow Depth =	4.16"	for 10-year event
Inflow =	2.06 cfs @ 12.17 hrs,	Volume=	0.159 af	
Outflow =	2.03 cfs @ 12.21 hrs,	Volume=	0.159 af,	Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.32 fps, Min. Travel Time= 1.2 min  
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.7 min

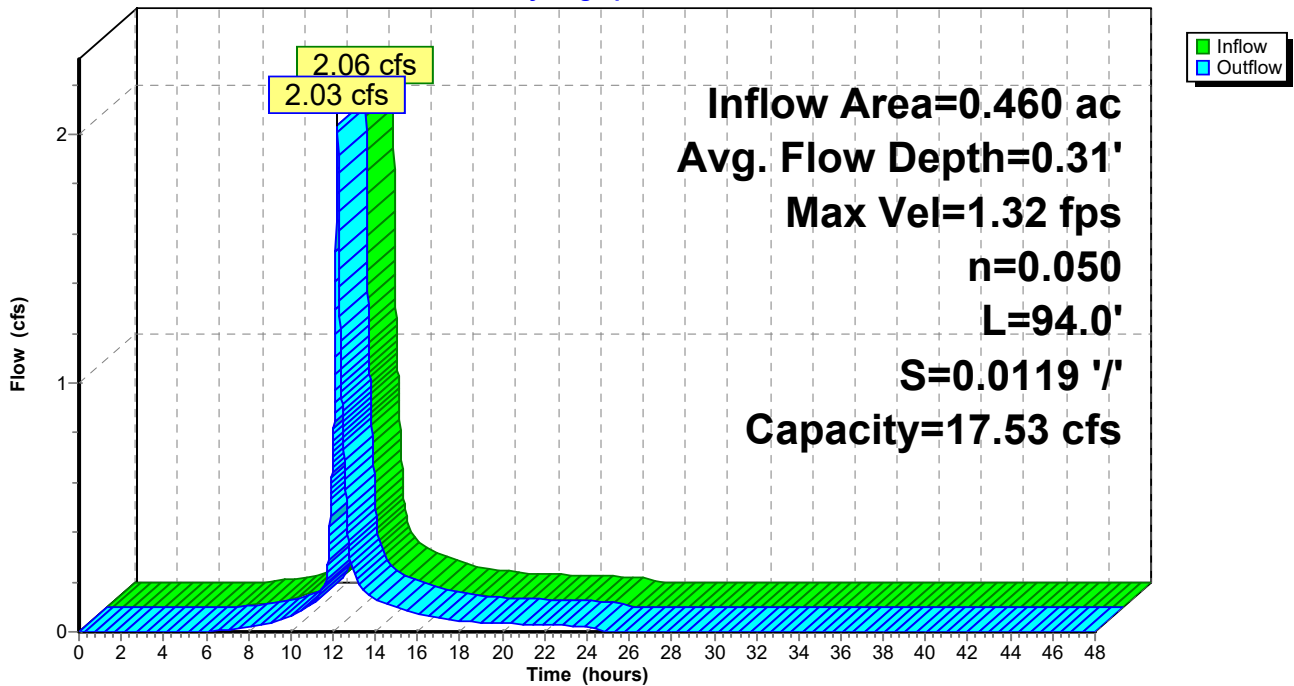
Peak Storage= 145 cf @ 12.19 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 17.53 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
 Side Slope Z-value= 3.0 '/' Top Width= 10.00'  
 Length= 94.0' Slope= 0.0119 '/'  
 Inlet Invert= 57.00', Outlet Invert= 55.88'



### Reach 3.4R: Stream Channel

Hydrograph



### Summary for Reach 3.5R: Stream Channel

Inflow Area = 9.592 ac, 14.76% Impervious, Inflow Depth = 2.75" for 10-year event  
 Inflow = 18.34 cfs @ 12.37 hrs, Volume= 2.197 af  
 Outflow = 18.33 cfs @ 12.38 hrs, Volume= 2.197 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 3.59 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.0 min

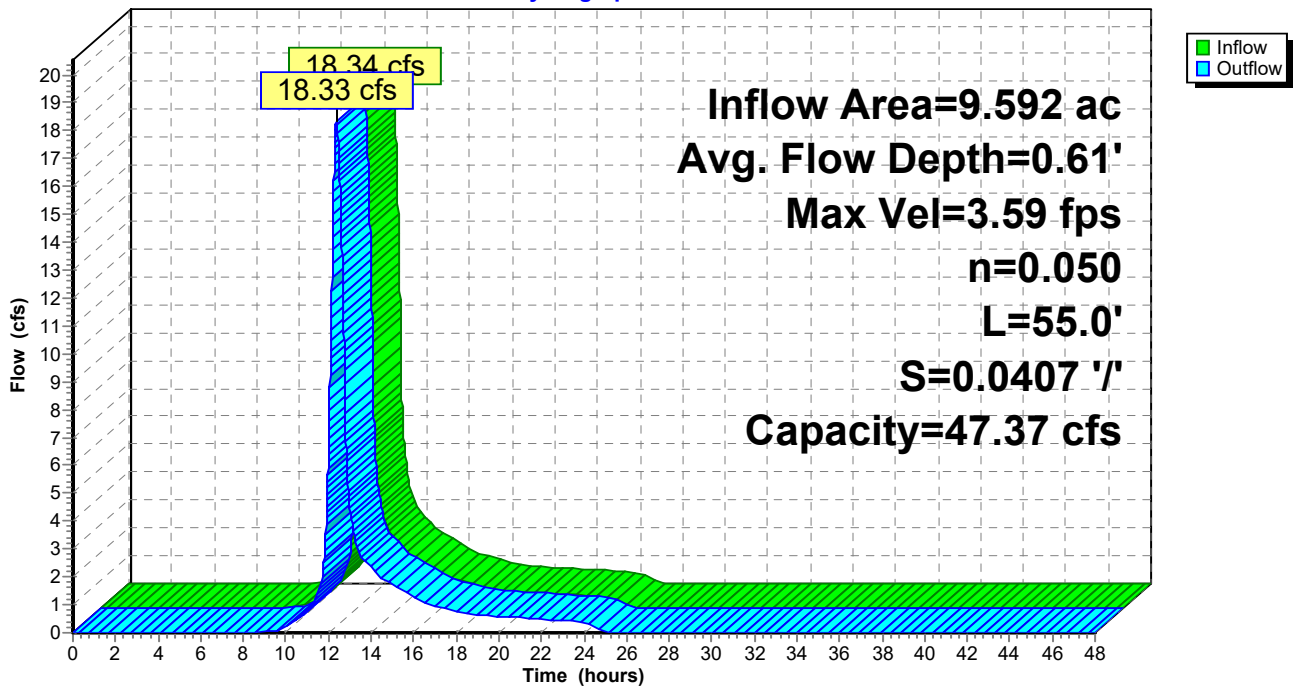
Peak Storage= 281 cf @ 12.37 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 47.37 cfs

6.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
 Side Slope Z-value= 4.0 '/' Top Width= 14.00'  
 Length= 55.0' Slope= 0.0407 '/'  
 Inlet Invert= 54.57', Outlet Invert= 52.33'



### Reach 3.5R: Stream Channel

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 1P: DOT CB**

Inflow Area = 1.081 ac, 26.00% Impervious, Inflow Depth = 2.41" for 10-year event  
 Inflow = 2.10 cfs @ 12.26 hrs, Volume= 0.217 af  
 Outflow = 2.10 cfs @ 12.27 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.3 min  
 Primary = 2.10 cfs @ 12.27 hrs, Volume= 0.217 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 73.02' @ 12.27 hrs Surf.Area= 13 sf Storage= 28 cf  
 Flood Elev= 74.90' Surf.Area= 3,366 sf Storage= 589 cf

Plug-Flow detention time= 0.3 min calculated for 0.217 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 855.6 - 855.4 )

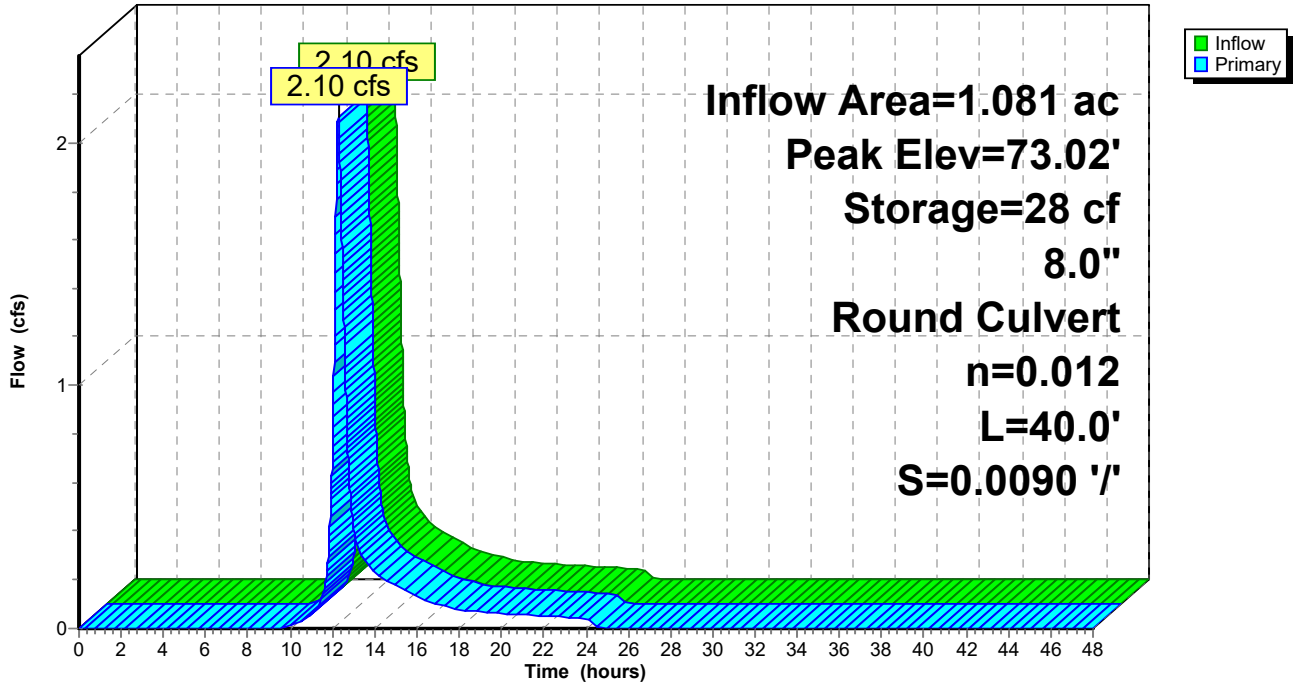
Volume	Invert	Avail.Storage	Storage Description
#1	70.83'	5,742 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.83	13	0	0
74.58	13	49	49
75.00	4,414	930	978
75.60	11,463	4,763	5,742

Device	Routing	Invert	Outlet Devices
#1	Primary	70.83'	<b>8.0" Round Culvert</b> L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.83' / 70.47' S= 0.0090 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

**Primary OutFlow** Max=2.10 cfs @ 12.27 hrs HW=73.02' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 2.10 cfs @ 6.03 fps)

### Pond 1P: DOT CB

#### Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 2.1P: 12" Culvert**

[63] Warning: Exceeded Reach 2.0R INLET depth by 0.44' @ 12.54 hrs

Inflow Area = 1.890 ac, 18.58% Impervious, Inflow Depth = 2.36" for 10-year event  
 Inflow = 3.57 cfs @ 12.18 hrs, Volume= 0.371 af  
 Outflow = 2.27 cfs @ 12.44 hrs, Volume= 0.371 af, Atten= 36%, Lag= 16.0 min  
 Primary = 2.27 cfs @ 12.44 hrs, Volume= 0.371 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 75.48' @ 12.44 hrs Surf.Area= 5,694 sf Storage= 1,823 cf

Plug-Flow detention time= 8.0 min calculated for 0.371 af (100% of inflow)  
 Center-of-Mass det. time= 8.0 min ( 851.6 - 843.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	74.40'	6,200 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.40	180	0	0
75.00	756	281	281
76.00	11,083	5,920	6,200

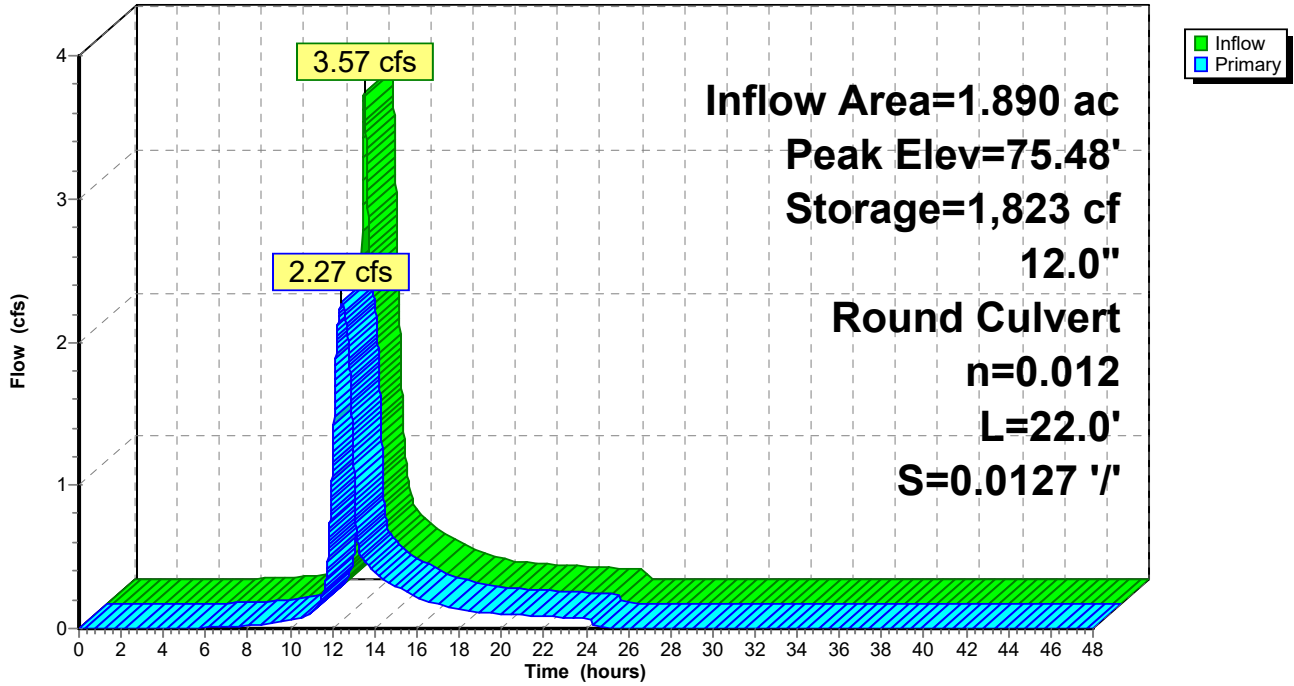
Device	Routing	Invert	Outlet Devices
#1	Primary	74.40'	<b>12.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.40' / 74.12' S= 0.0127 ' S= 0.0127 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.27 cfs @ 12.44 hrs HW=75.48' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 2.27 cfs @ 2.89 fps)



### Pond 2.1P: 12" Culvert

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 2.2P: 18" Culvert**

[62] Hint: Exceeded Reach 2.1R OUTLET depth by 0.58' @ 12.13 hrs

Inflow Area = 2.809 ac, 18.21% Impervious, Inflow Depth = 2.35" for 10-year event  
 Inflow = 3.88 cfs @ 12.11 hrs, Volume= 0.549 af  
 Outflow = 3.70 cfs @ 12.15 hrs, Volume= 0.549 af, Atten= 5%, Lag= 2.6 min  
 Primary = 3.70 cfs @ 12.15 hrs, Volume= 0.549 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 71.81' @ 12.15 hrs Surf.Area= 820 sf Storage= 488 cf

Plug-Flow detention time= 2.6 min calculated for 0.549 af (100% of inflow)  
 Center-of-Mass det. time= 2.6 min ( 854.5 - 851.8 )

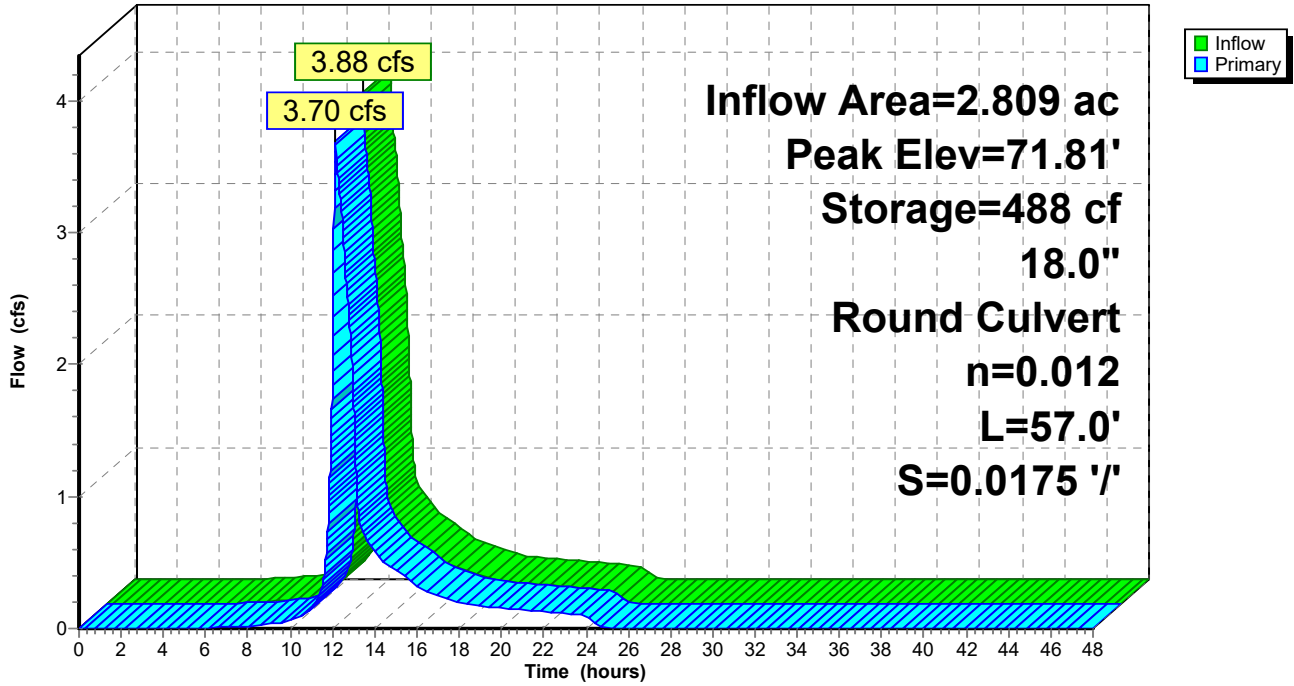
Volume	Invert	Avail.Storage	Storage Description
#1	70.75'	11,435 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.75	100	0	0
72.00	949	656	656
73.00	5,155	3,052	3,708
74.00	10,300	7,728	11,435

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	<b>18.0" Round Culvert</b> L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.75' S= 0.0175 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

**Primary OutFlow** Max=3.70 cfs @ 12.15 hrs HW=71.81' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 3.70 cfs @ 2.77 fps)

### Pond 2.2P: 18" Culvert

Hydrograph





**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 2.3P: 15" Culvert**

[62] Hint: Exceeded Reach 2.2R OUTLET depth by 0.89' @ 12.14 hrs

Inflow Area = 3.846 ac, 16.70% Impervious, Inflow Depth = 2.25" for 10-year event  
 Inflow = 5.71 cfs @ 12.13 hrs, Volume= 0.721 af  
 Outflow = 5.65 cfs @ 12.14 hrs, Volume= 0.721 af, Atten= 1%, Lag= 1.0 min  
 Primary = 5.65 cfs @ 12.14 hrs, Volume= 0.721 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 63.60' @ 12.14 hrs Surf.Area= 322 sf Storage= 117 cf

Plug-Flow detention time= 0.2 min calculated for 0.721 af (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 856.3 - 856.2 )

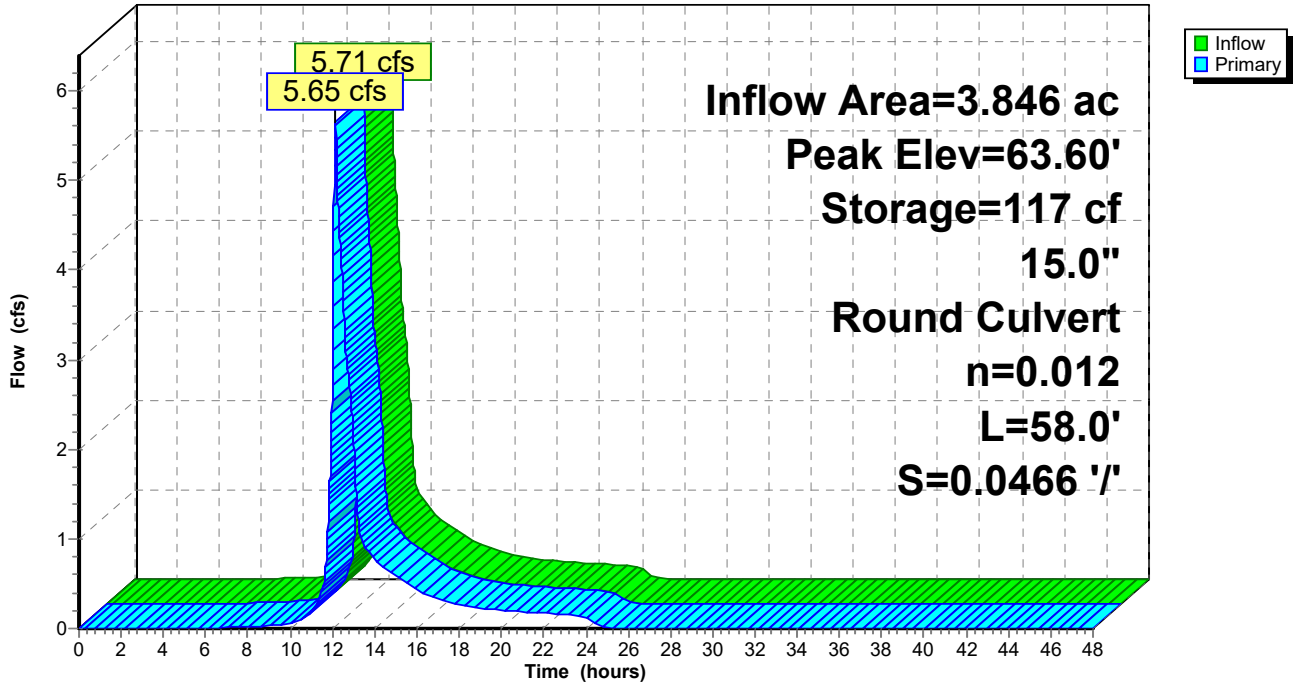
Volume	Invert	Avail.Storage	Storage Description
#1	62.40'	6,599 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.40	10	0	0
63.00	28	11	11
64.00	516	272	283
65.00	1,341	929	1,212
66.00	2,587	1,964	3,176
67.00	4,259	3,423	6,599

Device	Routing	Invert	Outlet Devices
#1	Primary	62.40'	<b>15.0" Round Culvert</b> L= 58.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 62.40' / 59.70' S= 0.0466 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=5.65 cfs @ 12.14 hrs HW=63.60' (Free Discharge)↑**1=Culvert** (Inlet Controls 5.65 cfs @ 4.67 fps)

### Pond 2.3P: 15" Culvert

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 2.5P: 12" Culvert**

Inflow Area = 0.880 ac, 39.29% Impervious, Inflow Depth = 2.95" for 10-year event  
 Inflow = 3.05 cfs @ 12.09 hrs, Volume= 0.216 af  
 Outflow = 2.99 cfs @ 12.10 hrs, Volume= 0.216 af, Atten= 2%, Lag= 0.9 min  
 Primary = 2.99 cfs @ 12.10 hrs, Volume= 0.216 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 53.69' @ 12.10 hrs Surf.Area= 99 sf Storage= 63 cf

Plug-Flow detention time= 0.3 min calculated for 0.216 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 829.8 - 829.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	52.19'	749 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.19	10	0	0
53.00	32	17	17
54.00	129	81	98
55.00	1,173	651	749

Device	Routing	Invert	Outlet Devices
#1	Primary	52.19'	<b>12.0" Round Culvert</b> L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.19' / 51.49' S= 0.0189 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	54.47'	<b>Asymmetrical Weir, C= 3.27</b> Offset (feet) -15.00 0.00 10.00 Height (feet) 0.24 0.00 0.24

**Primary OutFlow** Max=2.99 cfs @ 12.10 hrs HW=53.69' (Free Discharge)

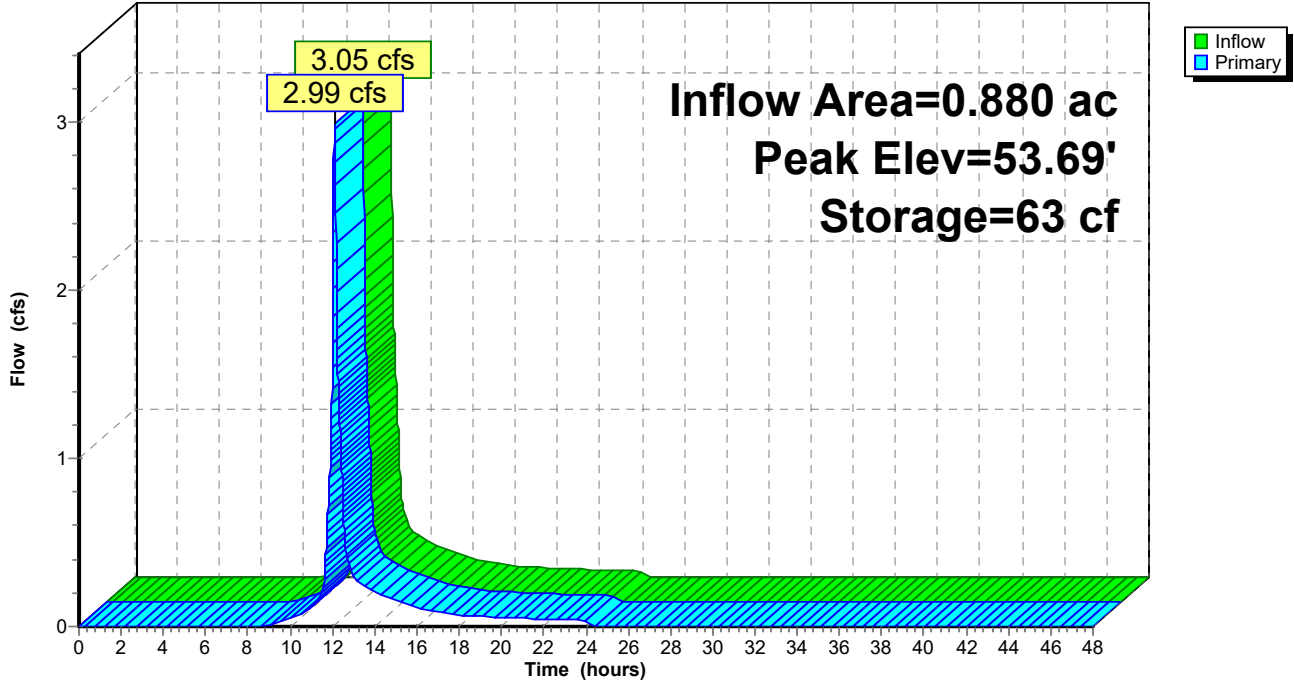
1=Culvert (Inlet Controls 2.99 cfs @ 3.80 fps)

2=Asymmetrical Weir ( Controls 0.00 cfs)



Pond 2.5P: 12" Culvert

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.0P: CB 36**

Inflow Area = 0.223 ac, 43.66% Impervious, Inflow Depth = 3.83" for 10-year event  
 Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af  
 Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.1 min  
 Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 89.77' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 0.071 af (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 806.5 - 806.0 )

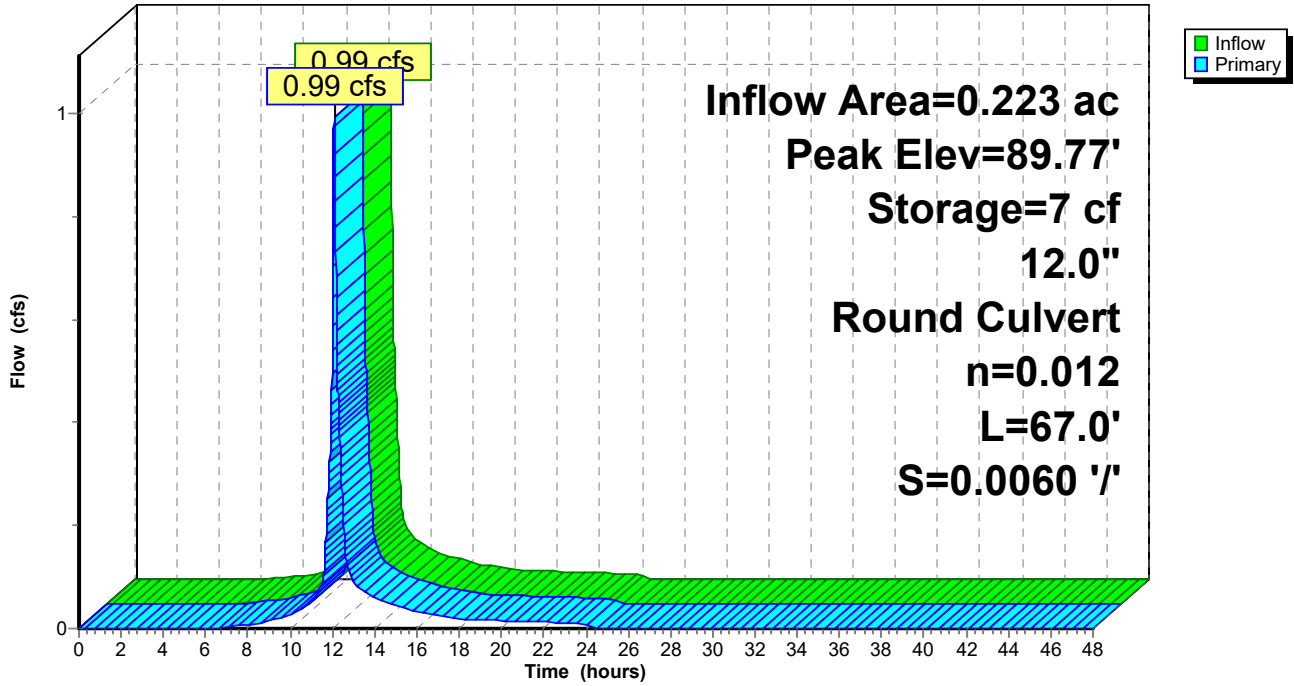
Volume	Invert	Avail.Storage	Storage Description		
#1	89.20'	43 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
89.20	13	0	0	13	
92.50	13	43	43	55	

Device	Routing	Invert	Outlet Devices
#1	Primary	89.20'	<b>12.0" Round Culvert</b> L= 67.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.80' S= 0.0060 ' S= 0.0060 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.99 cfs @ 12.09 hrs HW=89.77' TW=87.33' (Fixed TW Elev= 87.33')  
 ↑1=Culvert (Barrel Controls 0.99 cfs @ 3.12 fps)

**Pond 3.0P: CB 36**

Hydrograph





**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.1P: CB 37**

[81] Warning: Exceeded Pond 3.0P by 0.18' @ 25.28 hrs

Inflow Area = 0.324 ac, 50.15% Impervious, Inflow Depth = 4.00" for 10-year event  
 Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.108 af  
 Outflow = 1.48 cfs @ 12.09 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.1 min  
 Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.108 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 89.70' @ 12.09 hrs Surf.Area= 13 sf Storage= 13 cf

Plug-Flow detention time= 2.1 min calculated for 0.108 af (100% of inflow)  
 Center-of-Mass det. time= 0.9 min ( 801.9 - 801.0 )

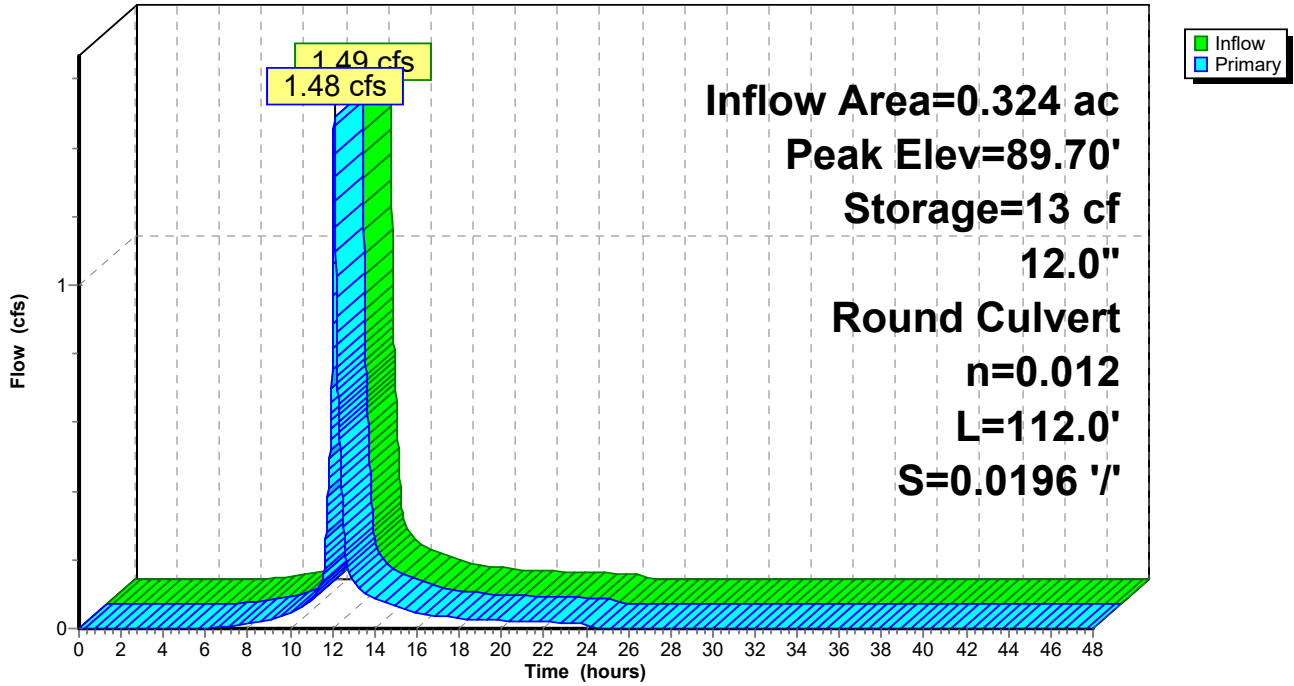
Volume	Invert	Avail.Storage	Storage Description		
#1	88.70'	66 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
88.70	13	0	0	13	
93.80	13	66	66	78	

Device	Routing	Invert	Outlet Devices
#1	Primary	88.70'	<b>12.0" Round Culvert</b> L= 112.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.70' / 86.50' S= 0.0196 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.48 cfs @ 12.09 hrs HW=89.70' TW=89.38' (Fixed TW Elev= 89.38')  
 ↑1=Culvert (Outlet Controls 1.48 cfs @ 2.34 fps)

**Pond 3.1P: CB 37**

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.2P: CB 40**

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
 Inflow = 2.18 cfs @ 12.09 hrs, Volume= 0.159 af  
 Outflow = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.1 min  
 Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 87.35' @ 12.09 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.3 min calculated for 0.159 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 796.2 - 795.8 )

Volume	Invert	Avail.Storage	Storage Description		
#1	86.40'	48 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
86.40	13	0	0	13	
90.10	13	48	48	60	

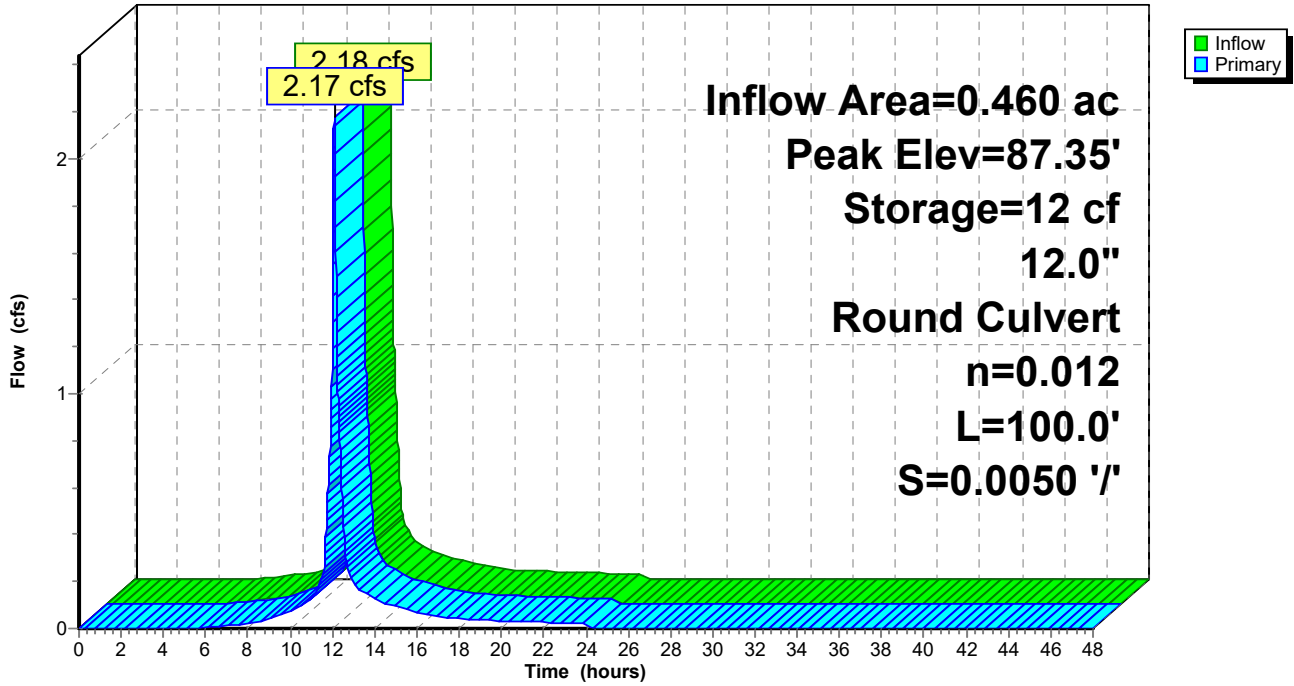
Device	Routing	Invert	Outlet Devices
#1	Primary	86.40'	<b>12.0" Round Culvert</b> L= 100.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.40' / 85.90' S= 0.0050 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.17 cfs @ 12.09 hrs HW=87.35' TW=86.10' (Fixed TW Elev= 86.10')  
 ↑**1=Culvert** (Barrel Controls 2.17 cfs @ 3.62 fps)



**Pond 3.2P: CB 40**

Hydrograph



**5015-Pre**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.5P: 2x15" Culverts**

[63] Warning: Exceeded Reach 3.4R INLET depth by 0.64' @ 12.38 hrs

Inflow Area = 9.592 ac, 14.76% Impervious, Inflow Depth = 2.75" for 10-year event  
 Inflow = 21.63 cfs @ 12.25 hrs, Volume= 2.197 af  
 Outflow = 18.34 cfs @ 12.37 hrs, Volume= 2.197 af, Atten= 15%, Lag= 7.2 min  
 Primary = 18.34 cfs @ 12.37 hrs, Volume= 2.197 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 57.85' @ 12.37 hrs Surf.Area= 6,198 sf Storage= 6,231 cf

Plug-Flow detention time= 6.9 min calculated for 2.197 af (100% of inflow)  
 Center-of-Mass det. time= 7.0 min ( 852.6 - 845.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	55.88'	34,780 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.88	200	0	0
56.00	861	64	64
57.00	3,116	1,989	2,052
58.00	6,756	4,936	6,988
59.00	13,601	10,179	17,167
60.00	21,625	17,613	34,780

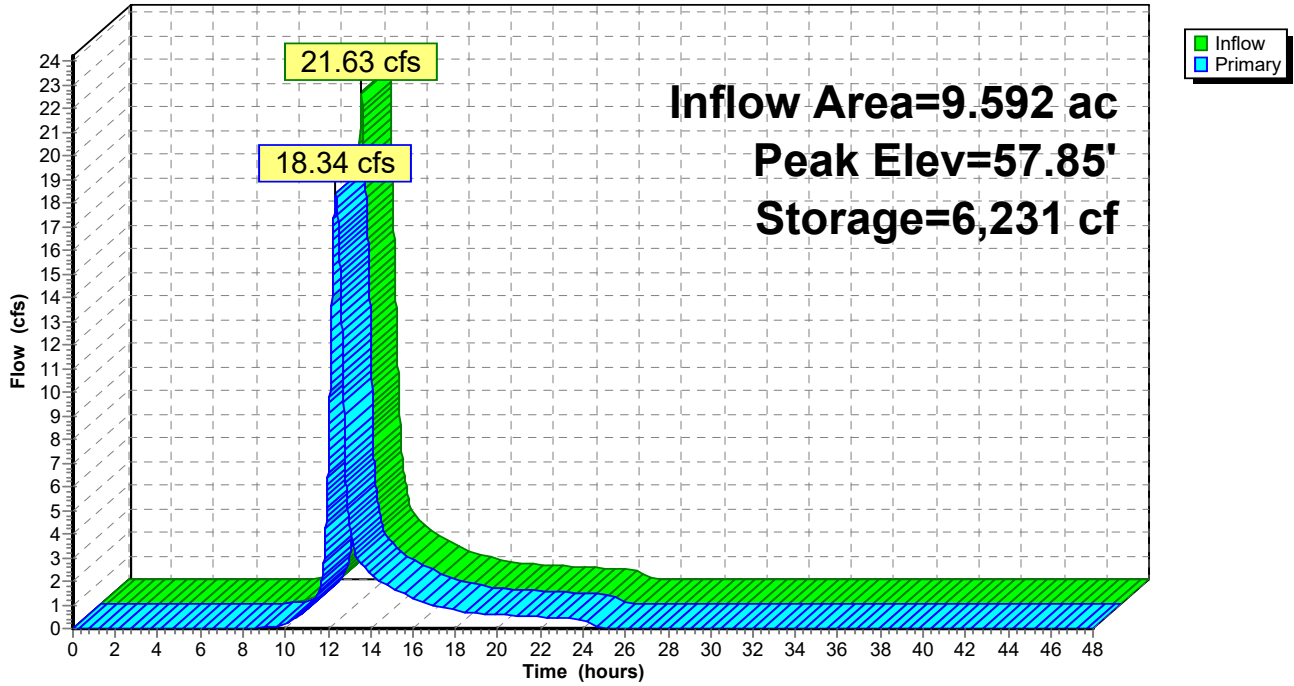
Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	<b>18.0" Round Culvert</b> L= 76.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.88' / 54.57' S= 0.0172 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	55.99'	<b>18.0" Round Culvert</b> L= 76.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.99' / 54.58' S= 0.0186 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

**Primary OutFlow** Max=18.33 cfs @ 12.37 hrs HW=57.85' TW=55.60' (Fixed TW Elev= 55.60')

- 1=Culvert (Inlet Controls 9.38 cfs @ 5.31 fps)
- 2=Culvert (Inlet Controls 8.95 cfs @ 5.06 fps)

### Pond 3.5P: 2x15" Culverts

Hydrograph



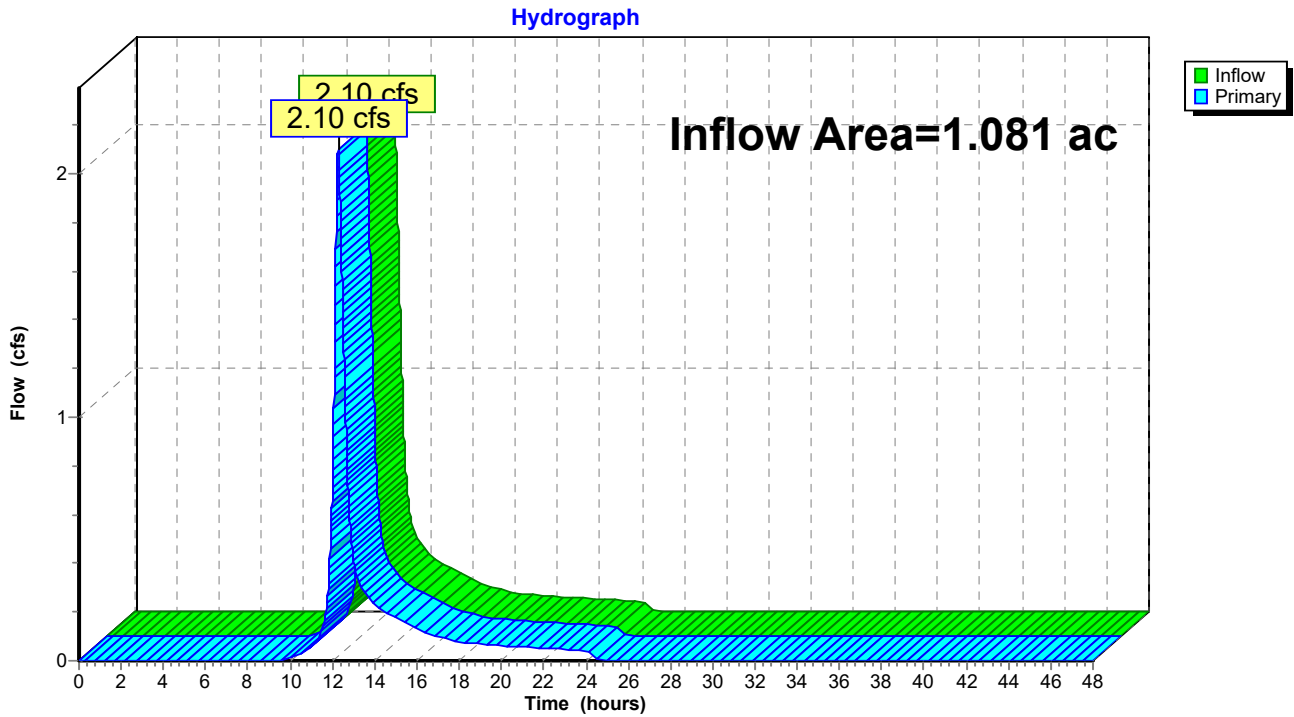


### Summary for Link 100L: POA #100 - Culvert Outfall

Inflow Area = 1.081 ac, 26.00% Impervious, Inflow Depth = 2.41" for 10-year event  
Inflow = 2.10 cfs @ 12.27 hrs, Volume= 0.217 af  
Primary = 2.10 cfs @ 12.27 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 100L: POA #100 - Culvert Outfall



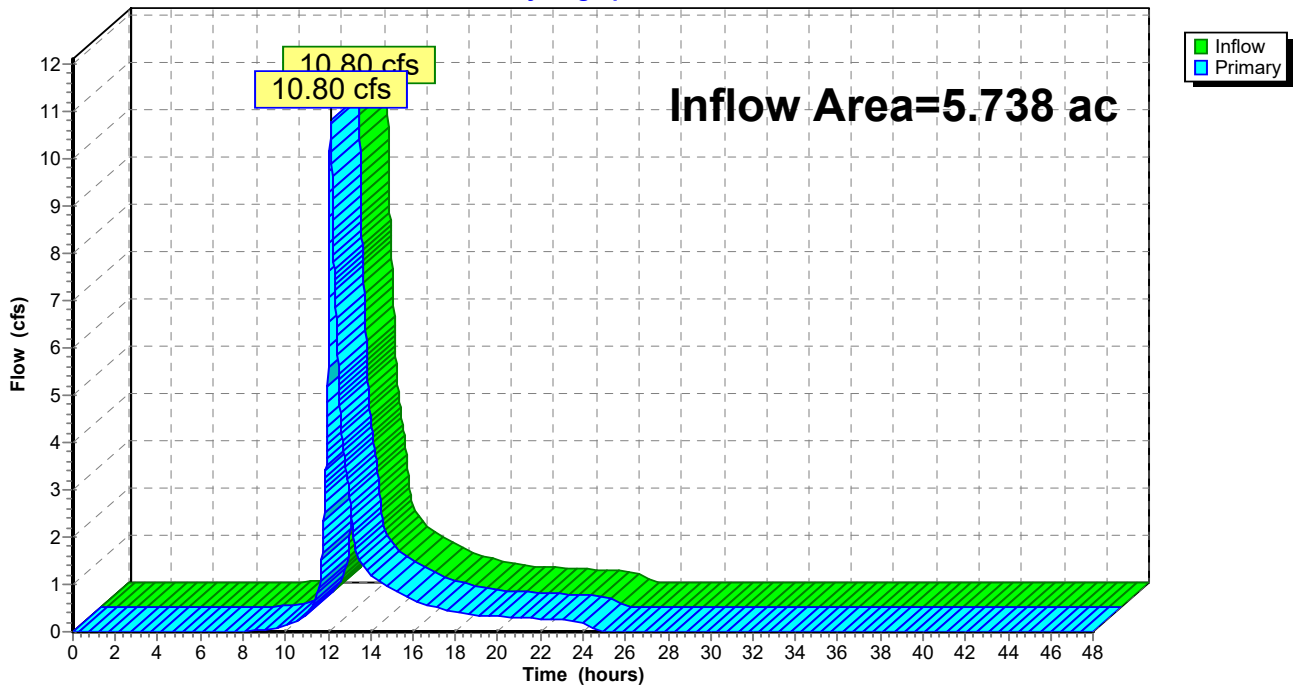
### Summary for Link 200L: POA #200 - East Boundary

Inflow Area = 5.738 ac, 21.06% Impervious, Inflow Depth = 2.42" for 10-year event  
Inflow = 10.80 cfs @ 12.13 hrs, Volume= 1.156 af  
Primary = 10.80 cfs @ 12.13 hrs, Volume= 1.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 200L: POA #200 - East Boundary

Hydrograph



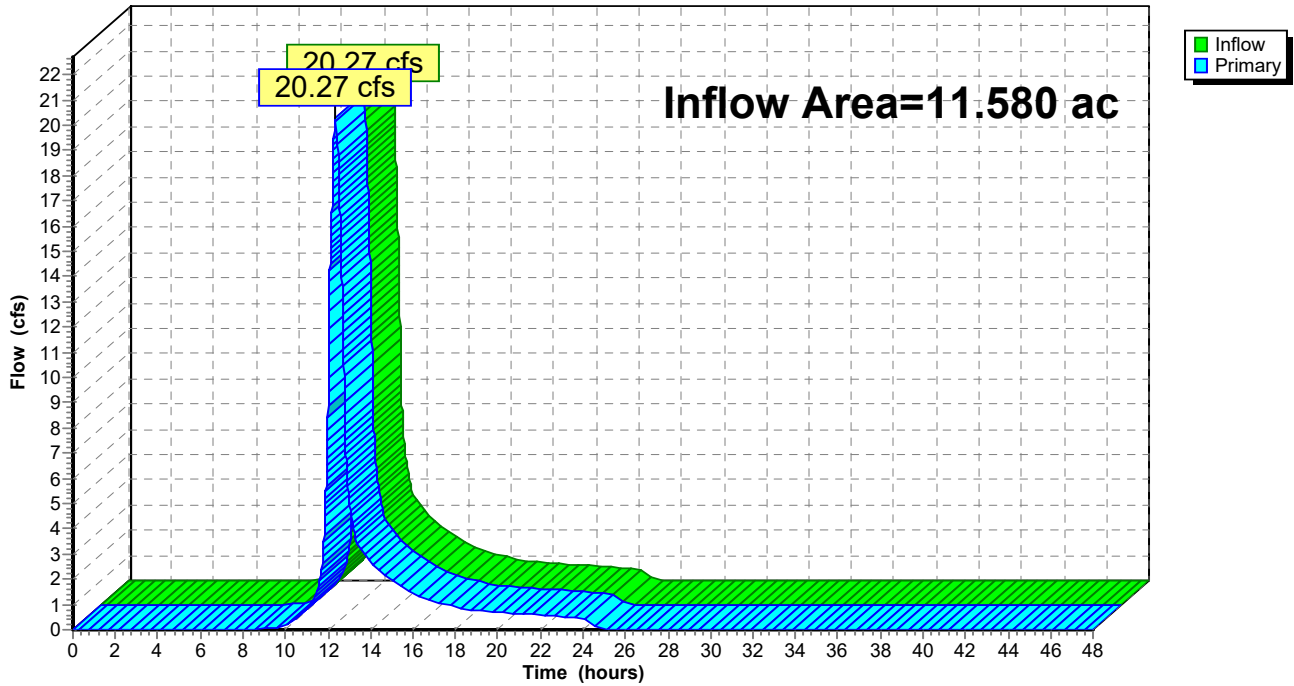
### Summary for Link 300L: POA # 300 - East Boundary

Inflow Area = 11.580 ac, 15.01% Impervious, Inflow Depth = 2.63" for 10-year event  
Inflow = 20.27 cfs @ 12.36 hrs, Volume= 2.540 af  
Primary = 20.27 cfs @ 12.36 hrs, Volume= 2.540 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 300L: POA # 300 - East Boundary

Hydrograph





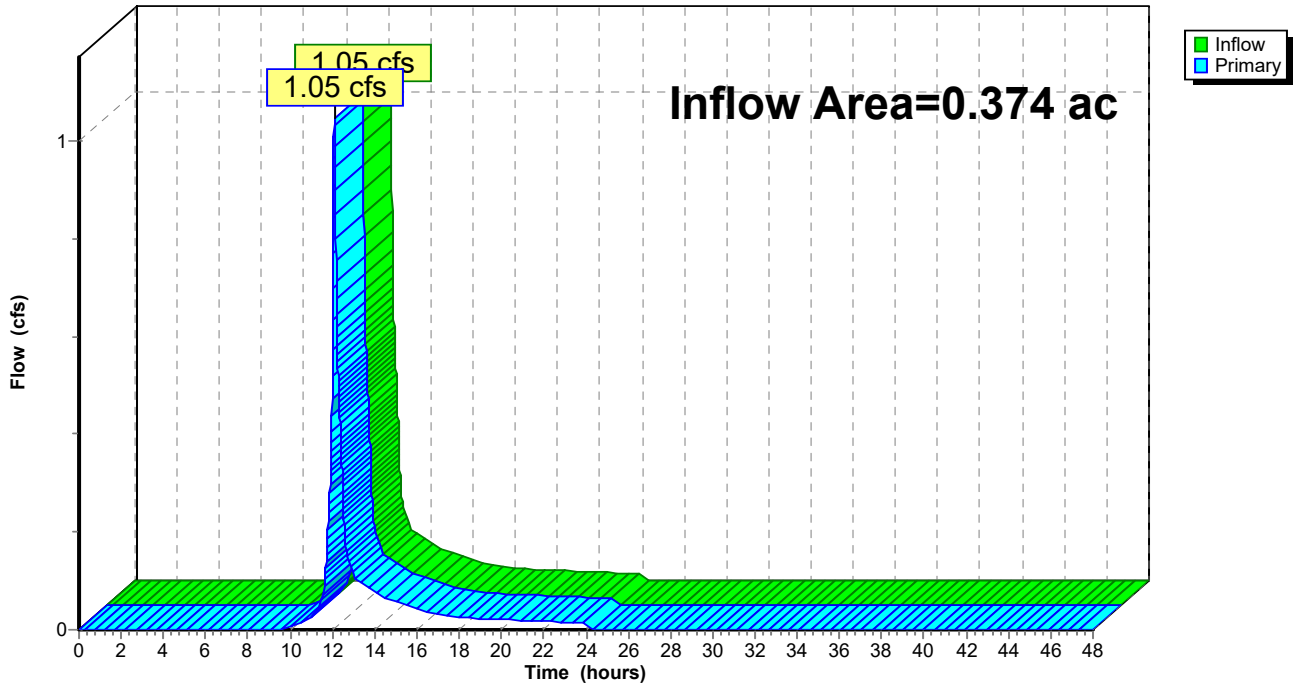
### Summary for Link 400L: POA #400 - SW Boundary

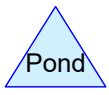
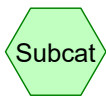
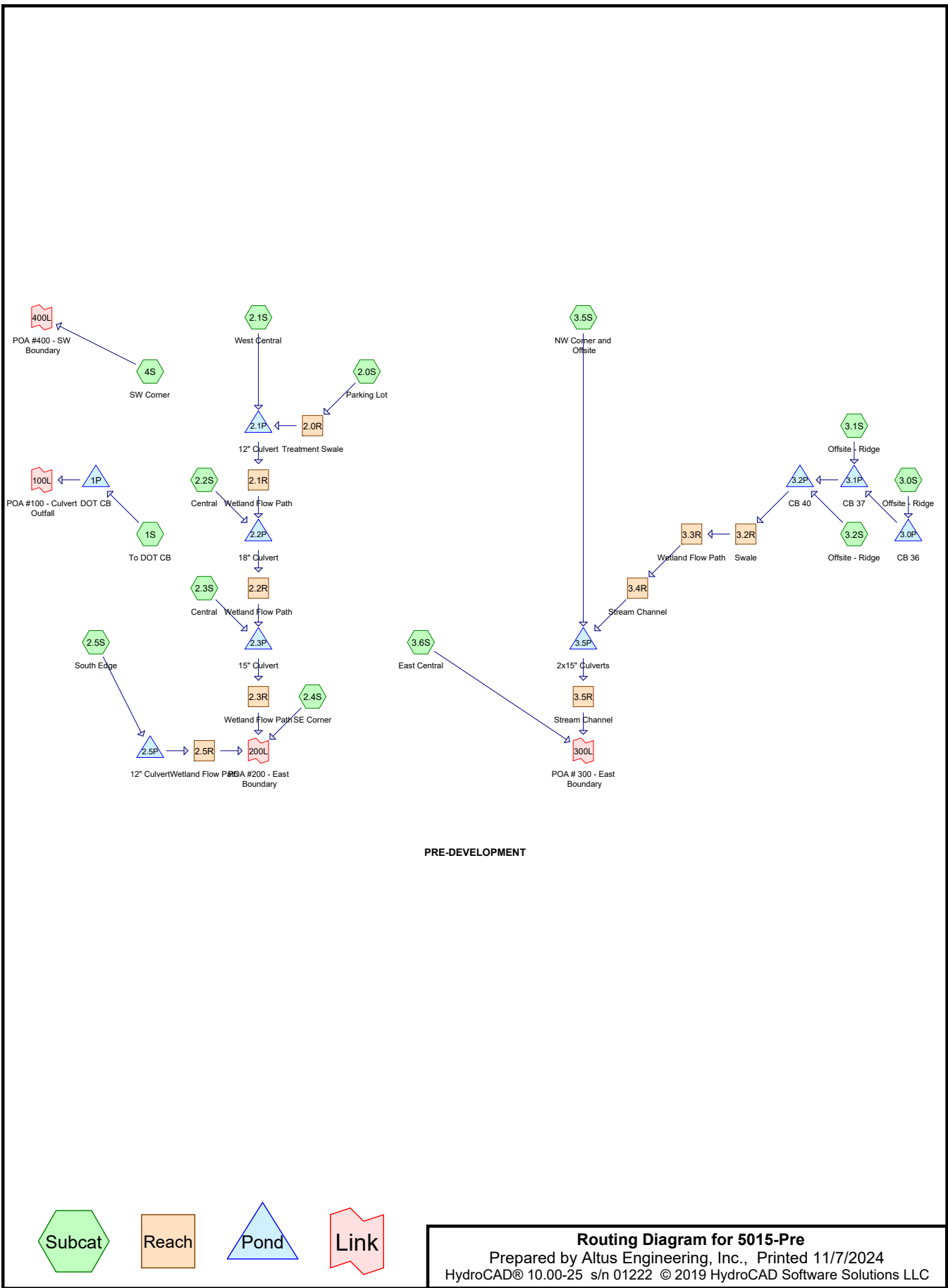
Inflow Area = 0.374 ac, 22.77% Impervious, Inflow Depth = 2.41" for 10-year event  
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af  
Primary = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 400L: POA #400 - SW Boundary

Hydrograph





**Routing Diagram for 5015-Pre**  
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**5015-Pre**

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Type III 24-hr 25-year Rainfall=7.14"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=47,076 sf 26.00% Impervious Runoff Depth=3.63" Flow Length=191' Tc=18.2 min CN=69 Runoff=3.21 cfs 0.327 af
<b>Subcatchment 2.0S: Parking Lot</b>	Runoff Area=14,408 sf 78.73% Impervious Runoff Depth=5.96" Flow Length=234' Tc=6.0 min CN=90 Runoff=2.18 cfs 0.164 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=67,904 sf 5.82% Impervious Runoff Depth=3.01" Flow Length=382' Tc=16.7 min CN=63 Runoff=3.91 cfs 0.390 af
<b>Subcatchment 2.2S: Central</b>	Runoff Area=40,042 sf 17.46% Impervious Runoff Depth=3.52" Flow Length=255' Tc=6.0 min CN=68 Runoff=3.79 cfs 0.270 af
<b>Subcatchment 2.3S: Central</b>	Runoff Area=45,171 sf 12.61% Impervious Runoff Depth=3.11" Flow Length=235' Tc=6.0 min CN=64 Runoff=3.74 cfs 0.269 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=44,106 sf 21.78% Impervious Runoff Depth=3.84" Flow Length=305' Tc=6.0 min CN=71 Runoff=4.56 cfs 0.324 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=38,329 sf 39.29% Impervious Runoff Depth=4.27" Flow Length=466' Tc=6.0 min CN=75 Runoff=4.40 cfs 0.313 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=5.27" Flow Length=154' Slope=0.0200 '/' Tc=6.0 min CN=84 Runoff=1.35 cfs 0.098 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=5.84" Flow Length=232' Slope=0.0200 '/' Tc=6.0 min CN=89 Runoff=0.65 cfs 0.049 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=6.08" Flow Length=145' Slope=0.0200 '/' Tc=6.0 min CN=91 Runoff=0.91 cfs 0.069 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=397,781 sf 12.69% Impervious Runoff Depth=3.95" Flow Length=967' Tc=18.5 min CN=72 Runoff=29.41 cfs 3.005 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=86,620 sf 16.22% Impervious Runoff Depth=3.21" Flow Length=491' Tc=6.0 min CN=65 Runoff=7.43 cfs 0.532 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=3.63" Flow Length=92' Tc=6.0 min CN=69 Runoff=1.59 cfs 0.113 af
<b>Reach 2.0R: Treatment Swale</b>	Avg. Flow Depth=0.35' Max Vel=1.15 fps Inflow=2.18 cfs 0.164 af n=0.040 L=100.0' S=0.0050 '/' Capacity=14.81 cfs Outflow=2.13 cfs 0.164 af
<b>Reach 2.1R: Wetland Flow Path</b>	Avg. Flow Depth=0.61' Max Vel=1.76 fps Inflow=2.78 cfs 0.555 af n=0.080 L=104.0' S=0.0324 '/' Capacity=7.99 cfs Outflow=2.78 cfs 0.555 af
<b>Reach 2.2R: Wetland Flow Path</b>	Avg. Flow Depth=0.37' Max Vel=2.51 fps Inflow=5.17 cfs 0.825 af n=0.080 L=77.0' S=0.0955 '/' Capacity=34.57 cfs Outflow=5.16 cfs 0.825 af



**5015-Pre**

Type III 24-hr 25-year Rainfall=7.14"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.46'	Max Vel=3.03 fps	Inflow=8.07 cfs	1.093 af
	n=0.050 L=223.0'	S=0.0436 '/'	Capacity=37.37 cfs	Outflow=8.04 cfs 1.093 af
<b>Reach 2.5R: Wetland Flow Path</b>	Avg. Flow Depth=0.24'	Max Vel=1.59 fps	Inflow=3.91 cfs	0.313 af
	n=0.080 L=17.0'	S=0.0659 '/'	Capacity=63.77 cfs	Outflow=3.91 cfs 0.313 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.25'	Max Vel=4.18 fps	Inflow=2.89 cfs	0.216 af
	n=0.035 L=177.0'	S=0.0876 '/'	Capacity=44.72 cfs	Outflow=2.88 cfs 0.216 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.22'	Max Vel=2.01 fps	Inflow=2.88 cfs	0.216 af
	n=0.050 L=252.0'	S=0.0516 '/'	Capacity=65.79 cfs	Outflow=2.76 cfs 0.216 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.37'	Max Vel=1.45 fps	Inflow=2.76 cfs	0.216 af
	n=0.050 L=94.0'	S=0.0119 '/'	Capacity=17.53 cfs	Outflow=2.73 cfs 0.216 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.69'	Max Vel=3.86 fps	Inflow=23.26 cfs	3.221 af
	n=0.050 L=55.0'	S=0.0407 '/'	Capacity=47.37 cfs	Outflow=23.26 cfs 3.221 af
<b>Pond 1P: DOT CB</b>	Peak Elev=74.73'	Storage=172 cf	Inflow=3.21 cfs	0.327 af
	8.0" Round Culvert n=0.012 L=40.0'	S=0.0090 '/'	Outflow=2.91 cfs	0.327 af
<b>Pond 2.1P: 12" Culvert</b>	Peak Elev=75.77'	Storage=3,884 cf	Inflow=5.41 cfs	0.555 af
	12.0" Round Culvert n=0.012 L=22.0'	S=0.0127 '/'	Outflow=2.78 cfs	0.555 af
<b>Pond 2.2P: 18" Culvert</b>	Peak Elev=72.09'	Storage=753 cf	Inflow=5.61 cfs	0.825 af
	18.0" Round Culvert n=0.012 L=57.0'	S=0.0175 '/'	Outflow=5.17 cfs	0.825 af
<b>Pond 2.3P: 15" Culvert</b>	Peak Elev=64.22'	Storage=417 cf	Inflow=8.50 cfs	1.093 af
	15.0" Round Culvert n=0.012 L=58.0'	S=0.0466 '/'	Outflow=8.07 cfs	1.093 af
<b>Pond 2.5P: 12" Culvert</b>	Peak Elev=54.40'	Storage=234 cf	Inflow=4.40 cfs	0.313 af
			Outflow=3.91 cfs	0.313 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.88'	Storage=9 cf	Inflow=1.35 cfs	0.098 af
	12.0" Round Culvert n=0.012 L=67.0'	S=0.0060 '/'	Outflow=1.35 cfs	0.098 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.84'	Storage=15 cf	Inflow=2.00 cfs	0.147 af
	12.0" Round Culvert n=0.012 L=112.0'	S=0.0196 '/'	Outflow=2.00 cfs	0.147 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.67'	Storage=17 cf	Inflow=2.90 cfs	0.216 af
	12.0" Round Culvert n=0.012 L=100.0'	S=0.0050 '/'	Outflow=2.89 cfs	0.216 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=58.55'	Storage=12,626 cf	Inflow=31.79 cfs	3.221 af
			Outflow=23.26 cfs	3.221 af
<b>Link 100L: POA #100 - Culvert Outfall</b>			Inflow=2.91 cfs	0.327 af
			Primary=2.91 cfs	0.327 af
<b>Link 200L: POA #200 - East Boundary</b>			Inflow=15.36 cfs	1.731 af
			Primary=15.36 cfs	1.731 af
<b>Link 300L: POA # 300 - East Boundary</b>			Inflow=25.88 cfs	3.753 af
			Primary=25.88 cfs	3.753 af

**5015-Pre**

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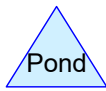
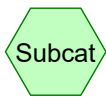
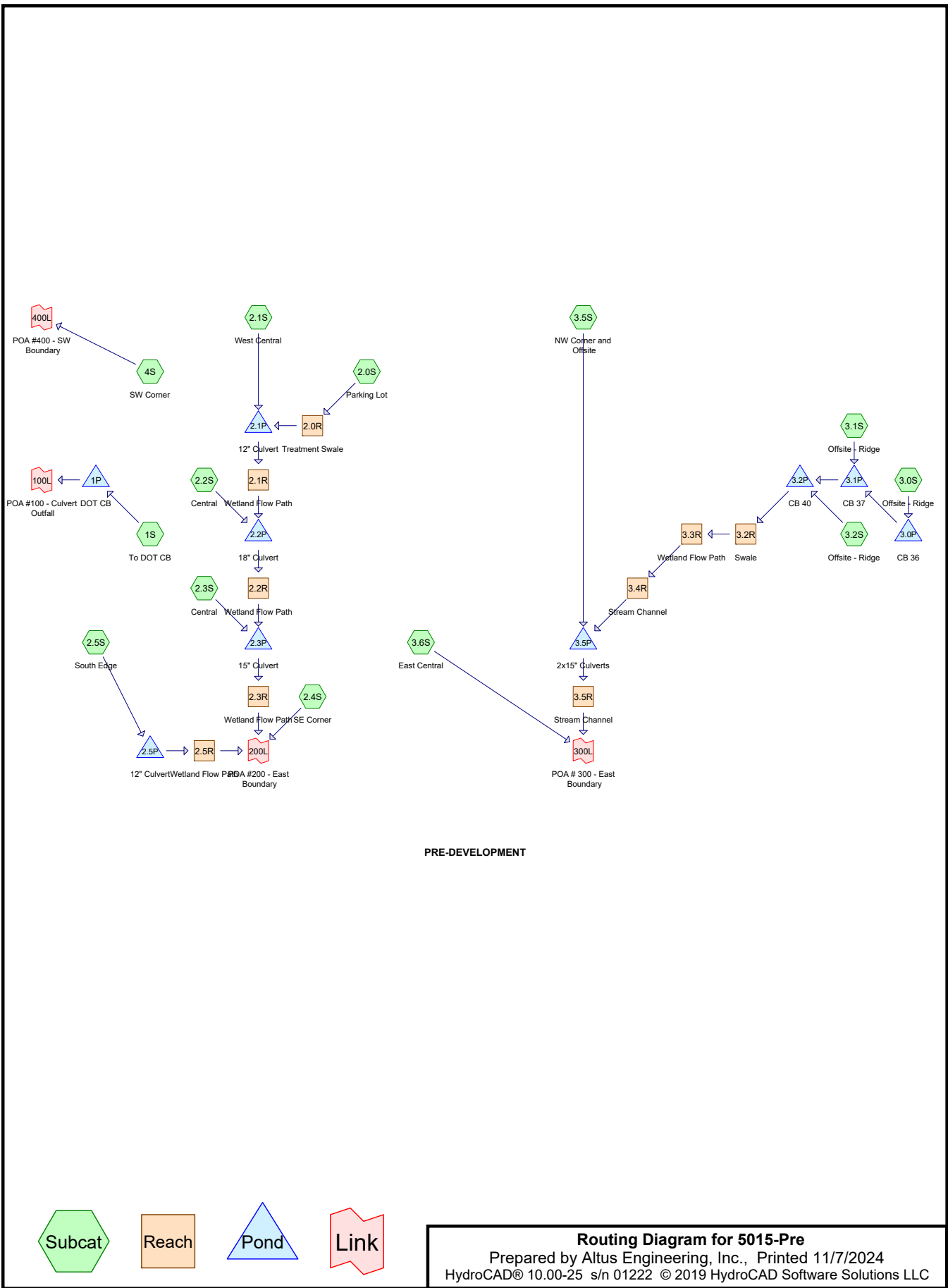
*Type III 24-hr 25-year Rainfall=7.14"*

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**Link 400L: POA #400 - SW Boundary**

Inflow=1.59 cfs 0.113 af  
Primary=1.59 cfs 0.113 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 5.924 af   Average Runoff Depth = 3.79"**  
**82.35% Pervious = 15.460 ac   17.65% Impervious = 3.313 ac**



**Routing Diagram for 5015-Pre**  
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**5015-Pre**

Type III 24-hr 50-year Rainfall=8.58"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=47,076 sf 26.00% Impervious Runoff Depth=4.85" Flow Length=191' Tc=18.2 min CN=69 Runoff=4.30 cfs 0.436 af
<b>Subcatchment 2.0S: Parking Lot</b>	Runoff Area=14,408 sf 78.73% Impervious Runoff Depth=7.38" Flow Length=234' Tc=6.0 min CN=90 Runoff=2.66 cfs 0.203 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=67,904 sf 5.82% Impervious Runoff Depth=4.13" Flow Length=382' Tc=16.7 min CN=63 Runoff=5.45 cfs 0.537 af
<b>Subcatchment 2.2S: Central</b>	Runoff Area=40,042 sf 17.46% Impervious Runoff Depth=4.73" Flow Length=255' Tc=6.0 min CN=68 Runoff=5.10 cfs 0.362 af
<b>Subcatchment 2.3S: Central</b>	Runoff Area=45,171 sf 12.61% Impervious Runoff Depth=4.25" Flow Length=235' Tc=6.0 min CN=64 Runoff=5.16 cfs 0.367 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=44,106 sf 21.78% Impervious Runoff Depth=5.09" Flow Length=305' Tc=6.0 min CN=71 Runoff=6.04 cfs 0.429 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=38,329 sf 39.29% Impervious Runoff Depth=5.57" Flow Length=466' Tc=6.0 min CN=75 Runoff=5.71 cfs 0.408 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=6.65" Flow Length=154' Slope=0.0200 '/' Tc=6.0 min CN=84 Runoff=1.68 cfs 0.124 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=7.26" Flow Length=232' Slope=0.0200 '/' Tc=6.0 min CN=89 Runoff=0.80 cfs 0.061 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=7.50" Flow Length=145' Slope=0.0200 '/' Tc=6.0 min CN=91 Runoff=1.10 cfs 0.085 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=397,781 sf 12.69% Impervious Runoff Depth=5.21" Flow Length=967' Tc=18.5 min CN=72 Runoff=38.77 cfs 3.962 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=86,620 sf 16.22% Impervious Runoff Depth=4.37" Flow Length=491' Tc=6.0 min CN=65 Runoff=10.18 cfs 0.724 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=4.85" Flow Length=92' Tc=6.0 min CN=69 Runoff=2.13 cfs 0.151 af
<b>Reach 2.0R: Treatment Swale</b>	Avg. Flow Depth=0.39' Max Vel=1.22 fps Inflow=2.66 cfs 0.203 af n=0.040 L=100.0' S=0.0050 '/' Capacity=14.81 cfs Outflow=2.61 cfs 0.203 af
<b>Reach 2.1R: Wetland Flow Path</b>	Avg. Flow Depth=0.71' Max Vel=1.94 fps Inflow=4.77 cfs 0.740 af n=0.080 L=104.0' S=0.0324 '/' Capacity=7.99 cfs Outflow=3.85 cfs 0.740 af
<b>Reach 2.2R: Wetland Flow Path</b>	Avg. Flow Depth=0.41' Max Vel=2.64 fps Inflow=6.08 cfs 1.102 af n=0.080 L=77.0' S=0.0955 '/' Capacity=34.57 cfs Outflow=6.08 cfs 1.102 af

**5015-Pre**

Type III 24-hr 50-year Rainfall=8.58"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.50' Max Vel=3.20 fps Inflow=9.67 cfs 1.469 af n=0.050 L=223.0' S=0.0436 '/ Capacity=37.37 cfs Outflow=9.65 cfs 1.469 af
<b>Reach 2.5R: Wetland Flow Path</b>	Avg. Flow Depth=0.29' Max Vel=1.78 fps Inflow=5.56 cfs 0.408 af n=0.080 L=17.0' S=0.0659 '/ Capacity=63.77 cfs Outflow=5.55 cfs 0.408 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.28' Max Vel=4.46 fps Inflow=3.57 cfs 0.269 af n=0.035 L=177.0' S=0.0876 '/ Capacity=44.72 cfs Outflow=3.55 cfs 0.269 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.25' Max Vel=2.14 fps Inflow=3.55 cfs 0.269 af n=0.050 L=252.0' S=0.0516 '/ Capacity=65.79 cfs Outflow=3.42 cfs 0.269 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.42' Max Vel=1.55 fps Inflow=3.42 cfs 0.269 af n=0.050 L=94.0' S=0.0119 '/ Capacity=17.53 cfs Outflow=3.39 cfs 0.269 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.75' Max Vel=4.04 fps Inflow=27.08 cfs 4.232 af n=0.050 L=55.0' S=0.0407 '/ Capacity=47.37 cfs Outflow=27.08 cfs 4.232 af
<b>Pond 1P: DOT CB</b>	Peak Elev=75.01' Storage=1,037 cf Inflow=4.30 cfs 0.436 af 8.0" Round Culvert n=0.012 L=40.0' S=0.0090 '/ Outflow=3.02 cfs 0.436 af
<b>Pond 2.1P: 12" Culvert</b>	Peak Elev=77.45' Storage=6,200 cf Inflow=7.25 cfs 0.740 af 12.0" Round Culvert n=0.012 L=22.0' S=0.0127 '/ Outflow=4.77 cfs 0.740 af
<b>Pond 2.2P: 18" Culvert</b>	Peak Elev=72.32' Storage=1,173 cf Inflow=7.21 cfs 1.102 af 18.0" Round Culvert n=0.012 L=57.0' S=0.0175 '/ Outflow=6.08 cfs 1.102 af
<b>Pond 2.3P: 15" Culvert</b>	Peak Elev=64.74' Storage=892 cf Inflow=10.76 cfs 1.469 af 15.0" Round Culvert n=0.012 L=58.0' S=0.0466 '/ Outflow=9.67 cfs 1.469 af
<b>Pond 2.5P: 12" Culvert</b>	Peak Elev=54.63' Storage=386 cf Inflow=5.71 cfs 0.408 af Outflow=5.56 cfs 0.408 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.98' Storage=10 cf Inflow=1.68 cfs 0.124 af 12.0" Round Culvert n=0.012 L=67.0' S=0.0060 '/ Outflow=1.68 cfs 0.124 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=90.07' Storage=18 cf Inflow=2.48 cfs 0.185 af 12.0" Round Culvert n=0.012 L=112.0' S=0.0196 '/ Outflow=2.47 cfs 0.184 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=88.24' Storage=24 cf Inflow=3.58 cfs 0.269 af 12.0" Round Culvert n=0.012 L=100.0' S=0.0050 '/ Outflow=3.57 cfs 0.269 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=59.22' Storage=20,990 cf Inflow=41.69 cfs 4.232 af Outflow=27.08 cfs 4.232 af
<b>Link 100L: POA #100 - Culvert Outfall</b>	Inflow=3.02 cfs 0.436 af Primary=3.02 cfs 0.436 af
<b>Link 200L: POA #200 - East Boundary</b>	Inflow=19.83 cfs 2.307 af Primary=19.83 cfs 2.307 af
<b>Link 300L: POA # 300 - East Boundary</b>	Inflow=30.42 cfs 4.956 af Primary=30.42 cfs 4.956 af

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*Type III 24-hr 50-year Rainfall=8.58"*

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**Link 400L: POA #400 - SW Boundary**

Inflow=2.13 cfs 0.151 af  
Primary=2.13 cfs 0.151 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 7.850 af   Average Runoff Depth = 5.02"**  
**82.35% Pervious = 15.460 ac   17.65% Impervious = 3.313 ac**



## Section 4

# Drainage Calculations

Post-Development

2-Year, 24-Hour Summary

10-Year, 24-Hour Complete

25-Year, 24-Hour Summary

50-Year, 24-Hour Summary



**5015-Post**

Type III 24-hr 2-year Rainfall=3.67"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=44,727 sf 26.97% Impervious Runoff Depth=1.06" Flow Length=191' Tc=18.2 min CN=69 Runoff=0.82 cfs 0.090 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=31,448 sf 0.92% Impervious Runoff Depth=0.65" Flow Length=235' Tc=12.3 min CN=61 Runoff=0.33 cfs 0.039 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=40,178 sf 0.79% Impervious Runoff Depth=0.74" Flow Length=443' Tc=13.4 min CN=63 Runoff=0.51 cfs 0.057 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=37,352 sf 37.57% Impervious Runoff Depth=1.42" Flow Length=464' Tc=6.0 min CN=75 Runoff=1.40 cfs 0.102 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=2.08" Flow Length=154' Slope=0.0200 '/ Tc=6.0 min CN=84 Runoff=0.55 cfs 0.039 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=2.51" Flow Length=232' Slope=0.0200 '/ Tc=6.0 min CN=89 Runoff=0.29 cfs 0.021 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=2.70" Flow Length=145' Slope=0.0200 '/ Tc=6.0 min CN=91 Runoff=0.42 cfs 0.031 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=371,700 sf 11.71% Impervious Runoff Depth=1.23" Flow Length=967' Tc=18.5 min CN=72 Runoff=8.15 cfs 0.877 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=54,990 sf 18.04% Impervious Runoff Depth=0.89" Flow Length=491' Tc=6.0 min CN=66 Runoff=1.16 cfs 0.094 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=1.06" Flow Length=92' Tc=6.0 min CN=69 Runoff=0.43 cfs 0.033 af
<b>Subcatchment 21S: Service Lawn</b>	Runoff Area=638 sf 7.99% Impervious Runoff Depth=1.49" Tc=6.0 min CN=76 Runoff=0.03 cfs 0.002 af
<b>Subcatchment 22S: To Bio #1</b>	Runoff Area=14,748 sf 55.11% Impervious Runoff Depth=1.85" Flow Length=150' Tc=6.0 min CN=81 Runoff=0.73 cfs 0.052 af
<b>Subcatchment 24S: White Oak at NH 111</b>	Runoff Area=9,927 sf 47.21% Impervious Runoff Depth=1.63" Flow Length=137' Tc=6.0 min CN=78 Runoff=0.43 cfs 0.031 af
<b>Subcatchment 25S: SE Perimeter Drive</b>	Runoff Area=5,559 sf 51.29% Impervious Runoff Depth=1.77" Flow Length=149' Tc=6.0 min CN=80 Runoff=0.26 cfs 0.019 af
<b>Subcatchment 28S: Satellite Parking Lot</b>	Runoff Area=17,698 sf 76.49% Impervious Runoff Depth=2.61" Flow Length=170' Tc=6.0 min CN=90 Runoff=1.22 cfs 0.088 af
<b>Subcatchment 29S: S Entry Loop</b>	Runoff Area=19,071 sf 36.57% Impervious Runoff Depth=1.49" Flow Length=149' Tc=6.0 min CN=76 Runoff=0.75 cfs 0.054 af



**5015-Post**

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*Type III 24-hr 2-year Rainfall=3.67"*

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<b>Subcatchment30S: SE White Oak Drive</b>	Runoff Area=6,767 sf 98.46% Impervious Runoff Depth=3.32" Flow Length=241' Slope=0.0200 '/' Tc=6.0 min CN=97 Runoff=0.55 cfs 0.043 af
<b>Subcatchment33S: N Entry Loop</b>	Runoff Area=13,053 sf 45.97% Impervious Runoff Depth=1.63" Flow Length=257' Tc=6.0 min CN=78 Runoff=0.57 cfs 0.041 af
<b>Subcatchment34S: E Central White Oak</b>	Runoff Area=3,130 sf 97.80% Impervious Runoff Depth=3.32" Flow Length=179' Tc=6.0 min CN=97 Runoff=0.25 cfs 0.020 af
<b>Subcatchment38S: To Bio #1</b>	Runoff Area=12,713 sf 0.76% Impervious Runoff Depth=0.65" Tc=6.0 min CN=61 Runoff=0.17 cfs 0.016 af
<b>Subcatchment40S: Service Lawn</b>	Runoff Area=1,039 sf 12.51% Impervious Runoff Depth=0.89" Tc=6.0 min CN=66 Runoff=0.02 cfs 0.002 af
<b>Subcatchment41S: Service Area</b>	Runoff Area=8,856 sf 68.47% Impervious Runoff Depth=2.25" Flow Length=229' Tc=6.0 min CN=86 Runoff=0.54 cfs 0.038 af
<b>Subcatchment44S: NW Corner</b>	Runoff Area=4,346 sf 36.29% Impervious Runoff Depth=1.36" Flow Length=125' Tc=6.0 min CN=74 Runoff=0.15 cfs 0.011 af
<b>Subcatchment46S: Garage Ramp</b>	Runoff Area=1,912 sf 59.00% Impervious Runoff Depth=2.00" Tc=6.0 min CN=83 Runoff=0.10 cfs 0.007 af
<b>Subcatchment47S: NE Lawn</b>	Runoff Area=871 sf 0.00% Impervious Runoff Depth=0.65" Tc=6.0 min CN=61 Runoff=0.01 cfs 0.001 af
<b>Subcatchment49S: NW White Oak Dr. &amp;</b>	Runoff Area=15,527 sf 57.85% Impervious Runoff Depth=1.92" Flow Length=200' Tc=6.0 min CN=82 Runoff=0.80 cfs 0.057 af
<b>Subcatchment60S: SW Roof</b>	Runoff Area=12,687 sf 100.00% Impervious Runoff Depth=3.44" Tc=6.0 min CN=98 Runoff=1.04 cfs 0.083 af
<b>Subcatchment61S: SE Roof</b>	Runoff Area=13,303 sf 100.00% Impervious Runoff Depth=3.44" Tc=6.0 min CN=98 Runoff=1.09 cfs 0.087 af
<b>Subcatchment62S: NW Roof</b>	Runoff Area=13,739 sf 100.00% Impervious Runoff Depth=3.44" Tc=6.0 min CN=98 Runoff=1.13 cfs 0.090 af
<b>Subcatchment63S: NE Roof</b>	Runoff Area=10,488 sf 100.00% Impervious Runoff Depth=3.44" Tc=6.0 min CN=98 Runoff=0.86 cfs 0.069 af
<b>Subcatchment70S: N Courtyard</b>	Runoff Area=3,611 sf 49.99% Impervious Runoff Depth=1.70" Tc=6.0 min CN=79 Runoff=0.16 cfs 0.012 af
<b>Subcatchment71S: S Courtyard</b>	Runoff Area=5,179 sf 49.99% Impervious Runoff Depth=1.92" Tc=6.0 min CN=82 Runoff=0.27 cfs 0.019 af
<b>Subcatchment80S: To S Porous</b>	Runoff Area=1,677 sf 96.18% Impervious Runoff Depth>3.30" Tc=790.0 min CN=97 Runoff=0.01 cfs 0.011 af
<b>Subcatchment81S: To N Porous</b>	Runoff Area=4,473 sf 98.57% Impervious Runoff Depth>3.30" Tc=790.0 min CN=97 Runoff=0.02 cfs 0.028 af

**5015-Post**

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Type III 24-hr 2-year Rainfall=3.67"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.16'	Max Vel=1.69 fps	Inflow=1.29 cfs	0.672 af
	n=0.050 L=195.0'	S=0.0436 '/	Capacity=37.39 cfs	Outflow=1.29 cfs 0.672 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.16'	Max Vel=3.22 fps	Inflow=1.26 cfs	0.090 af
	n=0.035 L=177.0'	S=0.0876 '/	Capacity=44.72 cfs	Outflow=1.24 cfs 0.090 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.14'	Max Vel=1.55 fps	Inflow=1.24 cfs	0.090 af
	n=0.050 L=252.0'	S=0.0516 '/	Capacity=65.79 cfs	Outflow=1.17 cfs 0.090 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.23'	Max Vel=1.09 fps	Inflow=1.17 cfs	0.090 af
	n=0.050 L=94.0'	S=0.0119 '/	Capacity=17.53 cfs	Outflow=1.15 cfs 0.090 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.41'	Max Vel=2.89 fps	Inflow=9.04 cfs	1.188 af
	n=0.050 L=55.0'	S=0.0407 '/	Capacity=47.37 cfs	Outflow=9.04 cfs 1.188 af
<b>Reach 38R: Outfall</b>	Avg. Flow Depth=0.21'	Max Vel=0.91 fps	Inflow=1.29 cfs	0.672 af
	n=0.069 L=17.0'	S=0.0171 '/	Capacity=91.14 cfs	Outflow=1.29 cfs 0.672 af
<b>Reach 49R: Woodland Flow Path</b>	Avg. Flow Depth=0.10'	Max Vel=1.67 fps	Inflow=0.71 cfs	0.221 af
	n=0.050 L=95.0'	S=0.0792 '/	Capacity=50.36 cfs	Outflow=0.71 cfs 0.221 af
<b>Pond 1P: DOT CB</b>	Peak Elev=71.42'	Storage=8 cf	Inflow=0.82 cfs	0.090 af
	8.0" Round Culvert n=0.012 L=40.0'	S=0.0090 '/	Outflow=0.82 cfs	0.090 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.61'	Storage=5 cf	Inflow=0.55 cfs	0.039 af
	12.0" Round Culvert n=0.012 L=67.0'	S=0.0060 '/	Outflow=0.55 cfs	0.039 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.54'	Storage=11 cf	Inflow=0.84 cfs	0.060 af
	12.0" Round Culvert n=0.012 L=112.0'	S=0.0196 '/	Outflow=0.84 cfs	0.060 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.07'	Storage=9 cf	Inflow=1.26 cfs	0.090 af
	12.0" Round Culvert n=0.012 L=100.0'	S=0.0050 '/	Outflow=1.26 cfs	0.090 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=56.97'	Storage=1,997 cf	Inflow=9.32 cfs	1.188 af
			Outflow=9.04 cfs	1.188 af
<b>Pond 20P: 12" Culvert</b>	Peak Elev=74.78'	Storage=5 cf	Inflow=0.33 cfs	0.039 af
	12.0" Round Culvert n=0.012 L=46.0'	S=0.0272 '/	Outflow=0.33 cfs	0.039 af
<b>Pond 21P: CB #7</b>	Peak Elev=73.44'	Inflow=0.35 cfs	0.041 af	
	12.0" Round Culvert n=0.012 L=153.0'	S=0.0097 '/	Outflow=0.35 cfs	0.041 af
<b>Pond 22P: CB #6-1</b>	Peak Elev=72.32'	Inflow=0.73 cfs	0.052 af	
	12.0" Round Culvert n=0.012 L=30.0'	S=0.0050 '/	Outflow=0.73 cfs	0.052 af
<b>Pond 23P: DMH #6</b>	Peak Elev=72.10'	Inflow=1.97 cfs	0.176 af	
	15.0" Round Culvert n=0.012 L=103.0'	S=0.0100 '/	Outflow=1.97 cfs	0.176 af
<b>Pond 24P: CB #5-1</b>	Peak Elev=69.59'	Inflow=0.43 cfs	0.031 af	
	12.0" Round Culvert n=0.012 L=17.0'	S=0.0047 '/	Outflow=0.43 cfs	0.031 af

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*Type III 24-hr 2-year Rainfall=3.67"*

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<b>Pond 25P: CB #5-2</b>	Peak Elev=69.47' Inflow=0.26 cfs 0.019 af 12.0" Round Culvert n=0.012 L=5.0' S=0.0160 '/' Outflow=0.26 cfs 0.019 af
<b>Pond 26P: DMH #5</b>	Peak Elev=70.12' Inflow=4.02 cfs 0.333 af 15.0" Round Culvert n=0.012 L=85.0' S=0.0049 '/' Outflow=4.02 cfs 0.333 af
<b>Pond 27P: DMH #4</b>	Peak Elev=68.79' Inflow=4.02 cfs 0.333 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0243 '/' Outflow=4.02 cfs 0.333 af
<b>Pond 28P: CB #3-1</b>	Peak Elev=67.02' Inflow=1.22 cfs 0.088 af 12.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=1.22 cfs 0.088 af
<b>Pond 29P: CB #3-2-2</b>	Peak Elev=67.67' Inflow=0.75 cfs 0.054 af 12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.75 cfs 0.054 af
<b>Pond 30P: CB #3-2-1</b>	Peak Elev=67.55' Inflow=0.55 cfs 0.043 af 12.0" Round Culvert n=0.012 L=4.0' S=0.0250 '/' Outflow=0.55 cfs 0.043 af
<b>Pond 31P: DMH #3-2</b>	Peak Elev=67.55' Inflow=1.30 cfs 0.097 af 12.0" Round Culvert n=0.012 L=24.0' S=0.0354 '/' Outflow=1.30 cfs 0.097 af
<b>Pond 32P: DMH #3</b>	Peak Elev=66.22' Inflow=6.54 cfs 0.518 af 24.0" Round Culvert n=0.012 L=106.0' S=0.0275 '/' Outflow=6.54 cfs 0.518 af
<b>Pond 33P: CB #9-1</b>	Peak Elev=65.28' Inflow=0.57 cfs 0.041 af 12.0" Round Culvert n=0.012 L=12.0' S=0.0958 '/' Outflow=0.57 cfs 0.041 af
<b>Pond 34P: CB #9-2</b>	Peak Elev=65.15' Inflow=0.25 cfs 0.020 af 12.0" Round Culvert n=0.012 L=16.0' S=0.0719 '/' Outflow=0.25 cfs 0.020 af
<b>Pond 35P: DMH #9</b>	Peak Elev=64.20' Inflow=1.68 cfs 0.129 af 15.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=1.68 cfs 0.129 af
<b>Pond 36P: DMH #8</b>	Peak Elev=63.42' Inflow=1.68 cfs 0.129 af 15.0" Round Culvert n=0.012 L=108.0' S=0.0050 '/' Outflow=1.68 cfs 0.129 af
<b>Pond 37P: DMH #1</b>	Peak Elev=63.64' Inflow=8.22 cfs 0.648 af 24.0" Round Culvert n=0.012 L=16.0' S=0.0050 '/' Outflow=8.22 cfs 0.648 af
<b>Pond 38P: Bioretention #1</b>	Peak Elev=63.48' Storage=11,101 cf Inflow=8.38 cfs 0.664 af Outflow=1.29 cfs 0.672 af
<b>Pond 40P: CB #26</b>	Peak Elev=73.32' Inflow=0.02 cfs 0.002 af 12.0" Round Culvert n=0.012 L=141.0' S=0.0200 '/' Outflow=0.02 cfs 0.002 af
<b>Pond 41P: CB #25-1</b>	Peak Elev=71.27' Inflow=0.54 cfs 0.038 af 12.0" Round Culvert n=0.012 L=6.0' S=0.0783 '/' Outflow=0.54 cfs 0.038 af
<b>Pond 42P: DMH #25</b>	Peak Elev=70.53' Inflow=0.56 cfs 0.040 af 15.0" Round Culvert n=0.012 L=39.0' S=0.0318 '/' Outflow=0.56 cfs 0.040 af
<b>Pond 43P: Stormtech #1</b>	Peak Elev=68.64' Storage=1,060 cf Inflow=1.85 cfs 0.142 af Outflow=0.79 cfs 0.142 af



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Type III 24-hr 2-year Rainfall=3.67"

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<b>Pond 44P: CB #22-1</b>	Peak Elev=67.87'	Inflow=0.15 cfs	0.011 af
	12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/'	Outflow=0.15 cfs	0.011 af
<b>Pond 45P: DMH #22</b>	Peak Elev=66.24'	Inflow=0.88 cfs	0.153 af
	15.0" Round Culvert n=0.012 L=80.0' S=0.0200 '/'	Outflow=0.88 cfs	0.153 af
<b>Pond 46P: TD #21-1-1</b>	Peak Elev=65.23'	Inflow=0.10 cfs	0.007 af
	6.0" Round Culvert n=0.012 L=38.0' S=0.0050 '/'	Outflow=0.10 cfs	0.007 af
<b>Pond 47P: CB #21-1</b>	Peak Elev=64.70'	Inflow=0.11 cfs	0.008 af
	12.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/'	Outflow=0.11 cfs	0.008 af
<b>Pond 48P: DMH #21</b>	Peak Elev=64.66'	Inflow=0.98 cfs	0.162 af
	15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/'	Outflow=0.98 cfs	0.162 af
<b>Pond 49P: Bioretention #2</b>	Peak Elev=66.59'	Storage=3,880 cf	Inflow=1.76 cfs 0.219 af
		Outflow=0.71 cfs	0.221 af
<b>Pond 70P: 12" CPP</b>	Peak Elev=74.70'	Inflow=0.16 cfs	0.012 af
	12.0" Round Culvert n=0.012 L=62.0' S=0.0690 '/'	Outflow=0.16 cfs	0.012 af
<b>Pond 71P: 12" CPP</b>	Peak Elev=74.25'	Inflow=0.27 cfs	0.019 af
	12.0" Round Culvert n=0.012 L=70.0' S=0.0500 '/'	Outflow=0.27 cfs	0.019 af
<b>Pond 72P: 15" CPP Tee</b>	Peak Elev=71.24'	Inflow=2.24 cfs	0.196 af
	15.0" Round Culvert n=0.012 L=141.0' S=0.0100 '/'	Outflow=2.24 cfs	0.196 af
<b>Pond 80P: S Porous</b>	Peak Elev=0.01'	Storage=2 cf	Inflow=0.01 cfs 0.011 af
		Outflow=0.01 cfs	0.011 af
<b>Pond 81P: N Porous</b>	Peak Elev=0.01'	Storage=5 cf	Inflow=0.02 cfs 0.028 af
		Outflow=0.02 cfs	0.028 af
<b>Link 100L: POA #100 - Culvert Outfall</b>		Inflow=0.82 cfs	0.090 af
		Primary=0.82 cfs	0.090 af
<b>Link 200L: POA #200 - East Boundary</b>		Inflow=2.08 cfs	0.831 af
		Primary=2.08 cfs	0.831 af
<b>Link 300L: POA # 300 - East Boundary</b>		Inflow=9.66 cfs	1.282 af
		Primary=9.66 cfs	1.282 af
<b>Link 400L: POA #400 - SW Boundary</b>		Inflow=0.43 cfs	0.033 af
		Primary=0.43 cfs	0.033 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 2.265 af   Average Runoff Depth = 1.45"**  
**72.41% Pervious = 13.593 ac   27.59% Impervious = 5.180 ac**



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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
3.932	61	>75% Grass cover, Good, HSG B (1S, 2.1S, 2.4S, 2.5S, 3.5S, 3.6S, 4S, 22S, 24S, 25S, 28S, 29S, 30S, 33S, 34S, 38S, 40S, 41S, 44S, 46S, 47S, 49S, 70S, 71S, 80S, 81S)
2.310	74	>75% Grass cover, Good, HSG C (2.1S, 2.4S, 3.0S, 3.1S, 3.2S, 3.5S, 21S, 22S, 25S, 28S, 29S, 71S)
0.442	98	Paved parking, HSG B (1S, 2.1S, 2.4S, 28S, 38S, 40S, 70S, 71S)
0.129	98	Paved parking, HSG C (2.4S, 3.2S, 21S, 28S, 71S)
2.030	98	Paved roads w/curbs & sewers, HSG B (1S, 2.5S, 3.5S, 3.6S, 4S, 22S, 24S, 25S, 29S, 30S, 33S, 34S, 41S, 44S, 46S, 49S, 80S, 81S)
1.054	98	Paved roads w/curbs & sewers, HSG C (3.0S, 3.1S, 3.5S, 3.6S, 22S, 29S, 30S, 41S)
1.056	98	Roofs, HSG B (60S, 61S, 62S, 63S, 80S, 81S)
0.468	98	Roofs, HSG C (3.0S, 3.5S, 60S, 61S, 62S)
2.488	55	Woods, Good, HSG B (1S, 2.1S, 2.4S, 2.5S, 3.5S, 3.6S)
4.862	70	Woods, Good, HSG C (2.1S, 2.4S, 3.5S, 3.6S)
<b>18.773</b>	<b>74</b>	<b>TOTAL AREA</b>



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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
9.949	HSG B	1S, 2.1S, 2.4S, 2.5S, 3.5S, 3.6S, 4S, 22S, 24S, 25S, 28S, 29S, 30S, 33S, 34S, 38S, 40S, 41S, 44S, 46S, 47S, 49S, 60S, 61S, 62S, 63S, 70S, 71S, 80S, 81S
8.824	HSG C	2.1S, 2.4S, 3.0S, 3.1S, 3.2S, 3.5S, 3.6S, 21S, 22S, 25S, 28S, 29S, 30S, 41S, 60S, 61S, 62S, 71S
0.000	HSG D	
0.000	Other	
<b>18.773</b>		<b>TOTAL AREA</b>

**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=44,727 sf 26.97% Impervious Runoff Depth=2.41" Flow Length=191' Tc=18.2 min CN=69 Runoff=2.00 cfs 0.206 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=31,448 sf 0.92% Impervious Runoff Depth=1.75" Flow Length=235' Tc=12.3 min CN=61 Runoff=1.12 cfs 0.105 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=40,178 sf 0.79% Impervious Runoff Depth=1.91" Flow Length=443' Tc=13.4 min CN=63 Runoff=1.55 cfs 0.147 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=37,352 sf 37.57% Impervious Runoff Depth=2.95" Flow Length=464' Tc=6.0 min CN=75 Runoff=2.97 cfs 0.211 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=3.83" Flow Length=154' Slope=0.0200 '/ Tc=6.0 min CN=84 Runoff=0.99 cfs 0.071 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=4.36" Flow Length=232' Slope=0.0200 '/ Tc=6.0 min CN=89 Runoff=0.50 cfs 0.037 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=4.58" Flow Length=145' Slope=0.0200 '/ Tc=6.0 min CN=91 Runoff=0.69 cfs 0.052 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=371,700 sf 11.71% Impervious Runoff Depth=2.68" Flow Length=967' Tc=18.5 min CN=72 Runoff=18.52 cfs 1.904 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=54,990 sf 18.04% Impervious Runoff Depth=2.16" Flow Length=491' Tc=6.0 min CN=66 Runoff=3.11 cfs 0.227 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=2.41" Flow Length=92' Tc=6.0 min CN=69 Runoff=1.05 cfs 0.075 af
<b>Subcatchment 21S: Service Lawn</b>	Runoff Area=638 sf 7.99% Impervious Runoff Depth=3.05" Tc=6.0 min CN=76 Runoff=0.05 cfs 0.004 af
<b>Subcatchment 22S: To Bio #1</b>	Runoff Area=14,748 sf 55.11% Impervious Runoff Depth=3.53" Flow Length=150' Tc=6.0 min CN=81 Runoff=1.40 cfs 0.100 af
<b>Subcatchment 24S: White Oak at NH 111</b>	Runoff Area=9,927 sf 47.21% Impervious Runoff Depth=3.24" Flow Length=137' Tc=6.0 min CN=78 Runoff=0.86 cfs 0.061 af
<b>Subcatchment 25S: SE Perimeter Drive</b>	Runoff Area=5,559 sf 51.29% Impervious Runoff Depth=3.43" Flow Length=149' Tc=6.0 min CN=80 Runoff=0.51 cfs 0.036 af
<b>Subcatchment 28S: Satellite Parking Lot</b>	Runoff Area=17,698 sf 76.49% Impervious Runoff Depth=4.47" Flow Length=170' Tc=6.0 min CN=90 Runoff=2.04 cfs 0.151 af
<b>Subcatchment 29S: S Entry Loop</b>	Runoff Area=19,071 sf 36.57% Impervious Runoff Depth=3.05" Flow Length=149' Tc=6.0 min CN=76 Runoff=1.56 cfs 0.111 af

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*Type III 24-hr 10-year Rainfall=5.61"*

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<b>Subcatchment30S: SE White Oak Drive</b>	Runoff Area=6,767 sf 98.46% Impervious Runoff Depth=5.26" Flow Length=241' Slope=0.0200 '/' Tc=6.0 min CN=97 Runoff=0.85 cfs 0.068 af
<b>Subcatchment33S: N Entry Loop</b>	Runoff Area=13,053 sf 45.97% Impervious Runoff Depth=3.24" Flow Length=257' Tc=6.0 min CN=78 Runoff=1.14 cfs 0.081 af
<b>Subcatchment34S: E Central White Oak</b>	Runoff Area=3,130 sf 97.80% Impervious Runoff Depth=5.26" Flow Length=179' Tc=6.0 min CN=97 Runoff=0.39 cfs 0.031 af
<b>Subcatchment38S: To Bio #1</b>	Runoff Area=12,713 sf 0.76% Impervious Runoff Depth=1.75" Tc=6.0 min CN=61 Runoff=0.56 cfs 0.043 af
<b>Subcatchment40S: Service Lawn</b>	Runoff Area=1,039 sf 12.51% Impervious Runoff Depth=2.16" Tc=6.0 min CN=66 Runoff=0.06 cfs 0.004 af
<b>Subcatchment41S: Service Area</b>	Runoff Area=8,856 sf 68.47% Impervious Runoff Depth=4.04" Flow Length=229' Tc=6.0 min CN=86 Runoff=0.94 cfs 0.068 af
<b>Subcatchment44S: NW Corner</b>	Runoff Area=4,346 sf 36.29% Impervious Runoff Depth=2.86" Flow Length=125' Tc=6.0 min CN=74 Runoff=0.33 cfs 0.024 af
<b>Subcatchment46S: Garage Ramp</b>	Runoff Area=1,912 sf 59.00% Impervious Runoff Depth=3.73" Tc=6.0 min CN=83 Runoff=0.19 cfs 0.014 af
<b>Subcatchment47S: NE Lawn</b>	Runoff Area=871 sf 0.00% Impervious Runoff Depth=1.75" Tc=6.0 min CN=61 Runoff=0.04 cfs 0.003 af
<b>Subcatchment49S: NW White Oak Dr. &amp;</b>	Runoff Area=15,527 sf 57.85% Impervious Runoff Depth=3.63" Flow Length=200' Tc=6.0 min CN=82 Runoff=1.51 cfs 0.108 af
<b>Subcatchment60S: SW Roof</b>	Runoff Area=12,687 sf 100.00% Impervious Runoff Depth=5.37" Tc=6.0 min CN=98 Runoff=1.60 cfs 0.130 af
<b>Subcatchment61S: SE Roof</b>	Runoff Area=13,303 sf 100.00% Impervious Runoff Depth=5.37" Tc=6.0 min CN=98 Runoff=1.68 cfs 0.137 af
<b>Subcatchment62S: NW Roof</b>	Runoff Area=13,739 sf 100.00% Impervious Runoff Depth=5.37" Tc=6.0 min CN=98 Runoff=1.73 cfs 0.141 af
<b>Subcatchment63S: NE Roof</b>	Runoff Area=10,488 sf 100.00% Impervious Runoff Depth=5.37" Tc=6.0 min CN=98 Runoff=1.32 cfs 0.108 af
<b>Subcatchment70S: N Courtyard</b>	Runoff Area=3,611 sf 49.99% Impervious Runoff Depth=3.33" Tc=6.0 min CN=79 Runoff=0.32 cfs 0.023 af
<b>Subcatchment71S: S Courtyard</b>	Runoff Area=5,179 sf 49.99% Impervious Runoff Depth=3.63" Tc=6.0 min CN=82 Runoff=0.50 cfs 0.036 af
<b>Subcatchment80S: To S Porous</b>	Runoff Area=1,677 sf 96.18% Impervious Runoff Depth>5.23" Tc=790.0 min CN=97 Runoff=0.01 cfs 0.017 af
<b>Subcatchment81S: To N Porous</b>	Runoff Area=4,473 sf 98.57% Impervious Runoff Depth>5.23" Tc=790.0 min CN=97 Runoff=0.04 cfs 0.045 af



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Type III 24-hr 10-year Rainfall=5.61"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.32'	Max Vel=2.50 fps	Inflow=4.23 cfs	1.211 af
	n=0.050 L=195.0'	S=0.0436 '/	Capacity=37.39 cfs	Outflow=4.23 cfs 1.211 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.21'	Max Vel=3.83 fps	Inflow=2.17 cfs	0.159 af
	n=0.035 L=177.0'	S=0.0876 '/	Capacity=44.72 cfs	Outflow=2.16 cfs 0.159 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.19'	Max Vel=1.85 fps	Inflow=2.16 cfs	0.159 af
	n=0.050 L=252.0'	S=0.0516 '/	Capacity=65.79 cfs	Outflow=2.06 cfs 0.159 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.31'	Max Vel=1.32 fps	Inflow=2.06 cfs	0.159 af
	n=0.050 L=94.0'	S=0.0119 '/	Capacity=17.53 cfs	Outflow=2.03 cfs 0.159 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.61'	Max Vel=3.62 fps	Inflow=18.80 cfs	2.450 af
	n=0.050 L=55.0'	S=0.0407 '/	Capacity=47.37 cfs	Outflow=18.80 cfs 2.450 af
<b>Reach 38R: Outfall</b>	Avg. Flow Depth=0.41'	Max Vel=1.35 fps	Inflow=4.23 cfs	1.211 af
	n=0.069 L=17.0'	S=0.0171 '/	Capacity=91.14 cfs	Outflow=4.23 cfs 1.211 af
<b>Reach 49R: Woodland Flow Path</b>	Avg. Flow Depth=0.18'	Max Vel=2.44 fps	Inflow=2.13 cfs	0.387 af
	n=0.050 L=95.0'	S=0.0792 '/	Capacity=50.36 cfs	Outflow=2.13 cfs 0.387 af
<b>Pond 1P: DOT CB</b>	Peak Elev=72.84'	Storage=26 cf	Inflow=2.00 cfs	0.206 af
	8.0" Round Culvert n=0.012 L=40.0'	S=0.0090 '/	Outflow=2.00 cfs	0.206 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.77'	Storage=7 cf	Inflow=0.99 cfs	0.071 af
	12.0" Round Culvert n=0.012 L=67.0'	S=0.0060 '/	Outflow=0.99 cfs	0.071 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.70'	Storage=13 cf	Inflow=1.49 cfs	0.108 af
	12.0" Round Culvert n=0.012 L=112.0'	S=0.0196 '/	Outflow=1.48 cfs	0.108 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.35'	Storage=12 cf	Inflow=2.18 cfs	0.159 af
	12.0" Round Culvert n=0.012 L=100.0'	S=0.0050 '/	Outflow=2.17 cfs	0.159 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=57.91'	Storage=6,526 cf	Inflow=22.46 cfs	2.450 af
			Outflow=18.80 cfs	2.450 af
<b>Pond 20P: 12" Culvert</b>	Peak Elev=75.05'	Storage=14 cf	Inflow=1.12 cfs	0.105 af
	12.0" Round Culvert n=0.012 L=46.0'	S=0.0272 '/	Outflow=1.12 cfs	0.105 af
<b>Pond 21P: CB #7</b>	Peak Elev=73.71'	Inflow=1.16 cfs	0.109 af	
	12.0" Round Culvert n=0.012 L=153.0'	S=0.0097 '/	Outflow=1.16 cfs	0.109 af
<b>Pond 22P: CB #6-1</b>	Peak Elev=72.55'	Inflow=1.40 cfs	0.100 af	
	12.0" Round Culvert n=0.012 L=30.0'	S=0.0050 '/	Outflow=1.40 cfs	0.100 af
<b>Pond 23P: DMH #6</b>	Peak Elev=72.46'	Inflow=3.84 cfs	0.339 af	
	15.0" Round Culvert n=0.012 L=103.0'	S=0.0100 '/	Outflow=3.84 cfs	0.339 af
<b>Pond 24P: CB #5-1</b>	Peak Elev=69.77'	Inflow=0.86 cfs	0.061 af	
	12.0" Round Culvert n=0.012 L=17.0'	S=0.0047 '/	Outflow=0.86 cfs	0.061 af

**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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<b>Pond 25P: CB #5-2</b>	Peak Elev=69.60'	Inflow=0.51 cfs	0.036 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0160 '/'	Outflow=0.51 cfs	0.036 af	
<b>Pond 26P: DMH #5</b>	Peak Elev=71.49'	Inflow=7.38 cfs	0.610 af
15.0" Round Culvert n=0.012 L=85.0' S=0.0049 '/'	Outflow=7.38 cfs	0.610 af	
<b>Pond 27P: DMH #4</b>	Peak Elev=69.88'	Inflow=7.38 cfs	0.610 af
15.0" Round Culvert n=0.012 L=76.0' S=0.0243 '/'	Outflow=7.38 cfs	0.610 af	
<b>Pond 28P: CB #3-1</b>	Peak Elev=67.28'	Inflow=2.04 cfs	0.151 af
12.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/'	Outflow=2.04 cfs	0.151 af	
<b>Pond 29P: CB #3-2-2</b>	Peak Elev=67.96'	Inflow=1.56 cfs	0.111 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/'	Outflow=1.56 cfs	0.111 af	
<b>Pond 30P: CB #3-2-1</b>	Peak Elev=67.67'	Inflow=0.85 cfs	0.068 af
12.0" Round Culvert n=0.012 L=4.0' S=0.0250 '/'	Outflow=0.85 cfs	0.068 af	
<b>Pond 31P: DMH #3-2</b>	Peak Elev=67.85'	Inflow=2.41 cfs	0.179 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0354 '/'	Outflow=2.41 cfs	0.179 af	
<b>Pond 32P: DMH #3</b>	Peak Elev=66.72'	Inflow=11.82 cfs	0.940 af
24.0" Round Culvert n=0.012 L=106.0' S=0.0275 '/'	Outflow=11.82 cfs	0.940 af	
<b>Pond 33P: CB #9-1</b>	Peak Elev=65.46'	Inflow=1.14 cfs	0.081 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0958 '/'	Outflow=1.14 cfs	0.081 af	
<b>Pond 34P: CB #9-2</b>	Peak Elev=65.21'	Inflow=0.39 cfs	0.031 af
12.0" Round Culvert n=0.012 L=16.0' S=0.0719 '/'	Outflow=0.39 cfs	0.031 af	
<b>Pond 35P: DMH #9</b>	Peak Elev=64.46'	Inflow=2.85 cfs	0.220 af
15.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/'	Outflow=2.85 cfs	0.220 af	
<b>Pond 36P: DMH #8</b>	Peak Elev=63.69'	Inflow=2.85 cfs	0.220 af
15.0" Round Culvert n=0.012 L=108.0' S=0.0050 '/'	Outflow=2.85 cfs	0.220 af	
<b>Pond 37P: DMH #1</b>	Peak Elev=64.38'	Inflow=14.67 cfs	1.160 af
24.0" Round Culvert n=0.012 L=16.0' S=0.0050 '/'	Outflow=14.67 cfs	1.160 af	
<b>Pond 38P: Bioretention #1</b>	Peak Elev=64.48'	Storage=18,567 cf	Inflow=15.23 cfs 1.203 af
			Outflow=4.23 cfs 1.211 af
<b>Pond 40P: CB #26</b>	Peak Elev=73.37'	Inflow=0.06 cfs	0.004 af
12.0" Round Culvert n=0.012 L=141.0' S=0.0200 '/'	Outflow=0.06 cfs	0.004 af	
<b>Pond 41P: CB #25-1</b>	Peak Elev=71.40'	Inflow=0.94 cfs	0.068 af
12.0" Round Culvert n=0.012 L=6.0' S=0.0783 '/'	Outflow=0.94 cfs	0.068 af	
<b>Pond 42P: DMH #25</b>	Peak Elev=70.65'	Inflow=1.00 cfs	0.073 af
15.0" Round Culvert n=0.012 L=39.0' S=0.0318 '/'	Outflow=1.00 cfs	0.073 af	
<b>Pond 43P: Stormtech #1</b>	Peak Elev=69.84'	Storage=2,133 cf	Inflow=3.06 cfs 0.237 af
			Outflow=1.06 cfs 0.237 af

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Type III 24-hr 10-year Rainfall=5.61"

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<b>Pond 44P: CB #22-1</b>	Peak Elev=67.98'	Inflow=0.33 cfs	0.024 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/	Outflow=0.33 cfs	0.024 af	
<b>Pond 45P: DMH #22</b>	Peak Elev=66.34'	Inflow=1.26 cfs	0.261 af
15.0" Round Culvert n=0.012 L=80.0' S=0.0200 '/	Outflow=1.26 cfs	0.261 af	
<b>Pond 46P: TD #21-1-1</b>	Peak Elev=65.32'	Inflow=0.19 cfs	0.014 af
6.0" Round Culvert n=0.012 L=38.0' S=0.0050 '/	Outflow=0.19 cfs	0.014 af	
<b>Pond 47P: CB #21-1</b>	Peak Elev=64.78'	Inflow=0.23 cfs	0.017 af
12.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/	Outflow=0.23 cfs	0.017 af	
<b>Pond 48P: DMH #21</b>	Peak Elev=64.80'	Inflow=1.47 cfs	0.277 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/	Outflow=1.47 cfs	0.277 af	
<b>Pond 49P: Bioretention #2</b>	Peak Elev=66.71'	Storage=4,111 cf	Inflow=2.95 cfs
		Outflow=2.13 cfs	0.387 af
<b>Pond 70P: 12" CPP</b>	Peak Elev=74.78'	Inflow=0.32 cfs	0.023 af
12.0" Round Culvert n=0.012 L=62.0' S=0.0690 '/	Outflow=0.32 cfs	0.023 af	
<b>Pond 71P: 12" CPP</b>	Peak Elev=74.35'	Inflow=0.50 cfs	0.036 af
12.0" Round Culvert n=0.012 L=70.0' S=0.0500 '/	Outflow=0.50 cfs	0.036 af	
<b>Pond 72P: 15" CPP Tee</b>	Peak Elev=71.87'	Inflow=4.34 cfs	0.375 af
15.0" Round Culvert n=0.012 L=141.0' S=0.0100 '/	Outflow=4.34 cfs	0.375 af	
<b>Pond 80P: S Porous</b>	Peak Elev=0.02'	Storage=3 cf	Inflow=0.01 cfs
		Outflow=0.01 cfs	0.017 af
<b>Pond 81P: N Porous</b>	Peak Elev=0.02'	Storage=8 cf	Inflow=0.04 cfs
		Outflow=0.04 cfs	0.045 af
<b>Link 100L: POA #100 - Culvert Outfall</b>		Inflow=2.00 cfs	0.206 af
		Primary=2.00 cfs	0.206 af
<b>Link 200L: POA #200 - East Boundary</b>		Inflow=6.56 cfs	1.568 af
		Primary=6.56 cfs	1.568 af
<b>Link 300L: POA # 300 - East Boundary</b>		Inflow=20.04 cfs	2.677 af
		Primary=20.04 cfs	2.677 af
<b>Link 400L: POA #400 - SW Boundary</b>		Inflow=1.05 cfs	0.075 af
		Primary=1.05 cfs	0.075 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 4.579 af   Average Runoff Depth = 2.93"**  
**72.41% Pervious = 13.593 ac   27.59% Impervious = 5.180 ac**



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 1S: To DOT CB**

Runoff = 2.00 cfs @ 12.26 hrs, Volume= 0.206 af, Depth= 2.41"

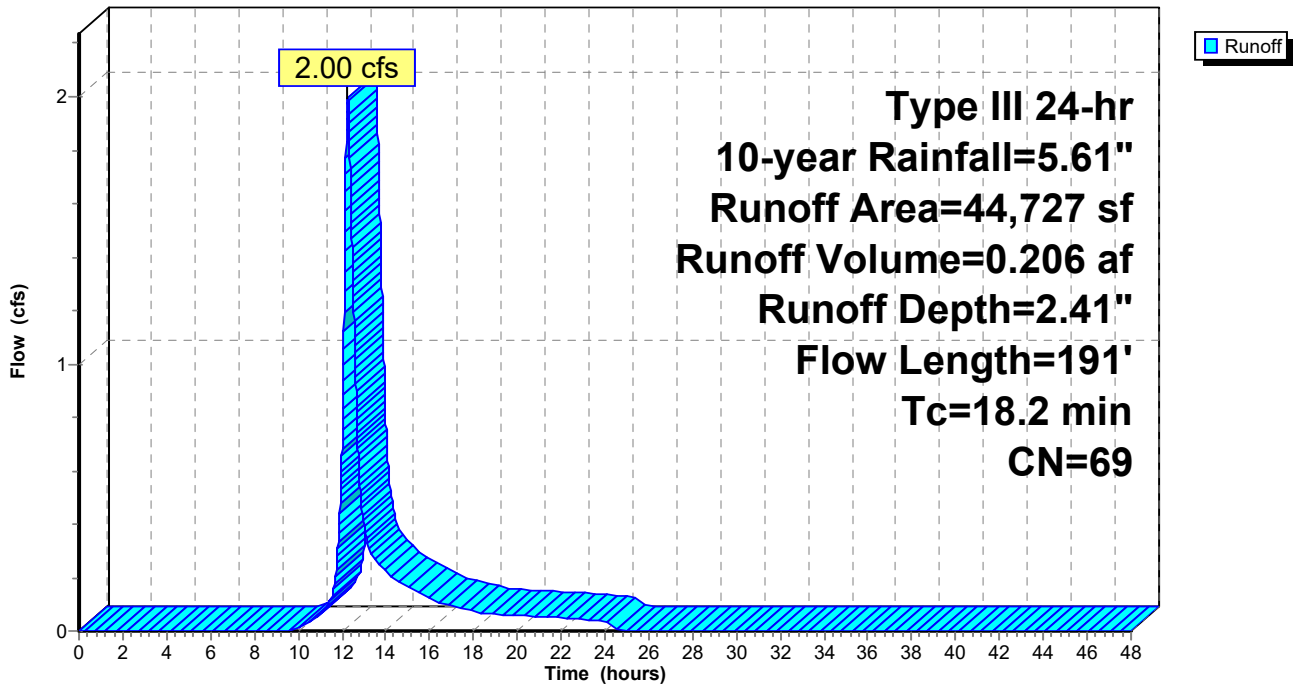
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
10,100	98	Paved roads w/curbs & sewers, HSG B
1,965	98	Paved parking, HSG B
21,624	61	>75% Grass cover, Good, HSG B
11,038	55	Woods, Good, HSG B
44,727	69	Weighted Average
32,662		73.03% Pervious Area
12,065		26.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.0263	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.67"
6.0	98	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.9	43	0.0030	0.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.2	191	Total			

**Subcatchment 1S: To DOT CB**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.1S: West Central**

Runoff = 1.12 cfs @ 12.18 hrs, Volume= 0.105 af, Depth= 1.75"

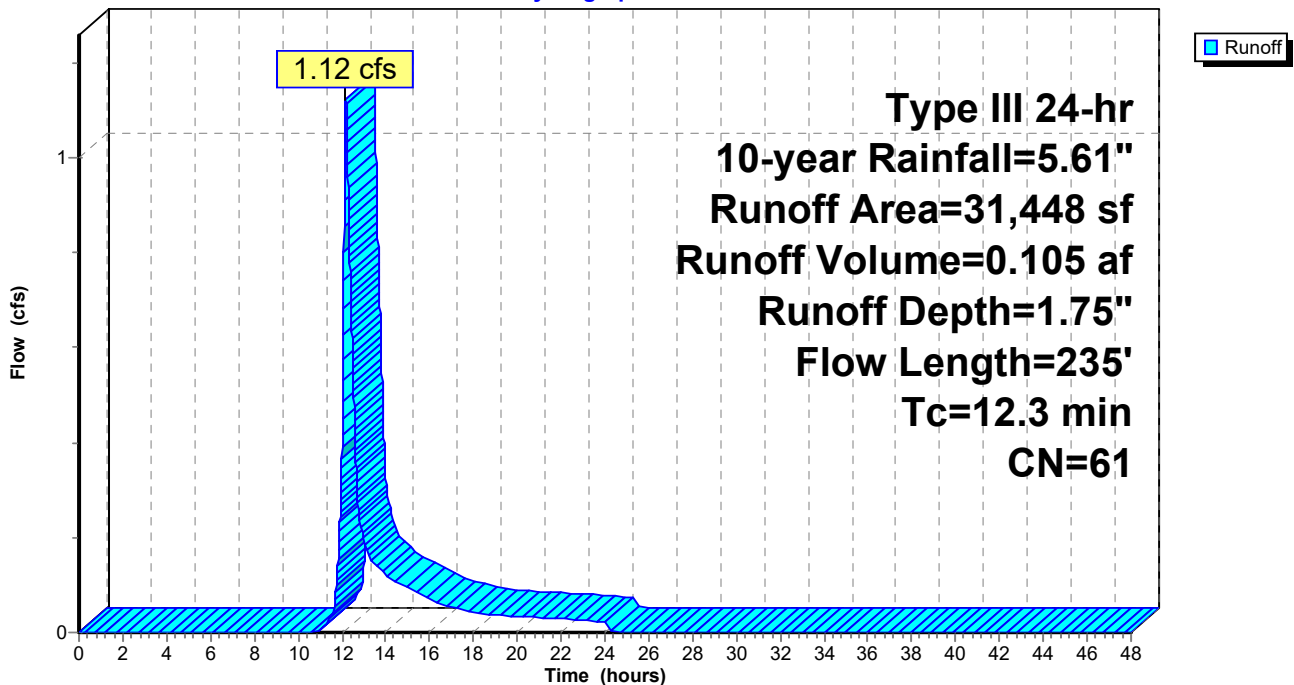
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
289	98	Paved parking, HSG B
3,148	74	>75% Grass cover, Good, HSG C
8,839	61	>75% Grass cover, Good, HSG B
3,651	70	Woods, Good, HSG C
15,521	55	Woods, Good, HSG B
31,448	61	Weighted Average
31,159		99.08% Pervious Area
289		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	74	0.0179	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.67"
4.8	161	0.0064	0.56		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.3	235	Total			

**Subcatchment 2.1S: West Central**

Hydrograph



**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.4S: SE Corner**

Runoff = 1.55 cfs @ 12.20 hrs, Volume= 0.147 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

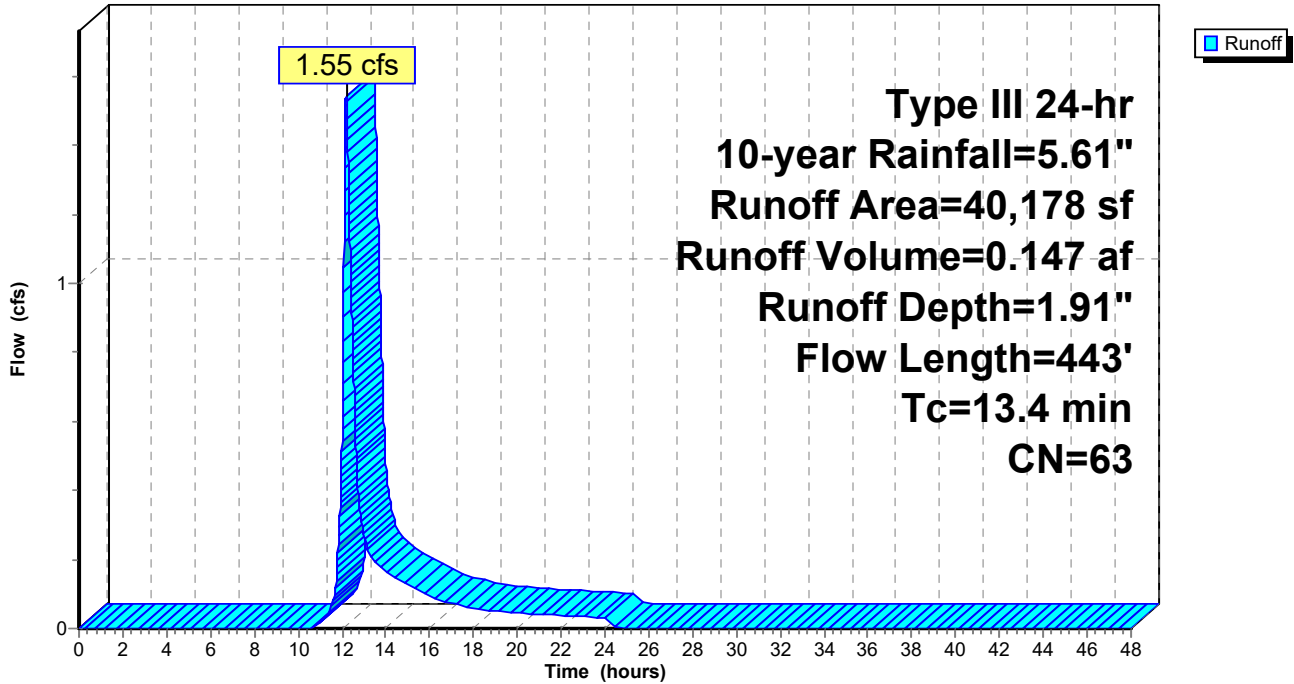
Area (sf)	CN	Description
77	98	Paved parking, HSG C
240	98	Paved parking, HSG B
678	74	>75% Grass cover, Good, HSG C
11,936	61	>75% Grass cover, Good, HSG B
14,997	70	Woods, Good, HSG C
12,250	55	Woods, Good, HSG B
40,178	63	Weighted Average
39,861		99.21% Pervious Area
317		0.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	59	0.0508	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.67"
1.0	72	0.0556	1.18		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	53	0.0138	0.82		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	53	0.0138	0.59		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.7	206	0.0436	4.67	37.38	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.00' D=1.00' Z= 4.0 '/' Top.W=12.00' n= 0.050 Mountain streams w/large boulders
13.4	443	Total			



Subcatchment 2.4S: SE Corner

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 2.5S: South Edge**

Runoff = 2.97 cfs @ 12.09 hrs, Volume= 0.211 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

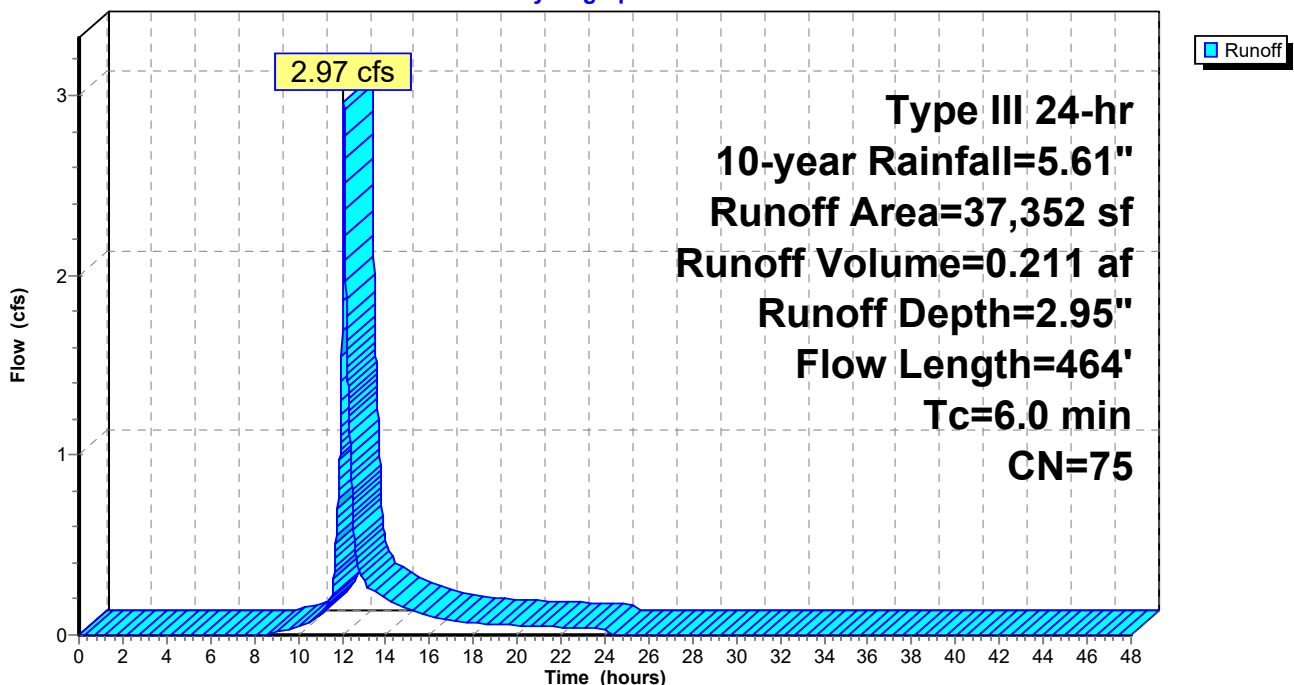
Area (sf)	CN	Description
14,035	98	Paved roads w/curbs & sewers, HSG B
22,251	61	>75% Grass cover, Good, HSG B
1,066	55	Woods, Good, HSG B
37,352	75	Weighted Average
23,317		62.43% Pervious Area
14,035		37.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	68	0.0200	1.36		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.2	23	0.0143	2.43		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.9	373	0.0585	7.02	56.13	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=2.00' D=1.00' Z= 6.0 '/' Top.W=14.00' n= 0.035 Earth, dense weeds
1.9	464	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 2.5S: South Edge**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.0S: Offsite - Ridge**

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 3.83"

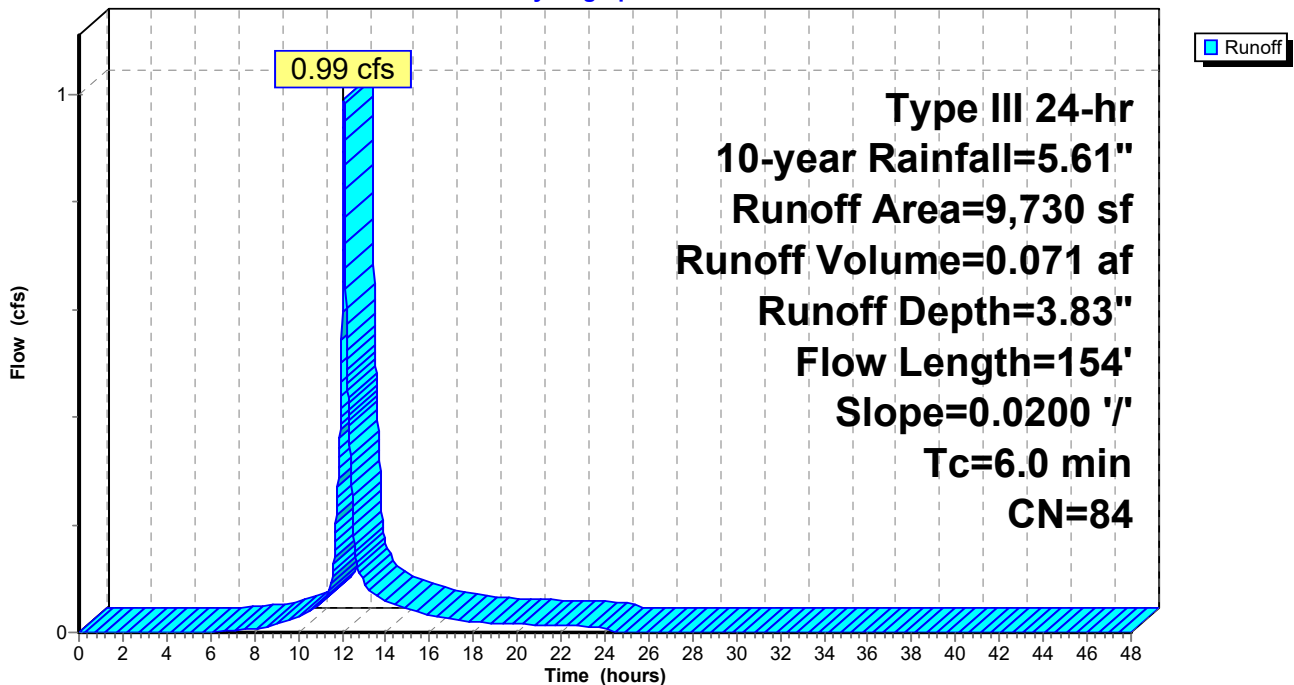
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
3,029	98	Paved roads w/curbs & sewers, HSG C
1,219	98	Roofs, HSG C
5,482	74	>75% Grass cover, Good, HSG C
9,730	84	Weighted Average
5,482		56.34% Pervious Area
4,248		43.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	37	0.0200	1.10		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.03"
0.7	117	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.3	154	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.0S: Offsite - Ridge**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.1S: Offsite - Ridge**

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 4.36"

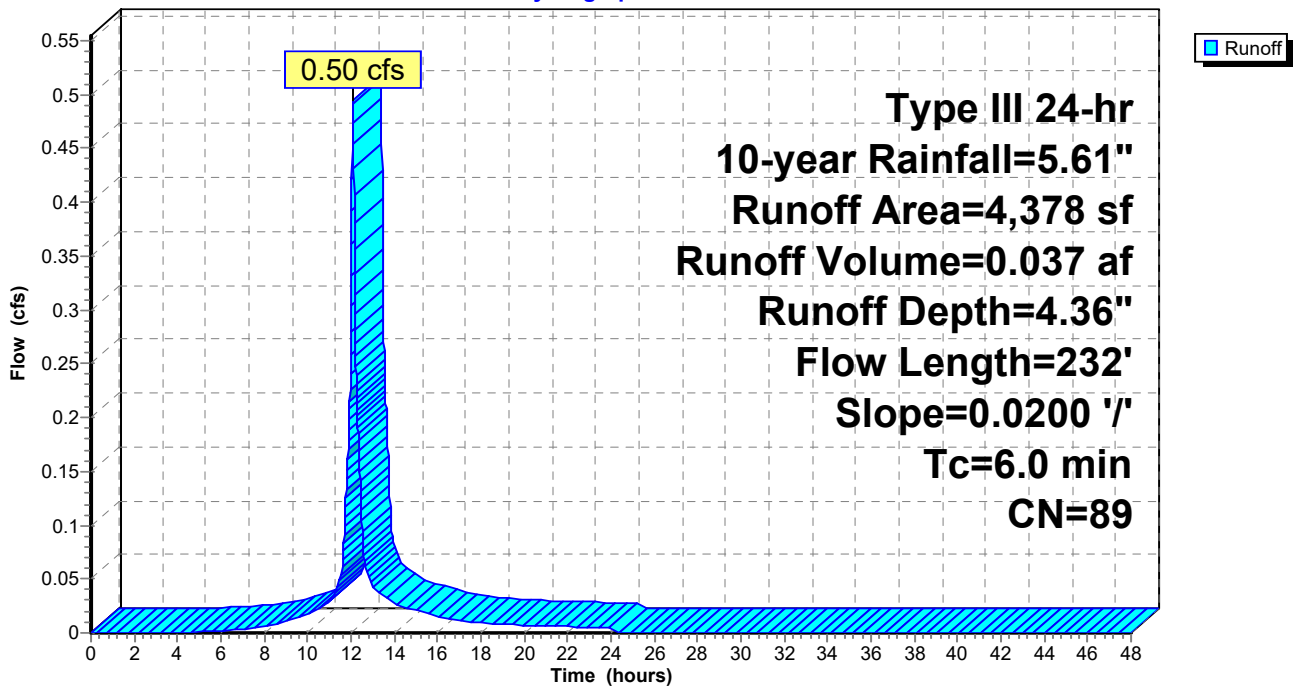
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
2,827	98	Paved roads w/curbs & sewers, HSG C
1,551	74	>75% Grass cover, Good, HSG C
4,378	89	Weighted Average
1,551		35.43% Pervious Area
2,827		64.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0200	1.05		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.2	214	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.5	232	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.1S: Offsite - Ridge**

Hydrograph



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**Summary for Subcatchment 3.2S: Offsite - Ridge**

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.052 af, Depth= 4.58"

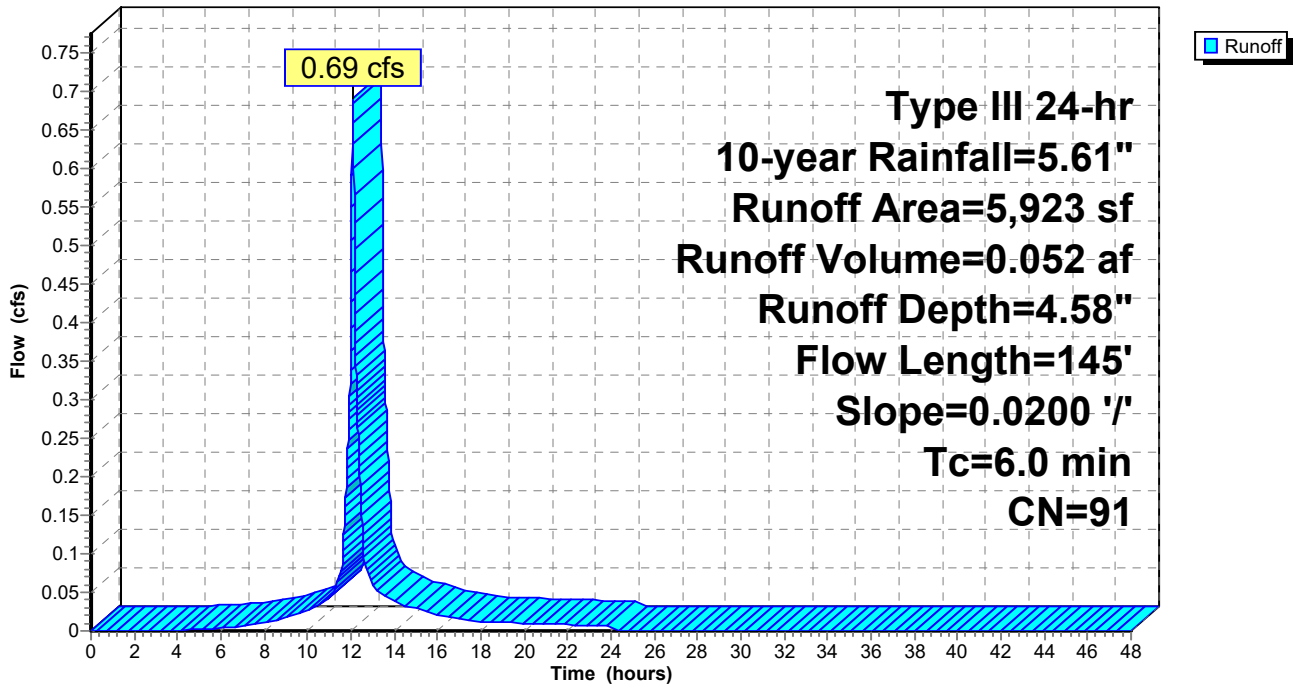
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
4,129	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
5,923	91	Weighted Average
1,794		30.29% Pervious Area
4,129		69.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.24		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.67"
0.6	102	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	145	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.2S: Offsite - Ridge**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.5S: NW Corner and Offsite**

Runoff = 18.52 cfs @ 12.27 hrs, Volume= 1.904 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
28,998	98	Paved roads w/curbs & sewers, HSG C
2,409	98	Paved roads w/curbs & sewers, HSG B
12,129	98	Roofs, HSG C
84,232	74	>75% Grass cover, Good, HSG C
8,796	61	>75% Grass cover, Good, HSG B
190,242	70	Woods, Good, HSG C
44,894	55	Woods, Good, HSG B
371,700	72	Weighted Average
328,164		88.29% Pervious Area
43,536		11.71% Impervious Area

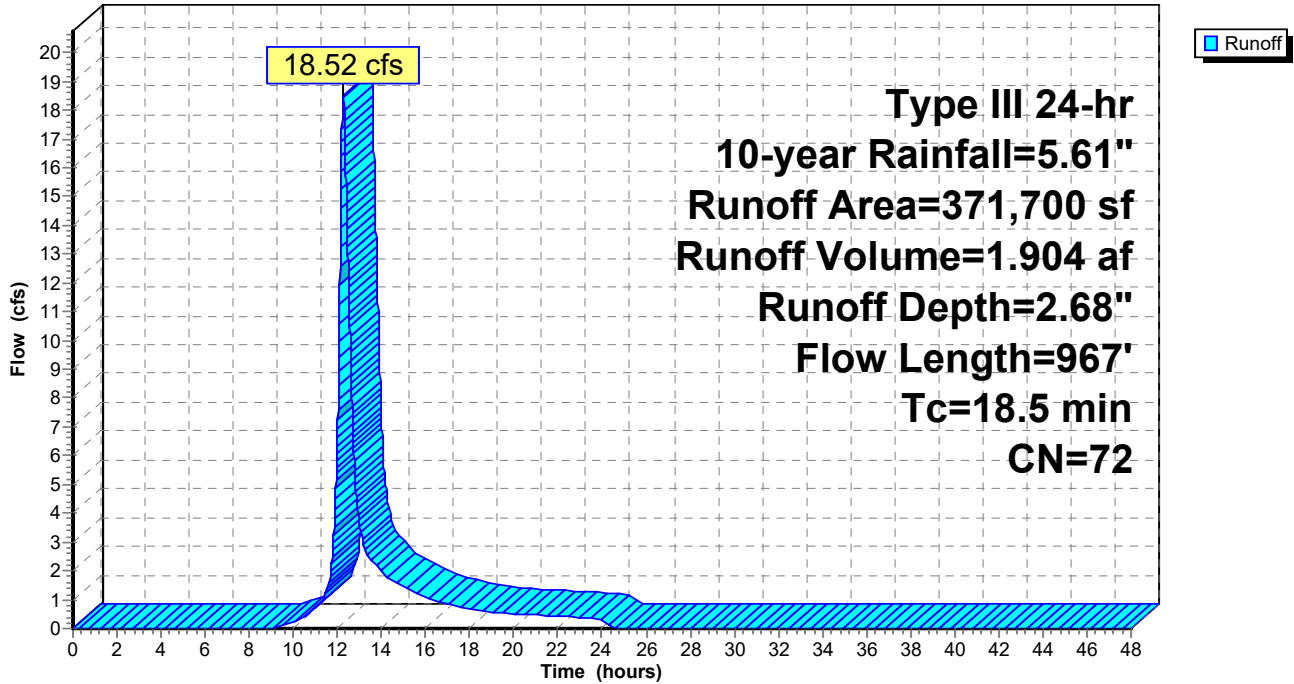
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	83	0.0200	1.42		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
3.0	154	0.0150	0.86		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.6	84	0.0952	2.16		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.8	108	0.0083	0.64		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.1	538	0.0262	0.81		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.5	967	Total			



### Subcatchment 3.5S: NW Corner and Offsite

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 3.6S: East Central**

Runoff = 3.11 cfs @ 12.09 hrs, Volume= 0.227 af, Depth= 2.16"

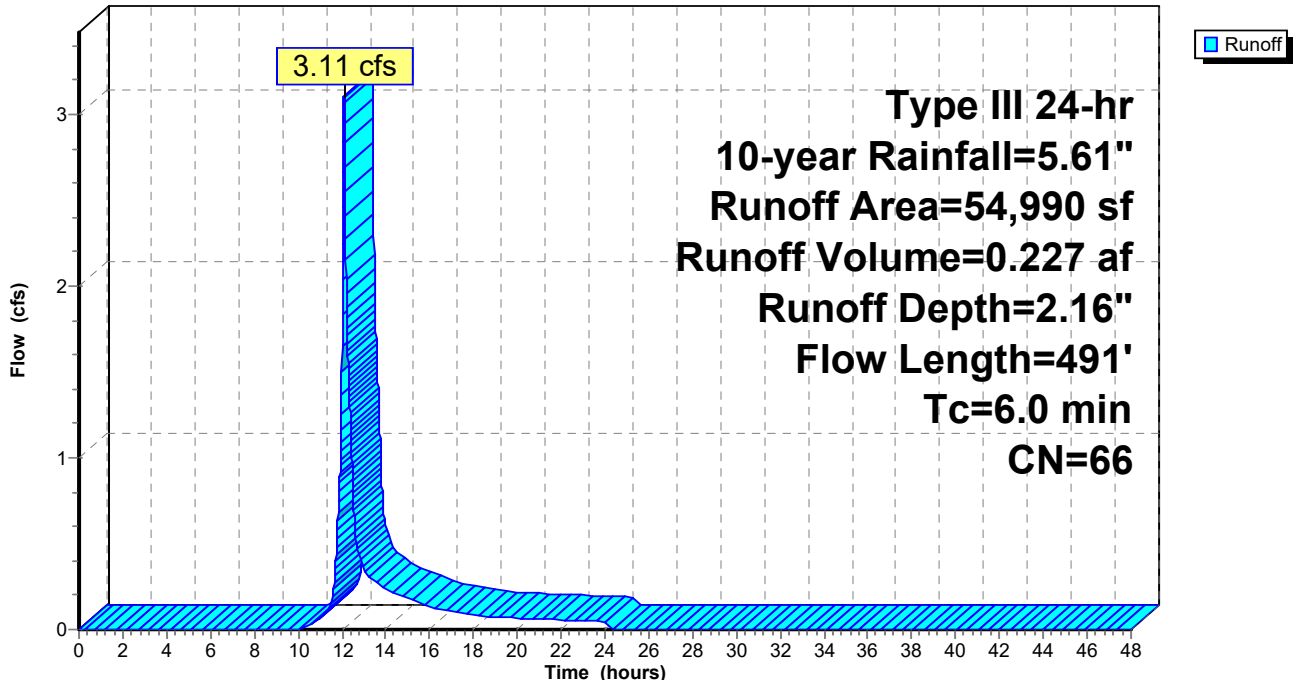
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
5,924	98	Paved roads w/curbs & sewers, HSG C
3,997	98	Paved roads w/curbs & sewers, HSG B
2,902	70	Woods, Good, HSG C
18,543	61	>75% Grass cover, Good, HSG B
23,624	55	Woods, Good, HSG B
54,990	66	Weighted Average
45,069		81.96% Pervious Area
9,921		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	48	0.0200	1.27		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
3.2	311	0.0532	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	132	0.0948	1.54		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.2	491	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 3.6S: East Central**

Hydrograph



**5015-Post**

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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 4S: SW Corner**

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 2.41"

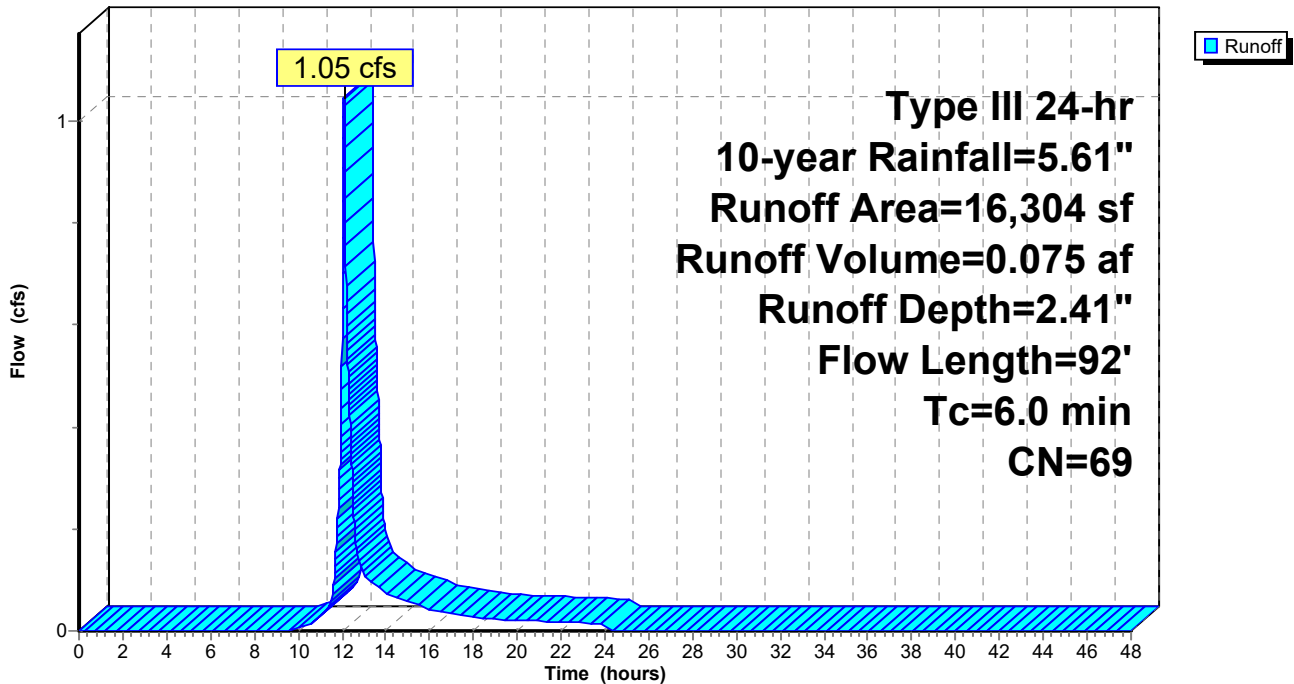
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
3,712	98	Paved roads w/curbs & sewers, HSG B
12,592	61	>75% Grass cover, Good, HSG B
16,304	69	Weighted Average
12,592		77.23% Pervious Area
3,712		22.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	17	0.0100	0.78		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.3	75	0.0185	0.95		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.7	92	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 4S: SW Corner**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 21S: Service Lawn**

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 3.05"

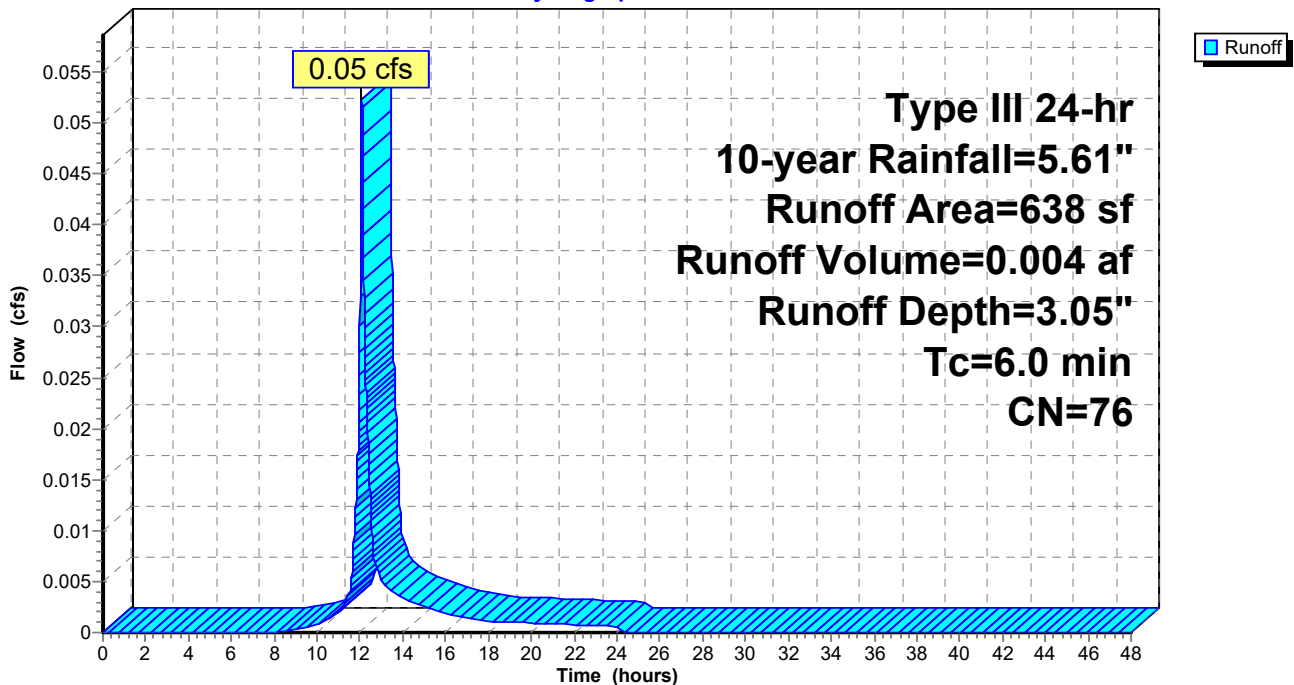
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
51	98	Paved parking, HSG C
587	74	>75% Grass cover, Good, HSG C
638	76	Weighted Average
587		92.01% Pervious Area
51		7.99% Impervious Area

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

**Subcatchment 21S: Service Lawn**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 22S: To Bio #1**

Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 3.53"

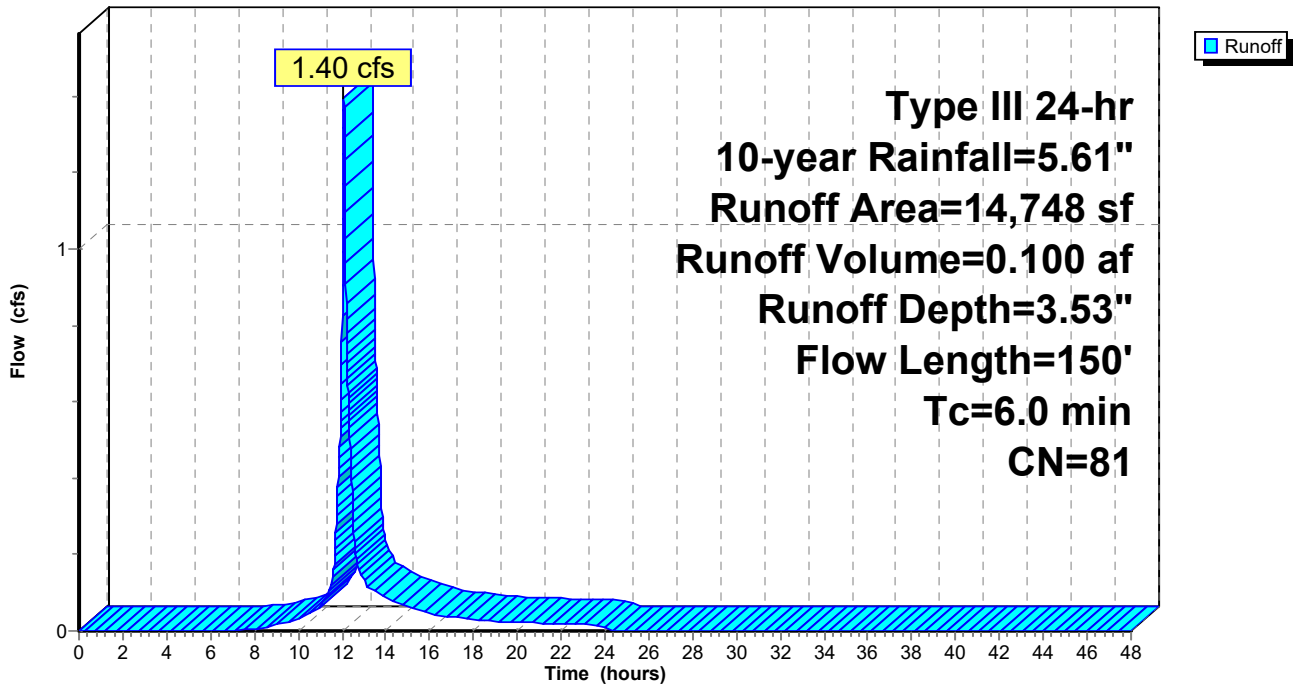
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,425	98	Paved roads w/curbs & sewers, HSG C
6,702	98	Paved roads w/curbs & sewers, HSG B
42	74	>75% Grass cover, Good, HSG C
6,579	61	>75% Grass cover, Good, HSG B
14,748	81	Weighted Average
6,621		44.89% Pervious Area
8,127		55.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	19	0.0200	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.1	131	0.0100	2.03		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.4	150	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 22S: To Bio #1**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 24S: White Oak at NH 111**

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 3.24"

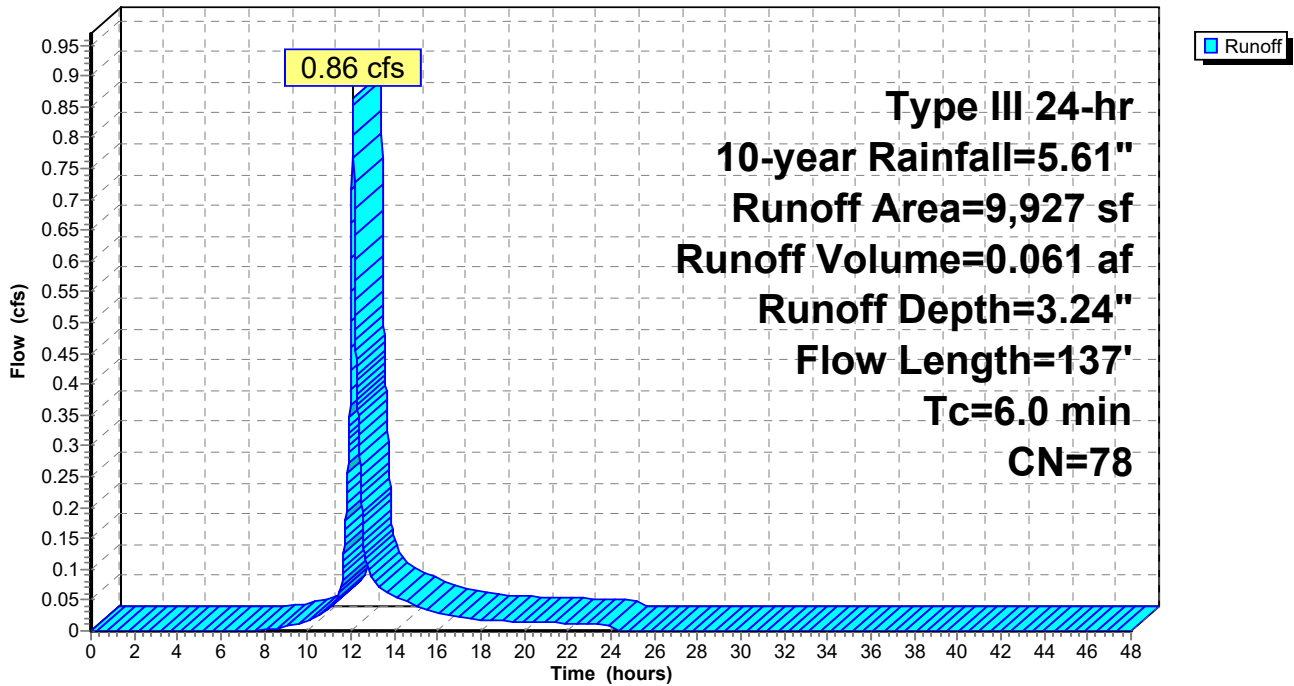
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
4,687	98	Paved roads w/curbs & sewers, HSG B
5,240	61	>75% Grass cover, Good, HSG B
9,927	78	Weighted Average
5,240		52.79% Pervious Area
4,687		47.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	72	0.0200	1.38		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.67"
0.3	65	0.0430	4.21		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	137	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 24S: White Oak at NH 111**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 25S: SE Perimeter Drive**

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.036 af, Depth= 3.43"

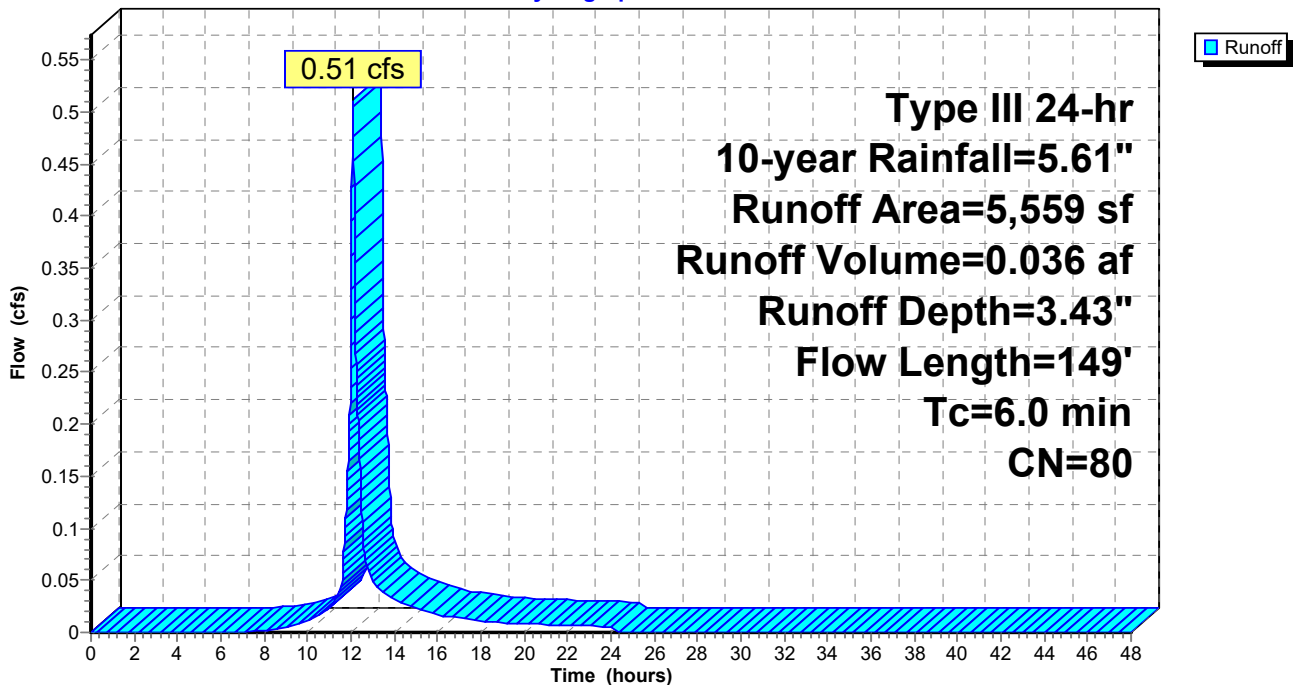
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
2,851	98	Paved roads w/curbs & sewers, HSG B
137	74	>75% Grass cover, Good, HSG C
2,571	61	>75% Grass cover, Good, HSG B
5,559	80	Weighted Average
2,708		48.71% Pervious Area
2,851		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	19	0.0200	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.5	130	0.0500	4.54		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.8	149	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 25S: SE Perimeter Drive**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 28S: Satellite Parking Lot**

Runoff = 2.04 cfs @ 12.08 hrs, Volume= 0.151 af, Depth= 4.47"

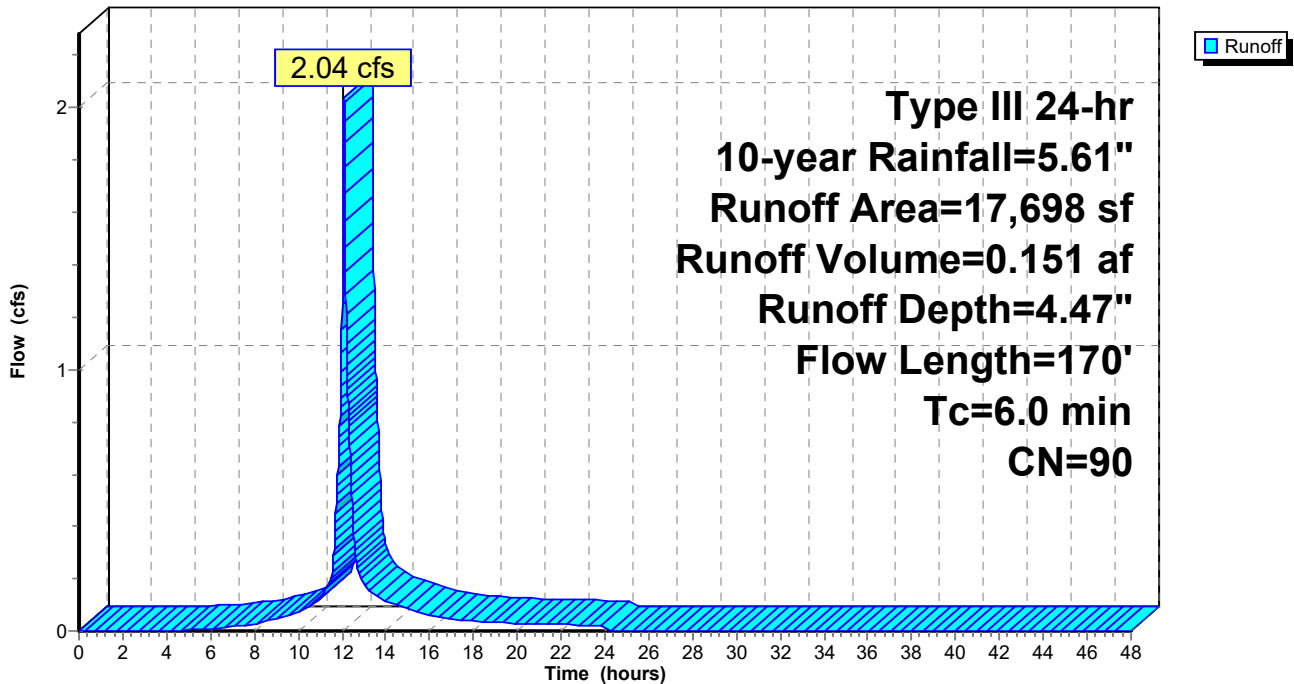
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
464	98	Paved parking, HSG C
13,074	98	Paved parking, HSG B
628	74	>75% Grass cover, Good, HSG C
3,532	61	>75% Grass cover, Good, HSG B
17,698	90	Weighted Average
4,160		23.51% Pervious Area
13,538		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0175	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.4	66	0.0161	2.58		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	59	0.0100	2.03		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.5	170	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 28S: Satellite Parking Lot**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 29S: S Entry Loop**

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 0.111 af, Depth= 3.05"

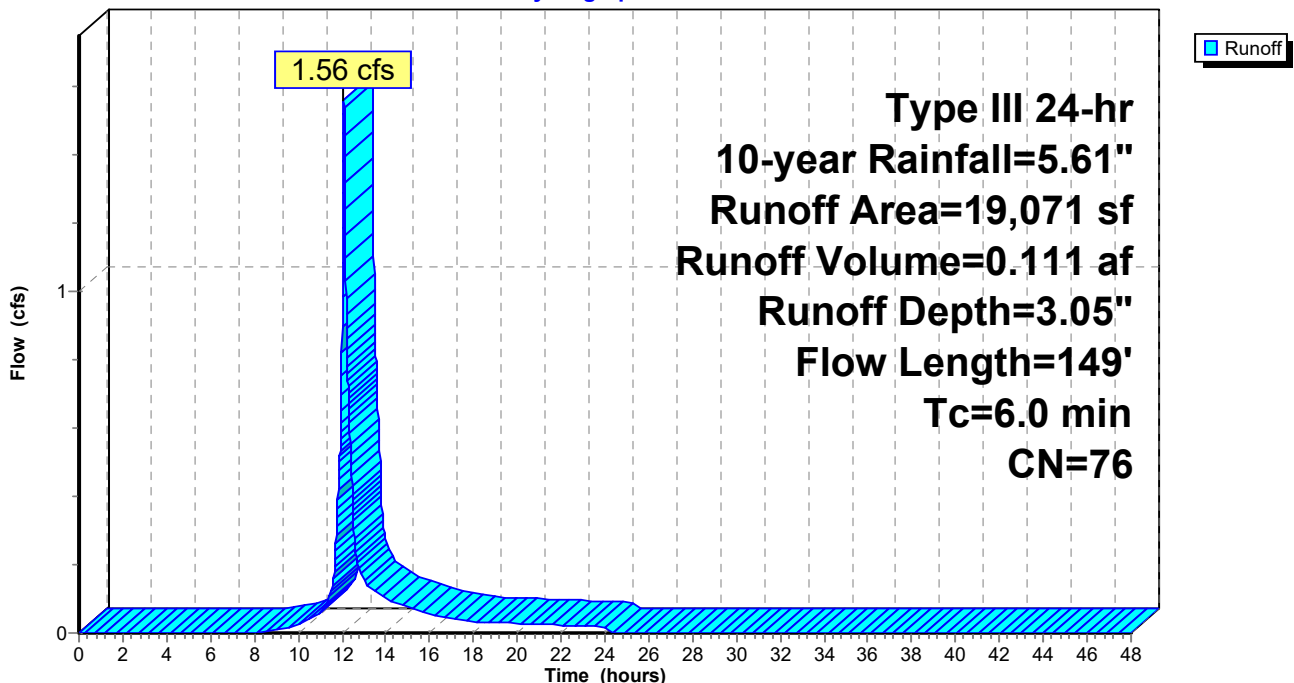
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,048	98	Paved roads w/curbs & sewers, HSG C
5,926	98	Paved roads w/curbs & sewers, HSG B
1,433	74	>75% Grass cover, Good, HSG C
10,664	61	>75% Grass cover, Good, HSG B
19,071	76	Weighted Average
12,097		63.43% Pervious Area
6,974		36.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	53	0.0370	1.66		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.3	70	0.0500	4.54		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.2	26	0.0100	2.03		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.0	149	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 29S: S Entry Loop**

Hydrograph





**5015-Post**

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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 30S: SE White Oak Drive**

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.068 af, Depth= 5.26"

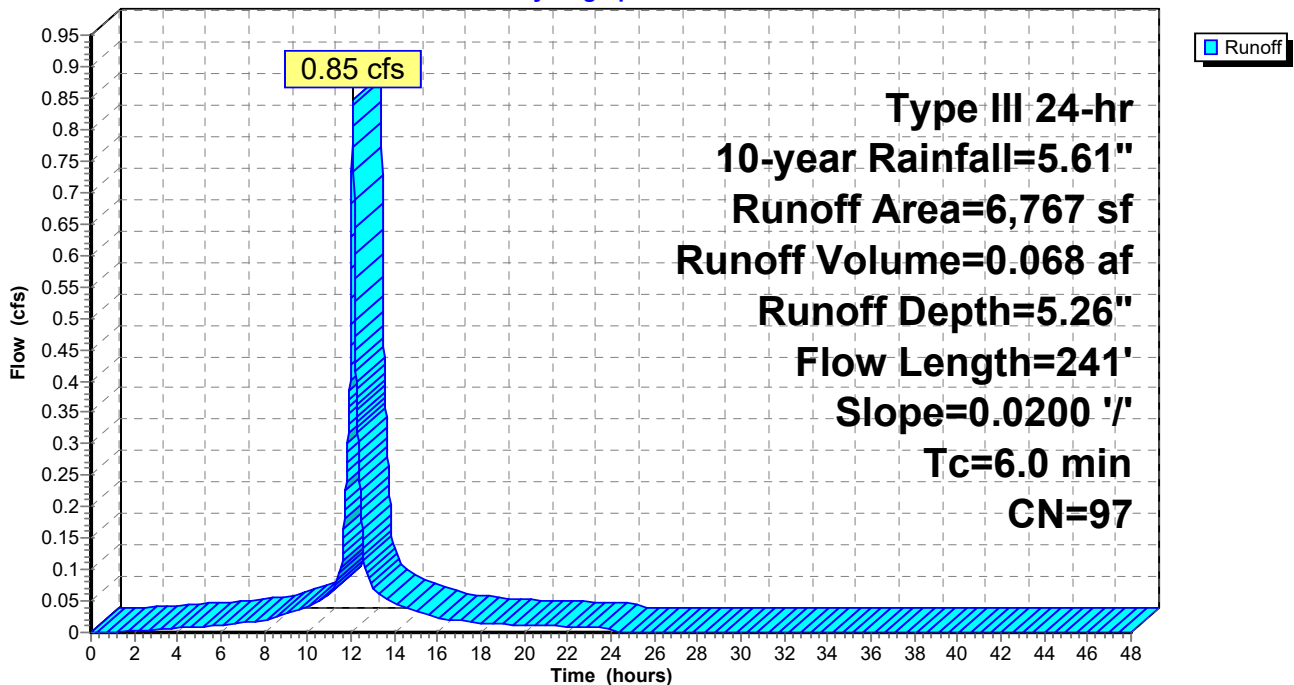
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,207	98	Paved roads w/curbs & sewers, HSG C
5,456	98	Paved roads w/curbs & sewers, HSG B
104	61	>75% Grass cover, Good, HSG B
6,767	97	Weighted Average
104		1.54% Pervious Area
6,663		98.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	36	0.0200	1.20		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.2	205	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.7	241	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 30S: SE White Oak Drive**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 33S: N Entry Loop**

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.081 af, Depth= 3.24"

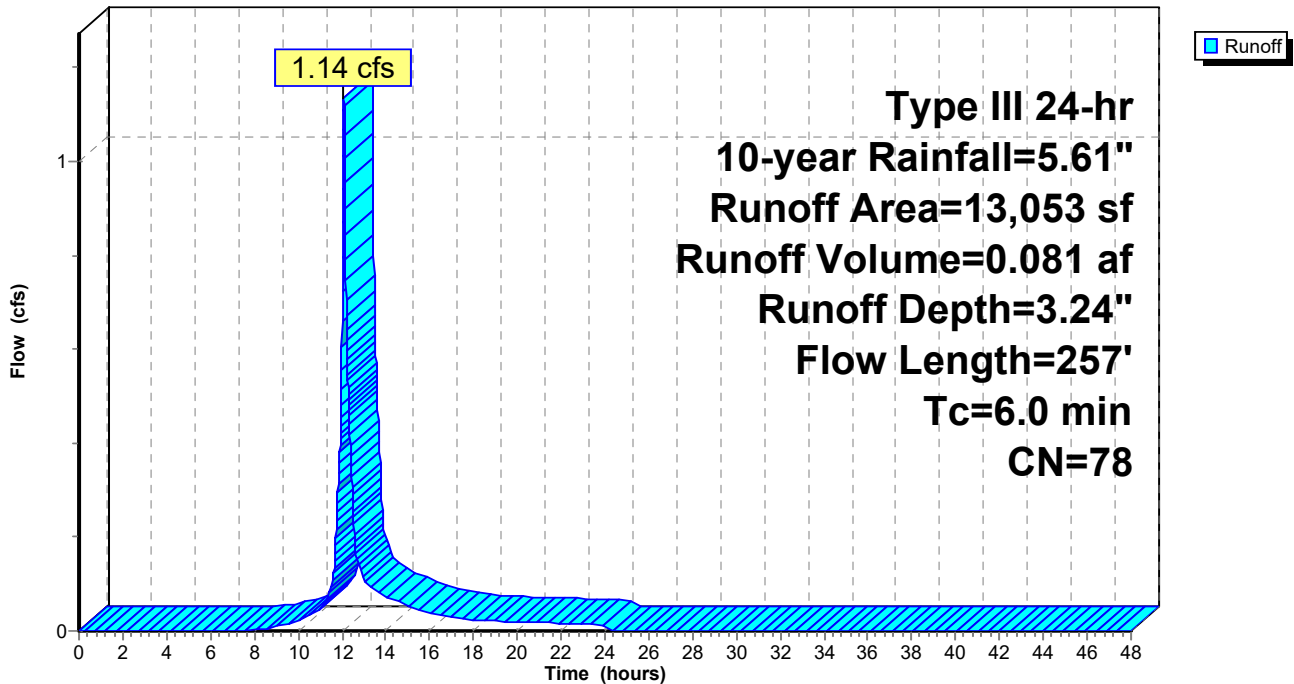
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
6,001	98	Paved roads w/curbs & sewers, HSG B
7,052	61	>75% Grass cover, Good, HSG B
13,053	78	Weighted Average
7,052		54.03% Pervious Area
6,001		45.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0304	1.48		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.4	102	0.0490	4.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	111	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.4	257	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 33S: N Entry Loop**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 34S: E Central White Oak Drive**

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 5.26"

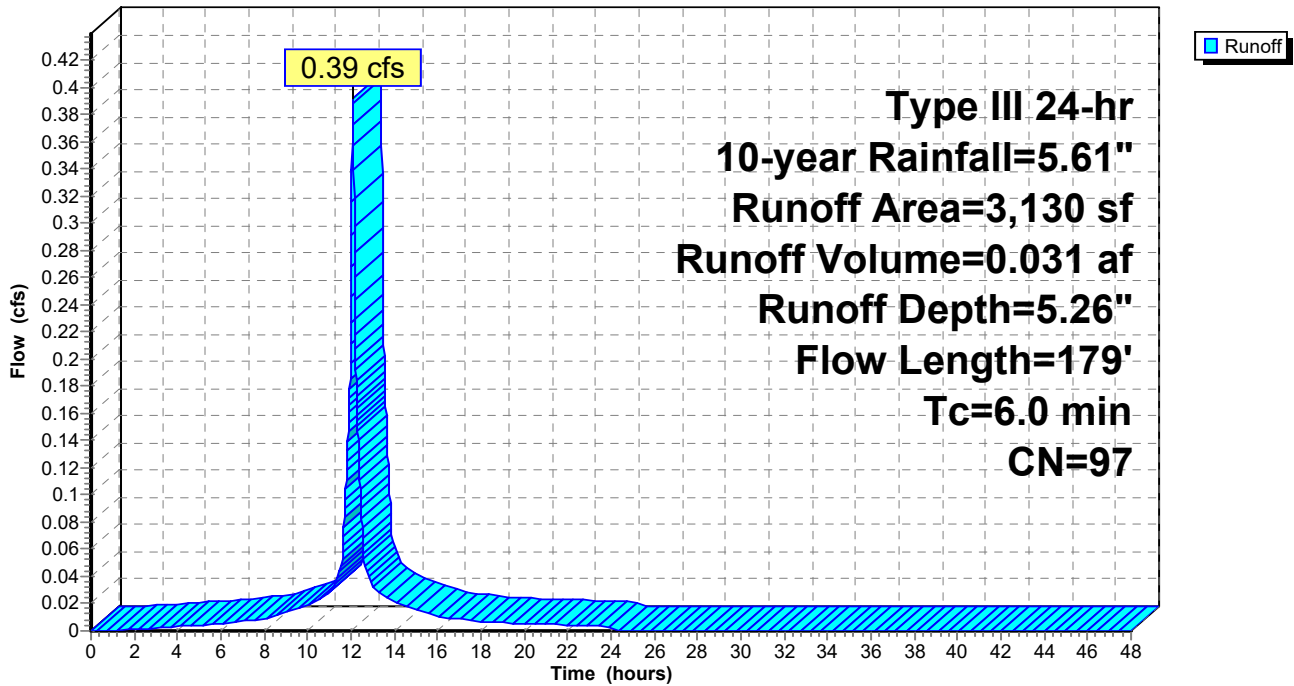
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
3,061	98	Paved roads w/curbs & sewers, HSG B
69	61	>75% Grass cover, Good, HSG B
3,130	97	Weighted Average
69		2.20% Pervious Area
3,061		97.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0200	1.01		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
0.8	164	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.0	179	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 34S: E Central White Oak Drive**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 38S: To Bio #1**

Runoff = 0.56 cfs @ 12.10 hrs, Volume= 0.043 af, Depth= 1.75"

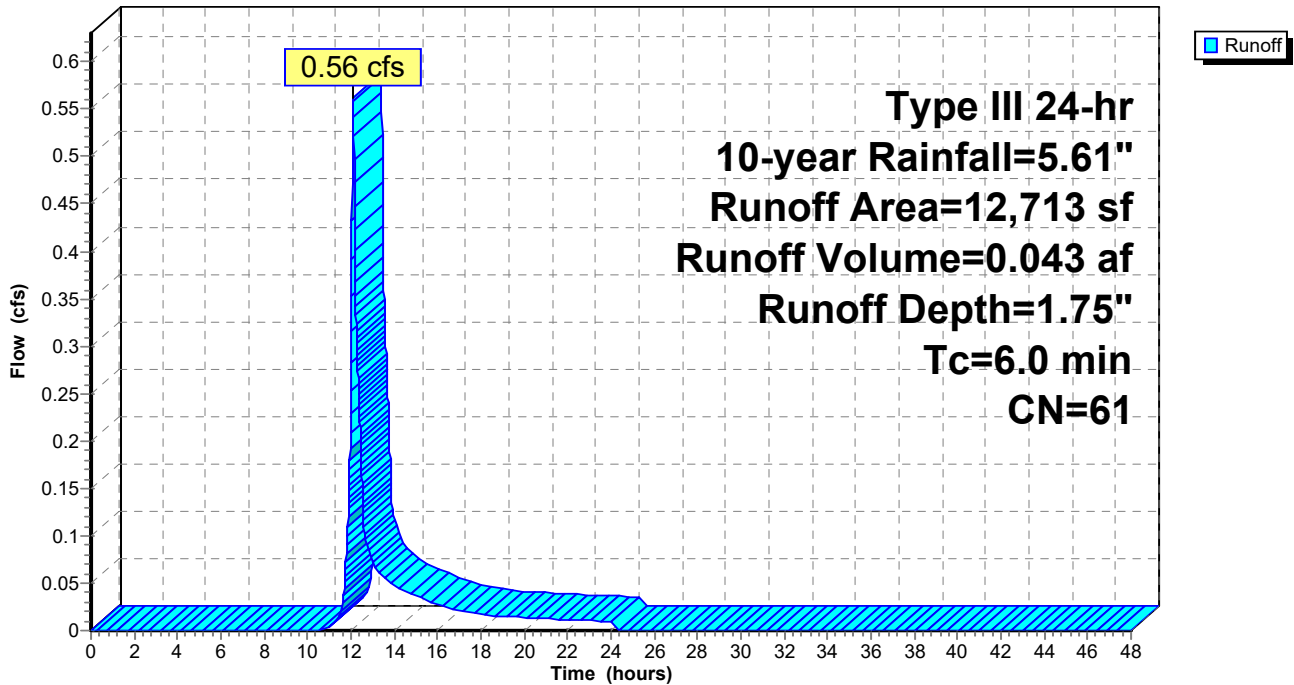
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
97	98	Paved parking, HSG B
12,616	61	>75% Grass cover, Good, HSG B
12,713	61	Weighted Average
12,616		99.24% Pervious Area
97		0.76% Impervious Area

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

**Subcatchment 38S: To Bio #1**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 40S: Service Lawn**

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 2.16"

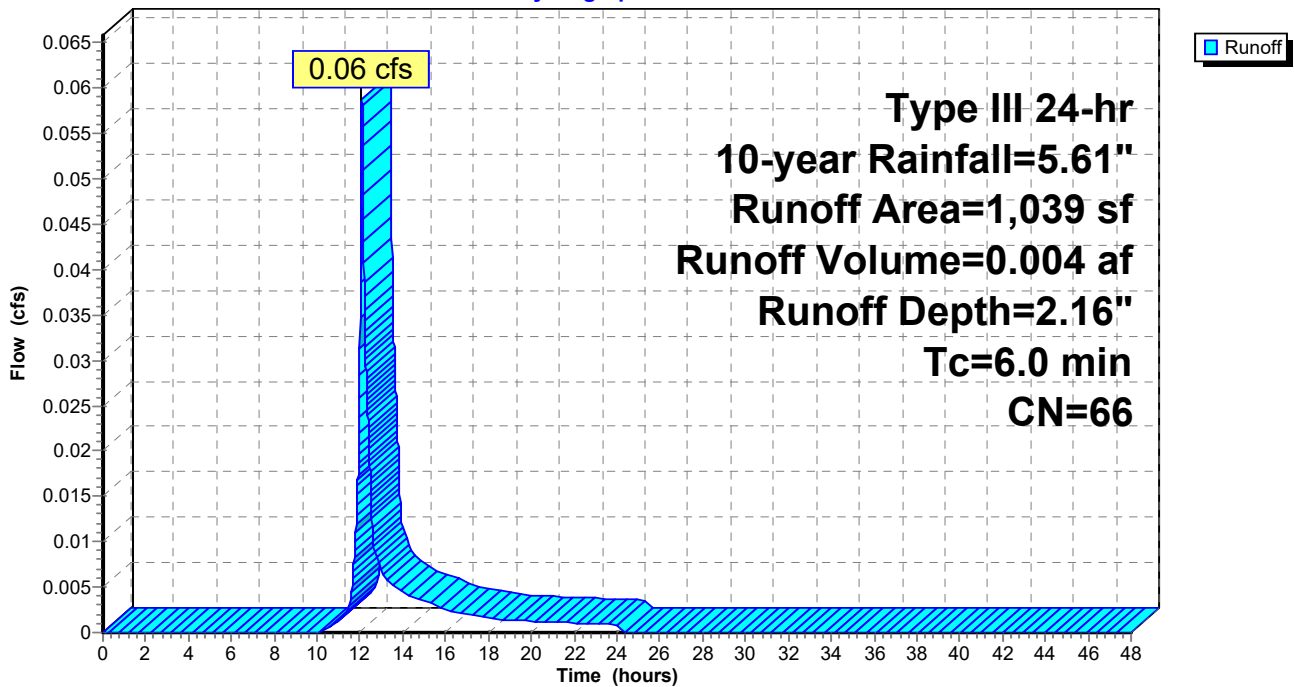
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
130	98	Paved parking, HSG B
909	61	>75% Grass cover, Good, HSG B
1,039	66	Weighted Average
909		87.49% Pervious Area
130		12.51% Impervious Area

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

**Subcatchment 40S: Service Lawn**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 41S: Service Area**

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 4.04"

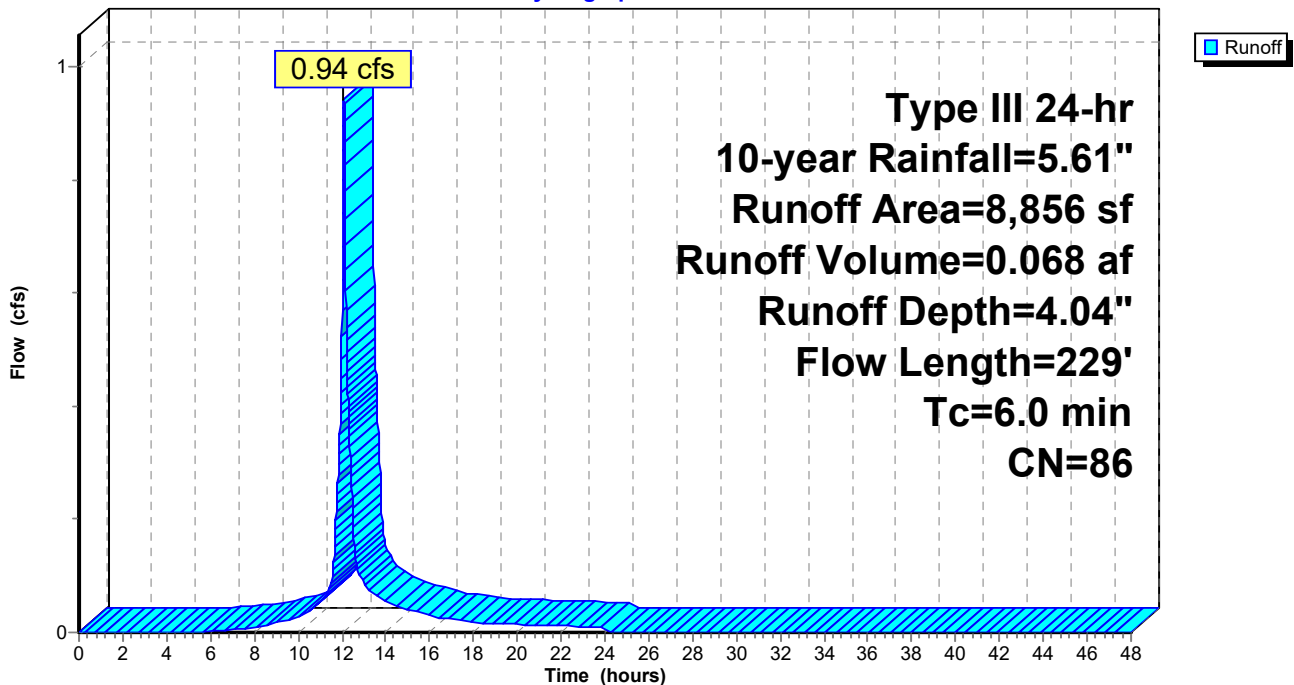
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,468	98	Paved roads w/curbs & sewers, HSG C
4,596	98	Paved roads w/curbs & sewers, HSG B
2,792	61	>75% Grass cover, Good, HSG B
8,856	86	Weighted Average
2,792		31.53% Pervious Area
6,064		68.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	49	0.0400	1.69		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.67"
1.3	180	0.0124	2.26		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	229	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 41S: Service Area**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 44S: NW Corner**

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 2.86"

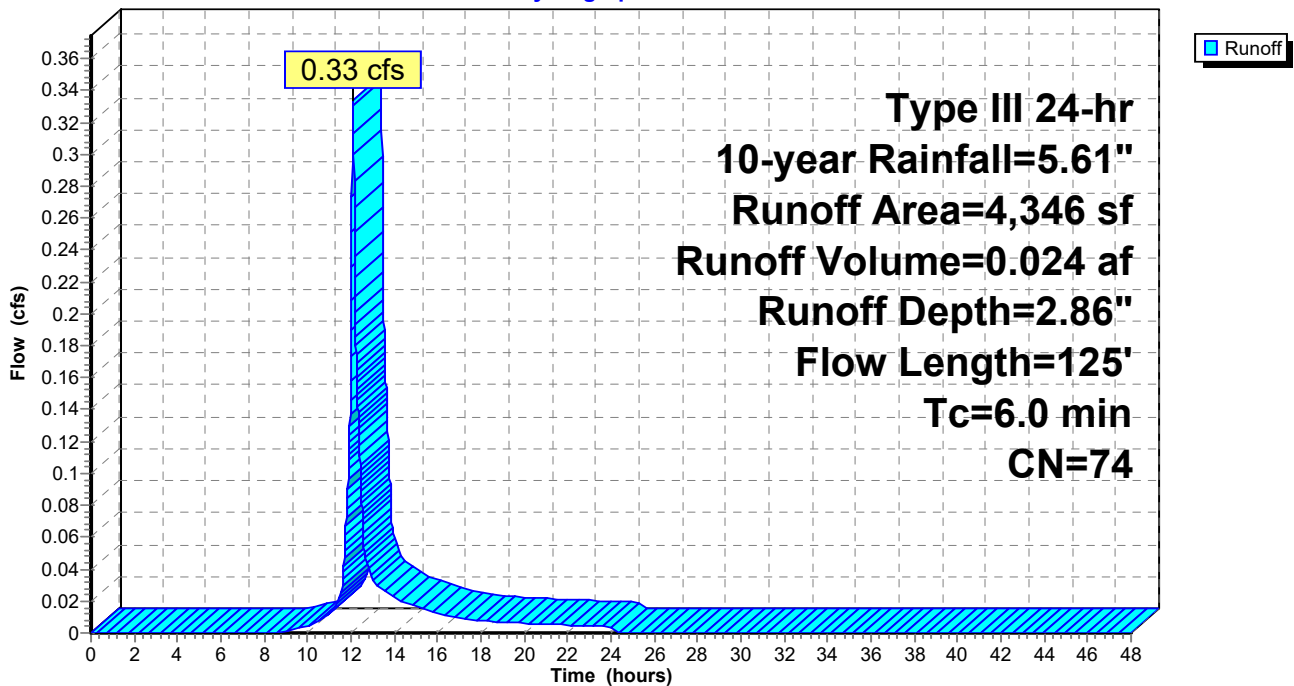
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,577	98	Paved roads w/curbs & sewers, HSG B
2,769	61	>75% Grass cover, Good, HSG B
4,346	74	Weighted Average
2,769		63.71% Pervious Area
1,577		36.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	17	0.1429	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.67"
0.1	25	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.4	83	0.0348	3.79		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.5	125	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 44S: NW Corner**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 46S: Garage Ramp**

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 3.73"

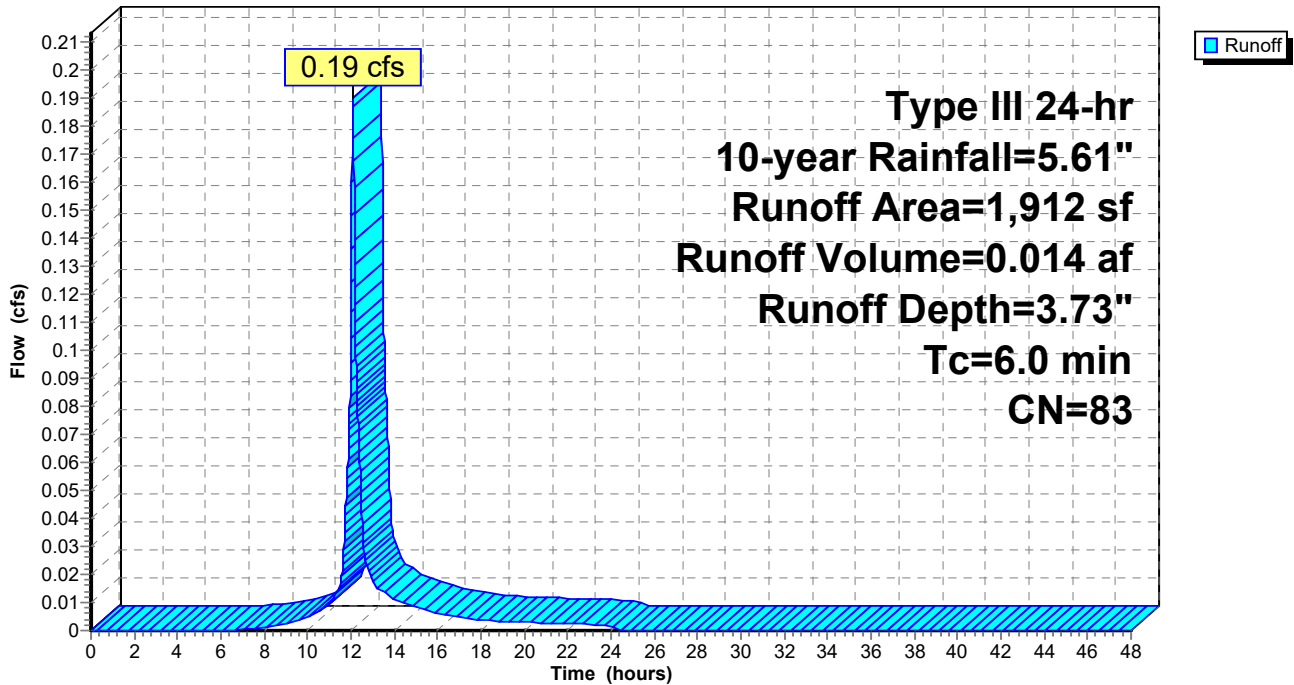
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,128	98	Paved roads w/curbs & sewers, HSG B
784	61	>75% Grass cover, Good, HSG B
1,912	83	Weighted Average
784		41.00% Pervious Area
1,128		59.00% Impervious Area

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

**Subcatchment 46S: Garage Ramp**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 47S: NE Lawn**

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af, Depth= 1.75"

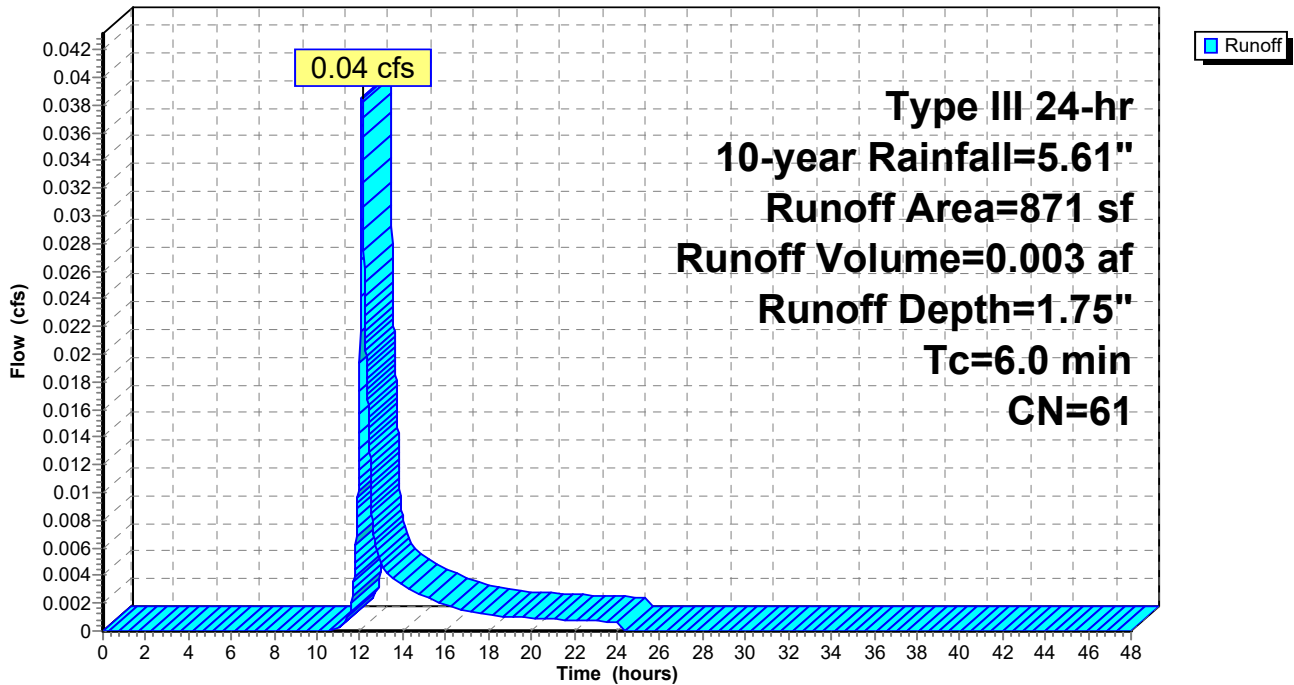
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
871	61	>75% Grass cover, Good, HSG B
871		100.00% Pervious Area

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

**Subcatchment 47S: NE Lawn**

Hydrograph





**5015-Post**

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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 49S: NW White Oak Dr. & P-Lot**

Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.108 af, Depth= 3.63"

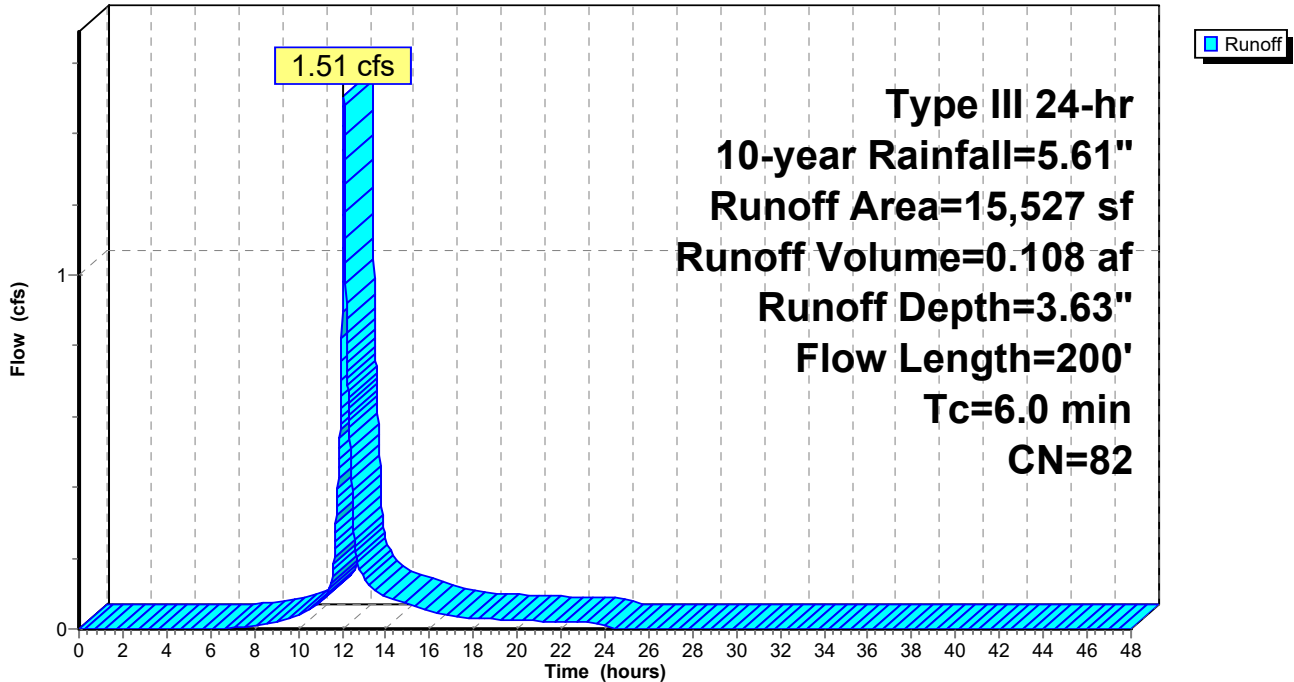
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
8,983	98	Paved roads w/curbs & sewers, HSG B
6,544	61	>75% Grass cover, Good, HSG B
15,527	82	Weighted Average
6,544		42.15% Pervious Area
8,983		57.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	55	0.0889	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.67"
0.4	101	0.0500	4.54		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.3	44	0.0150	2.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.8	200	Total, Increased to minimum Tc = 6.0 min			

**Subcatchment 49S: NW White Oak Dr. & P-Lot**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 60S: SW Roof**

Runoff = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af, Depth= 5.37"

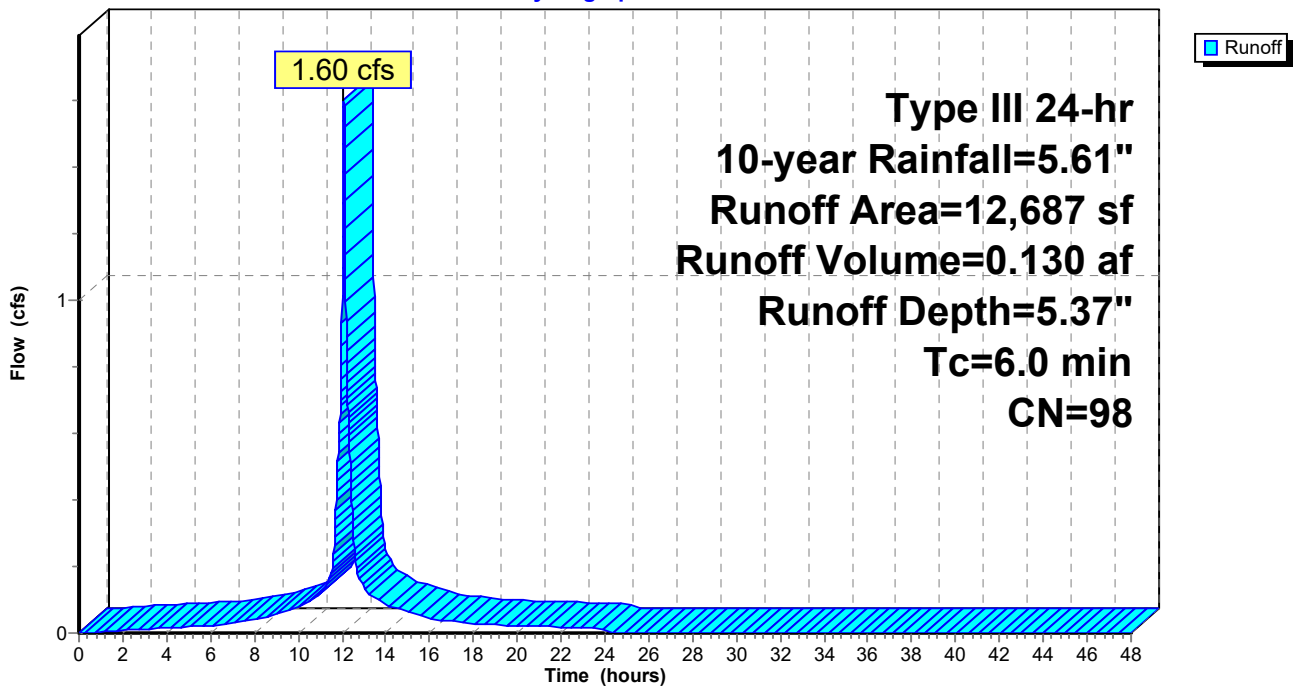
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,576	98	Roofs, HSG C
11,111	98	Roofs, HSG B
12,687	98	Weighted Average
12,687		100.00% Impervious Area

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

**Subcatchment 60S: SW Roof**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 61S: SE Roof**

Runoff = 1.68 cfs @ 12.08 hrs, Volume= 0.137 af, Depth= 5.37"

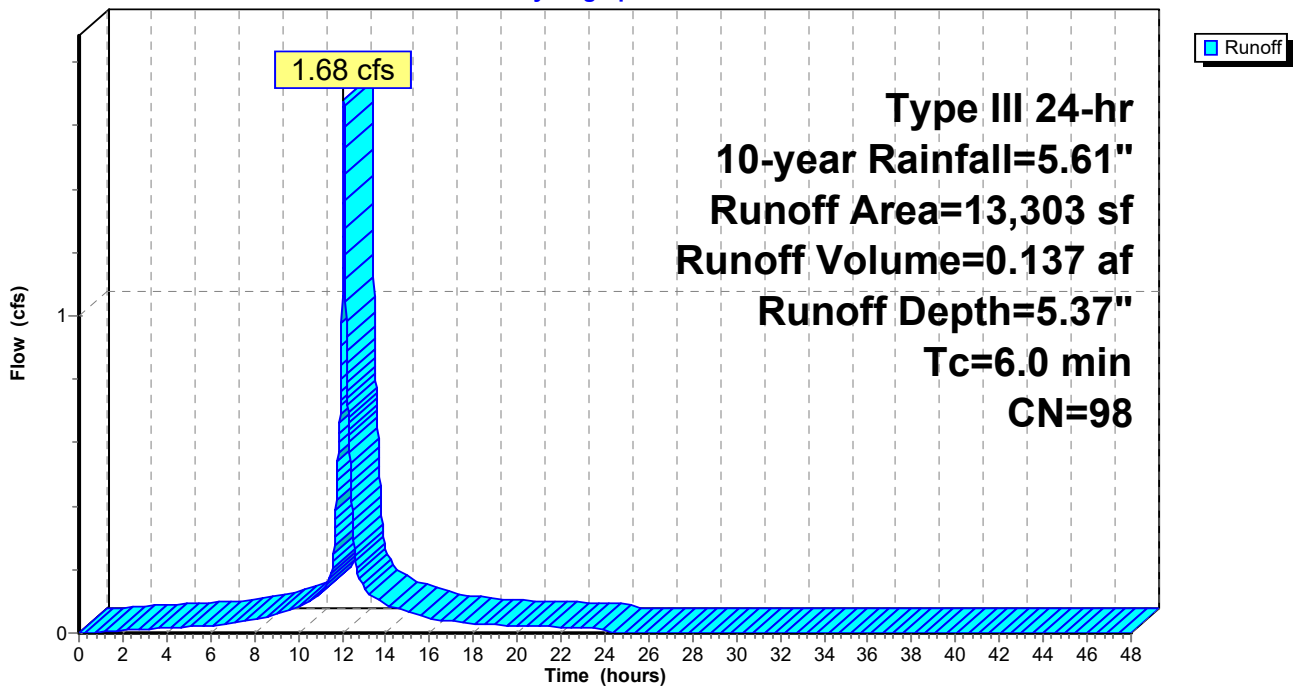
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
4,735	98	Roofs, HSG C
8,568	98	Roofs, HSG B
13,303	98	Weighted Average
13,303		100.00% Impervious Area

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

**Subcatchment 61S: SE Roof**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 62S: NW Roof**

Runoff = 1.73 cfs @ 12.08 hrs, Volume= 0.141 af, Depth= 5.37"

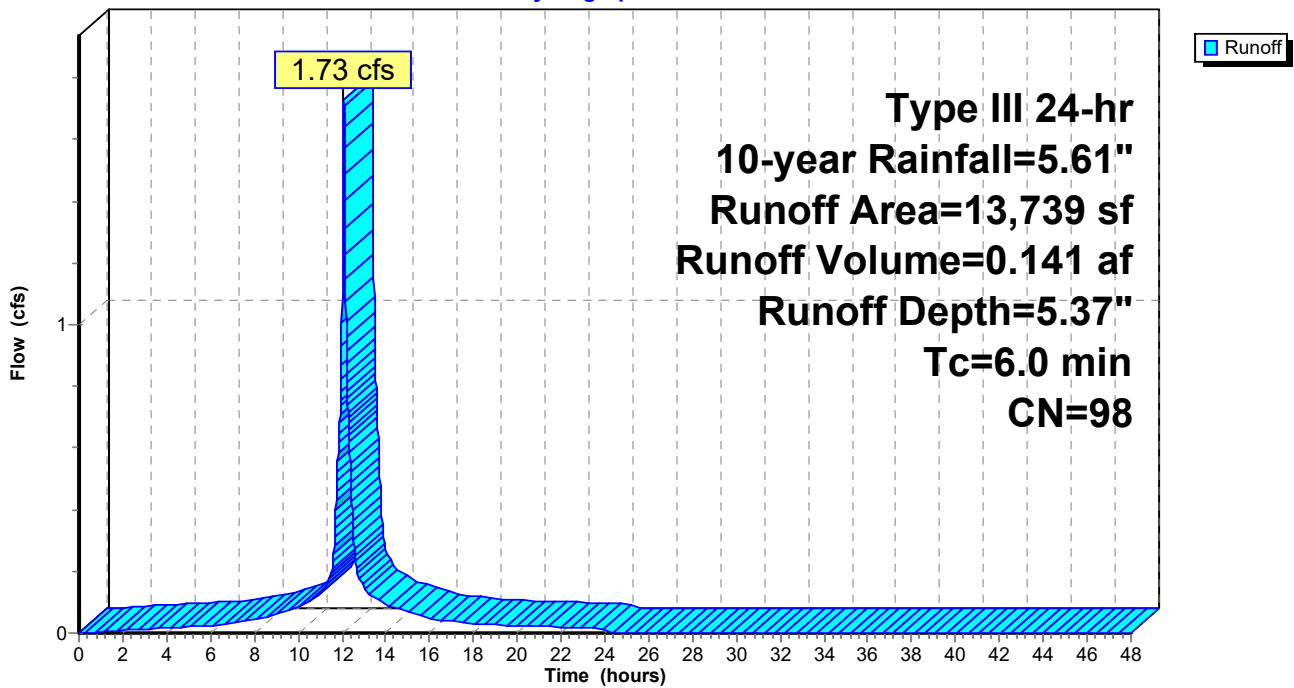
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
738	98	Roofs, HSG C
13,001	98	Roofs, HSG B
13,739	98	Weighted Average
13,739		100.00% Impervious Area

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

**Subcatchment 62S: NW Roof**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 63S: NE Roof**

Runoff = 1.32 cfs @ 12.08 hrs, Volume= 0.108 af, Depth= 5.37"

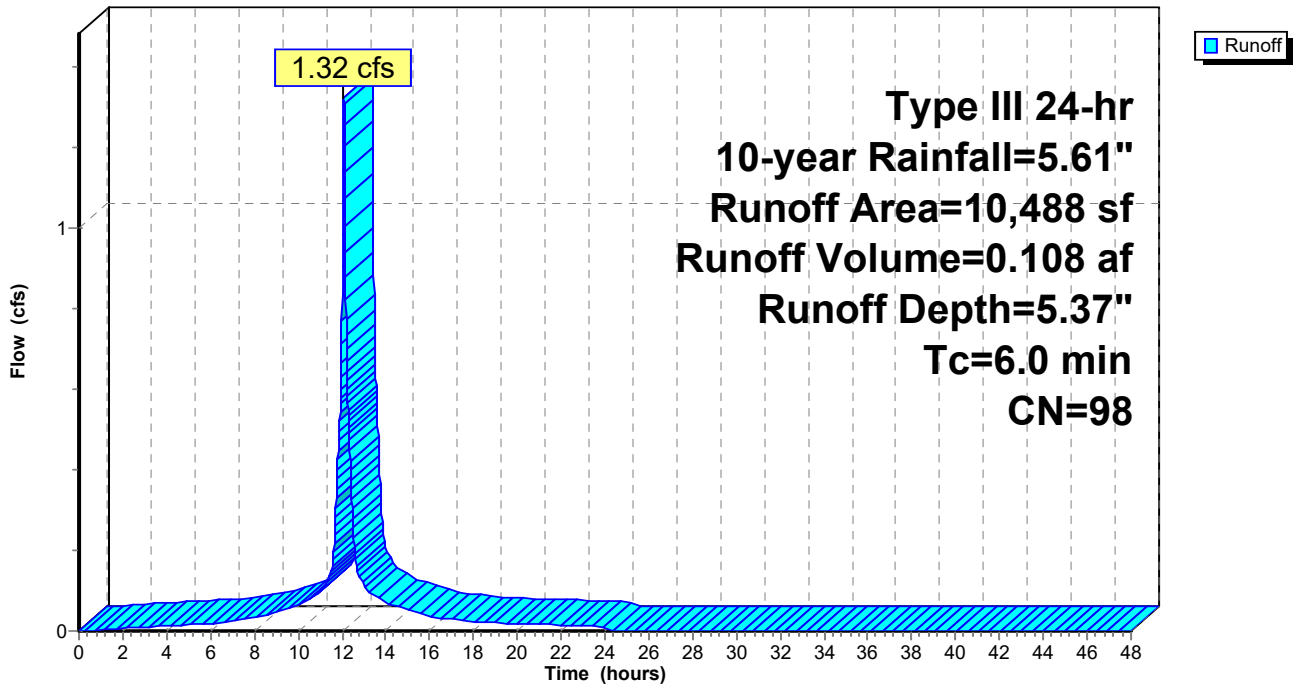
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
10,488	98	Roofs, HSG B
10,488		100.00% Impervious Area

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

**Subcatchment 63S: NE Roof**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 70S: N Courtyard**

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 3.33"

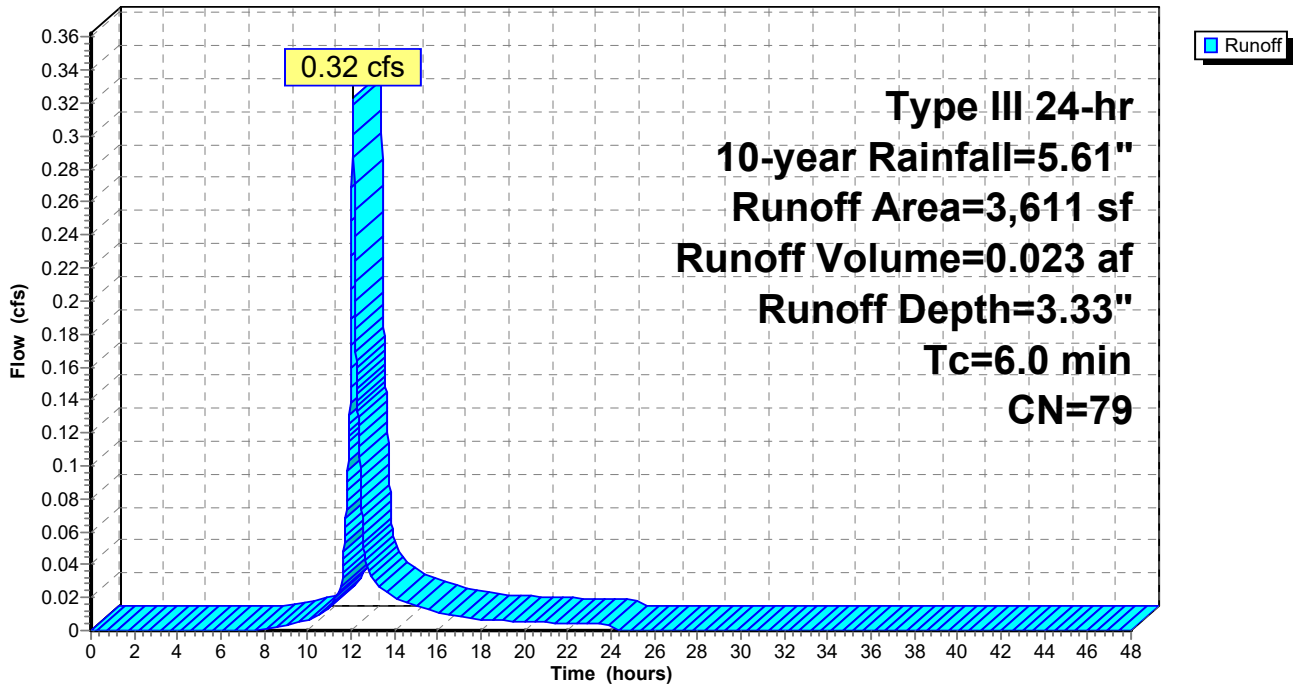
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
1,805	98	Paved parking, HSG B
1,806	61	>75% Grass cover, Good, HSG B
3,611	79	Weighted Average
1,806		50.01% Pervious Area
1,805		49.99% Impervious Area

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

**Subcatchment 70S: N Courtyard**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Subcatchment 71S: S Courtyard**

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Depth= 3.63"

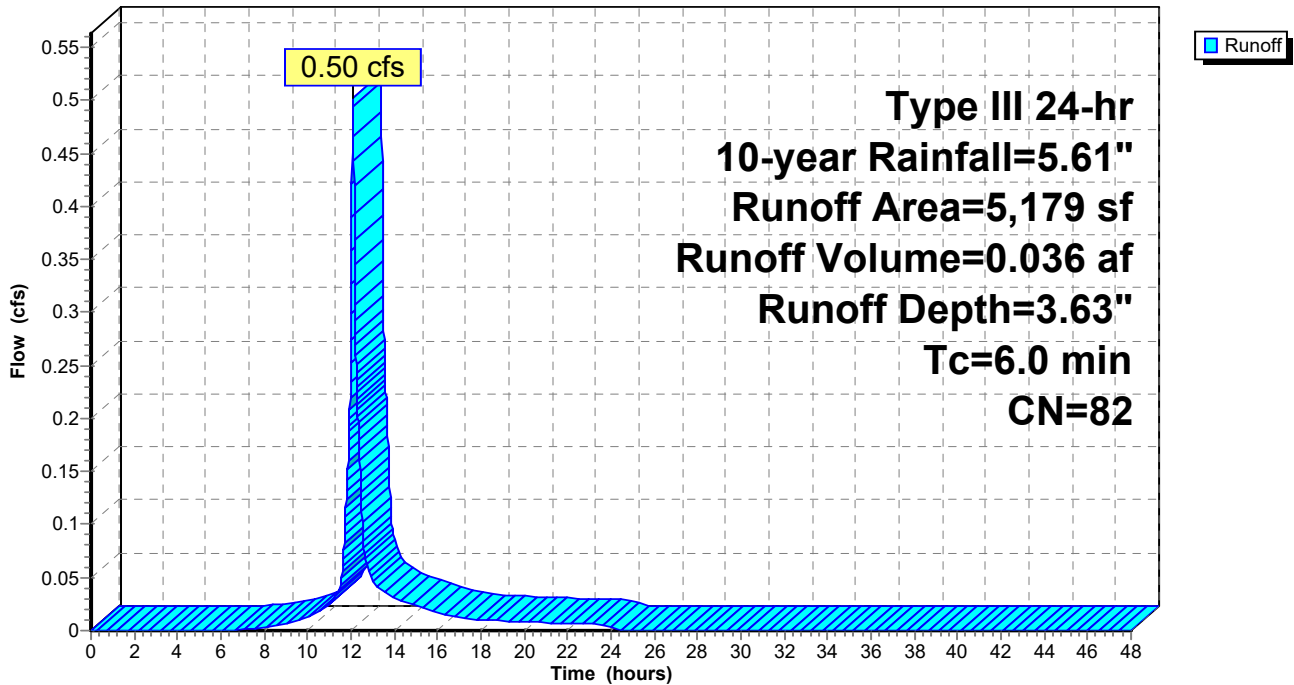
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
917	98	Paved parking, HSG C
1,672	98	Paved parking, HSG B
918	74	>75% Grass cover, Good, HSG C
1,672	61	>75% Grass cover, Good, HSG B
5,179	82	Weighted Average
2,590		50.01% Pervious Area
2,589		49.99% Impervious Area

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

**Subcatchment 71S: S Courtyard**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 80S: To S Porous**

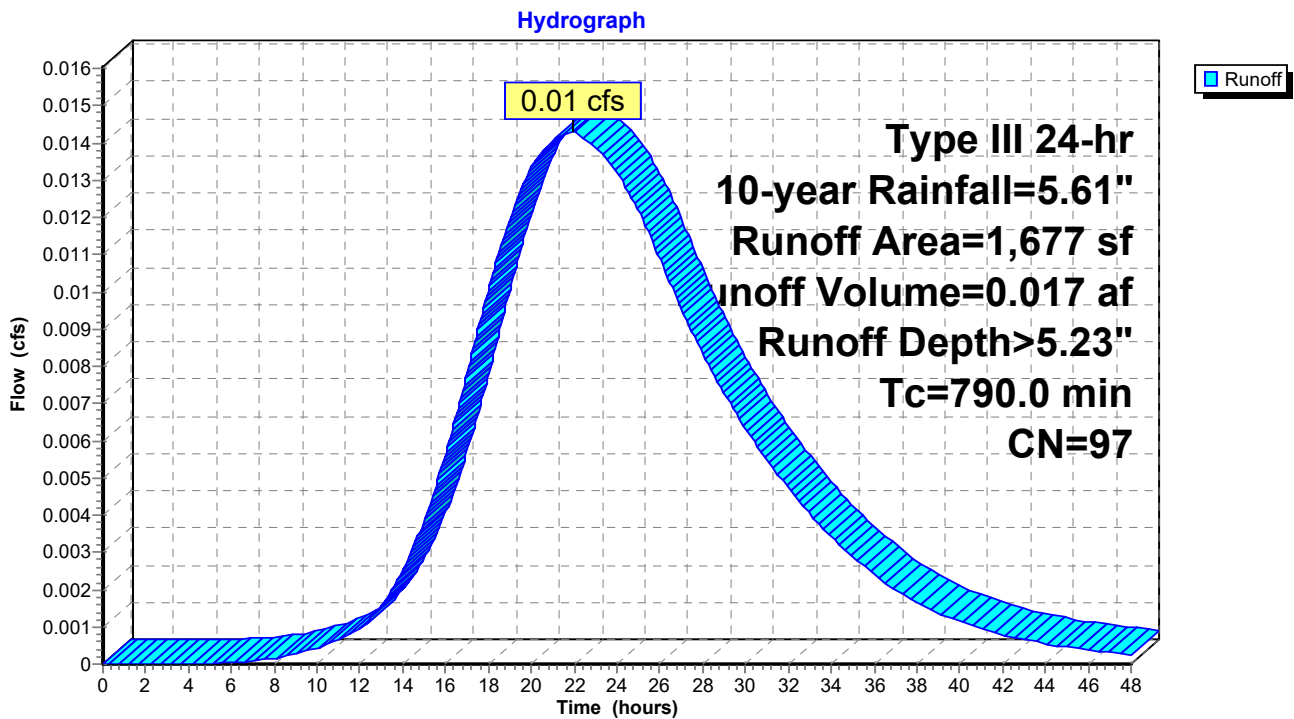
Runoff = 0.01 cfs @ 21.94 hrs, Volume= 0.017 af, Depth> 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
597	98	Paved roads w/curbs & sewers, HSG B
1,016	98	Roofs, HSG B
64	61	>75% Grass cover, Good, HSG B
1,677	97	Weighted Average
64		3.82% Pervious Area
1,613		96.18% Impervious Area

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

**Subcatchment 80S: To S Porous**





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Subcatchment 81S: To N Porous**

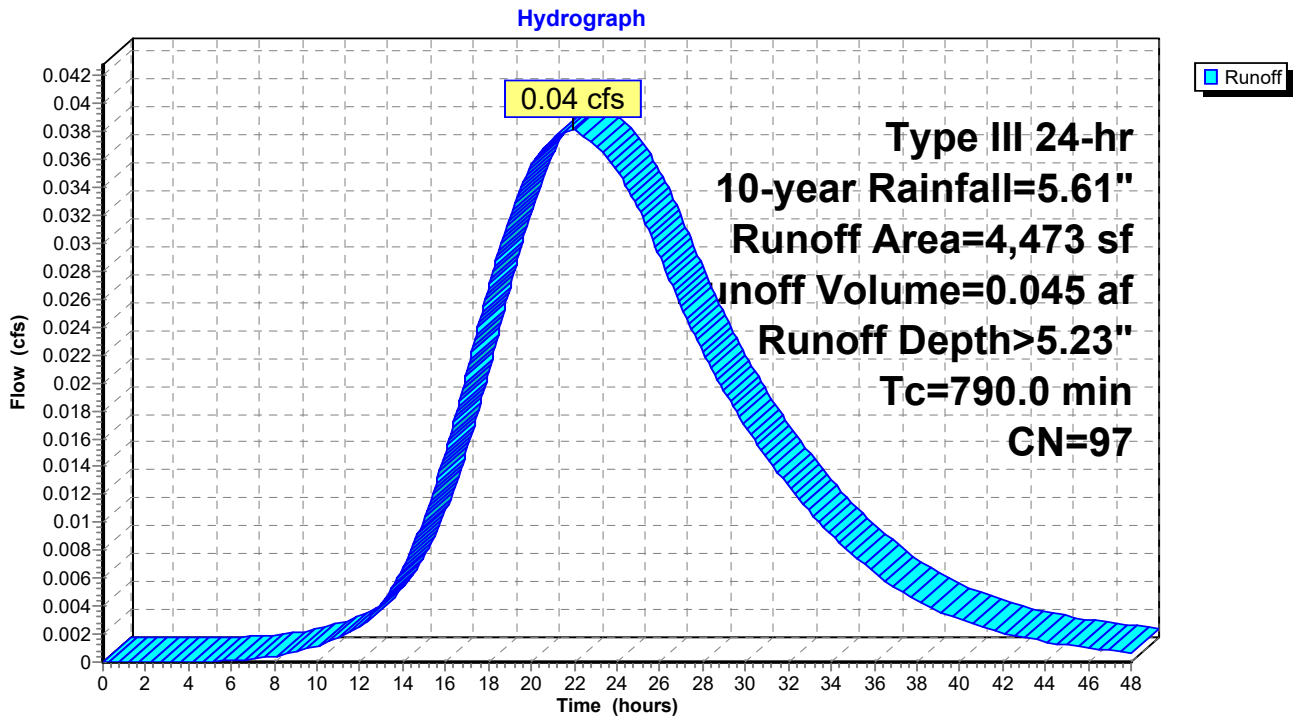
Runoff = 0.04 cfs @ 21.94 hrs, Volume= 0.045 af, Depth> 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.61"

Area (sf)	CN	Description
2,588	98	Paved roads w/curbs & sewers, HSG B
1,821	98	Roofs, HSG B
64	61	>75% Grass cover, Good, HSG B
4,473	97	Weighted Average
64		1.43% Pervious Area
4,409		98.57% Impervious Area

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

**Subcatchment 81S: To N Porous**



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 2.3R: Wetland Flow Path**

[62] Hint: Exceeded Reach 38R OUTLET depth by 0.03' @ 28.06 hrs

Inflow Area =	4.050 ac, 51.81% Impervious, Inflow Depth = 3.59"	for 10-year event
Inflow =	4.23 cfs @ 12.48 hrs, Volume=	1.211 af
Outflow =	4.23 cfs @ 12.51 hrs, Volume=	1.211 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.50 fps, Min. Travel Time= 1.3 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 3.2 min

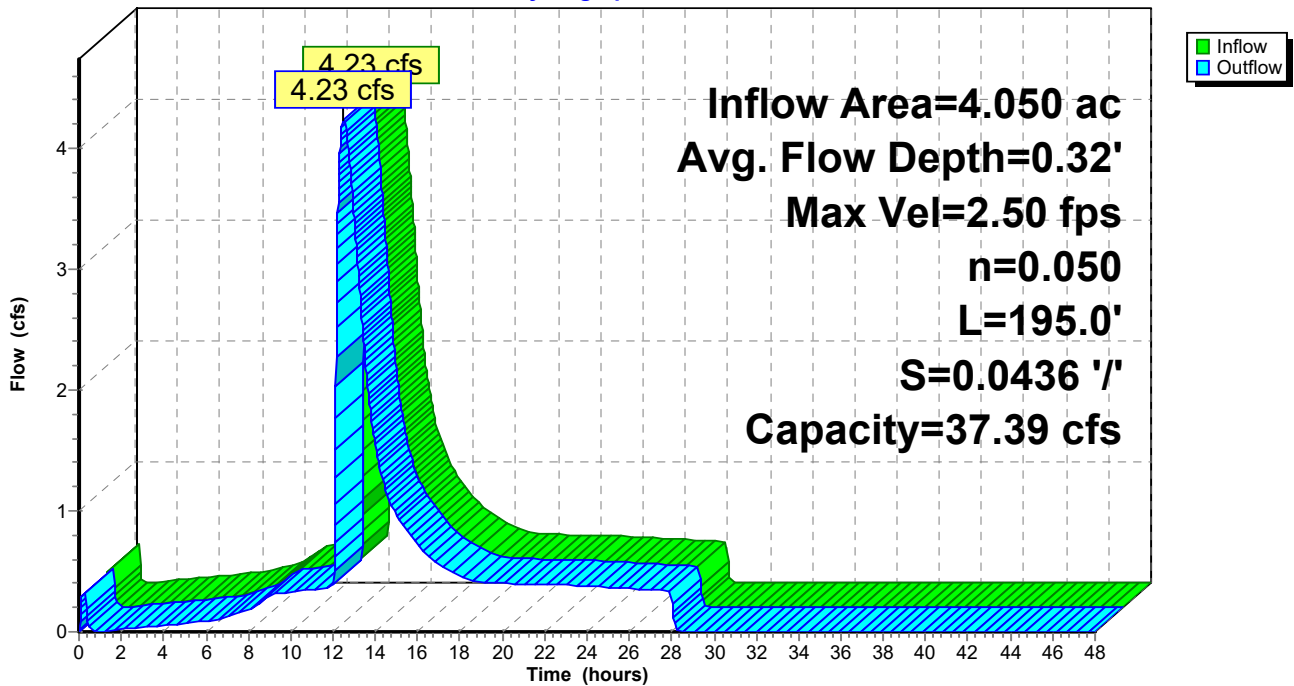
Peak Storage= 330 cf @ 12.49 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 37.39 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
 Side Slope Z-value= 4.0 '/' Top Width= 12.00'  
 Length= 195.0' Slope= 0.0436 '/'  
 Inlet Invert= 58.49', Outlet Invert= 49.98'



**Reach 2.3R: Wetland Flow Path**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 3.2R: Swale**

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af  
Outflow = 2.16 cfs @ 12.11 hrs, Volume= 0.159 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.83 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.05 fps, Avg. Travel Time= 2.8 min

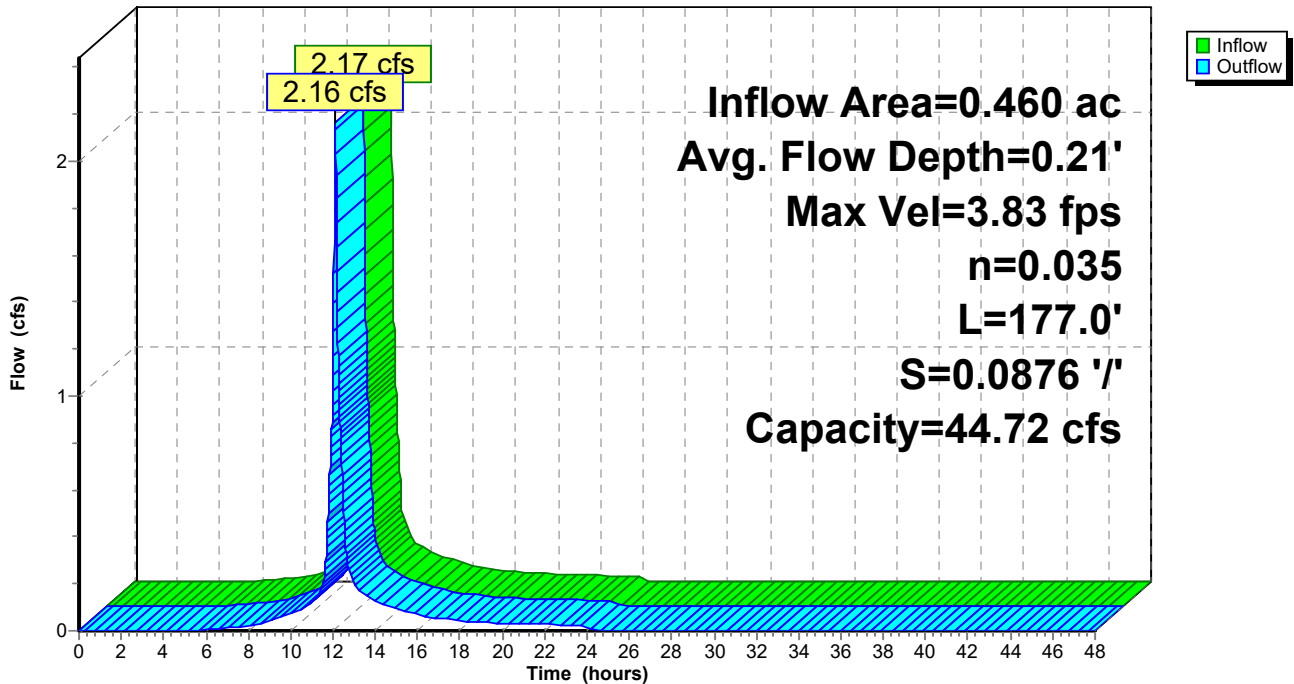
Peak Storage= 100 cf @ 12.10 hrs  
Average Depth at Peak Storage= 0.21'  
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 44.72 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
Side Slope Z-value= 3.0 '/' Top Width= 8.00'  
Length= 177.0' Slope= 0.0876 '/'  
Inlet Invert= 85.50', Outlet Invert= 70.00'



**Reach 3.2R: Swale**

Hydrograph



**5015-Post**

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Type III 24-hr 10-year Rainfall=5.61"

Printed 11/7/2024

**Summary for Reach 3.3R: Wetland Flow Path**

[62] Hint: Exceeded Reach 3.2R OUTLET depth by 0.01' @ 12.21 hrs

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
Inflow = 2.16 cfs @ 12.11 hrs, Volume= 0.159 af  
Outflow = 2.06 cfs @ 12.17 hrs, Volume= 0.159 af, Atten= 5%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.85 fps, Min. Travel Time= 2.3 min  
Avg. Velocity = 0.53 fps, Avg. Travel Time= 8.0 min

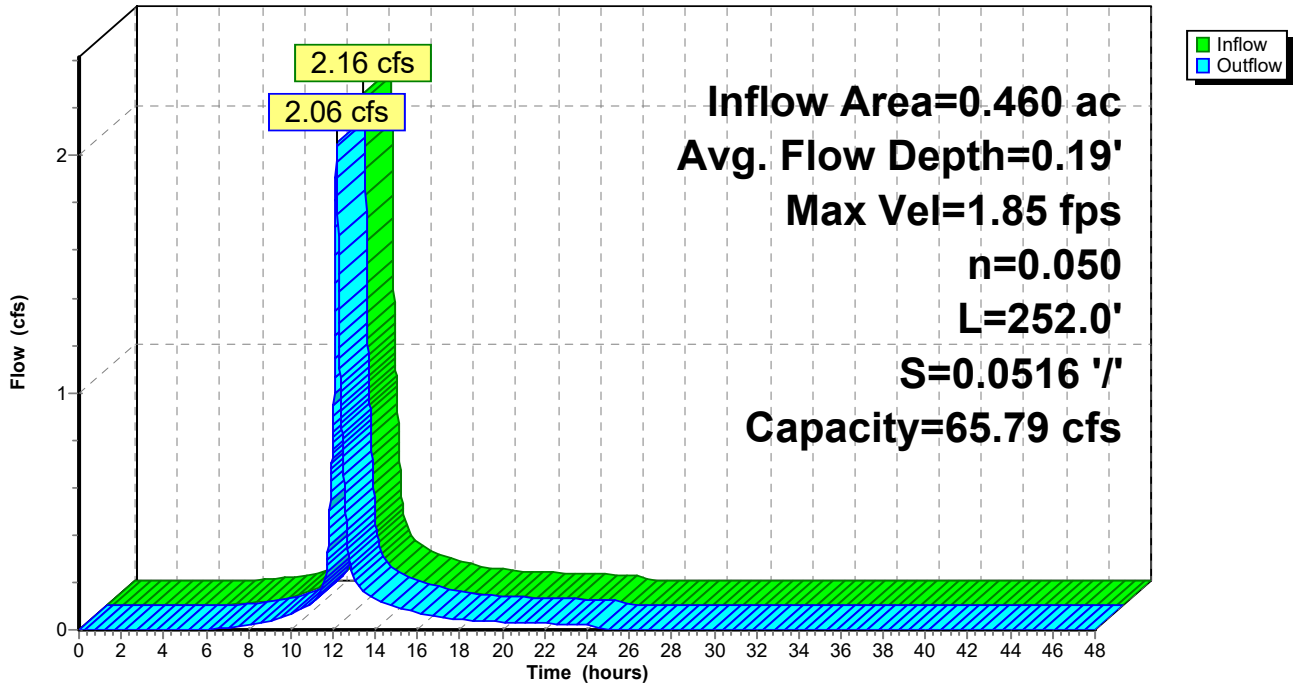
Peak Storage= 281 cf @ 12.14 hrs  
Average Depth at Peak Storage= 0.19'  
Bank-Full Depth= 1.00' Flow Area= 14.0 sf, Capacity= 65.79 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
Side Slope Z-value= 10.0 '/' Top Width= 24.00'  
Length= 252.0' Slope= 0.0516 '/'  
Inlet Invert= 70.00', Outlet Invert= 57.00'



**Reach 3.3R: Wetland Flow Path**

Hydrograph





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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 3.4R: Stream Channel**

[62] Hint: Exceeded Reach 3.3R OUTLET depth by 0.14' @ 12.21 hrs

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
Inflow = 2.06 cfs @ 12.17 hrs, Volume= 0.159 af  
Outflow = 2.03 cfs @ 12.21 hrs, Volume= 0.159 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.32 fps, Min. Travel Time= 1.2 min  
Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.7 min

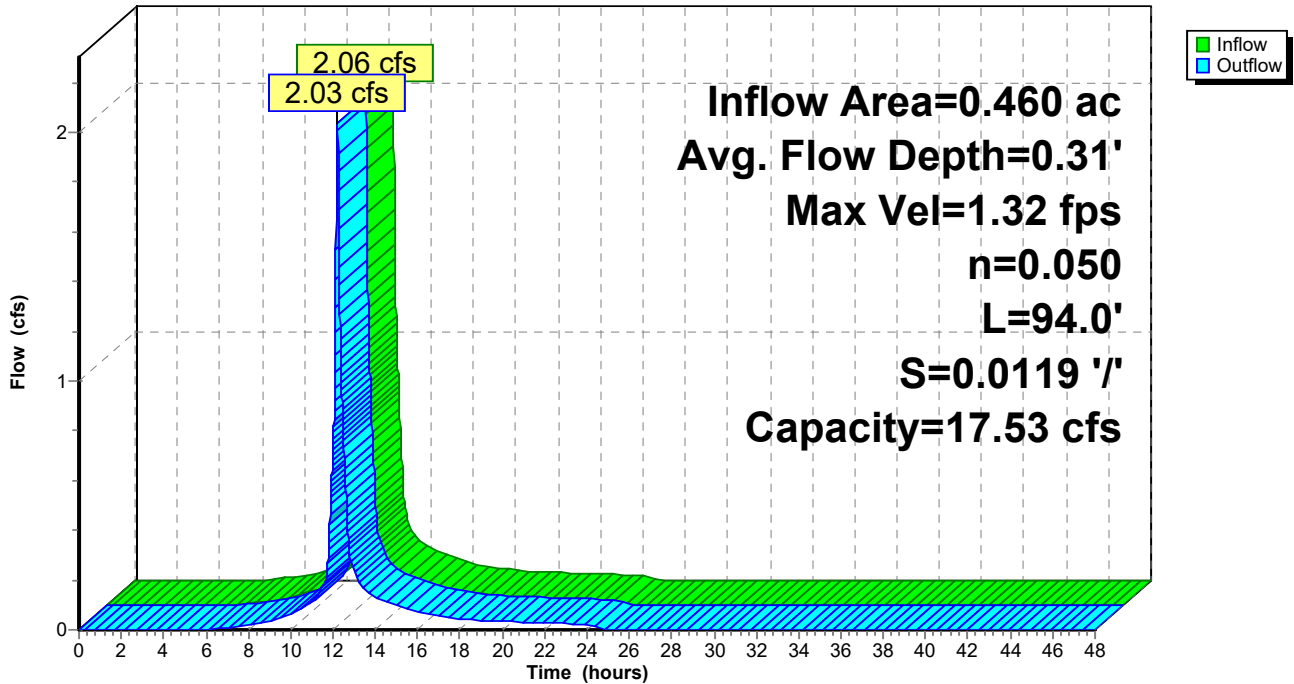
Peak Storage= 145 cf @ 12.19 hrs  
Average Depth at Peak Storage= 0.31'  
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 17.53 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
Side Slope Z-value= 3.0 '/' Top Width= 10.00'  
Length= 94.0' Slope= 0.0119 '/'  
Inlet Invert= 57.00', Outlet Invert= 55.88'



**Reach 3.4R: Stream Channel**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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## Summary for Reach 3.5R: Stream Channel

Inflow Area = 10.138 ac, 19.96% Impervious, Inflow Depth = 2.90" for 10-year event  
Inflow = 18.80 cfs @ 12.38 hrs, Volume= 2.450 af  
Outflow = 18.80 cfs @ 12.38 hrs, Volume= 2.450 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.62 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 0.80 fps, Avg. Travel Time= 1.2 min

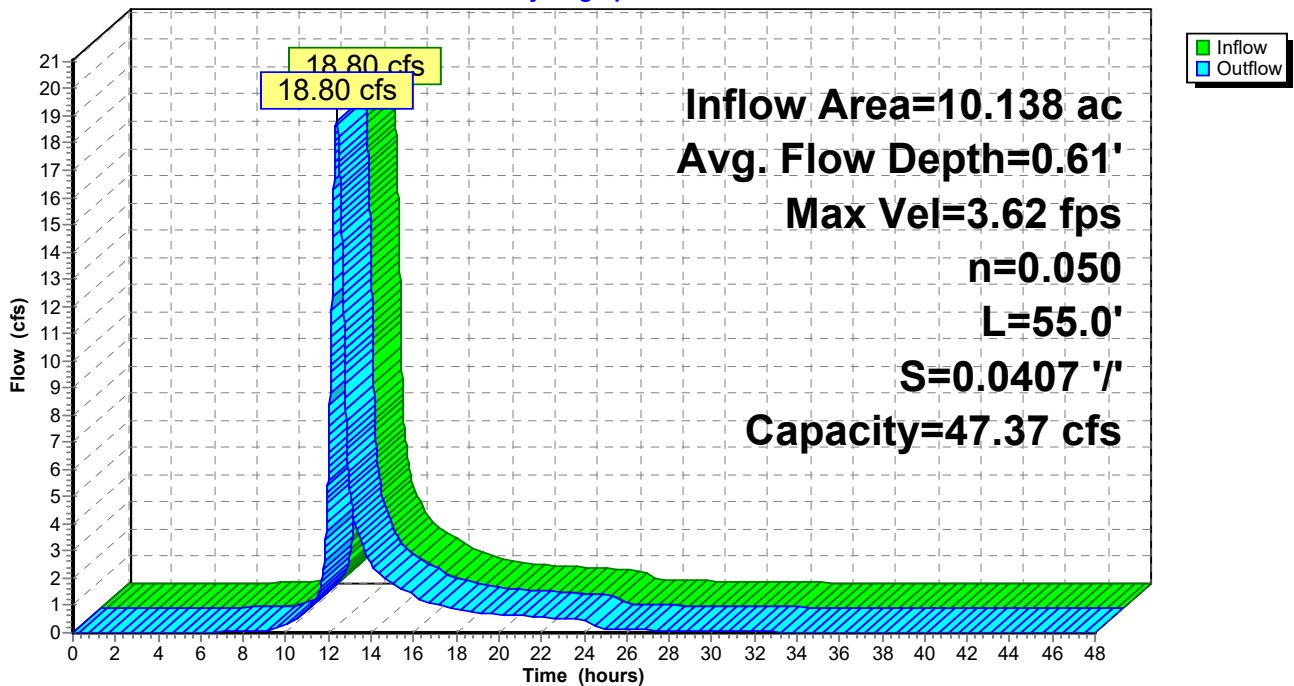
Peak Storage= 285 cf @ 12.38 hrs  
Average Depth at Peak Storage= 0.61'  
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 47.37 cfs

6.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
Side Slope Z-value= 4.0 '/' Top Width= 14.00'  
Length= 55.0' Slope= 0.0407 '/'  
Inlet Invert= 54.57', Outlet Invert= 52.33'



## Reach 3.5R: Stream Channel

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 38R: Outfall**

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

[79] Warning: Submerged Pond 38P Primary device # 1 INLET by 0.19'

Inflow Area = 4.050 ac, 51.81% Impervious, Inflow Depth = 3.59" for 10-year event  
Inflow = 4.23 cfs @ 12.47 hrs, Volume= 1.211 af  
Outflow = 4.23 cfs @ 12.48 hrs, Volume= 1.211 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.35 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 0.57 fps, Avg. Travel Time= 0.5 min

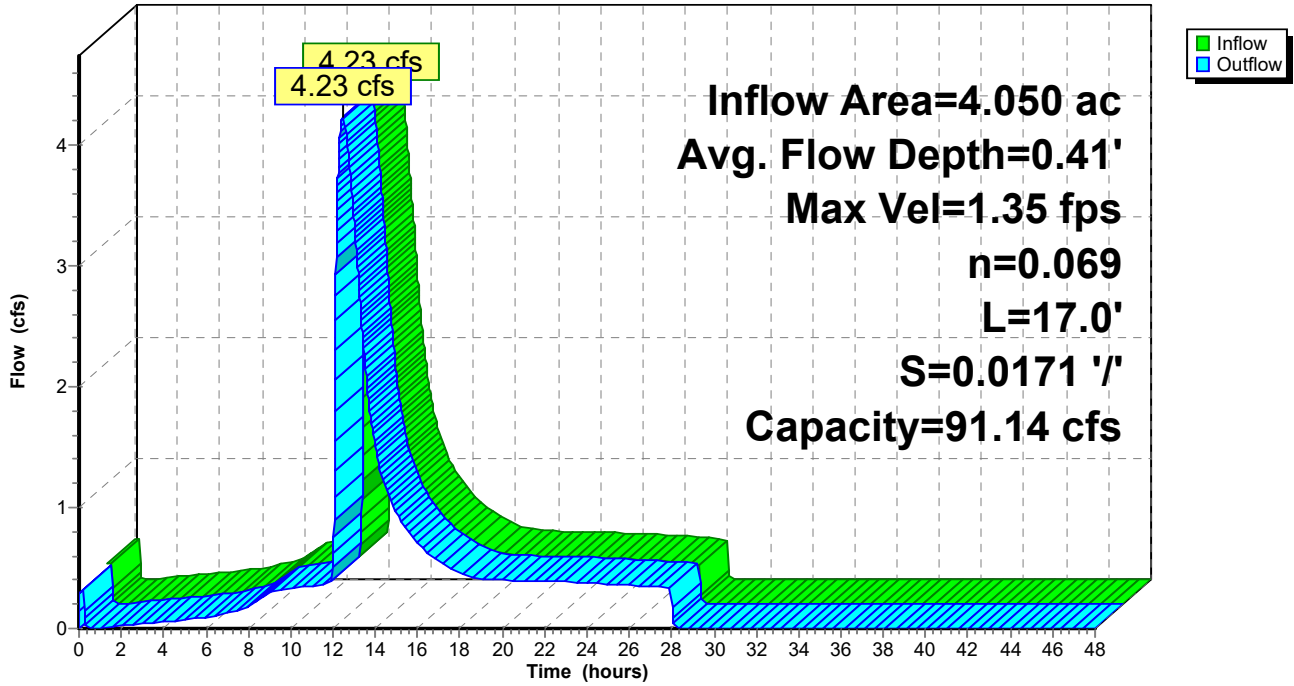
Peak Storage= 53 cf @ 12.47 hrs  
Average Depth at Peak Storage= 0.41'  
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 91.14 cfs

6.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch  
Side Slope Z-value= 4.0 '/' Top Width= 22.00'  
Length= 17.0' Slope= 0.0171 '/'  
Inlet Invert= 58.78', Outlet Invert= 58.49'



### Reach 38R: Outfall

Hydrograph





**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Reach 49R: Woodland Flow Path**

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

[81] Warning: Exceeded Pond 49P by 0.91' @ 0.35 hrs

Inflow Area = 1.146 ac, 66.98% Impervious, Inflow Depth = 4.05" for 10-year event  
Inflow = 2.13 cfs @ 12.23 hrs, Volume= 0.387 af  
Outflow = 2.13 cfs @ 12.25 hrs, Volume= 0.387 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.44 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 0.79 fps, Avg. Travel Time= 2.0 min

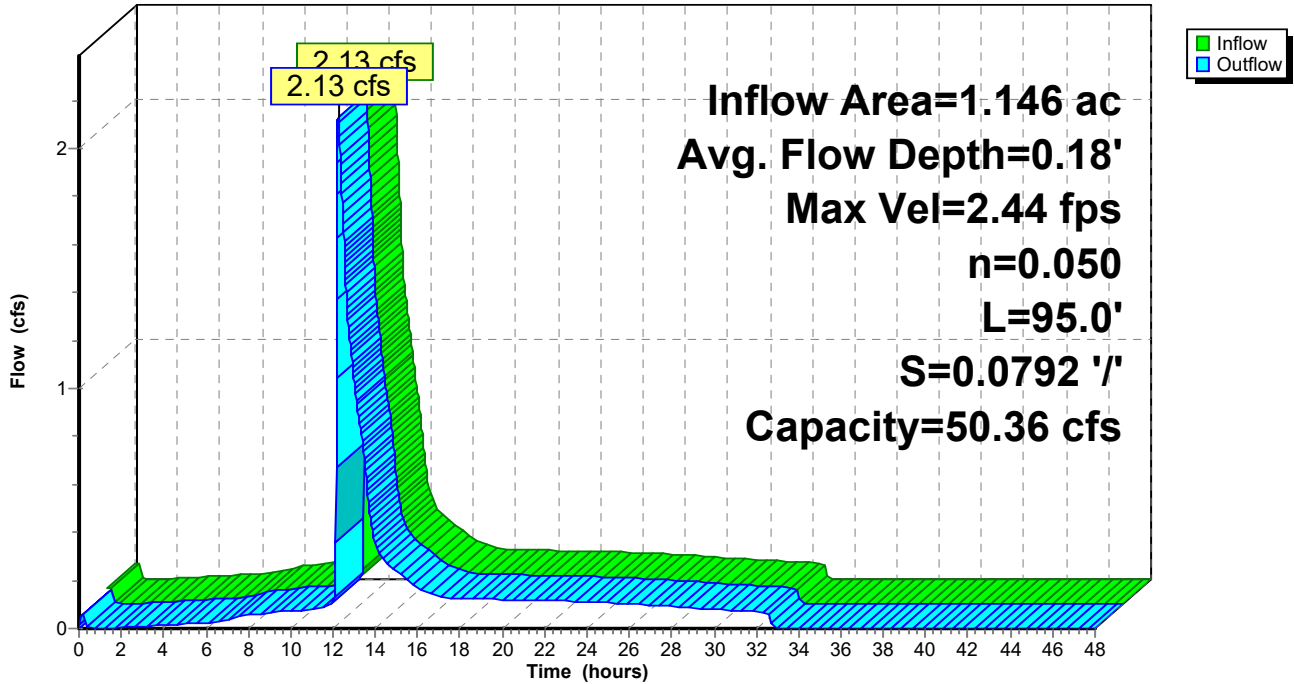
Peak Storage= 83 cf @ 12.24 hrs  
Average Depth at Peak Storage= 0.18'  
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 50.36 cfs

4.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders  
Side Slope Z-value= 4.0 '/' Top Width= 12.00'  
Length= 95.0' Slope= 0.0792 '/'  
Inlet Invert= 63.40', Outlet Invert= 55.88'



### Reach 49R: Woodland Flow Path

Hydrograph



**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 1P: DOT CB**

Inflow Area = 1.027 ac, 26.97% Impervious, Inflow Depth = 2.41" for 10-year event  
 Inflow = 2.00 cfs @ 12.26 hrs, Volume= 0.206 af  
 Outflow = 2.00 cfs @ 12.27 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.3 min  
 Primary = 2.00 cfs @ 12.27 hrs, Volume= 0.206 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 72.84' @ 12.27 hrs Surf.Area= 13 sf Storage= 26 cf  
 Flood Elev= 74.90' Surf.Area= 3,366 sf Storage= 589 cf

Plug-Flow detention time= 0.3 min calculated for 0.206 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 855.6 - 855.4 )

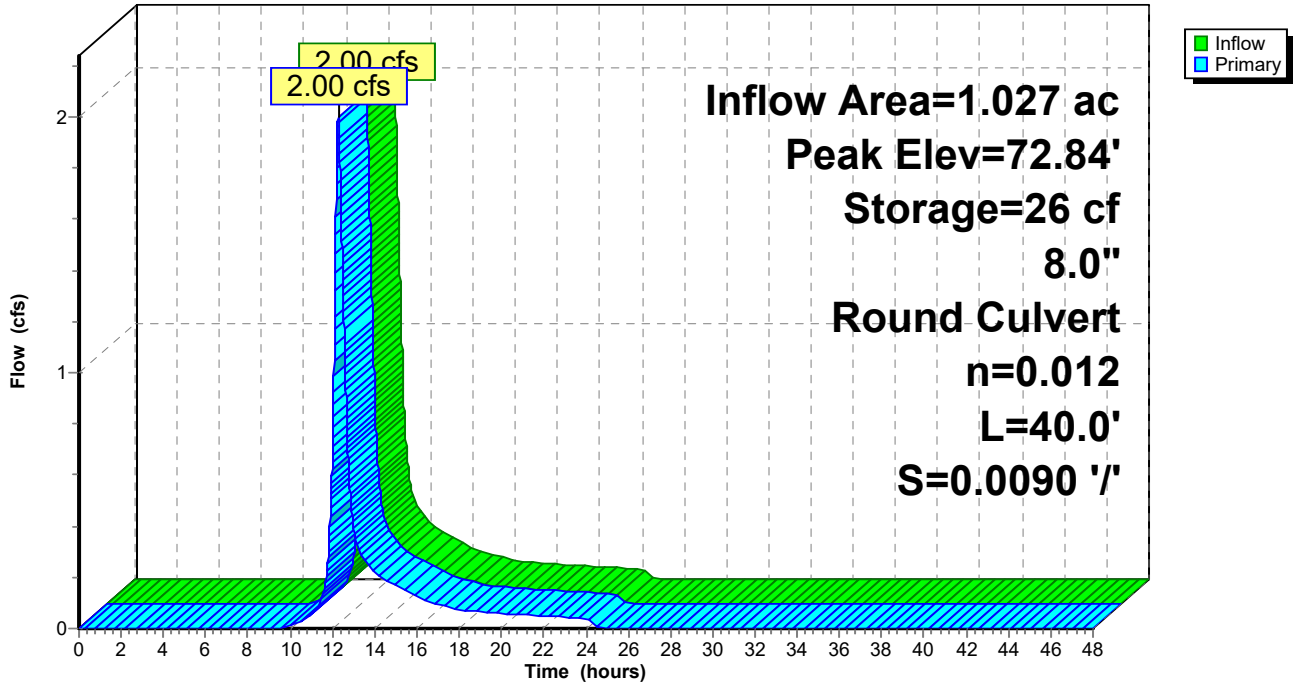
Volume	Invert	Avail.Storage	Storage Description
#1	70.83'	5,742 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.83	13	0	0
74.58	13	49	49
75.00	4,414	930	978
75.60	11,463	4,763	5,742

Device	Routing	Invert	Outlet Devices
#1	Primary	70.83'	<b>8.0" Round Culvert</b> L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.83' / 70.47' S= 0.0090 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

**Primary OutFlow** Max=2.00 cfs @ 12.27 hrs HW=72.84' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 2.00 cfs @ 5.73 fps)

**Pond 1P: DOT CB**

**Hydrograph**





**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.0P: CB 36**

Inflow Area = 0.223 ac, 43.66% Impervious, Inflow Depth = 3.83" for 10-year event  
 Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af  
 Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.1 min  
 Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 89.77' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 0.071 af (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 806.5 - 806.0 )

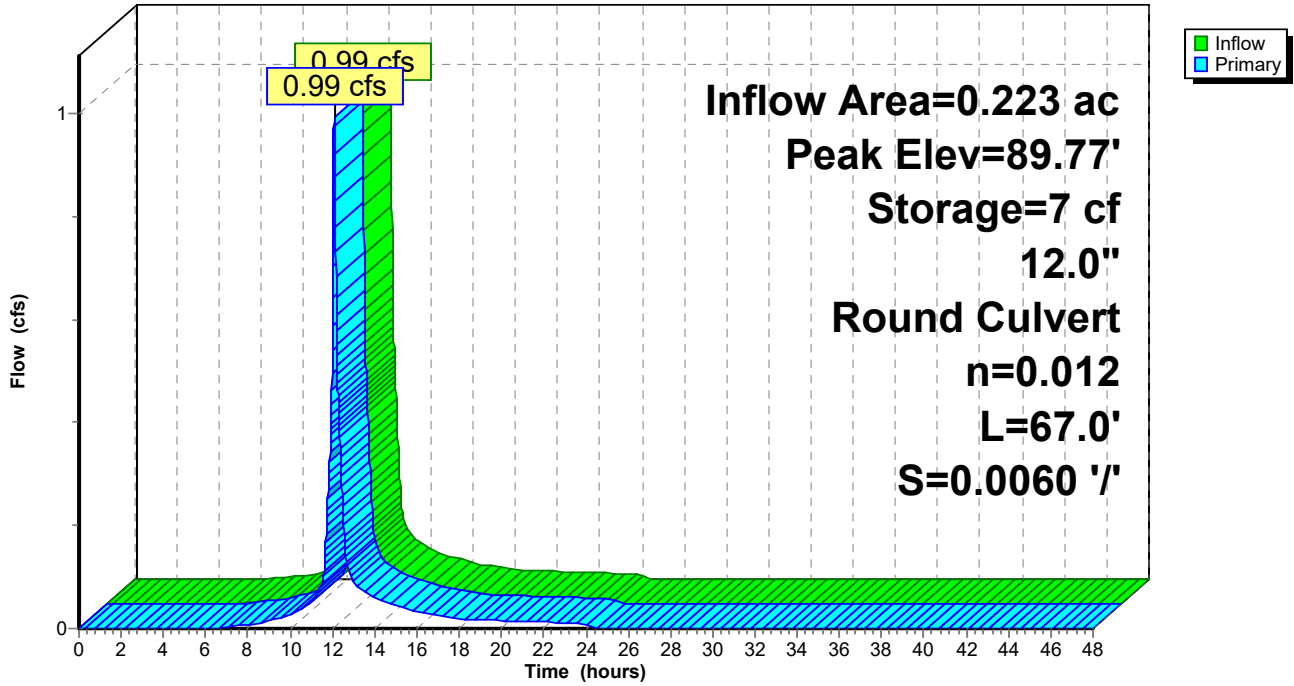
Volume	Invert	Avail.Storage	Storage Description		
#1	89.20'	43 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
89.20	13	0	0	13	
92.50	13	43	43	55	

Device	Routing	Invert	Outlet Devices
#1	Primary	89.20'	<b>12.0" Round Culvert</b> L= 67.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.80' S= 0.0060 ' S= 0.0060 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.99 cfs @ 12.09 hrs HW=89.77' TW=87.33' (Fixed TW Elev= 87.33')  
 ↑1=Culvert (Barrel Controls 0.99 cfs @ 3.12 fps)

**Pond 3.0P: CB 36**

Hydrograph



**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.1P: CB 37**

[81] Warning: Exceeded Pond 3.0P by 0.18' @ 25.28 hrs

Inflow Area = 0.324 ac, 50.15% Impervious, Inflow Depth = 4.00" for 10-year event  
 Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.108 af  
 Outflow = 1.48 cfs @ 12.09 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.1 min  
 Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.108 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 89.70' @ 12.09 hrs Surf.Area= 13 sf Storage= 13 cf

Plug-Flow detention time= 2.1 min calculated for 0.108 af (100% of inflow)  
 Center-of-Mass det. time= 0.9 min ( 801.9 - 801.0 )

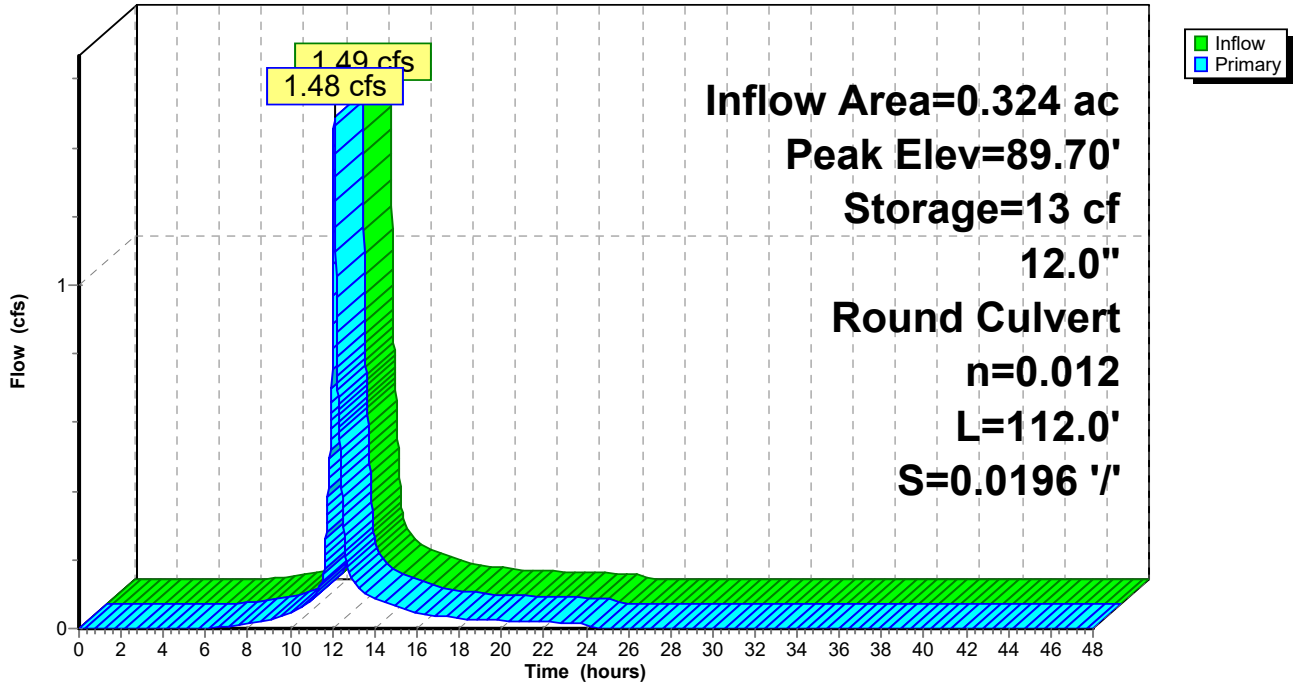
Volume	Invert	Avail.Storage	Storage Description		
#1	88.70'	66 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
88.70	13	0	0	13	
93.80	13	66	66	78	

Device	Routing	Invert	Outlet Devices
#1	Primary	88.70'	<b>12.0" Round Culvert</b> L= 112.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.70' / 86.50' S= 0.0196 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.48 cfs @ 12.09 hrs HW=89.70' TW=89.38' (Fixed TW Elev= 89.38')  
 ↑1=Culvert (Outlet Controls 1.48 cfs @ 2.34 fps)

**Pond 3.1P: CB 37**

Hydrograph





**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.2P: CB 40**

Inflow Area = 0.460 ac, 55.93% Impervious, Inflow Depth = 4.16" for 10-year event  
 Inflow = 2.18 cfs @ 12.09 hrs, Volume= 0.159 af  
 Outflow = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.1 min  
 Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.159 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 87.35' @ 12.09 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.3 min calculated for 0.159 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 796.2 - 795.8 )

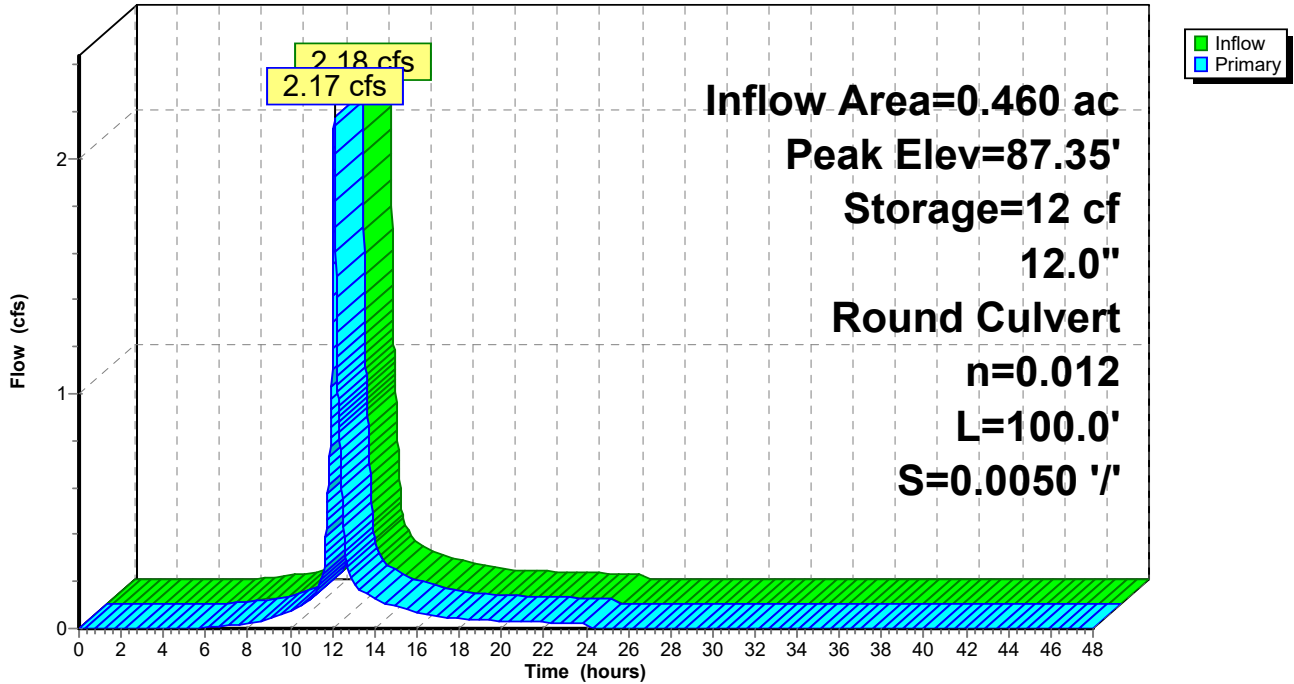
Volume	Invert	Avail.Storage	Storage Description		
#1	86.40'	48 cf	<b>Custom Stage Data (Conic)</b> Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
86.40	13	0	0	13	
90.10	13	48	48	60	

Device	Routing	Invert	Outlet Devices
#1	Primary	86.40'	<b>12.0" Round Culvert</b> L= 100.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.40' / 85.90' S= 0.0050 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.17 cfs @ 12.09 hrs HW=87.35' TW=86.10' (Fixed TW Elev= 86.10')  
 ↑**1=Culvert** (Barrel Controls 2.17 cfs @ 3.62 fps)

**Pond 3.2P: CB 40**

Hydrograph



**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 3.5P: 2x15" Culverts**

[63] Warning: Exceeded Reach 3.4R INLET depth by 0.70' @ 12.39 hrs

[62] Hint: Exceeded Reach 49R OUTLET depth by 1.86' @ 12.38 hrs

Inflow Area = 10.138 ac, 19.96% Impervious, Inflow Depth = 2.90" for 10-year event  
 Inflow = 22.46 cfs @ 12.25 hrs, Volume= 2.450 af  
 Outflow = 18.80 cfs @ 12.38 hrs, Volume= 2.450 af, Atten= 16%, Lag= 7.8 min  
 Primary = 18.80 cfs @ 12.38 hrs, Volume= 2.450 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 57.91' @ 12.38 hrs Surf.Area= 6,415 sf Storage= 6,526 cf

Plug-Flow detention time= 7.4 min calculated for 2.450 af (100% of inflow)  
 Center-of-Mass det. time= 7.3 min ( 876.5 - 869.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	55.88'	34,780 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.88	200	0	0
56.00	861	64	64
57.00	3,116	1,989	2,052
58.00	6,756	4,936	6,988
59.00	13,601	10,179	17,167
60.00	21,625	17,613	34,780

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	<b>18.0" Round Culvert</b> L= 76.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.88' / 54.57' S= 0.0172 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	55.99'	<b>18.0" Round Culvert</b> L= 76.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.99' / 54.58' S= 0.0186 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

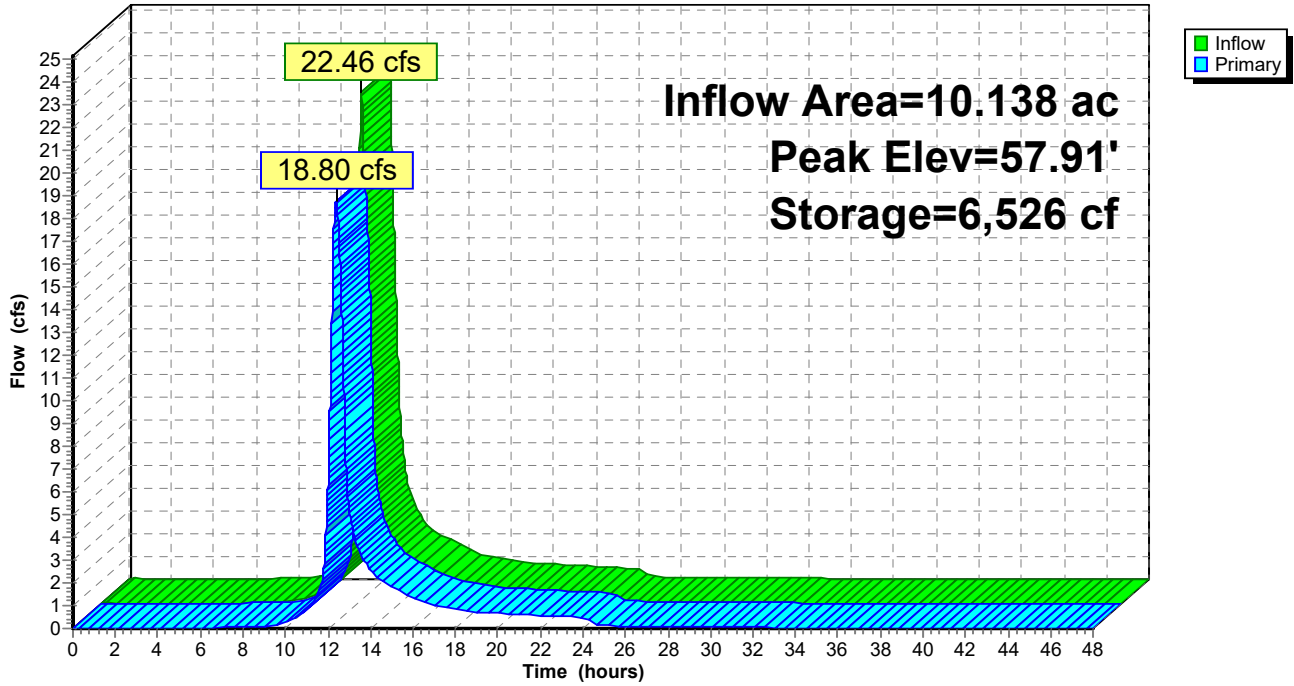
**Primary OutFlow** Max=18.80 cfs @ 12.38 hrs HW=57.91' TW=55.60' (Fixed TW Elev= 55.60')

1=Culvert (Inlet Controls 9.61 cfs @ 5.44 fps)

2=Culvert (Inlet Controls 9.19 cfs @ 5.20 fps)

Pond 3.5P: 2x15" Culverts

Hydrograph





**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 20P: 12" Culvert**

Inflow Area = 0.722 ac, 0.92% Impervious, Inflow Depth = 1.75" for 10-year event  
 Inflow = 1.12 cfs @ 12.18 hrs, Volume= 0.105 af  
 Outflow = 1.12 cfs @ 12.19 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.3 min  
 Primary = 1.12 cfs @ 12.19 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 75.05' @ 12.19 hrs Surf.Area= 65 sf Storage= 14 cf  
 Flood Elev= 77.00' Surf.Area= 28,038 sf Storage= 14,645 cf

Plug-Flow detention time= 0.3 min calculated for 0.105 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 870.6 - 870.3 )

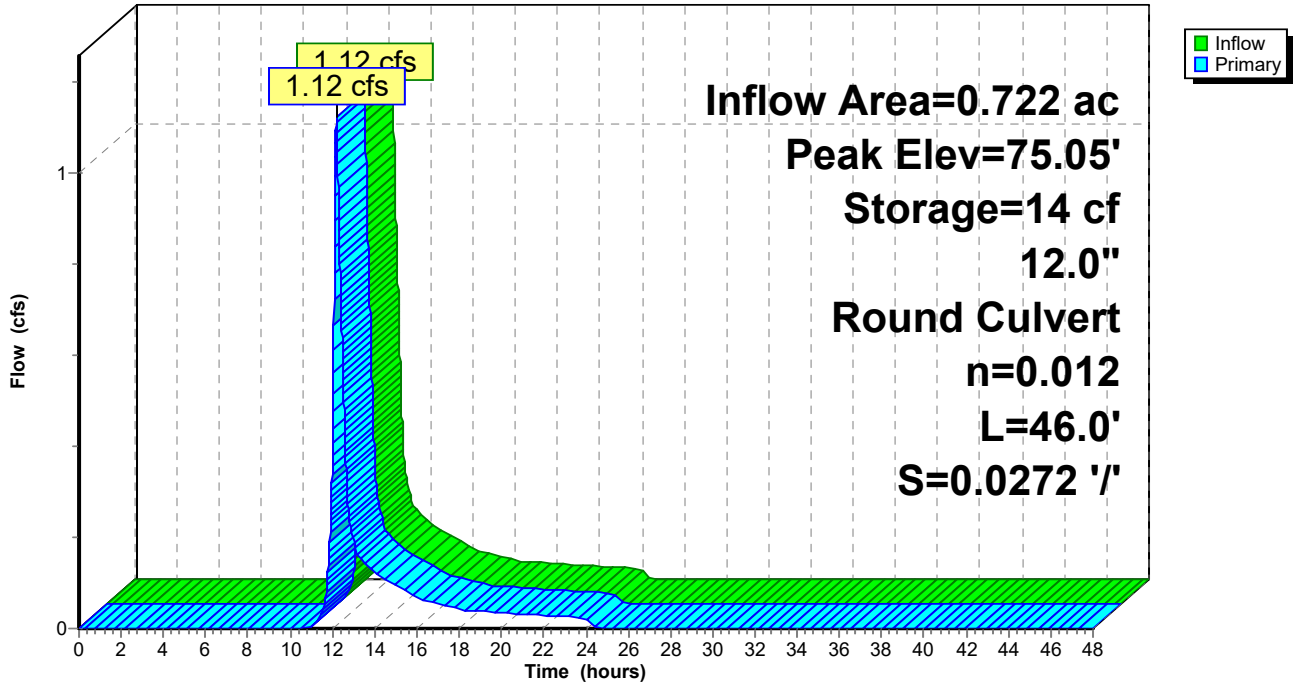
Volume	Invert	Avail.Storage	Storage Description
#1	74.50'	14,645 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.50	10	0	0
75.00	36	12	12
76.00	596	316	328
77.00	28,038	14,317	14,645

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	<b>12.0" Round Culvert</b> L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.50' / 73.25' S= 0.0272 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.12 cfs @ 12.19 hrs HW=75.05' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 1.12 cfs @ 2.53 fps)

Pond 20P: 12" Culvert

Hydrograph



### Summary for Pond 21P: CB #7

[79] Warning: Submerged Pond 20P Primary device # 1 OUTLET by 0.46'

Inflow Area = 0.737 ac, 1.06% Impervious, Inflow Depth = 1.78" for 10-year event  
 Inflow = 1.16 cfs @ 12.18 hrs, Volume= 0.109 af  
 Outflow = 1.16 cfs @ 12.18 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.16 cfs @ 12.18 hrs, Volume= 0.109 af

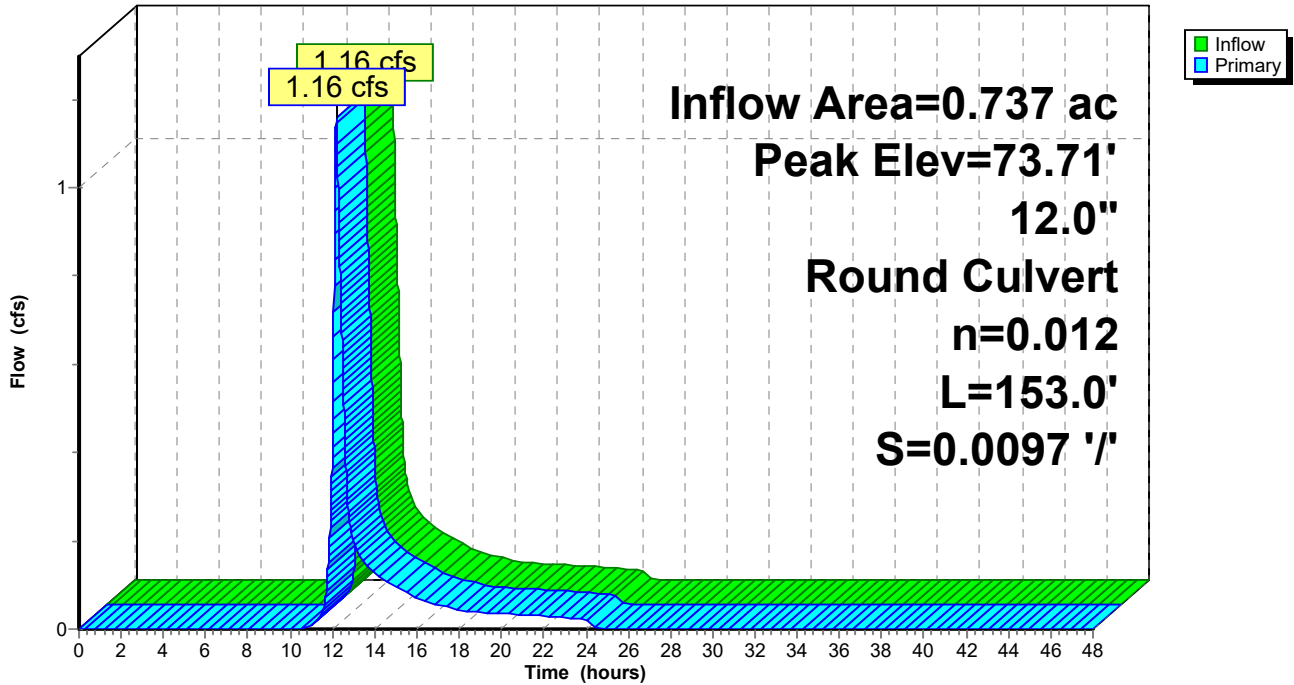
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 73.71' @ 12.18 hrs  
 Flood Elev= 77.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.15'	<b>12.0" Round Culvert</b> L= 153.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.15' / 71.66' S= 0.0097 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.16 cfs @ 12.18 hrs HW=73.71' (Free Discharge)  
 ↳=Culvert (Inlet Controls 1.16 cfs @ 2.55 fps)

### Pond 21P: CB #7

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 22P: CB #6-1**

Inflow Area = 0.339 ac, 55.11% Impervious, Inflow Depth = 3.53" for 10-year event  
Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af  
Outflow = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af

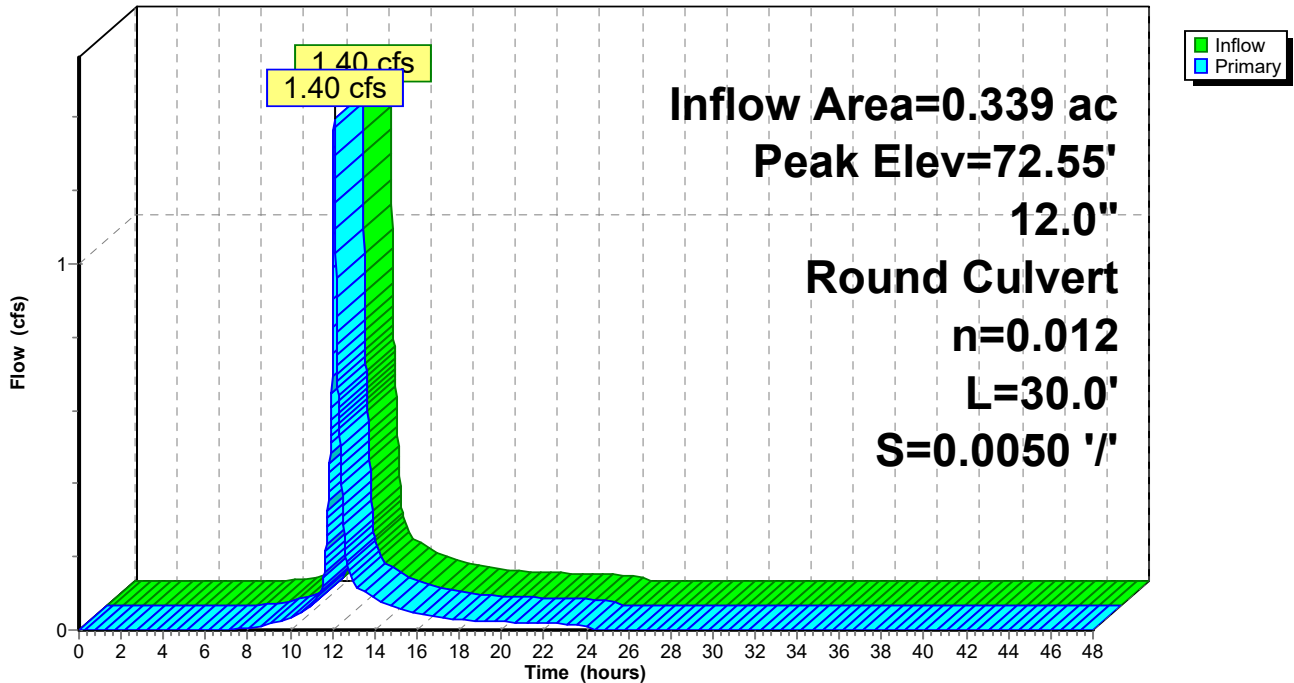
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 72.55' @ 12.09 hrs  
Flood Elev= 75.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.81'	<b>12.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.81' / 71.66' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.39 cfs @ 12.09 hrs HW=72.55' (Free Discharge)  
↑1=Culvert (Barrel Controls 1.39 cfs @ 3.11 fps)

**Pond 22P: CB #6-1**

Hydrograph





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**Summary for Pond 23P: DMH #6**

[79] Warning: Submerged Pond 21P Primary device # 1 OUTLET by 0.80'

[79] Warning: Submerged Pond 22P Primary device # 1 INLET by 0.65'

Inflow Area = 1.366 ac, 35.54% Impervious, Inflow Depth = 2.98" for 10-year event  
Inflow = 3.84 cfs @ 12.10 hrs, Volume= 0.339 af  
Outflow = 3.84 cfs @ 12.10 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min  
Primary = 3.84 cfs @ 12.10 hrs, Volume= 0.339 af

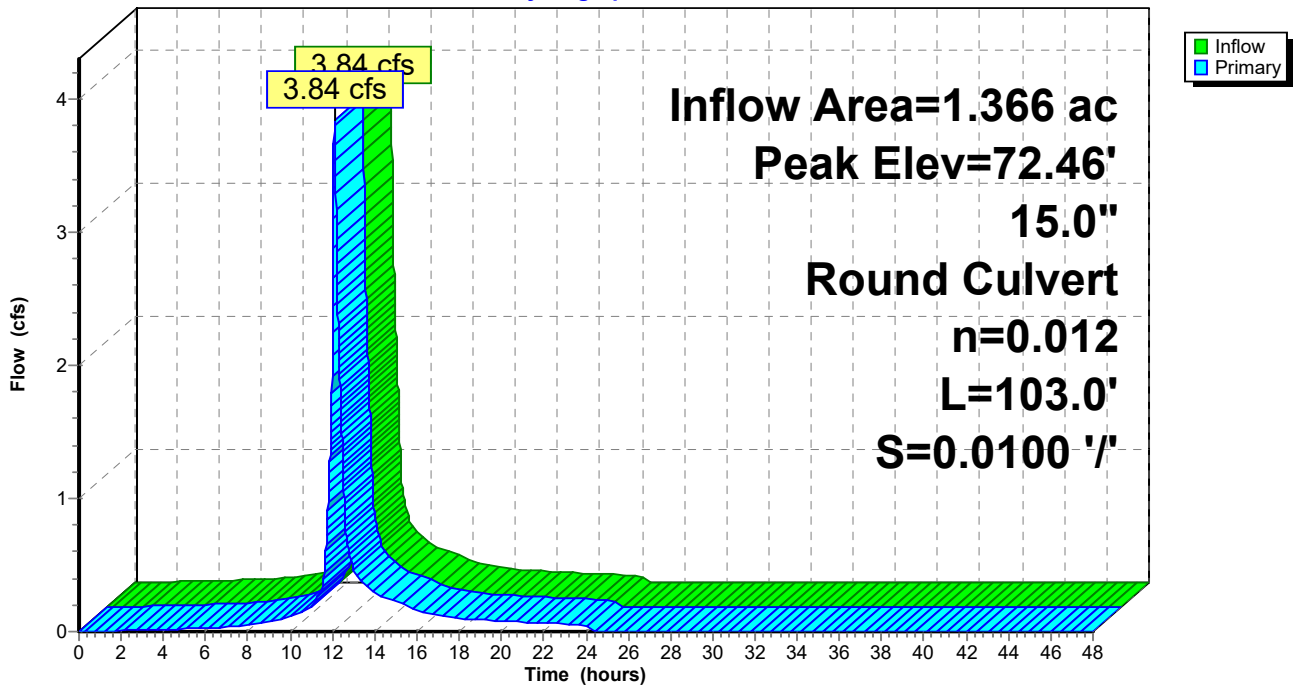
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 72.46' @ 12.10 hrs  
Flood Elev= 76.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.41'	<b>15.0" Round Culvert</b> L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.41' / 70.38' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=3.84 cfs @ 12.10 hrs HW=72.46' (Free Discharge)  
↑=Culvert (Inlet Controls 3.84 cfs @ 3.49 fps)

**Pond 23P: DMH #6**

Hydrograph



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**Summary for Pond 24P: CB #5-1**

Inflow Area = 0.228 ac, 47.21% Impervious, Inflow Depth = 3.24" for 10-year event  
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.061 af  
Outflow = 0.86 cfs @ 12.09 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.86 cfs @ 12.09 hrs, Volume= 0.061 af

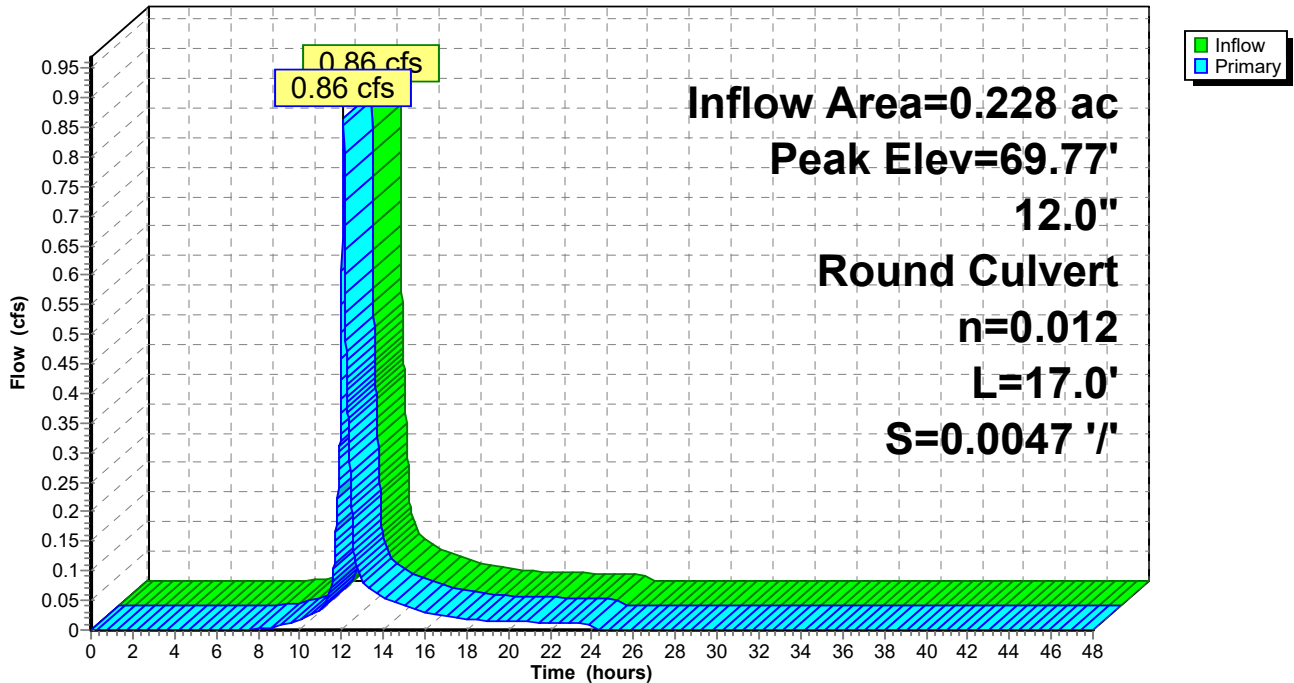
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 69.77' @ 12.09 hrs  
Flood Elev= 72.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.20'	<b>12.0" Round Culvert</b> L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.20' / 69.12' S= 0.0047 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.86 cfs @ 12.09 hrs HW=69.77' (Free Discharge)  
↑1=Culvert (Barrel Controls 0.86 cfs @ 2.67 fps)

**Pond 24P: CB #5-1**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 25P: CB #5-2**

Inflow Area = 0.128 ac, 51.29% Impervious, Inflow Depth = 3.43" for 10-year event  
Inflow = 0.51 cfs @ 12.09 hrs, Volume= 0.036 af  
Outflow = 0.51 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.51 cfs @ 12.09 hrs, Volume= 0.036 af

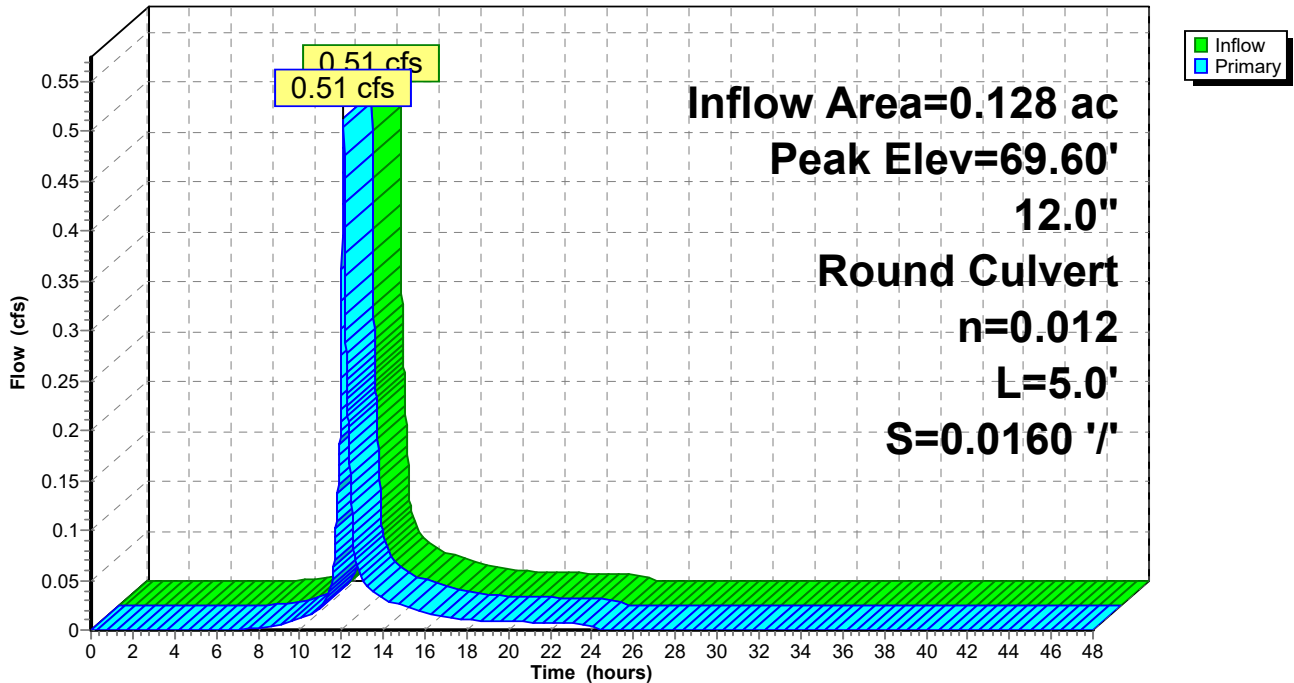
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 69.60' @ 12.09 hrs  
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.20' / 69.12' S= 0.0160 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.51 cfs @ 12.09 hrs HW=69.60' (Free Discharge)  
1=Culvert (Barrel Controls 0.51 cfs @ 2.59 fps)

**Pond 25P: CB #5-2**

Hydrograph



**Summary for Pond 26P: DMH #5**

[81] Warning: Exceeded Pond 24P by 1.72' @ 12.09 hrs  
 [81] Warning: Exceeded Pond 25P by 1.89' @ 12.09 hrs  
 [79] Warning: Submerged Pond 72P Primary device # 1 INLET by 1.11'

Inflow Area = 2.146 ac, 47.69% Impervious, Inflow Depth = 3.41" for 10-year event  
 Inflow = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af  
 Outflow = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af, Atten= 0%, Lag= 0.0 min  
 Primary = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af

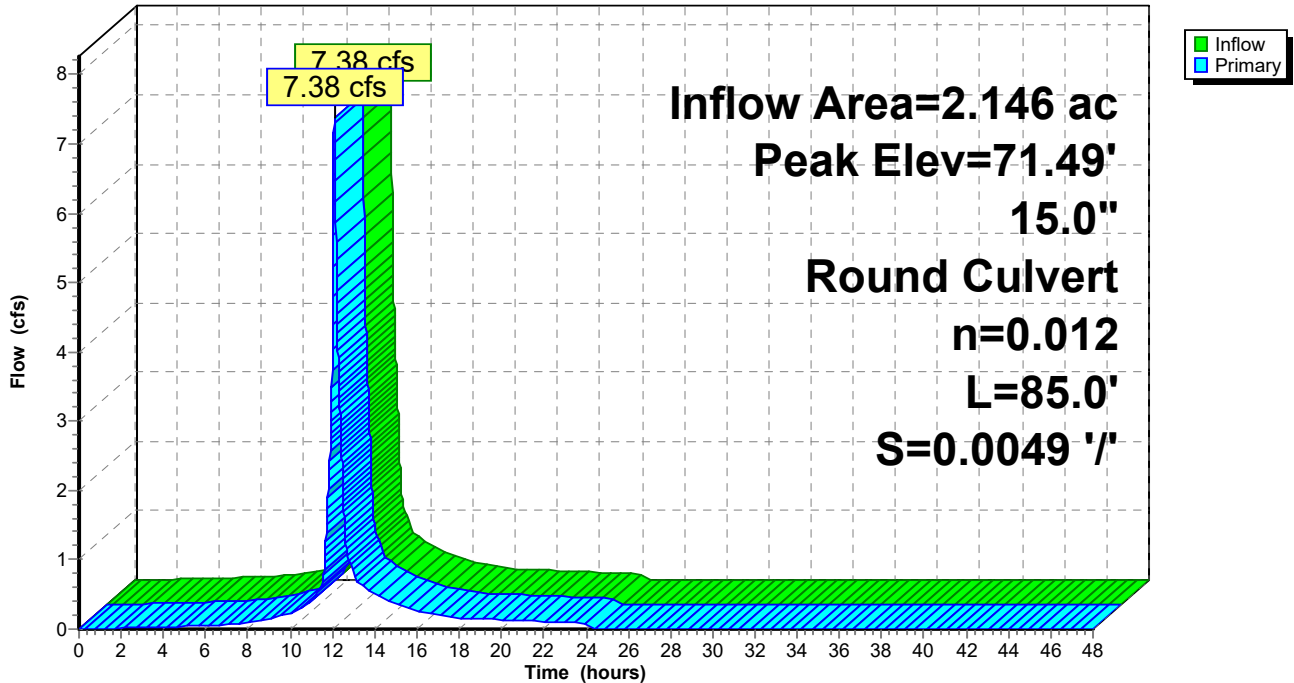
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 71.49' @ 12.09 hrs  
 Flood Elev= 72.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.87'	<b>15.0" Round Culvert</b> L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.87' / 68.45' S= 0.0049 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=7.37 cfs @ 12.09 hrs HW=71.49' (Free Discharge)  
 ↳=Culvert (Barrel Controls 7.37 cfs @ 6.01 fps)

**Pond 26P: DMH #5**

Hydrograph





**Summary for Pond 27P: DMH #4**

[79] Warning: Submerged Pond 26P Primary device # 1 INLET by 1.01'

Inflow Area = 2.146 ac, 47.69% Impervious, Inflow Depth = 3.41" for 10-year event  
 Inflow = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af  
 Outflow = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af, Atten= 0%, Lag= 0.0 min  
 Primary = 7.38 cfs @ 12.09 hrs, Volume= 0.610 af

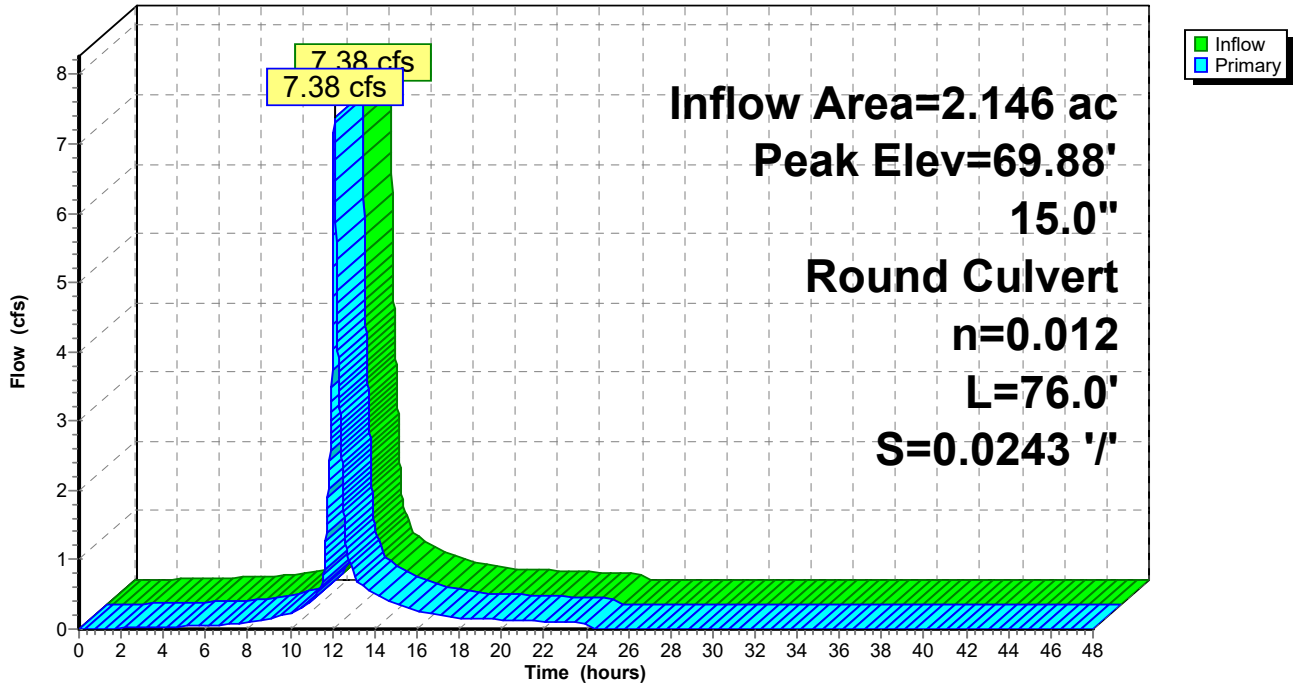
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 69.88' @ 12.09 hrs  
 Flood Elev= 71.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.70'	<b>15.0" Round Culvert</b> L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 67.70' / 65.85' S= 0.0243 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=7.37 cfs @ 12.09 hrs HW=69.88' (Free Discharge)  
 ↳ **1=Culvert** (Inlet Controls 7.37 cfs @ 6.01 fps)

**Pond 27P: DMH #4**

Hydrograph



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**Summary for Pond 28P: CB #3-1**

Inflow Area = 0.406 ac, 76.49% Impervious, Inflow Depth = 4.47" for 10-year event  
Inflow = 2.04 cfs @ 12.08 hrs, Volume= 0.151 af  
Outflow = 2.04 cfs @ 12.08 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min  
Primary = 2.04 cfs @ 12.08 hrs, Volume= 0.151 af

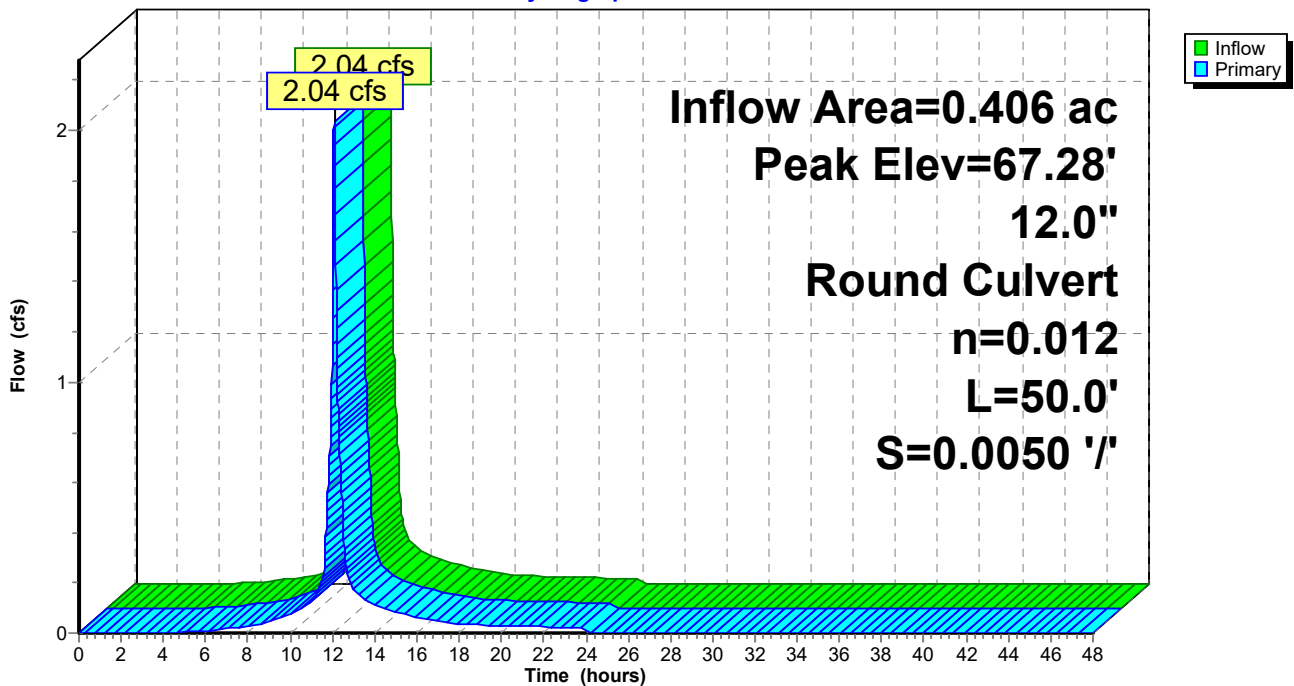
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 67.28' @ 12.08 hrs  
Flood Elev= 70.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.35'	<b>12.0" Round Culvert</b> L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 66.35' / 66.10' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.03 cfs @ 12.08 hrs HW=67.28' (Free Discharge)  
↑1=Culvert (Barrel Controls 2.03 cfs @ 3.48 fps)

**Pond 28P: CB #3-1**

Hydrograph



**Summary for Pond 29P: CB #3-2-2**

Inflow Area = 0.438 ac, 36.57% Impervious, Inflow Depth = 3.05" for 10-year event  
 Inflow = 1.56 cfs @ 12.09 hrs, Volume= 0.111 af  
 Outflow = 1.56 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.56 cfs @ 12.09 hrs, Volume= 0.111 af

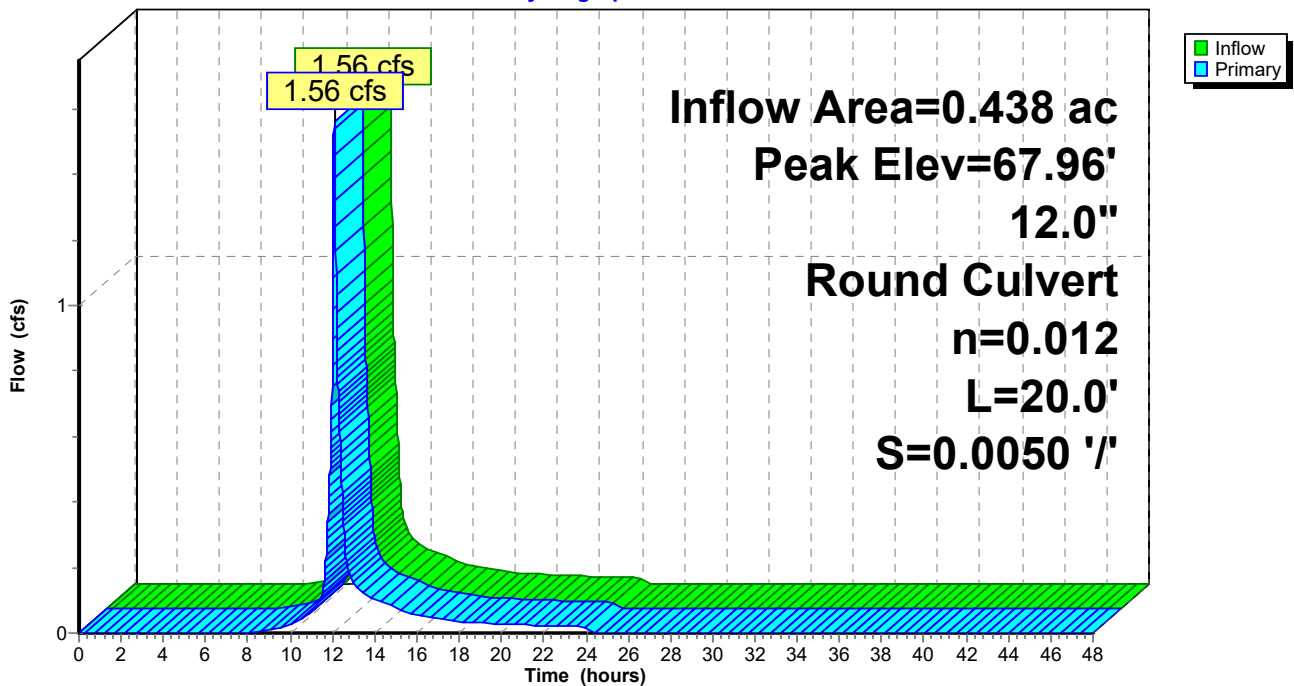
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 67.96' @ 12.09 hrs  
 Flood Elev= 71.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.15'	<b>12.0" Round Culvert</b> L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 67.15' / 67.05' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.56 cfs @ 12.09 hrs HW=67.96' (Free Discharge)  
 ←1=Culvert (Barrel Controls 1.56 cfs @ 3.15 fps)

**Pond 29P: CB #3-2-2**

Hydrograph



**5015-Post**

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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 30P: CB #3-2-1**

Inflow Area = 0.155 ac, 98.46% Impervious, Inflow Depth = 5.26" for 10-year event  
Inflow = 0.85 cfs @ 12.08 hrs, Volume= 0.068 af  
Outflow = 0.85 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.85 cfs @ 12.08 hrs, Volume= 0.068 af

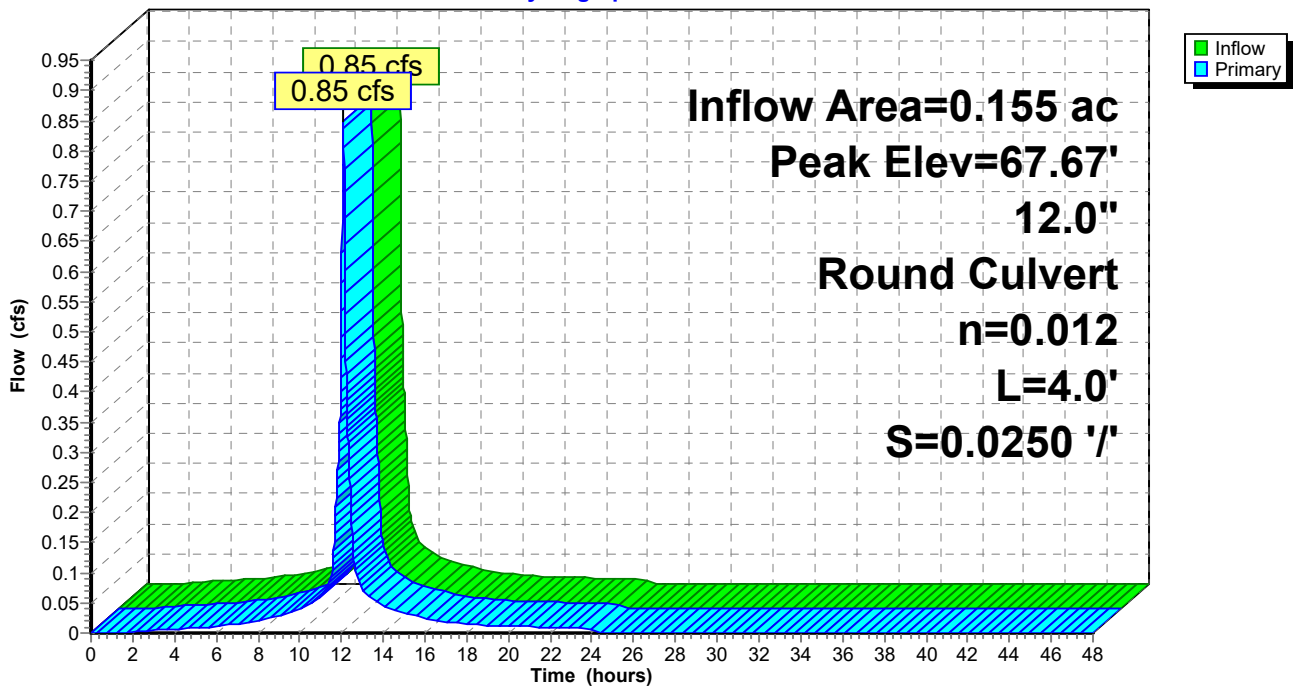
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 67.67' @ 12.08 hrs  
Flood Elev= 71.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.15'	<b>12.0" Round Culvert</b> L= 4.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 67.15' / 67.05' S= 0.0250 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.85 cfs @ 12.08 hrs HW=67.67' (Free Discharge)  
↑**1=Culvert** (Barrel Controls 0.85 cfs @ 3.01 fps)

**Pond 30P: CB #3-2-1**

Hydrograph





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**Summary for Pond 31P: DMH #3-2**

[79] Warning: Submerged Pond 29P Primary device # 1 INLET by 0.70'

[81] Warning: Exceeded Pond 30P by 0.18' @ 12.09 hrs

Inflow Area = 0.593 ac, 52.78% Impervious, Inflow Depth = 3.62" for 10-year event  
Inflow = 2.41 cfs @ 12.09 hrs, Volume= 0.179 af  
Outflow = 2.41 cfs @ 12.09 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min  
Primary = 2.41 cfs @ 12.09 hrs, Volume= 0.179 af

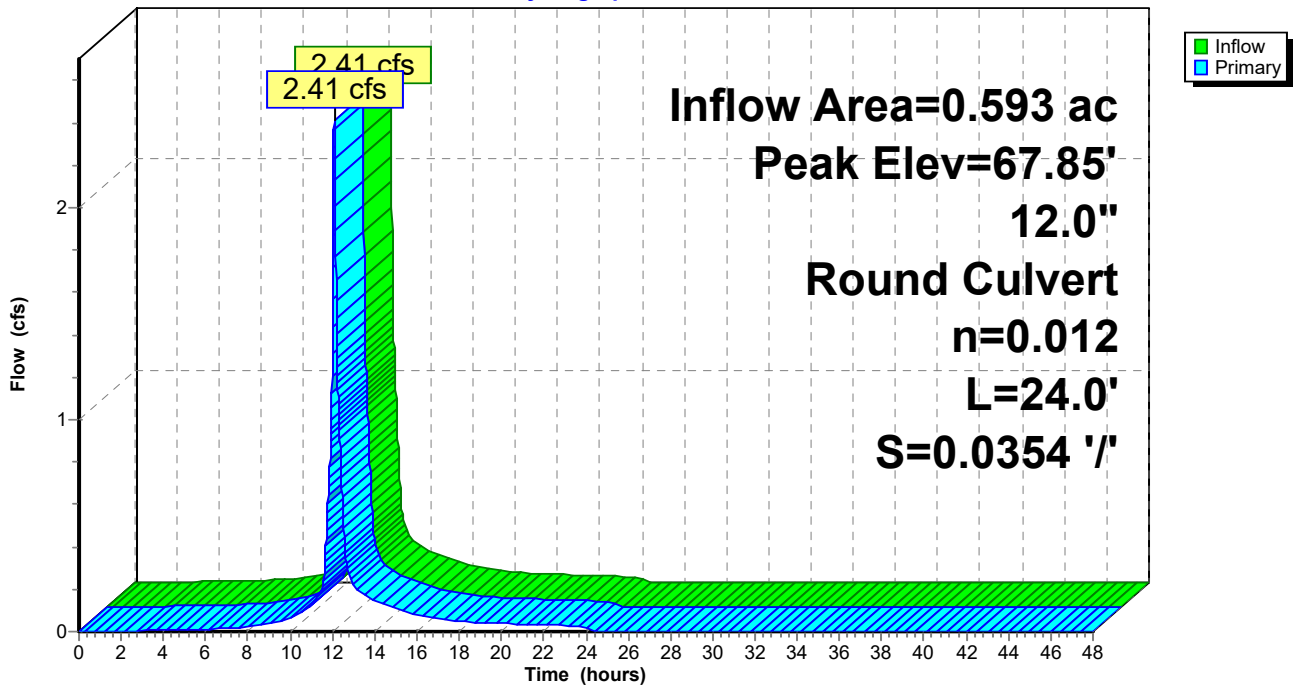
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 67.85' @ 12.09 hrs  
Flood Elev= 71.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.95'	<b>12.0" Round Culvert</b> L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 66.95' / 66.10' S= 0.0354 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.41 cfs @ 12.09 hrs HW=67.85' (Free Discharge)  
↑=Culvert (Inlet Controls 2.41 cfs @ 3.23 fps)

**Pond 31P: DMH #3-2**

Hydrograph



### Summary for Pond 32P: DMH #3

[79] Warning: Submerged Pond 27P Primary device # 1 OUTLET by 0.87'

[79] Warning: Submerged Pond 28P Primary device # 1 INLET by 0.37'

[79] Warning: Submerged Pond 31P Primary device # 1 OUTLET by 0.62'

Inflow Area = 3.146 ac, 52.37% Impervious, Inflow Depth = 3.59" for 10-year event  
 Inflow = 11.82 cfs @ 12.09 hrs, Volume= 0.940 af  
 Outflow = 11.82 cfs @ 12.09 hrs, Volume= 0.940 af, Atten= 0%, Lag= 0.0 min  
 Primary = 11.82 cfs @ 12.09 hrs, Volume= 0.940 af

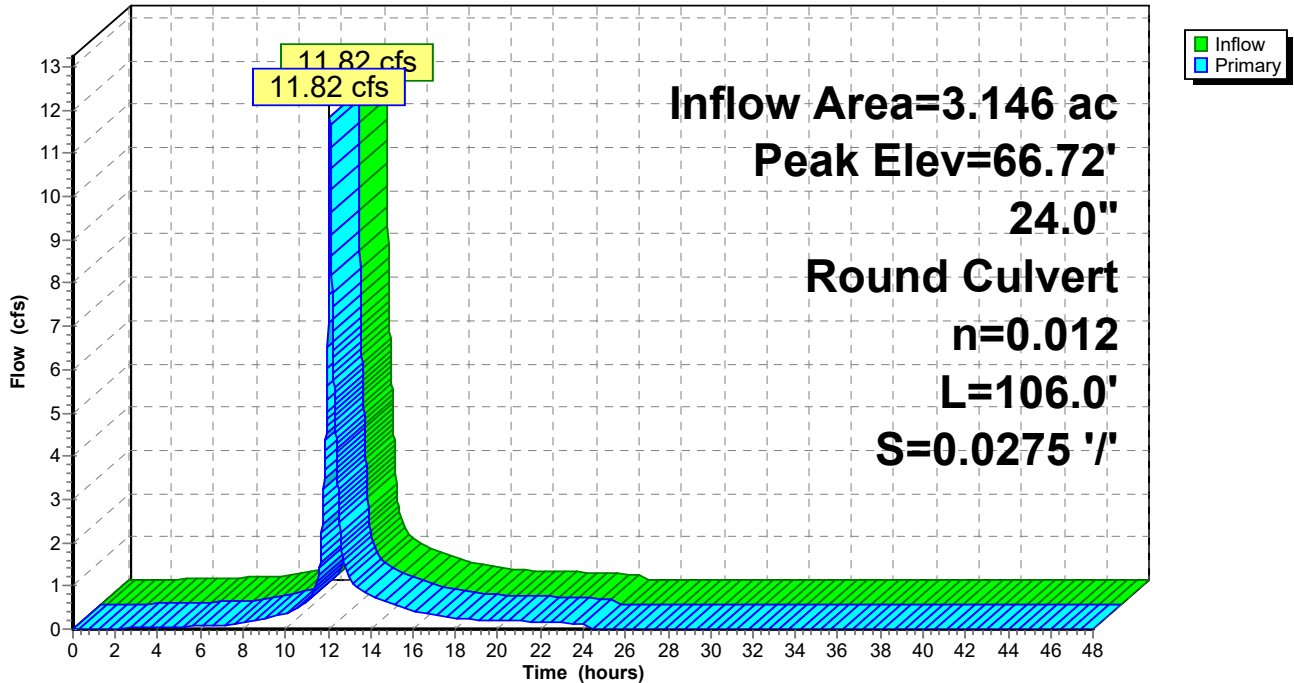
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.72' @ 12.09 hrs  
 Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.10'	<b>24.0" Round Culvert</b> L= 106.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 65.10' / 62.18' S= 0.0275 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

**Primary OutFlow** Max=11.82 cfs @ 12.09 hrs HW=66.72' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 11.82 cfs @ 4.33 fps)

### Pond 32P: DMH #3

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 33P: CB #9-1**

Inflow Area = 0.300 ac, 45.97% Impervious, Inflow Depth = 3.24" for 10-year event  
Inflow = 1.14 cfs @ 12.09 hrs, Volume= 0.081 af  
Outflow = 1.14 cfs @ 12.09 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.14 cfs @ 12.09 hrs, Volume= 0.081 af

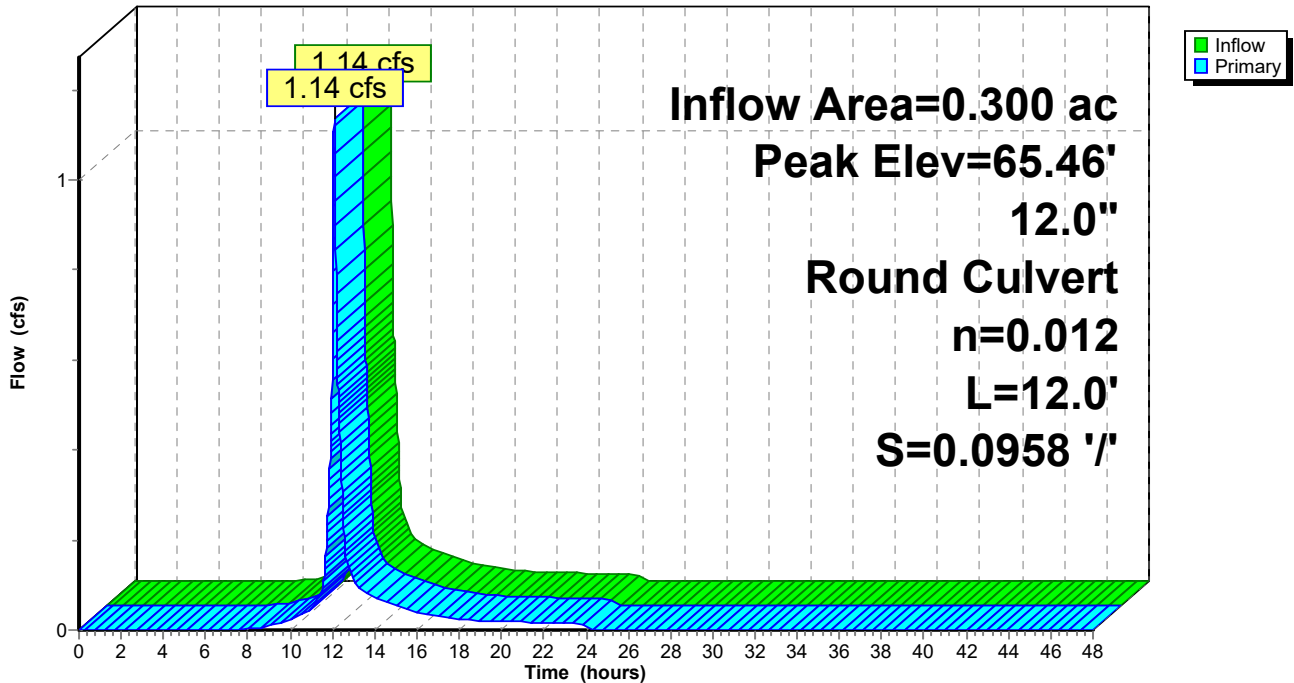
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 65.46' @ 12.09 hrs  
Flood Elev= 68.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.90'	<b>12.0" Round Culvert</b> L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 64.90' / 63.75' S= 0.0958 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.14 cfs @ 12.09 hrs HW=65.46' (Free Discharge)  
↑**1=Culvert** (Inlet Controls 1.14 cfs @ 2.54 fps)

**Pond 33P: CB #9-1**

Hydrograph



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**Summary for Pond 34P: CB #9-2**

Inflow Area = 0.072 ac, 97.80% Impervious, Inflow Depth = 5.26" for 10-year event  
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af  
Outflow = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af

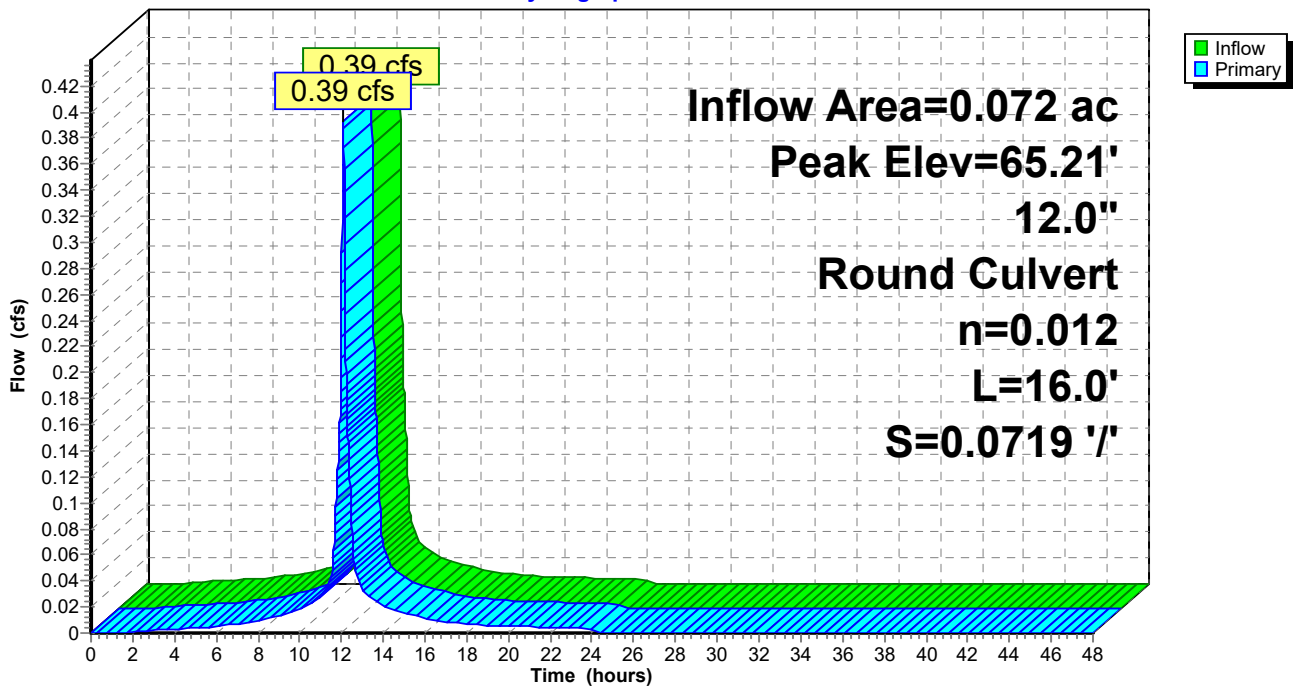
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 65.21' @ 12.08 hrs  
Flood Elev= 68.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.90'	<b>12.0" Round Culvert</b> L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 64.90' / 63.75' S= 0.0719 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.39 cfs @ 12.08 hrs HW=65.21' (Free Discharge)  
↑1=Culvert (Inlet Controls 0.39 cfs @ 1.89 fps)

**Pond 34P: CB #9-2**

Hydrograph





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**Summary for Pond 35P: DMH #9**

[79] Warning: Submerged Pond 33P Primary device # 1 OUTLET by 0.71'

[79] Warning: Submerged Pond 34P Primary device # 1 OUTLET by 0.71'

Inflow Area = 0.612 ac, 73.30% Impervious, Inflow Depth = 4.31" for 10-year event  
 Inflow = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af  
 Outflow = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af

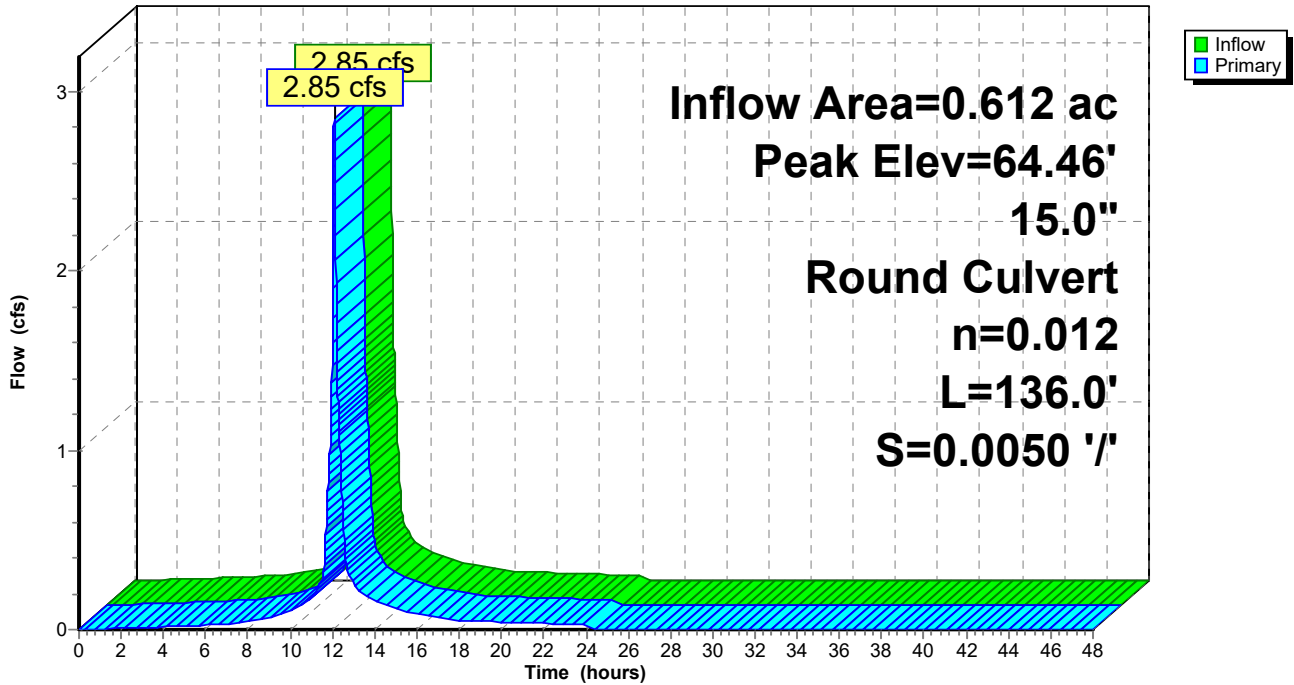
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 64.46' @ 12.09 hrs  
 Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	<b>15.0" Round Culvert</b> L= 136.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 63.50' / 62.82' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.85 cfs @ 12.09 hrs HW=64.46' (Free Discharge)  
 ↳ **1=Culvert** (Barrel Controls 2.85 cfs @ 3.89 fps)

**Pond 35P: DMH #9**

Hydrograph



**Summary for Pond 36P: DMH #8**

[79] Warning: Submerged Pond 35P Primary device # 1 INLET by 0.19'

Inflow Area = 0.612 ac, 73.30% Impervious, Inflow Depth = 4.31" for 10-year event  
 Inflow = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af  
 Outflow = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.220 af

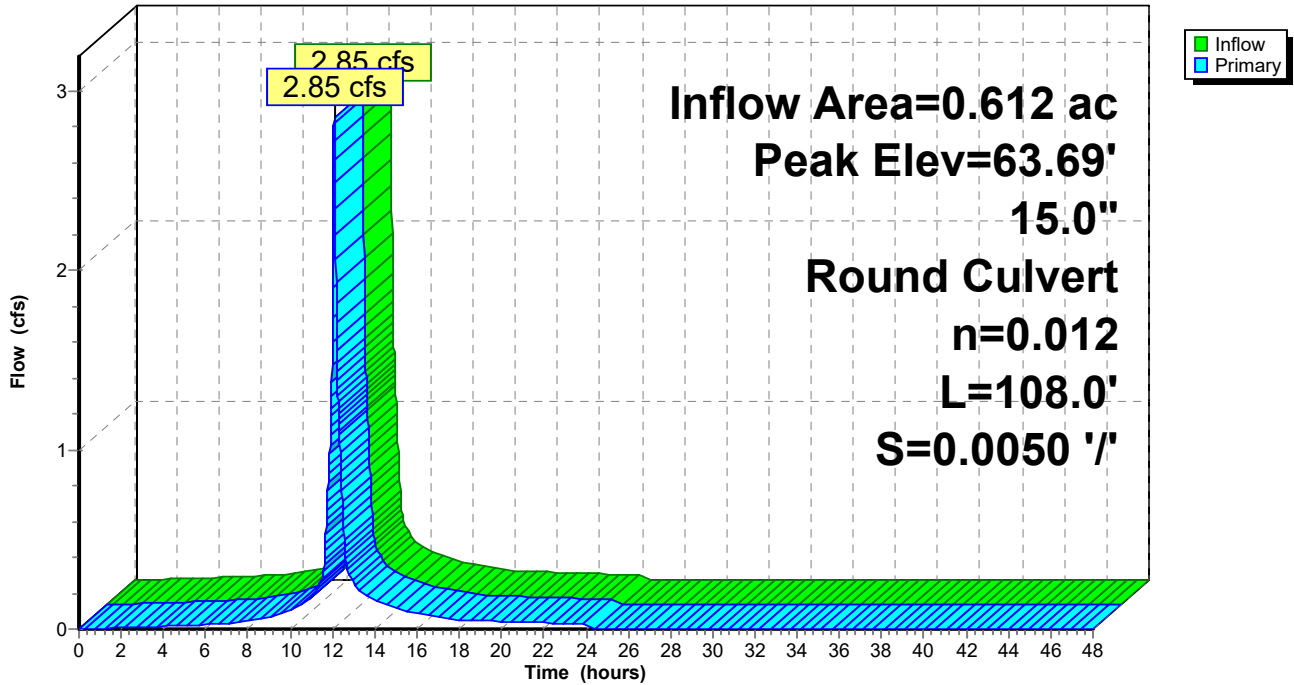
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 63.69' @ 12.09 hrs  
 Flood Elev= 73.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.72'	<b>15.0" Round Culvert</b> L= 108.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.72' / 62.18' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.85 cfs @ 12.09 hrs HW=63.69' (Free Discharge)  
 ↳ **1=Culvert** (Barrel Controls 2.85 cfs @ 3.85 fps)

**Pond 36P: DMH #8**

Hydrograph



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**Summary for Pond 37P: DMH #1**

[79] Warning: Submerged Pond 32P Primary device # 1 OUTLET by 2.20'

[81] Warning: Exceeded Pond 36P by 0.69' @ 12.09 hrs

Inflow Area = 3.758 ac, 55.78% Impervious, Inflow Depth = 3.70" for 10-year event  
 Inflow = 14.67 cfs @ 12.09 hrs, Volume= 1.160 af  
 Outflow = 14.67 cfs @ 12.09 hrs, Volume= 1.160 af, Atten= 0%, Lag= 0.0 min  
 Primary = 14.67 cfs @ 12.09 hrs, Volume= 1.160 af

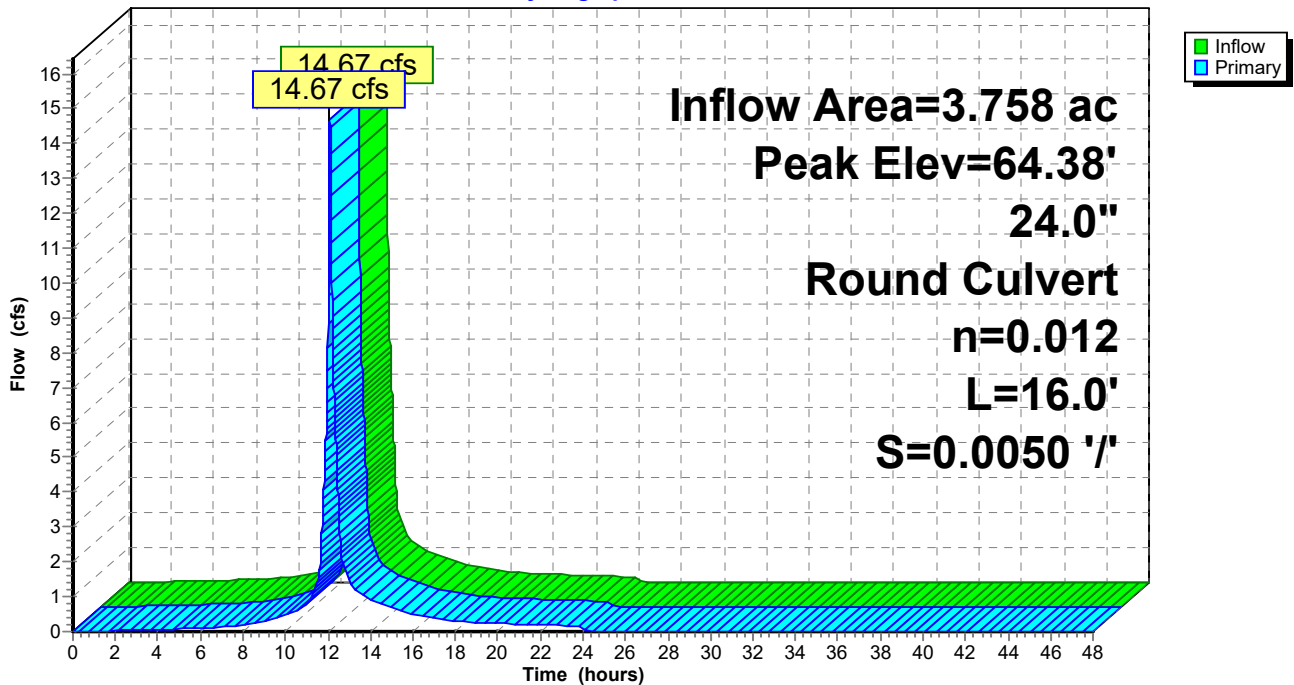
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 64.38' @ 12.09 hrs  
 Flood Elev= 71.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	<b>24.0" Round Culvert</b> L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.08' / 62.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

**Primary OutFlow** Max=14.66 cfs @ 12.09 hrs HW=64.38' (Free Discharge)  
 ←1=Culvert (Barrel Controls 14.66 cfs @ 5.09 fps)

**Pond 37P: DMH #1**

Hydrograph



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**Summary for Pond 38P: Bioretention #1**

[81] Warning: Exceeded Pond 37P by 1.58' @ 12.64 hrs

Inflow Area = 4.050 ac, 51.81% Impervious, Inflow Depth = 3.56" for 10-year event  
 Inflow = 15.23 cfs @ 12.09 hrs, Volume= 1.203 af  
 Outflow = 4.23 cfs @ 12.47 hrs, Volume= 1.211 af, Atten= 72%, Lag= 22.9 min  
 Primary = 4.23 cfs @ 12.47 hrs, Volume= 1.211 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Starting Elev= 61.75' Surf.Area= 5,501 sf Storage= 344 cf  
 Peak Elev= 64.48' @ 12.47 hrs Surf.Area= 7,863 sf Storage= 18,567 cf (18,223 cf above start)  
 Flood Elev= 66.00' Surf.Area= 9,341 sf Storage= 31,589 cf (31,245 cf above start)

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 136.7 min ( 930.1 - 793.4 )

Volume	Invert	Avail.Storage	Storage Description			
#1	60.50'	31,589 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
60.50	5,501	0.0	0	0	5,501	
61.75	5,501	5.0	344	344	5,830	
62.00	5,736	100.0	1,405	1,748	6,074	
63.00	6,551	100.0	6,139	7,887	6,935	
64.00	7,418	100.0	6,980	14,867	7,851	
65.00	8,351	100.0	7,880	22,747	8,836	
66.00	9,341	100.0	8,841	31,589	9,880	

Device	Routing	Invert	Outlet Devices
#1	Primary	59.00'	<b>24.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.00' / 58.85' S= 0.0050 1/ S= 0.0050 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	59.08'	<b>6.0" Vert. Underdrain</b> C= 0.600
#3	Device 2	60.50'	<b>2.500 in/hr Exfiltration through Media over Wetted area</b> Phase-In= 0.01'
#4	Device 1	63.00'	<b>12.0" Vert. Orifice/Grate</b> C= 0.600
#5	Device 1	65.50'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

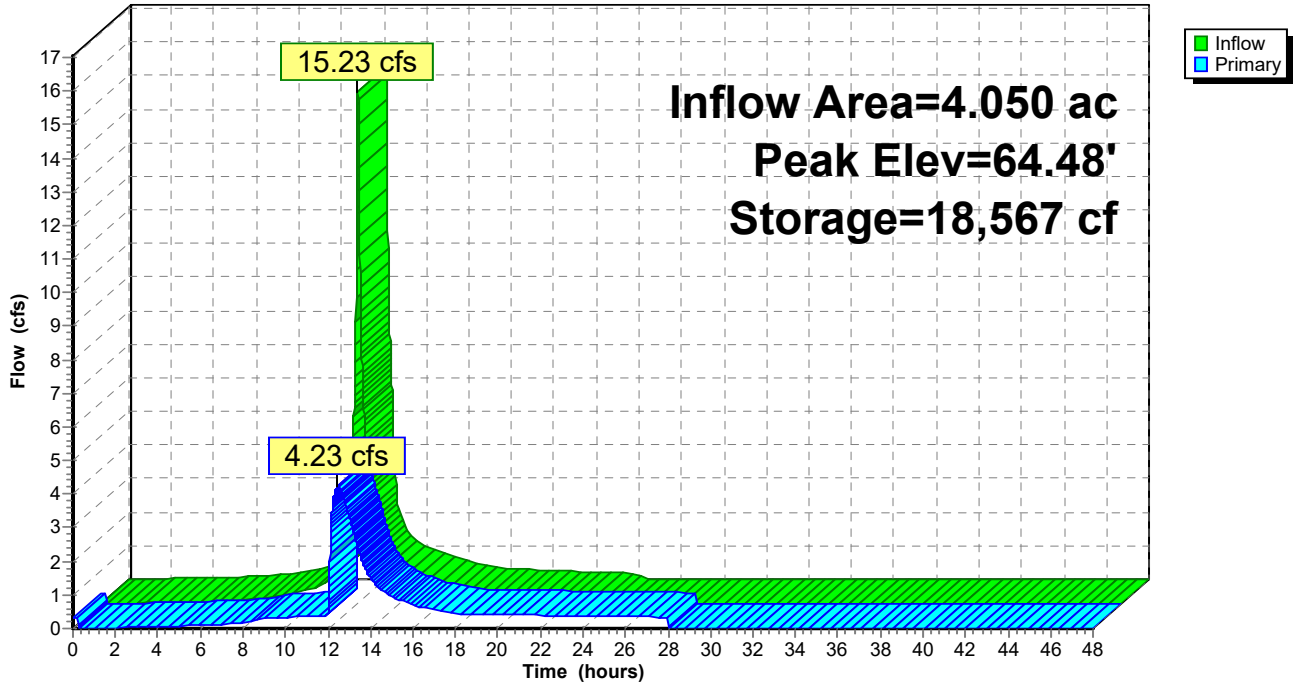
**Primary OutFlow** Max=4.23 cfs @ 12.47 hrs HW=64.48' (Free Discharge)

- 1=Culvert (Passes 4.23 cfs of 32.03 cfs potential flow)
- 2=Underdrain (Passes 0.48 cfs of 2.15 cfs potential flow)
- 3=Exfiltration through Media (Exfiltration Controls 0.48 cfs)
- 4=Orifice/Grate (Orifice Controls 3.75 cfs @ 4.78 fps)
- 5=Orifice/Grate ( Controls 0.00 cfs)



**Pond 38P: Bioretention #1**

Hydrograph



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**Summary for Pond 40P: CB #26**

Inflow Area = 0.024 ac, 12.51% Impervious, Inflow Depth = 2.16" for 10-year event  
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af  
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af

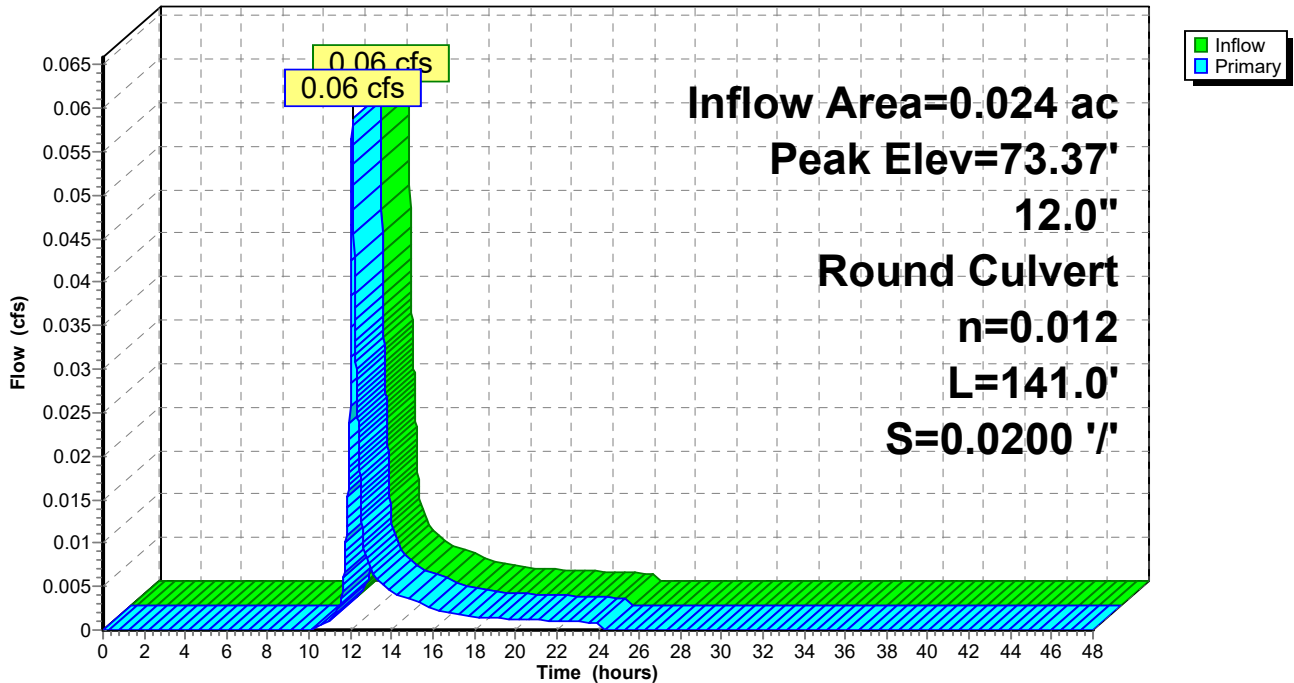
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 73.37' @ 12.09 hrs  
Flood Elev= 77.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.25'	<b>12.0" Round Culvert</b> L= 141.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.25' / 70.43' S= 0.0200 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.06 cfs @ 12.09 hrs HW=73.37' (Free Discharge)  
↑**1=Culvert** (Inlet Controls 0.06 cfs @ 1.15 fps)

**Pond 40P: CB #26**

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 41P: CB #25-1**

Inflow Area = 0.203 ac, 68.47% Impervious, Inflow Depth = 4.04" for 10-year event  
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af  
Outflow = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af

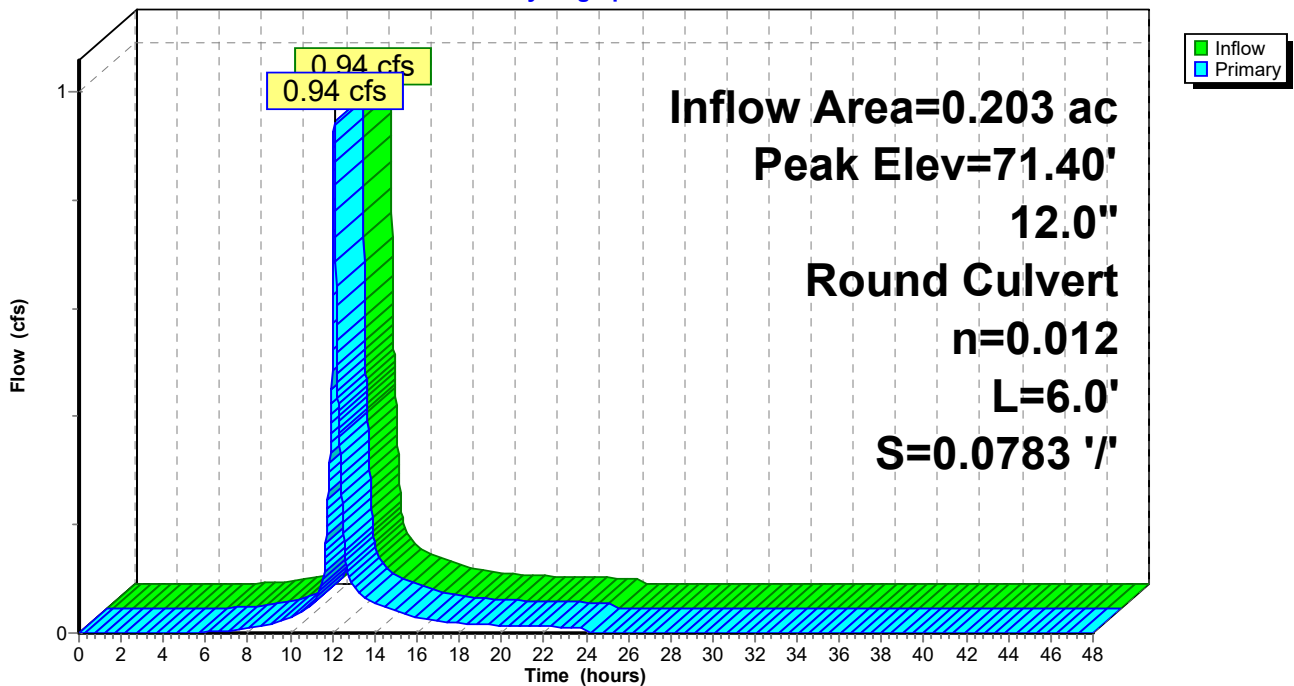
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 71.40' @ 12.09 hrs  
Flood Elev= 74.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.90'	<b>12.0" Round Culvert</b> L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.90' / 70.43' S= 0.0783 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.94 cfs @ 12.09 hrs HW=71.40' (Free Discharge)  
↑1=Culvert (Inlet Controls 0.94 cfs @ 2.40 fps)

**Pond 41P: CB #25-1**

Hydrograph



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**Summary for Pond 42P: DMH #25**

[79] Warning: Submerged Pond 40P Primary device # 1 OUTLET by 0.22'

[79] Warning: Submerged Pond 41P Primary device # 1 OUTLET by 0.22'

Inflow Area = 0.227 ac, 62.60% Impervious, Inflow Depth = 3.84" for 10-year event  
Inflow = 1.00 cfs @ 12.09 hrs, Volume= 0.073 af  
Outflow = 1.00 cfs @ 12.09 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.00 cfs @ 12.09 hrs, Volume= 0.073 af

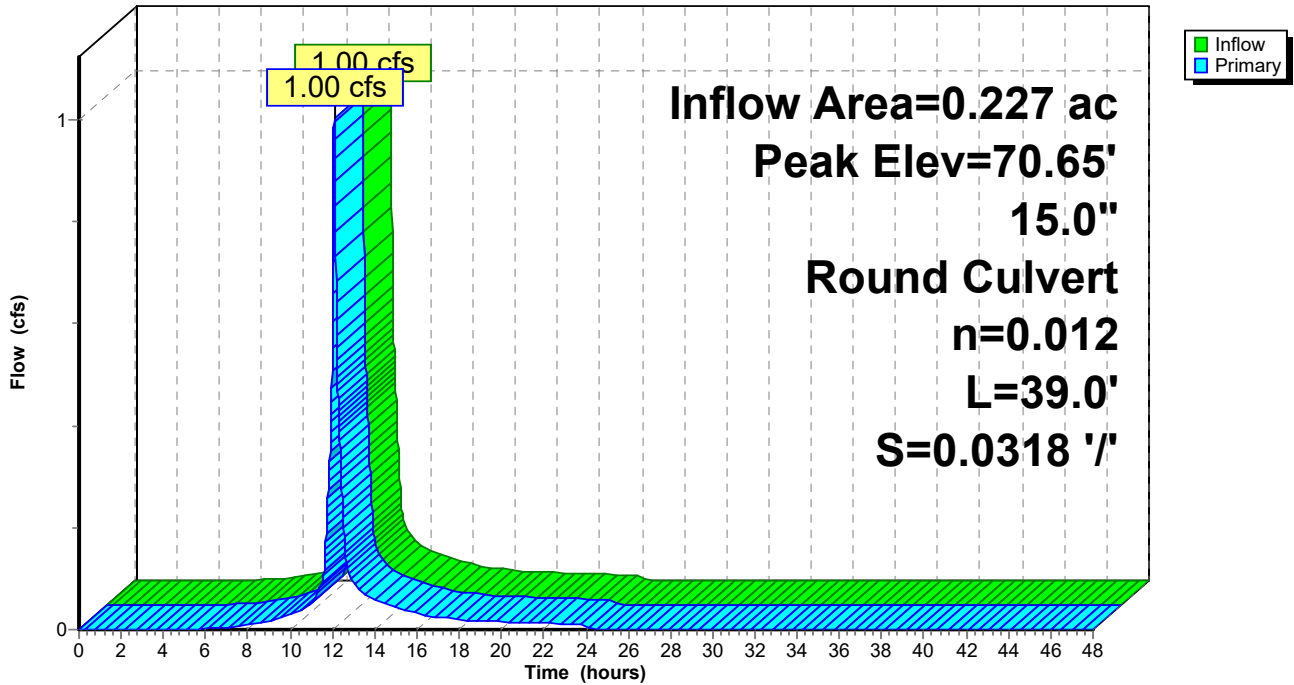
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 70.65' @ 12.09 hrs  
Flood Elev= 74.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.18'	<b>15.0" Round Culvert</b> L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.18' / 68.94' S= 0.0318 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.00 cfs @ 12.09 hrs HW=70.65' (Free Discharge)  
↑=Culvert (Inlet Controls 1.00 cfs @ 2.34 fps)

**Pond 42P: DMH #25**

Hydrograph





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**Summary for Pond 43P: Stormtech #1**

[79] Warning: Submerged Pond 42P Primary device # 1 OUTLET by 0.90'

Inflow Area = 0.625 ac, 79.79% Impervious, Inflow Depth = 4.55" for 10-year event  
 Inflow = 3.06 cfs @ 12.08 hrs, Volume= 0.237 af  
 Outflow = 1.06 cfs @ 12.36 hrs, Volume= 0.237 af, Atten= 65%, Lag= 16.3 min  
 Primary = 1.06 cfs @ 12.36 hrs, Volume= 0.237 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 69.84' @ 12.36 hrs Surf.Area= 1,170 sf Storage= 2,133 cf  
 Flood Elev= 75.55' Surf.Area= 1,170 sf Storage= 4,897 cf

Plug-Flow detention time= 20.9 min calculated for 0.237 af (100% of inflow)  
 Center-of-Mass det. time= 21.0 min ( 791.8 - 770.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	2,195 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 8,190 cf Overall - 2,702 cf Embedded = 5,488 cf x 40.0% Voids
#2	68.00'	2,702 cf	<b>ADS_StormTech MC-4500 +Cap @ 4.03' Lx 24</b> Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 24 Chambers in 2 Rows Cap Storage= +35.7 cf x 2 x 2 rows = 142.8 cf
		4,897 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	1,170	0	0
68.55	1,170	1,813	1,813
74.00	1,170	6,377	8,190

Device	Routing	Invert	Outlet Devices
#1	Primary	66.98'	<b>15.0" Round Culvert</b> L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 66.98' / 65.90' S= 0.0200 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	67.00'	<b>5.0" Vert. Orifice in Wall</b> C= 0.600
#3	Device 2	70.73'	<b>15.0" Round Outlet Manifold</b> L= 2.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 70.73' / 70.73' S= 0.0000 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#4	Device 1	73.00'	<b>5.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Device 2	67.00'	<b>6.0" Vert. 6" Underdrain</b> C= 0.600

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**Primary OutFlow** Max=1.06 cfs @ 12.36 hrs HW=69.84' (Free Discharge)

1=Culvert (Passes 1.06 cfs of 8.83 cfs potential flow)

2=Orifice in Wall (Orifice Controls 1.06 cfs @ 7.81 fps)

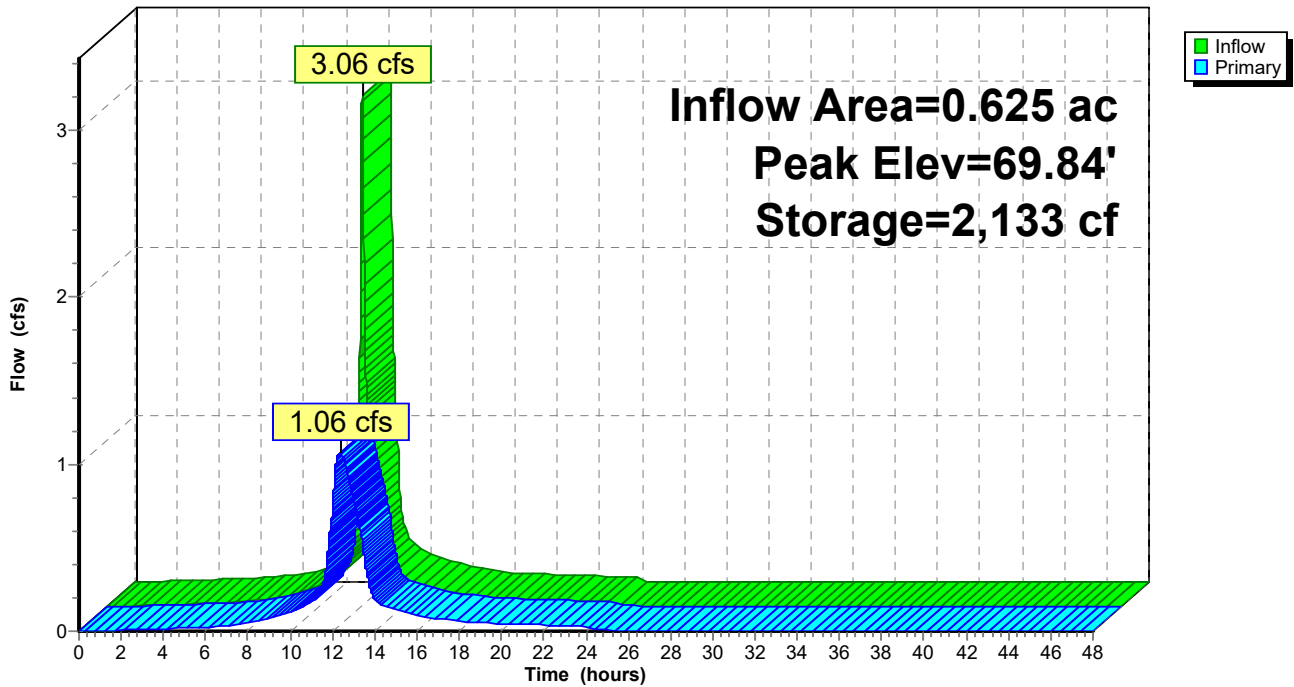
3=Outlet Manifold ( Controls 0.00 cfs)

5=6" Underdrain (Passes 1.06 cfs of 1.52 cfs potential flow)

4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 43P: Stormtech #1**

Hydrograph



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**Summary for Pond 44P: CB #22-1**

Inflow Area = 0.100 ac, 36.29% Impervious, Inflow Depth = 2.86" for 10-year event  
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af  
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af

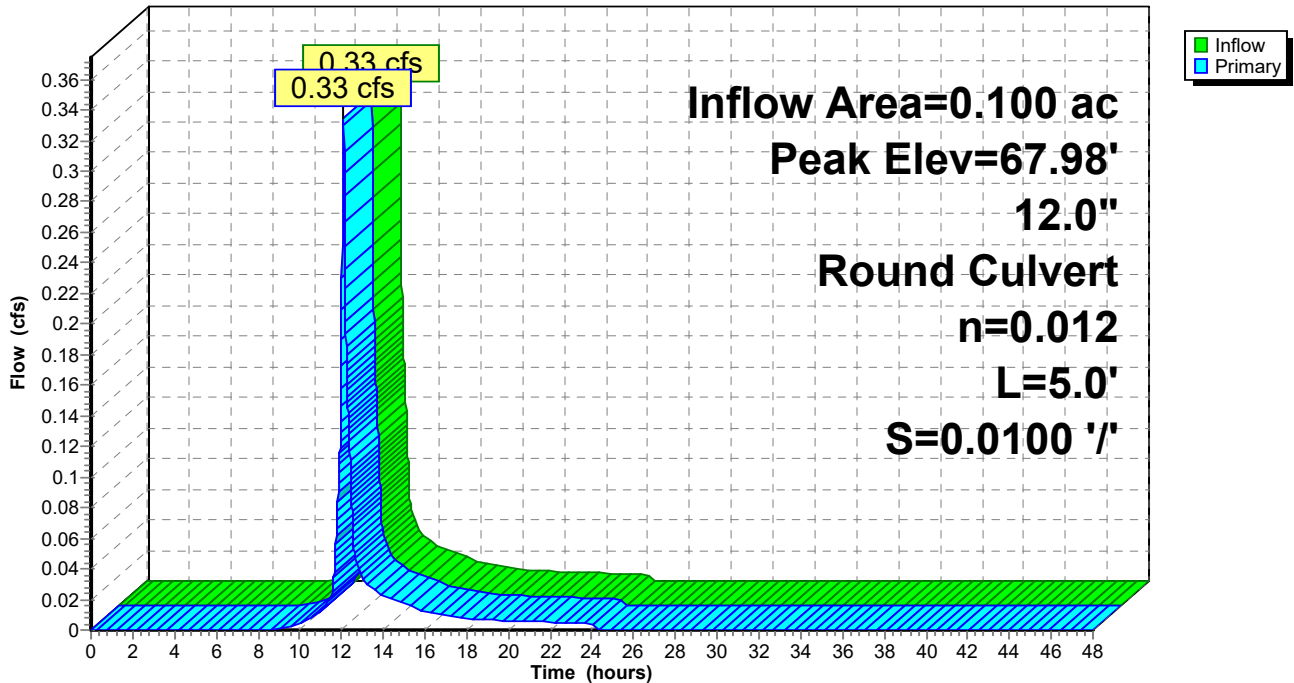
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 67.98' @ 12.09 hrs  
Flood Elev= 71.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	<b>12.0" Round Culvert</b> L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 67.65' / 67.60' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.33 cfs @ 12.09 hrs HW=67.98' (Free Discharge)  
↑**1=Culvert** (Barrel Controls 0.33 cfs @ 2.19 fps)

**Pond 44P: CB #22-1**

Hydrograph



**Summary for Pond 45P: DMH #22**

[79] Warning: Submerged Pond 43P Primary device # 1 OUTLET by 0.44'

Inflow Area = 0.725 ac, 73.80% Impervious, Inflow Depth = 4.31" for 10-year event  
 Inflow = 1.26 cfs @ 12.13 hrs, Volume= 0.261 af  
 Outflow = 1.26 cfs @ 12.13 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.26 cfs @ 12.13 hrs, Volume= 0.261 af

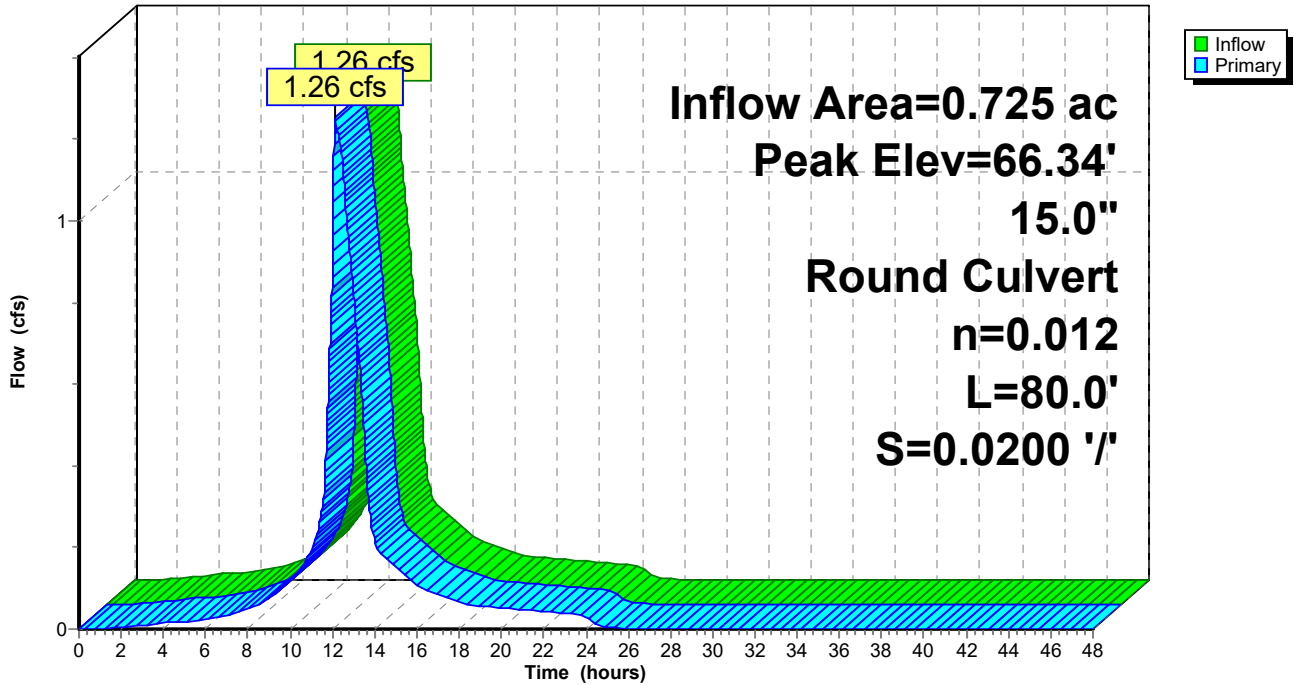
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.34' @ 12.13 hrs  
 Flood Elev= 71.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.80'	<b>15.0" Round Culvert</b> L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 65.80' / 64.20' S= 0.0200 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.25 cfs @ 12.13 hrs HW=66.34' (Free Discharge)  
 ↳ **1=Culvert** (Inlet Controls 1.25 cfs @ 2.49 fps)

**Pond 45P: DMH #22**

Hydrograph





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**Summary for Pond 46P: TD #21-1-1**

Inflow Area = 0.044 ac, 59.00% Impervious, Inflow Depth = 3.73" for 10-year event  
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af  
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af

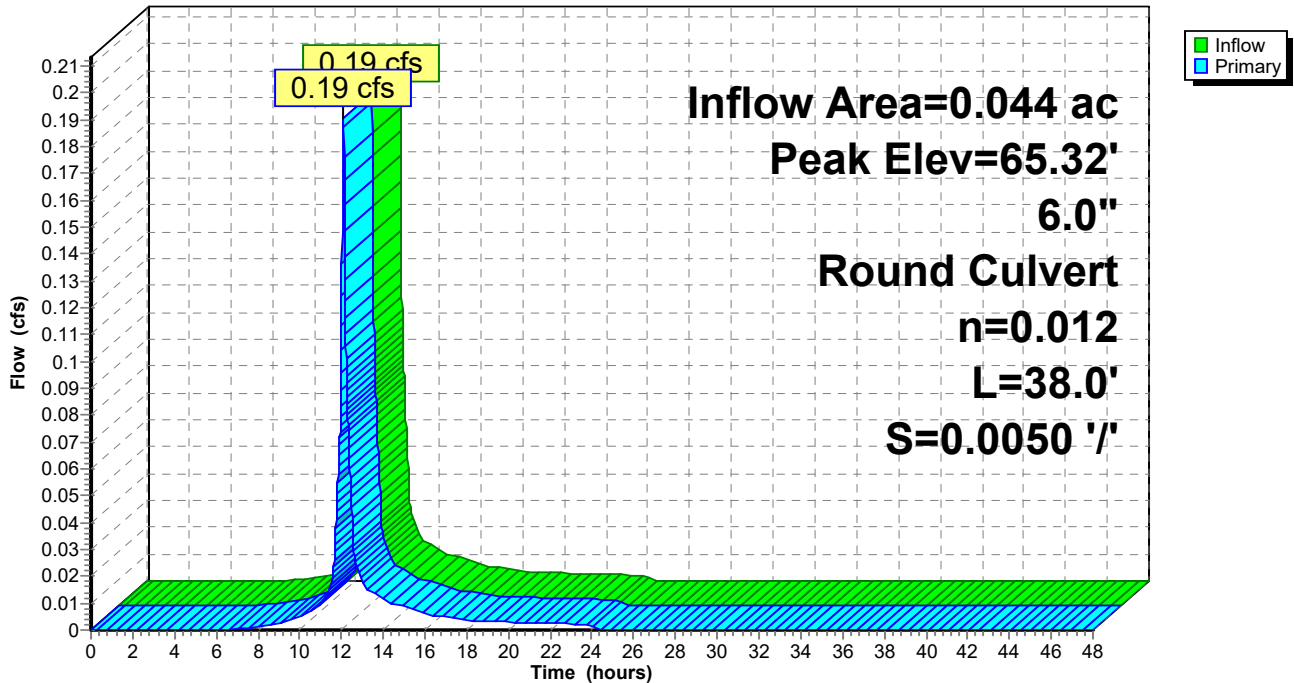
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 65.32' @ 12.09 hrs  
Flood Elev= 66.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	<b>6.0" Round Culvert</b> L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 65.00' / 64.81' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

**Primary OutFlow** Max=0.19 cfs @ 12.09 hrs HW=65.32' (Free Discharge)  
↑**1=Culvert** (Barrel Controls 0.19 cfs @ 2.04 fps)

**Pond 46P: TD #21-1-1**

Hydrograph



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**Summary for Pond 47P: CB #21-1**

Inflow Area = 0.064 ac, 40.53% Impervious, Inflow Depth = 3.11" for 10-year event  
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.017 af  
Outflow = 0.23 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.23 cfs @ 12.09 hrs, Volume= 0.017 af

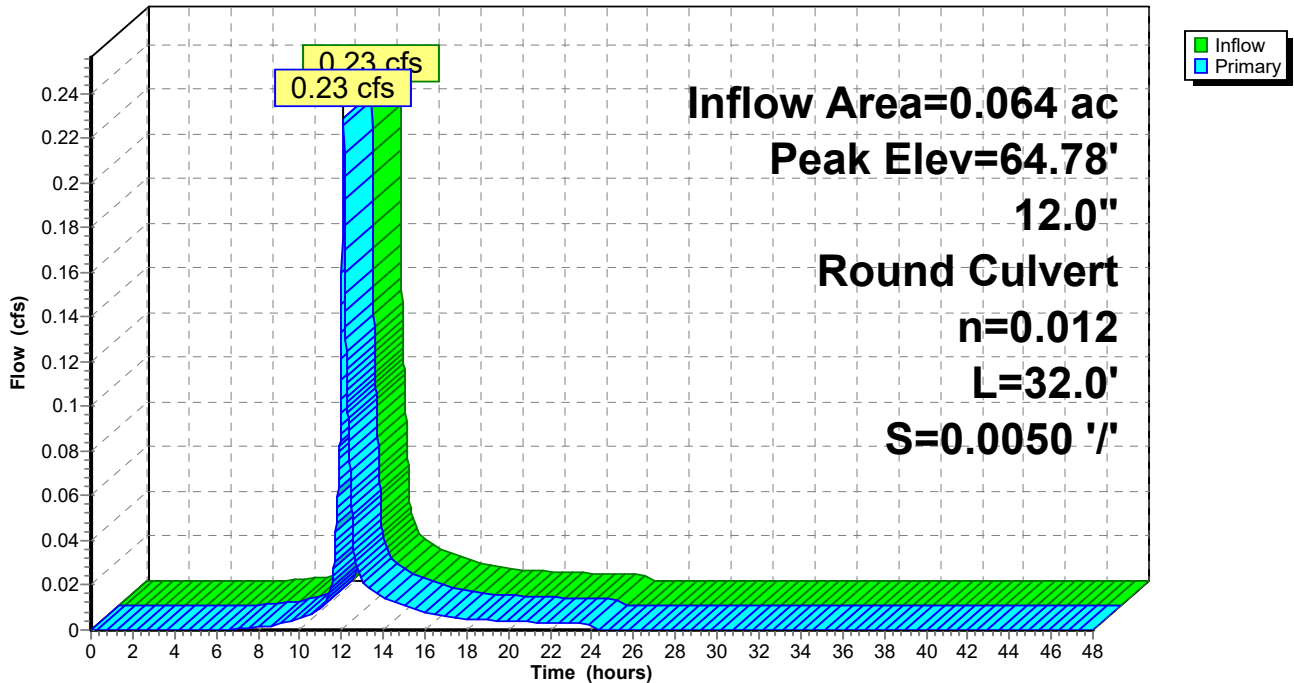
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 64.78' @ 12.09 hrs  
Flood Elev= 68.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.51'	<b>12.0" Round Culvert</b> L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 64.51' / 64.35' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.23 cfs @ 12.09 hrs HW=64.78' (Free Discharge)  
↑**1=Culvert** (Barrel Controls 0.23 cfs @ 1.99 fps)

**Pond 47P: CB #21-1**

Hydrograph



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**Summary for Pond 48P: DMH #21**

[79] Warning: Submerged Pond 45P Primary device # 1 OUTLET by 0.60'

[81] Warning: Exceeded Pond 47P by 0.08' @ 12.53 hrs

Inflow Area = 0.789 ac, 71.11% Impervious, Inflow Depth = 4.22" for 10-year event  
Inflow = 1.47 cfs @ 12.11 hrs, Volume= 0.277 af  
Outflow = 1.47 cfs @ 12.11 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.47 cfs @ 12.11 hrs, Volume= 0.277 af

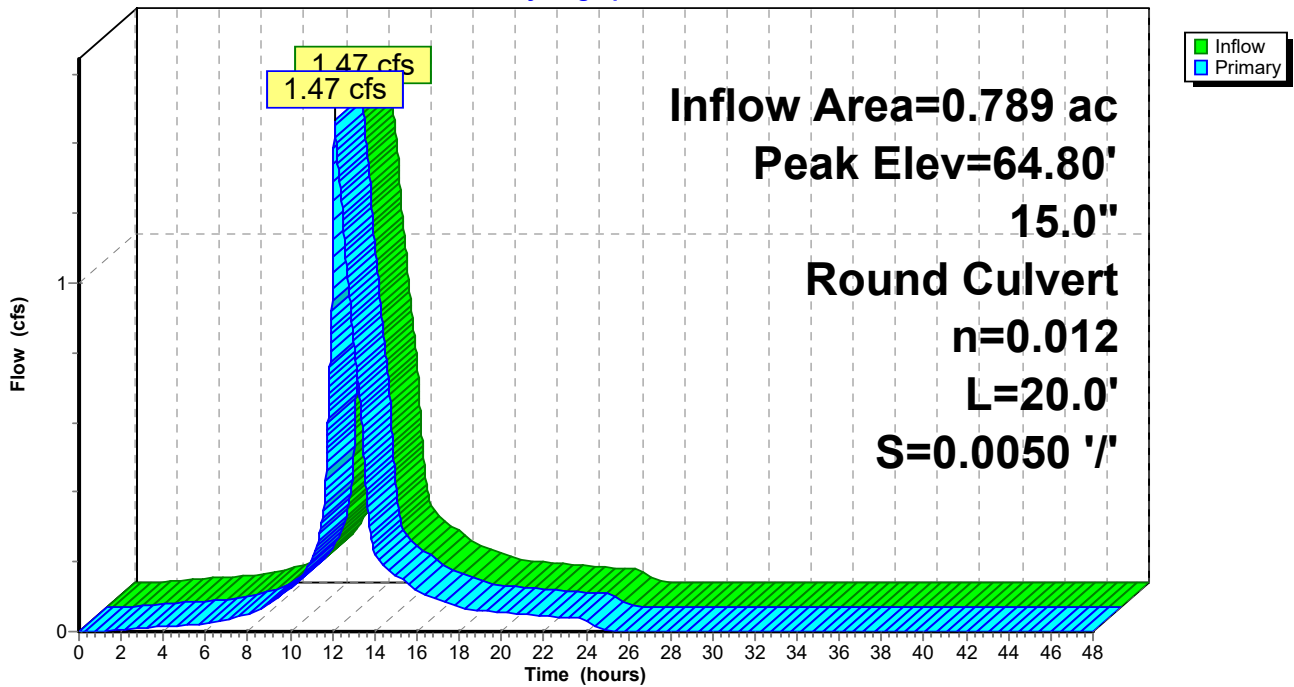
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 64.80' @ 12.11 hrs  
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.10'	<b>15.0" Round Culvert</b> L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 64.10' / 64.00' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.47 cfs @ 12.11 hrs HW=64.80' (Free Discharge)  
↑1=Culvert (Barrel Controls 1.47 cfs @ 3.00 fps)

**Pond 48P: DMH #21**

Hydrograph



**5015-Post**

Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 49P: Bioretention #2**

[81] Warning: Exceeded Pond 48P by 2.25' @ 17.56 hrs

Inflow Area = 1.146 ac, 66.98% Impervious, Inflow Depth = 4.03" for 10-year event  
 Inflow = 2.95 cfs @ 12.09 hrs, Volume= 0.385 af  
 Outflow = 2.13 cfs @ 12.23 hrs, Volume= 0.387 af, Atten= 28%, Lag= 8.0 min  
 Primary = 2.13 cfs @ 12.23 hrs, Volume= 0.387 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Starting Elev= 64.00' Surf.Area= 1,025 sf Storage= 77 cf  
 Peak Elev= 66.71' @ 12.23 hrs Surf.Area= 1,990 sf Storage= 4,111 cf (4,034 cf above start)  
 Flood Elev= 67.00' Surf.Area= 2,107 sf Storage= 4,703 cf (4,626 cf above start)

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 192.7 min ( 993.6 - 800.9 )

Volume	Invert	Avail.Storage	Storage Description		
#1	62.50'	4,703 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
62.50	1,025	0.0	0	0	1,025
64.00	1,025	5.0	77	77	1,195
65.00	1,355	100.0	1,186	1,263	1,547
66.00	1,716	100.0	1,532	2,795	1,934
67.00	2,107	100.0	1,908	4,703	2,354

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	<b>18.0" Round Culvert</b> L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.50' / 61.40' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	66.50'	<b>24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	61.50'	<b>4.0" Vert. Underdrain</b> C= 0.600
#4	Device 3	62.50'	<b>2.500 in/hr Exfiltration through Media over Wetted area</b> Phase-In= 0.01'

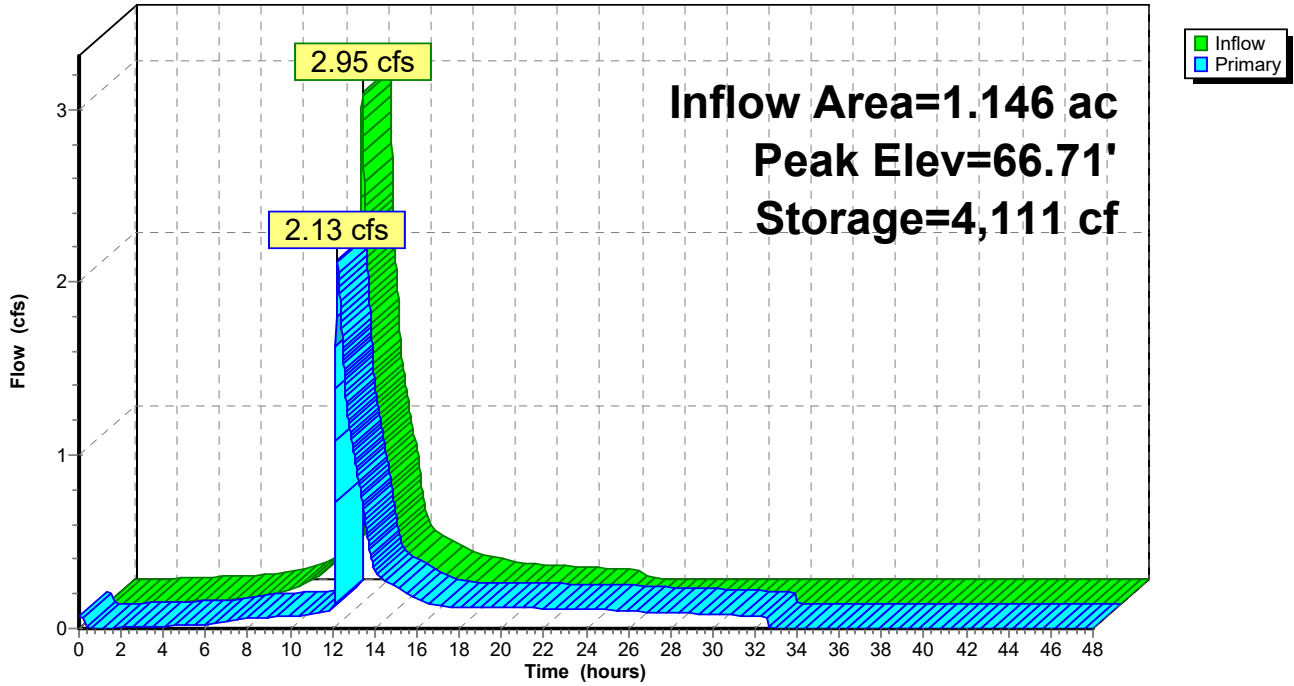
**Primary OutFlow** Max=2.12 cfs @ 12.23 hrs HW=66.71' (Free Discharge)

- 1=Culvert (Passes 2.12 cfs of 17.97 cfs potential flow)
- 2=Orifice/Grate (Weir Controls 1.99 cfs @ 1.50 fps)
- 3=Underdrain (Passes 0.13 cfs of 0.94 cfs potential flow)
- 4=Exfiltration through Media (Exfiltration Controls 0.13 cfs)



**Pond 49P: Bioretention #2**

Hydrograph



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**Summary for Pond 70P: 12" CPP**

Inflow Area = 0.083 ac, 49.99% Impervious, Inflow Depth = 3.33" for 10-year event  
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af  
Outflow = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af

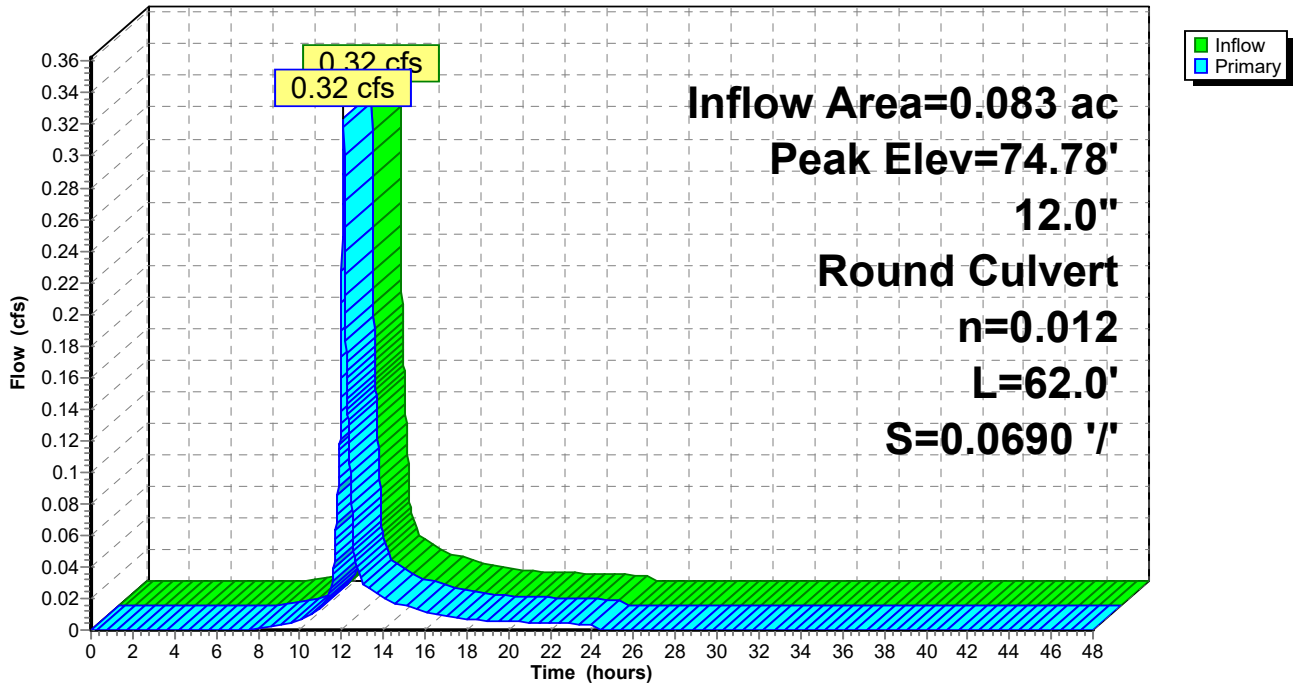
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 74.78' @ 12.09 hrs  
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	<b>12.0" Round Culvert</b> L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.50' / 70.22' S= 0.0690 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.32 cfs @ 12.09 hrs HW=74.78' (Free Discharge)  
↑**1=Culvert** (Inlet Controls 0.32 cfs @ 1.80 fps)

**Pond 70P: 12" CPP**

Hydrograph



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**Summary for Pond 71P: 12" CPP**

Inflow Area = 0.119 ac, 49.99% Impervious, Inflow Depth = 3.63" for 10-year event  
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af  
Outflow = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af

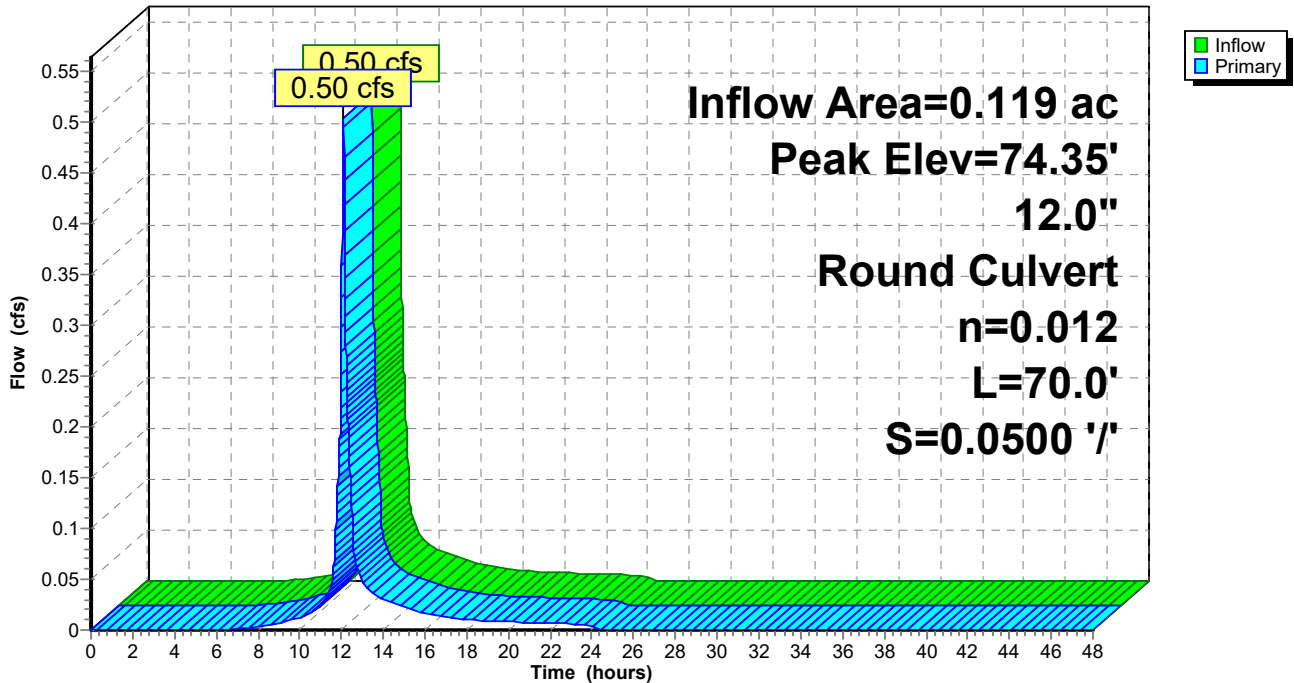
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 74.35' @ 12.09 hrs  
Flood Elev= 78.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	<b>12.0" Round Culvert</b> L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.00' / 70.50' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.50 cfs @ 12.09 hrs HW=74.35' (Free Discharge)  
↑1=Culvert (Inlet Controls 0.50 cfs @ 2.02 fps)

**Pond 71P: 12" CPP**

Hydrograph



### Summary for Pond 72P: 15" CPP Tee

[79] Warning: Submerged Pond 23P Primary device # 1 INLET by 0.46'

[79] Warning: Submerged Pond 71P Primary device # 1 OUTLET by 1.37'

Inflow Area = 1.485 ac, 36.70% Impervious, Inflow Depth = 3.03" for 10-year event  
 Inflow = 4.34 cfs @ 12.10 hrs, Volume= 0.375 af  
 Outflow = 4.34 cfs @ 12.10 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.34 cfs @ 12.10 hrs, Volume= 0.375 af

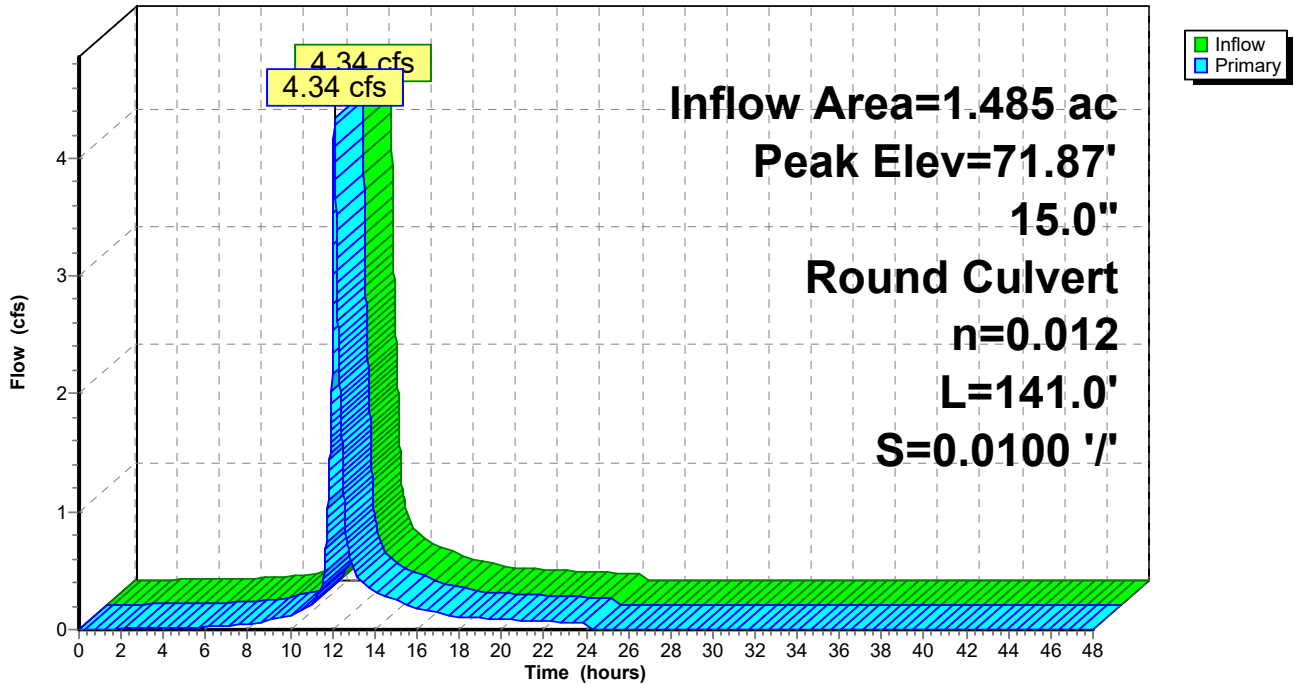
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 71.87' @ 12.10 hrs  
 Flood Elev= 77.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.38'	<b>15.0" Round Culvert</b> L= 141.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.38' / 68.97' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.33 cfs @ 12.10 hrs HW=71.87' (Free Discharge)  
 ↳=Culvert (Inlet Controls 4.33 cfs @ 3.53 fps)

### Pond 72P: 15" CPP Tee

Hydrograph





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**Summary for Pond 80P: S Porous**

Inflow Area = 0.038 ac, 96.18% Impervious, Inflow Depth > 5.23" for 10-year event  
 Inflow = 0.01 cfs @ 21.94 hrs, Volume= 0.017 af  
 Outflow = 0.01 cfs @ 21.97 hrs, Volume= 0.017 af, Atten= 0%, Lag= 1.9 min  
 Discarded = 0.01 cfs @ 21.97 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 0.02' @ 21.97 hrs Surf.Area= 350 sf Storage= 3 cf

Plug-Flow detention time= 3.3 min calculated for 0.017 af (100% of inflow)  
 Center-of-Mass det. time= 3.2 min ( 1,466.1 - 1,462.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	356 cf	<b>Custom Stage Data (Conic)</b> Listed below

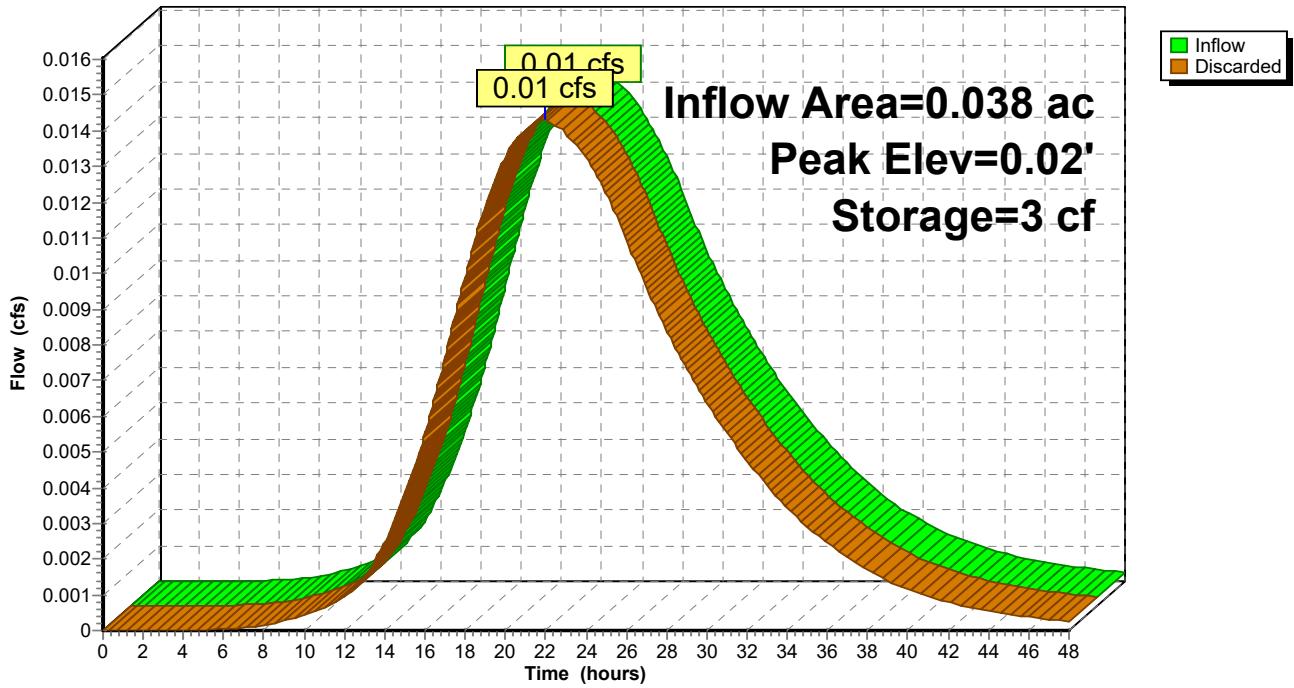
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
0.00	350	0.0	0	0	350
1.25	350	40.0	175	175	433
1.50	350	40.0	35	210	449
2.50	350	5.0	18	228	516
3.17	350	40.0	94	321	560
3.50	350	30.0	35	356	582

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	<b>3.000 in/hr Exfiltration over Wetted area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.02 cfs @ 21.97 hrs HW=0.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

### Pond 80P: S Porous

Hydrograph



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Type III 24-hr 10-year Rainfall=5.61"

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**Summary for Pond 81P: N Porous**

Inflow Area = 0.103 ac, 98.57% Impervious, Inflow Depth > 5.23" for 10-year event  
 Inflow = 0.04 cfs @ 21.94 hrs, Volume= 0.045 af  
 Outflow = 0.04 cfs @ 21.97 hrs, Volume= 0.045 af, Atten= 0%, Lag= 1.9 min  
 Discarded = 0.04 cfs @ 21.97 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 0.02' @ 21.97 hrs Surf.Area= 1,148 sf Storage= 8 cf

Plug-Flow detention time= 3.3 min calculated for 0.045 af (100% of inflow)  
 Center-of-Mass det. time= 3.2 min ( 1,466.1 - 1,462.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,168 cf	<b>Custom Stage Data (Conic)</b> Listed below

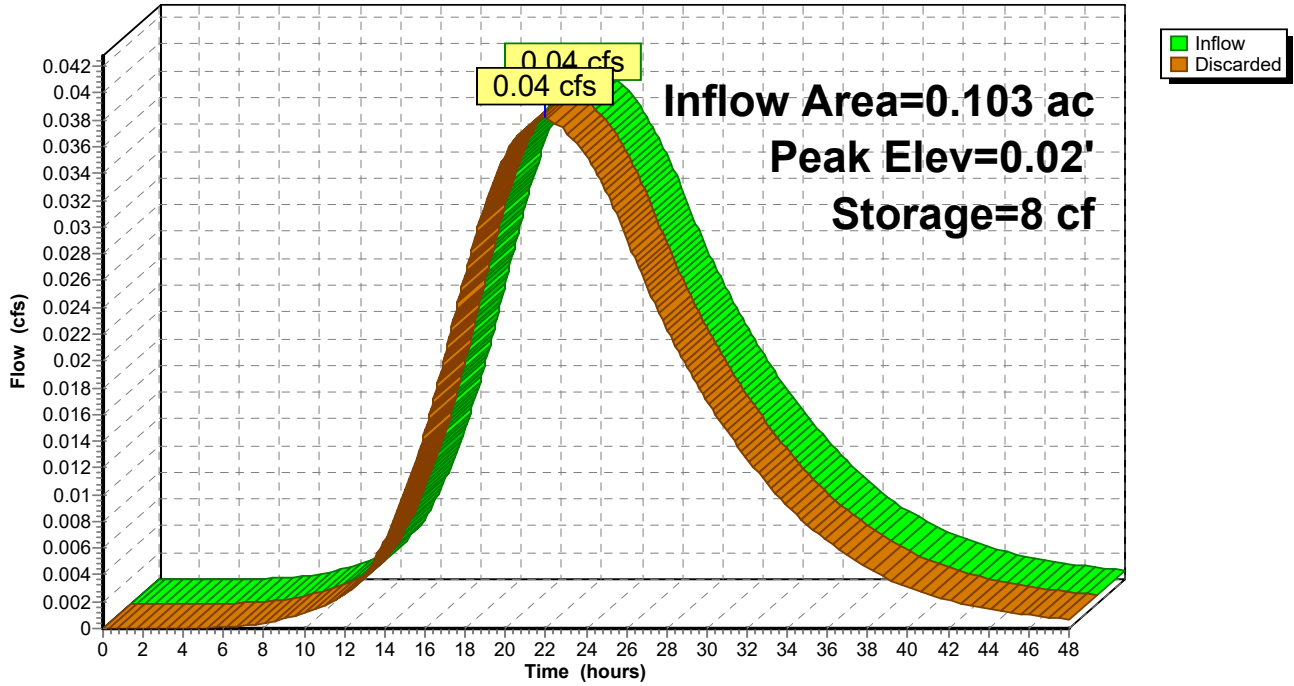
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
0.00	1,148	0.0	0	0	1,148
1.25	1,148	40.0	574	574	1,298
1.50	1,148	40.0	115	689	1,328
2.50	1,148	5.0	57	746	1,448
3.17	1,148	40.0	308	1,054	1,529
3.50	1,148	30.0	114	1,168	1,568

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	<b>3.000 in/hr Exfiltration over Wetted area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.08 cfs @ 21.97 hrs HW=0.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

### Pond 81P: N Porous

Hydrograph



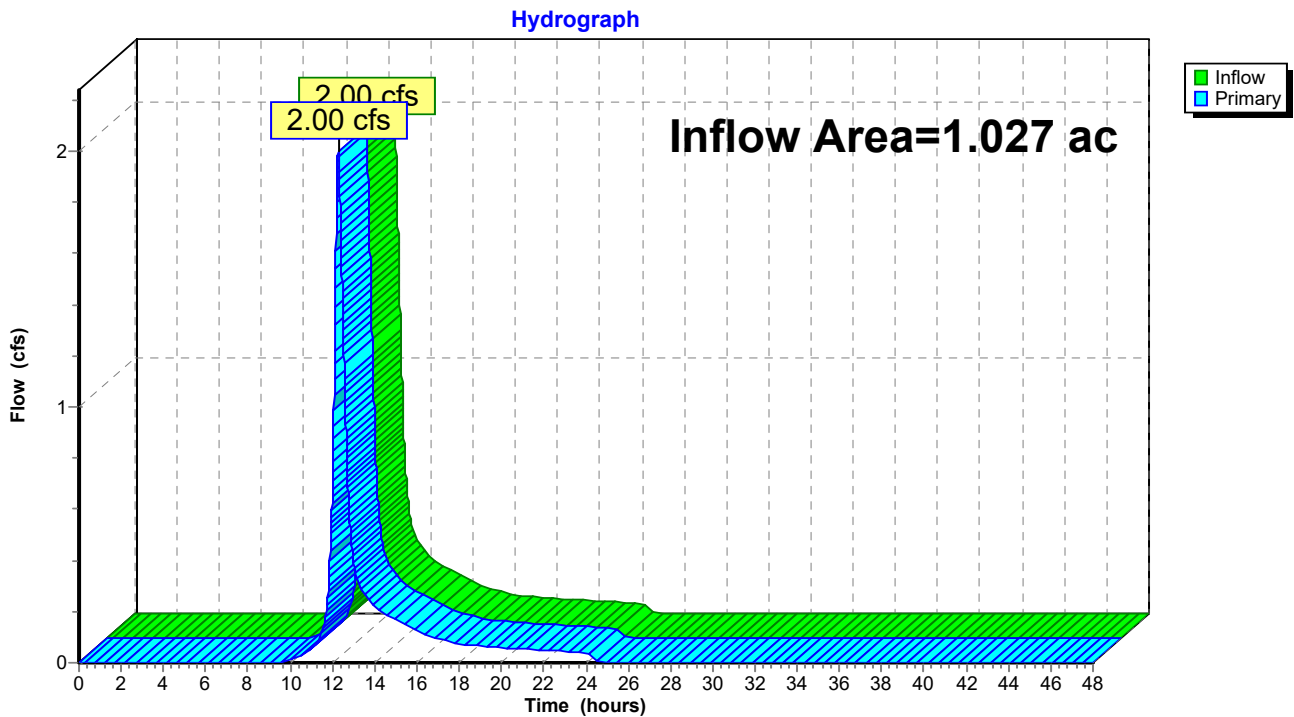


### Summary for Link 100L: POA #100 - Culvert Outfall

Inflow Area = 1.027 ac, 26.97% Impervious, Inflow Depth = 2.41" for 10-year event  
Inflow = 2.00 cfs @ 12.27 hrs, Volume= 0.206 af  
Primary = 2.00 cfs @ 12.27 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 100L: POA #100 - Culvert Outfall



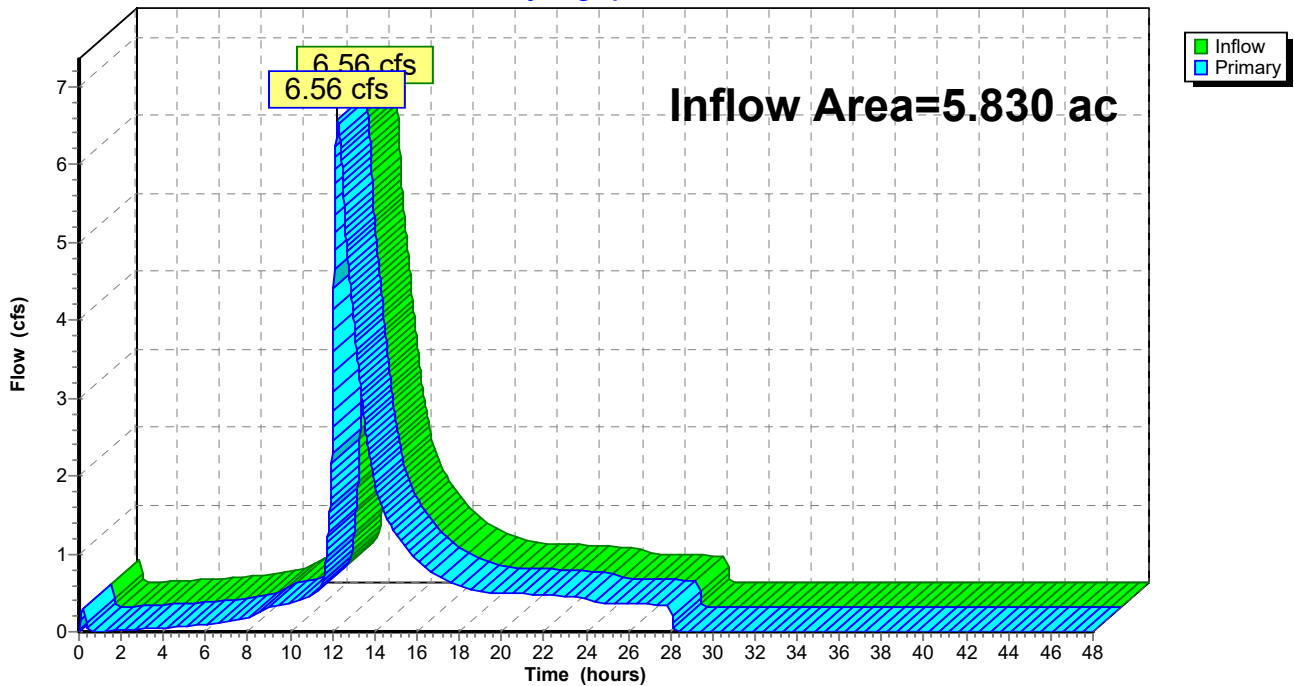
### Summary for Link 200L: POA #200 - East Boundary

Inflow Area = 5.830 ac, 41.65% Impervious, Inflow Depth = 3.23" for 10-year event  
Inflow = 6.56 cfs @ 12.24 hrs, Volume= 1.568 af  
Primary = 6.56 cfs @ 12.24 hrs, Volume= 1.568 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 200L: POA #200 - East Boundary

Hydrograph



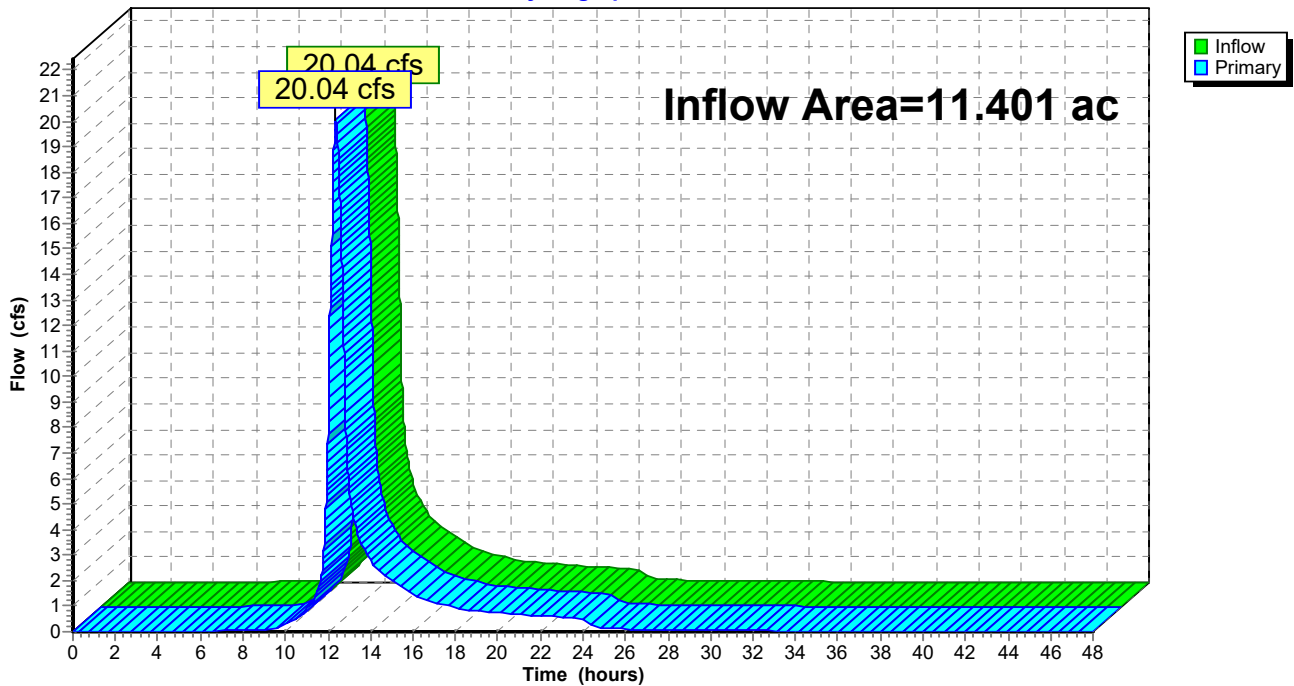
### Summary for Link 300L: POA # 300 - East Boundary

Inflow Area = 11.401 ac, 19.75% Impervious, Inflow Depth = 2.82" for 10-year event  
Inflow = 20.04 cfs @ 12.37 hrs, Volume= 2.677 af  
Primary = 20.04 cfs @ 12.37 hrs, Volume= 2.677 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 300L: POA # 300 - East Boundary

Hydrograph



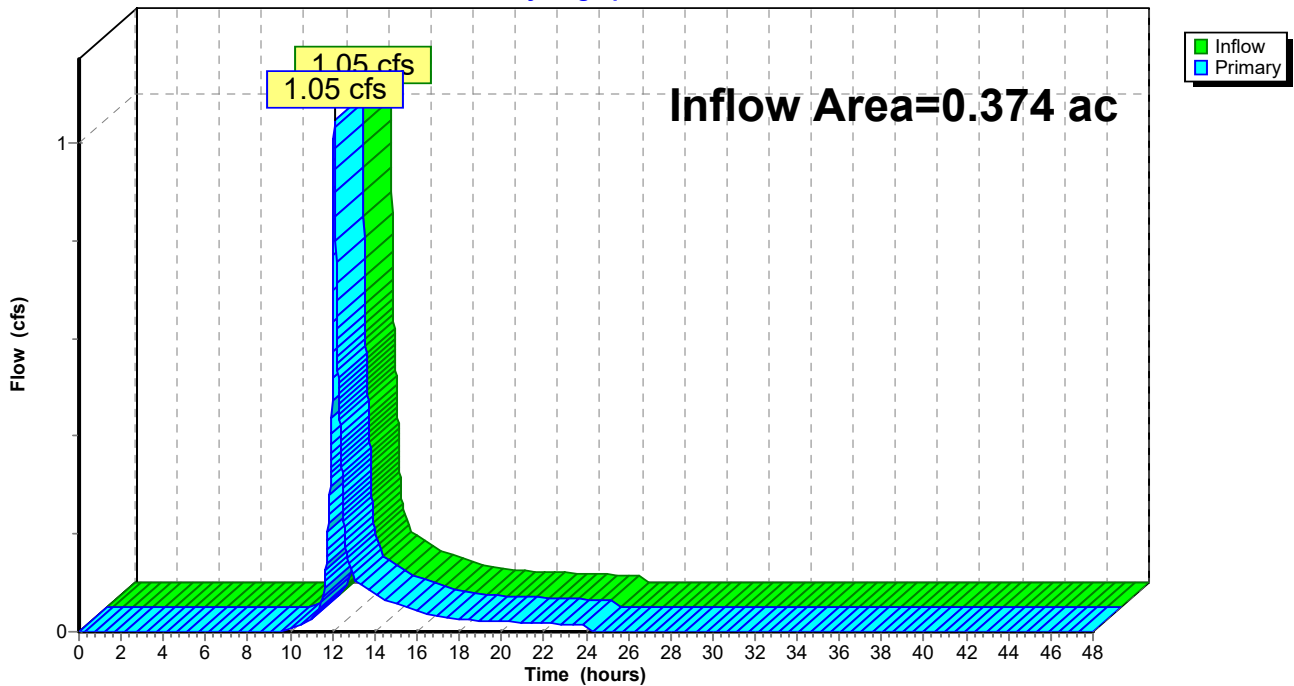
### Summary for Link 400L: POA #400 - SW Boundary

Inflow Area = 0.374 ac, 22.77% Impervious, Inflow Depth = 2.41" for 10-year event  
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af  
Primary = 1.05 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

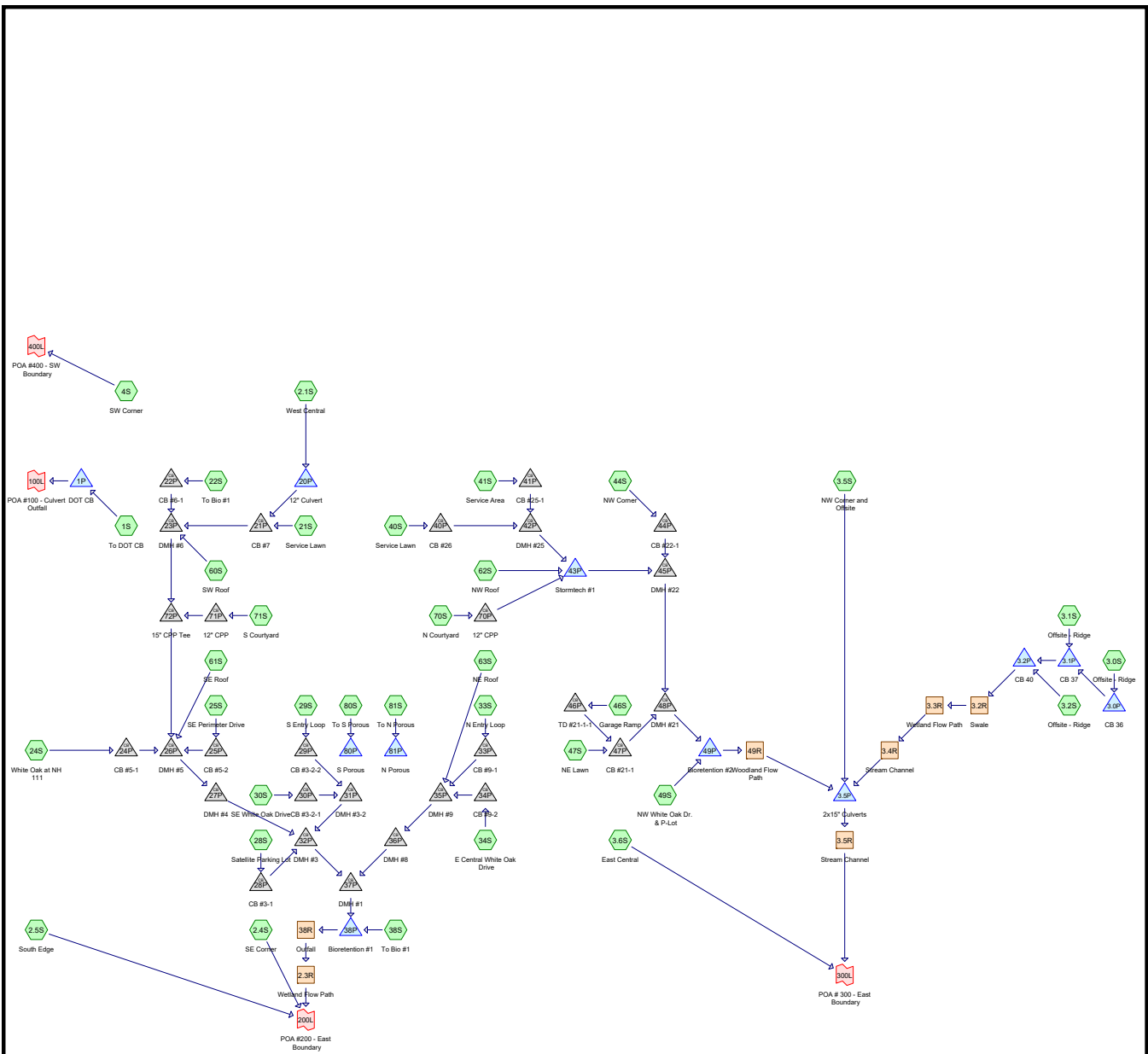
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 400L: POA #400 - SW Boundary

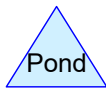
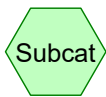
Hydrograph







POST-DEVELOPMENT



**Routing Diagram for 5015-Post**  
 Prepared by Altus Engineering, Inc., Printed 11/7/2024  
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**5015-Post**

Type III 24-hr 25-year Rainfall=7.14"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=44,727 sf 26.97% Impervious Runoff Depth=3.63" Flow Length=191' Tc=18.2 min CN=69 Runoff=3.05 cfs 0.311 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=31,448 sf 0.92% Impervious Runoff Depth=2.80" Flow Length=235' Tc=12.3 min CN=61 Runoff=1.88 cfs 0.169 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=40,178 sf 0.79% Impervious Runoff Depth=3.01" Flow Length=443' Tc=13.4 min CN=63 Runoff=2.52 cfs 0.231 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=37,352 sf 37.57% Impervious Runoff Depth=4.27" Flow Length=464' Tc=6.0 min CN=75 Runoff=4.29 cfs 0.305 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=5.27" Flow Length=154' Slope=0.0200 '/ Tc=6.0 min CN=84 Runoff=1.35 cfs 0.098 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=5.84" Flow Length=232' Slope=0.0200 '/ Tc=6.0 min CN=89 Runoff=0.65 cfs 0.049 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=6.08" Flow Length=145' Slope=0.0200 '/ Tc=6.0 min CN=91 Runoff=0.91 cfs 0.069 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=371,700 sf 11.71% Impervious Runoff Depth=3.95" Flow Length=967' Tc=18.5 min CN=72 Runoff=27.48 cfs 2.808 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=54,990 sf 18.04% Impervious Runoff Depth=3.31" Flow Length=491' Tc=6.0 min CN=66 Runoff=4.88 cfs 0.349 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=3.63" Flow Length=92' Tc=6.0 min CN=69 Runoff=1.59 cfs 0.113 af
<b>Subcatchment 21S: Service Lawn</b>	Runoff Area=638 sf 7.99% Impervious Runoff Depth=4.38" Tc=6.0 min CN=76 Runoff=0.08 cfs 0.005 af
<b>Subcatchment 22S: To Bio #1</b>	Runoff Area=14,748 sf 55.11% Impervious Runoff Depth=4.94" Flow Length=150' Tc=6.0 min CN=81 Runoff=1.93 cfs 0.139 af
<b>Subcatchment 24S: White Oak at NH 111</b>	Runoff Area=9,927 sf 47.21% Impervious Runoff Depth=4.60" Flow Length=137' Tc=6.0 min CN=78 Runoff=1.22 cfs 0.087 af
<b>Subcatchment 25S: SE Perimeter Drive</b>	Runoff Area=5,559 sf 51.29% Impervious Runoff Depth=4.82" Flow Length=149' Tc=6.0 min CN=80 Runoff=0.71 cfs 0.051 af
<b>Subcatchment 28S: Satellite Parking Lot</b>	Runoff Area=17,698 sf 76.49% Impervious Runoff Depth=5.96" Flow Length=170' Tc=6.0 min CN=90 Runoff=2.67 cfs 0.202 af
<b>Subcatchment 29S: S Entry Loop</b>	Runoff Area=19,071 sf 36.57% Impervious Runoff Depth=4.38" Flow Length=149' Tc=6.0 min CN=76 Runoff=2.24 cfs 0.160 af

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Type III 24-hr 25-year Rainfall=7.14"

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<b>Subcatchment30S: SE White Oak Drive</b>	Runoff Area=6,767 sf 98.46% Impervious Runoff Depth=6.78" Flow Length=241' Slope=0.0200 '/' Tc=6.0 min CN=97 Runoff=1.08 cfs 0.088 af
<b>Subcatchment33S: N Entry Loop</b>	Runoff Area=13,053 sf 45.97% Impervious Runoff Depth=4.60" Flow Length=257' Tc=6.0 min CN=78 Runoff=1.61 cfs 0.115 af
<b>Subcatchment34S: E Central White Oak</b>	Runoff Area=3,130 sf 97.80% Impervious Runoff Depth=6.78" Flow Length=179' Tc=6.0 min CN=97 Runoff=0.50 cfs 0.041 af
<b>Subcatchment38S: To Bio #1</b>	Runoff Area=12,713 sf 0.76% Impervious Runoff Depth=2.80" Tc=6.0 min CN=61 Runoff=0.94 cfs 0.068 af
<b>Subcatchment40S: Service Lawn</b>	Runoff Area=1,039 sf 12.51% Impervious Runoff Depth=3.31" Tc=6.0 min CN=66 Runoff=0.09 cfs 0.007 af
<b>Subcatchment41S: Service Area</b>	Runoff Area=8,856 sf 68.47% Impervious Runoff Depth=5.50" Flow Length=229' Tc=6.0 min CN=86 Runoff=1.27 cfs 0.093 af
<b>Subcatchment44S: NW Corner</b>	Runoff Area=4,346 sf 36.29% Impervious Runoff Depth=4.16" Flow Length=125' Tc=6.0 min CN=74 Runoff=0.49 cfs 0.035 af
<b>Subcatchment46S: Garage Ramp</b>	Runoff Area=1,912 sf 59.00% Impervious Runoff Depth=5.16" Tc=6.0 min CN=83 Runoff=0.26 cfs 0.019 af
<b>Subcatchment47S: NE Lawn</b>	Runoff Area=871 sf 0.00% Impervious Runoff Depth=2.80" Tc=6.0 min CN=61 Runoff=0.06 cfs 0.005 af
<b>Subcatchment49S: NW White Oak Dr. &amp;</b>	Runoff Area=15,527 sf 57.85% Impervious Runoff Depth=5.05" Flow Length=200' Tc=6.0 min CN=82 Runoff=2.07 cfs 0.150 af
<b>Subcatchment60S: SW Roof</b>	Runoff Area=12,687 sf 100.00% Impervious Runoff Depth=6.90" Tc=6.0 min CN=98 Runoff=2.04 cfs 0.167 af
<b>Subcatchment61S: SE Roof</b>	Runoff Area=13,303 sf 100.00% Impervious Runoff Depth=6.90" Tc=6.0 min CN=98 Runoff=2.14 cfs 0.176 af
<b>Subcatchment62S: NW Roof</b>	Runoff Area=13,739 sf 100.00% Impervious Runoff Depth=6.90" Tc=6.0 min CN=98 Runoff=2.21 cfs 0.181 af
<b>Subcatchment63S: NE Roof</b>	Runoff Area=10,488 sf 100.00% Impervious Runoff Depth=6.90" Tc=6.0 min CN=98 Runoff=1.69 cfs 0.138 af
<b>Subcatchment70S: N Courtyard</b>	Runoff Area=3,611 sf 49.99% Impervious Runoff Depth=4.71" Tc=6.0 min CN=79 Runoff=0.45 cfs 0.033 af
<b>Subcatchment71S: S Courtyard</b>	Runoff Area=5,179 sf 49.99% Impervious Runoff Depth=5.05" Tc=6.0 min CN=82 Runoff=0.69 cfs 0.050 af
<b>Subcatchment80S: To S Porous</b>	Runoff Area=1,677 sf 96.18% Impervious Runoff Depth>6.74" Tc=790.0 min CN=97 Runoff=0.02 cfs 0.022 af
<b>Subcatchment81S: To N Porous</b>	Runoff Area=4,473 sf 98.57% Impervious Runoff Depth>6.74" Tc=790.0 min CN=97 Runoff=0.05 cfs 0.058 af

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Type III 24-hr 25-year Rainfall=7.14"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.38'	Max Vel=2.74 fps	Inflow=5.74 cfs	1.665 af
	n=0.050 L=195.0'	S=0.0436 '/	Capacity=37.39 cfs	Outflow=5.74 cfs 1.665 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.25'	Max Vel=4.18 fps	Inflow=2.89 cfs	0.216 af
	n=0.035 L=177.0'	S=0.0876 '/	Capacity=44.72 cfs	Outflow=2.88 cfs 0.216 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.22'	Max Vel=2.01 fps	Inflow=2.88 cfs	0.216 af
	n=0.050 L=252.0'	S=0.0516 '/	Capacity=65.79 cfs	Outflow=2.76 cfs 0.216 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.37'	Max Vel=1.45 fps	Inflow=2.76 cfs	0.216 af
	n=0.050 L=94.0'	S=0.0119 '/	Capacity=17.53 cfs	Outflow=2.73 cfs 0.216 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.70'	Max Vel=3.89 fps	Inflow=23.87 cfs	3.547 af
	n=0.050 L=55.0'	S=0.0407 '/	Capacity=47.37 cfs	Outflow=23.87 cfs 3.547 af
<b>Reach 38R: Outfall</b>	Avg. Flow Depth=0.49'	Max Vel=1.49 fps	Inflow=5.74 cfs	1.665 af
	n=0.069 L=17.0'	S=0.0171 '/	Capacity=91.14 cfs	Outflow=5.74 cfs 1.665 af
<b>Reach 49R: Woodland Flow Path</b>	Avg. Flow Depth=0.25'	Max Vel=2.93 fps	Inflow=3.70 cfs	0.524 af
	n=0.050 L=95.0'	S=0.0792 '/	Capacity=50.36 cfs	Outflow=3.69 cfs 0.524 af
<b>Pond 1P: DOT CB</b>	Peak Elev=74.68'	Storage=98 cf	Inflow=3.05 cfs	0.311 af
	8.0" Round Culvert n=0.012 L=40.0'	S=0.0090 '/	Outflow=2.88 cfs	0.311 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.88'	Storage=9 cf	Inflow=1.35 cfs	0.098 af
	12.0" Round Culvert n=0.012 L=67.0'	S=0.0060 '/	Outflow=1.35 cfs	0.098 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=89.84'	Storage=15 cf	Inflow=2.00 cfs	0.147 af
	12.0" Round Culvert n=0.012 L=112.0'	S=0.0196 '/	Outflow=2.00 cfs	0.147 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=87.67'	Storage=17 cf	Inflow=2.90 cfs	0.216 af
	12.0" Round Culvert n=0.012 L=100.0'	S=0.0050 '/	Outflow=2.89 cfs	0.216 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=58.65'	Storage=13,632 cf	Inflow=32.90 cfs	3.547 af
			Outflow=23.87 cfs	3.547 af
<b>Pond 20P: 12" Culvert</b>	Peak Elev=75.25'	Storage=38 cf	Inflow=1.88 cfs	0.169 af
	12.0" Round Culvert n=0.012 L=46.0'	S=0.0272 '/	Outflow=1.87 cfs	0.169 af
<b>Pond 21P: CB #7</b>	Peak Elev=73.91'	Inflow=1.92 cfs	0.174 af	
	12.0" Round Culvert n=0.012 L=153.0'	S=0.0097 '/	Outflow=1.92 cfs	0.174 af
<b>Pond 22P: CB #6-1</b>	Peak Elev=72.72'	Inflow=1.93 cfs	0.139 af	
	12.0" Round Culvert n=0.012 L=30.0'	S=0.0050 '/	Outflow=1.93 cfs	0.139 af
<b>Pond 23P: DMH #6</b>	Peak Elev=72.87'	Inflow=5.40 cfs	0.481 af	
	15.0" Round Culvert n=0.012 L=103.0'	S=0.0100 '/	Outflow=5.40 cfs	0.481 af
<b>Pond 24P: CB #5-1</b>	Peak Elev=69.90'	Inflow=1.22 cfs	0.087 af	
	12.0" Round Culvert n=0.012 L=17.0'	S=0.0047 '/	Outflow=1.22 cfs	0.087 af



**5015-Post**

Type III 24-hr 25-year Rainfall=7.14"

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<b>Pond 25P: CB #5-2</b>	Peak Elev=69.68' Inflow=0.71 cfs 0.051 af 12.0" Round Culvert n=0.012 L=5.0' S=0.0160 '/' Outflow=0.71 cfs 0.051 af
<b>Pond 26P: DMH #5</b>	Peak Elev=73.08' Inflow=10.14 cfs 0.845 af 15.0" Round Culvert n=0.012 L=85.0' S=0.0049 '/' Outflow=10.14 cfs 0.845 af
<b>Pond 27P: DMH #4</b>	Peak Elev=71.27' Inflow=10.14 cfs 0.845 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0243 '/' Outflow=10.14 cfs 0.845 af
<b>Pond 28P: CB #3-1</b>	Peak Elev=67.51' Inflow=2.67 cfs 0.202 af 12.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=2.67 cfs 0.202 af
<b>Pond 29P: CB #3-2-2</b>	Peak Elev=68.18' Inflow=2.24 cfs 0.160 af 12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=2.24 cfs 0.160 af
<b>Pond 30P: CB #3-2-1</b>	Peak Elev=67.75' Inflow=1.08 cfs 0.088 af 12.0" Round Culvert n=0.012 L=4.0' S=0.0250 '/' Outflow=1.08 cfs 0.088 af
<b>Pond 31P: DMH #3-2</b>	Peak Elev=68.22' Inflow=3.33 cfs 0.248 af 12.0" Round Culvert n=0.012 L=24.0' S=0.0354 '/' Outflow=3.33 cfs 0.248 af
<b>Pond 32P: DMH #3</b>	Peak Elev=67.24' Inflow=16.13 cfs 1.295 af 24.0" Round Culvert n=0.012 L=106.0' S=0.0275 '/' Outflow=16.13 cfs 1.295 af
<b>Pond 33P: CB #9-1</b>	Peak Elev=65.58' Inflow=1.61 cfs 0.115 af 12.0" Round Culvert n=0.012 L=12.0' S=0.0958 '/' Outflow=1.61 cfs 0.115 af
<b>Pond 34P: CB #9-2</b>	Peak Elev=65.25' Inflow=0.50 cfs 0.041 af 12.0" Round Culvert n=0.012 L=16.0' S=0.0719 '/' Outflow=0.50 cfs 0.041 af
<b>Pond 35P: DMH #9</b>	Peak Elev=64.67' Inflow=3.80 cfs 0.294 af 15.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=3.80 cfs 0.294 af
<b>Pond 36P: DMH #8</b>	Peak Elev=63.90' Inflow=3.80 cfs 0.294 af 15.0" Round Culvert n=0.012 L=108.0' S=0.0050 '/' Outflow=3.80 cfs 0.294 af
<b>Pond 37P: DMH #1</b>	Peak Elev=65.04' Inflow=19.92 cfs 1.589 af 24.0" Round Culvert n=0.012 L=16.0' S=0.0050 '/' Outflow=19.92 cfs 1.589 af
<b>Pond 38P: Bioretention #1</b>	Peak Elev=65.40' Storage=26,122 cf Inflow=20.86 cfs 1.657 af Outflow=5.74 cfs 1.665 af
<b>Pond 40P: CB #26</b>	Peak Elev=73.39' Inflow=0.09 cfs 0.007 af 12.0" Round Culvert n=0.012 L=141.0' S=0.0200 '/' Outflow=0.09 cfs 0.007 af
<b>Pond 41P: CB #25-1</b>	Peak Elev=71.49' Inflow=1.27 cfs 0.093 af 12.0" Round Culvert n=0.012 L=6.0' S=0.0783 '/' Outflow=1.27 cfs 0.093 af
<b>Pond 42P: DMH #25</b>	Peak Elev=70.74' Inflow=1.36 cfs 0.100 af 15.0" Round Culvert n=0.012 L=39.0' S=0.0318 '/' Outflow=1.36 cfs 0.100 af
<b>Pond 43P: Stormtech #1</b>	Peak Elev=70.97' Storage=3,084 cf Inflow=4.02 cfs 0.314 af Outflow=1.27 cfs 0.314 af

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<b>Pond 44P: CB #22-1</b>	Peak Elev=68.06'	Inflow=0.49 cfs	0.035 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/'	Outflow=0.49 cfs	0.035 af	
<b>Pond 45P: DMH #22</b>	Peak Elev=66.40'	Inflow=1.55 cfs	0.348 af
15.0" Round Culvert n=0.012 L=80.0' S=0.0200 '/'	Outflow=1.55 cfs	0.348 af	
<b>Pond 46P: TD #21-1-1</b>	Peak Elev=65.39'	Inflow=0.26 cfs	0.019 af
6.0" Round Culvert n=0.012 L=38.0' S=0.0050 '/'	Outflow=0.26 cfs	0.019 af	
<b>Pond 47P: CB #21-1</b>	Peak Elev=64.84'	Inflow=0.32 cfs	0.024 af
12.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/'	Outflow=0.32 cfs	0.024 af	
<b>Pond 48P: DMH #21</b>	Peak Elev=64.90'	Inflow=1.86 cfs	0.372 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/'	Outflow=1.86 cfs	0.372 af	
<b>Pond 49P: Bioretention #2</b>	Peak Elev=66.81'	Storage=4,312 cf	Inflow=3.92 cfs
		Outflow=3.70 cfs	0.522 af
<b>Pond 70P: 12" CPP</b>	Peak Elev=74.83'	Inflow=0.45 cfs	0.033 af
12.0" Round Culvert n=0.012 L=62.0' S=0.0690 '/'	Outflow=0.45 cfs	0.033 af	
<b>Pond 71P: 12" CPP</b>	Peak Elev=74.42'	Inflow=0.69 cfs	0.050 af
12.0" Round Culvert n=0.012 L=70.0' S=0.0500 '/'	Outflow=0.69 cfs	0.050 af	
<b>Pond 72P: 15" CPP Tee</b>	Peak Elev=72.71'	Inflow=6.09 cfs	0.531 af
15.0" Round Culvert n=0.012 L=141.0' S=0.0100 '/'	Outflow=6.09 cfs	0.531 af	
<b>Pond 80P: S Porous</b>	Peak Elev=0.03'	Storage=4 cf	Inflow=0.02 cfs
		Outflow=0.02 cfs	0.022 af
<b>Pond 81P: N Porous</b>	Peak Elev=0.02'	Storage=10 cf	Inflow=0.05 cfs
		Outflow=0.05 cfs	0.058 af
<b>Link 100L: POA #100 - Culvert Outfall</b>		Inflow=2.88 cfs	0.311 af
		Primary=2.88 cfs	0.311 af
<b>Link 200L: POA #200 - East Boundary</b>		Inflow=10.12 cfs	2.201 af
		Primary=10.12 cfs	2.201 af
<b>Link 300L: POA # 300 - East Boundary</b>		Inflow=25.51 cfs	3.896 af
		Primary=25.51 cfs	3.896 af
<b>Link 400L: POA #400 - SW Boundary</b>		Inflow=1.59 cfs	0.113 af
		Primary=1.59 cfs	0.113 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 6.590 af   Average Runoff Depth = 4.21"**  
**72.41% Pervious = 13.593 ac   27.59% Impervious = 5.180 ac**



**5015-Post**

Type III 24-hr 50-year Rainfall=8.58"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 1S: To DOT CB</b>	Runoff Area=44,727 sf 26.97% Impervious Runoff Depth=4.85" Flow Length=191' Tc=18.2 min CN=69 Runoff=4.09 cfs 0.415 af
<b>Subcatchment 2.1S: West Central</b>	Runoff Area=31,448 sf 0.92% Impervious Runoff Depth=3.89" Flow Length=235' Tc=12.3 min CN=61 Runoff=2.66 cfs 0.234 af
<b>Subcatchment 2.4S: SE Corner</b>	Runoff Area=40,178 sf 0.79% Impervious Runoff Depth=4.13" Flow Length=443' Tc=13.4 min CN=63 Runoff=3.51 cfs 0.317 af
<b>Subcatchment 2.5S: South Edge</b>	Runoff Area=37,352 sf 37.57% Impervious Runoff Depth=5.57" Flow Length=464' Tc=6.0 min CN=75 Runoff=5.56 cfs 0.398 af
<b>Subcatchment 3.0S: Offsite - Ridge</b>	Runoff Area=9,730 sf 43.66% Impervious Runoff Depth=6.65" Flow Length=154' Slope=0.0200 '/ Tc=6.0 min CN=84 Runoff=1.68 cfs 0.124 af
<b>Subcatchment 3.1S: Offsite - Ridge</b>	Runoff Area=4,378 sf 64.57% Impervious Runoff Depth=7.26" Flow Length=232' Slope=0.0200 '/ Tc=6.0 min CN=89 Runoff=0.80 cfs 0.061 af
<b>Subcatchment 3.2S: Offsite - Ridge</b>	Runoff Area=5,923 sf 69.71% Impervious Runoff Depth=7.50" Flow Length=145' Slope=0.0200 '/ Tc=6.0 min CN=91 Runoff=1.10 cfs 0.085 af
<b>Subcatchment 3.5S: NW Corner and</b>	Runoff Area=371,700 sf 11.71% Impervious Runoff Depth=5.21" Flow Length=967' Tc=18.5 min CN=72 Runoff=36.23 cfs 3.703 af
<b>Subcatchment 3.6S: East Central</b>	Runoff Area=54,990 sf 18.04% Impervious Runoff Depth=4.49" Flow Length=491' Tc=6.0 min CN=66 Runoff=6.64 cfs 0.472 af
<b>Subcatchment 4S: SW Corner</b>	Runoff Area=16,304 sf 22.77% Impervious Runoff Depth=4.85" Flow Length=92' Tc=6.0 min CN=69 Runoff=2.13 cfs 0.151 af
<b>Subcatchment 21S: Service Lawn</b>	Runoff Area=638 sf 7.99% Impervious Runoff Depth=5.69" Tc=6.0 min CN=76 Runoff=0.10 cfs 0.007 af
<b>Subcatchment 22S: To Bio #1</b>	Runoff Area=14,748 sf 55.11% Impervious Runoff Depth=6.29" Flow Length=150' Tc=6.0 min CN=81 Runoff=2.44 cfs 0.178 af
<b>Subcatchment 24S: White Oak at NH 111</b>	Runoff Area=9,927 sf 47.21% Impervious Runoff Depth=5.93" Flow Length=137' Tc=6.0 min CN=78 Runoff=1.56 cfs 0.113 af
<b>Subcatchment 25S: SE Perimeter Drive</b>	Runoff Area=5,559 sf 51.29% Impervious Runoff Depth=6.17" Flow Length=149' Tc=6.0 min CN=80 Runoff=0.91 cfs 0.066 af
<b>Subcatchment 28S: Satellite Parking Lot</b>	Runoff Area=17,698 sf 76.49% Impervious Runoff Depth=7.38" Flow Length=170' Tc=6.0 min CN=90 Runoff=3.27 cfs 0.250 af
<b>Subcatchment 29S: S Entry Loop</b>	Runoff Area=19,071 sf 36.57% Impervious Runoff Depth=5.69" Flow Length=149' Tc=6.0 min CN=76 Runoff=2.90 cfs 0.208 af



**5015-Post**

Type III 24-hr 50-year Rainfall=8.58"

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<b>Subcatchment30S: SE White Oak Drive</b>	Runoff Area=6,767 sf 98.46% Impervious Runoff Depth=8.22" Flow Length=241' Slope=0.0200 '/' Tc=6.0 min CN=97 Runoff=1.31 cfs 0.106 af
<b>Subcatchment33S: N Entry Loop</b>	Runoff Area=13,053 sf 45.97% Impervious Runoff Depth=5.93" Flow Length=257' Tc=6.0 min CN=78 Runoff=2.06 cfs 0.148 af
<b>Subcatchment34S: E Central White Oak</b>	Runoff Area=3,130 sf 97.80% Impervious Runoff Depth=8.22" Flow Length=179' Tc=6.0 min CN=97 Runoff=0.60 cfs 0.049 af
<b>Subcatchment38S: To Bio #1</b>	Runoff Area=12,713 sf 0.76% Impervious Runoff Depth=3.89" Tc=6.0 min CN=61 Runoff=1.32 cfs 0.095 af
<b>Subcatchment40S: Service Lawn</b>	Runoff Area=1,039 sf 12.51% Impervious Runoff Depth=4.49" Tc=6.0 min CN=66 Runoff=0.13 cfs 0.009 af
<b>Subcatchment41S: Service Area</b>	Runoff Area=8,856 sf 68.47% Impervious Runoff Depth=6.89" Flow Length=229' Tc=6.0 min CN=86 Runoff=1.57 cfs 0.117 af
<b>Subcatchment44S: NW Corner</b>	Runoff Area=4,346 sf 36.29% Impervious Runoff Depth=5.45" Flow Length=125' Tc=6.0 min CN=74 Runoff=0.63 cfs 0.045 af
<b>Subcatchment46S: Garage Ramp</b>	Runoff Area=1,912 sf 59.00% Impervious Runoff Depth=6.53" Tc=6.0 min CN=83 Runoff=0.33 cfs 0.024 af
<b>Subcatchment47S: NE Lawn</b>	Runoff Area=871 sf 0.00% Impervious Runoff Depth=3.89" Tc=6.0 min CN=61 Runoff=0.09 cfs 0.006 af
<b>Subcatchment49S: NW White Oak Dr. &amp;</b>	Runoff Area=15,527 sf 57.85% Impervious Runoff Depth=6.41" Flow Length=200' Tc=6.0 min CN=82 Runoff=2.61 cfs 0.190 af
<b>Subcatchment60S: SW Roof</b>	Runoff Area=12,687 sf 100.00% Impervious Runoff Depth=8.34" Tc=6.0 min CN=98 Runoff=2.45 cfs 0.202 af
<b>Subcatchment61S: SE Roof</b>	Runoff Area=13,303 sf 100.00% Impervious Runoff Depth=8.34" Tc=6.0 min CN=98 Runoff=2.57 cfs 0.212 af
<b>Subcatchment62S: NW Roof</b>	Runoff Area=13,739 sf 100.00% Impervious Runoff Depth=8.34" Tc=6.0 min CN=98 Runoff=2.66 cfs 0.219 af
<b>Subcatchment63S: NE Roof</b>	Runoff Area=10,488 sf 100.00% Impervious Runoff Depth=8.34" Tc=6.0 min CN=98 Runoff=2.03 cfs 0.167 af
<b>Subcatchment70S: N Courtyard</b>	Runoff Area=3,611 sf 49.99% Impervious Runoff Depth=6.05" Tc=6.0 min CN=79 Runoff=0.58 cfs 0.042 af
<b>Subcatchment71S: S Courtyard</b>	Runoff Area=5,179 sf 49.99% Impervious Runoff Depth=6.41" Tc=6.0 min CN=82 Runoff=0.87 cfs 0.064 af
<b>Subcatchment80S: To S Porous</b>	Runoff Area=1,677 sf 96.18% Impervious Runoff Depth>8.17" Tc=790.0 min CN=97 Runoff=0.02 cfs 0.026 af
<b>Subcatchment81S: To N Porous</b>	Runoff Area=4,473 sf 98.57% Impervious Runoff Depth>8.17" Tc=790.0 min CN=97 Runoff=0.06 cfs 0.070 af

**5015-Post**

Type III 24-hr 50-year Rainfall=8.58"

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<b>Reach 2.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.59' Max Vel=3.50 fps Inflow=13.22 cfs 2.106 af n=0.050 L=195.0' S=0.0436 '/ Capacity=37.39 cfs Outflow=13.17 cfs 2.106 af
<b>Reach 3.2R: Swale</b>	Avg. Flow Depth=0.28' Max Vel=4.46 fps Inflow=3.57 cfs 0.269 af n=0.035 L=177.0' S=0.0876 '/ Capacity=44.72 cfs Outflow=3.55 cfs 0.269 af
<b>Reach 3.3R: Wetland Flow Path</b>	Avg. Flow Depth=0.25' Max Vel=2.14 fps Inflow=3.55 cfs 0.269 af n=0.050 L=252.0' S=0.0516 '/ Capacity=65.79 cfs Outflow=3.42 cfs 0.269 af
<b>Reach 3.4R: Stream Channel</b>	Avg. Flow Depth=0.42' Max Vel=1.55 fps Inflow=3.42 cfs 0.269 af n=0.050 L=94.0' S=0.0119 '/ Capacity=17.53 cfs Outflow=3.39 cfs 0.269 af
<b>Reach 3.5R: Stream Channel</b>	Avg. Flow Depth=0.75' Max Vel=4.06 fps Inflow=27.55 cfs 4.627 af n=0.050 L=55.0' S=0.0407 '/ Capacity=47.37 cfs Outflow=27.55 cfs 4.627 af
<b>Reach 38R: Outfall</b>	Avg. Flow Depth=0.76' Max Vel=1.92 fps Inflow=13.22 cfs 2.106 af n=0.069 L=17.0' S=0.0171 '/ Capacity=91.14 cfs Outflow=13.22 cfs 2.106 af
<b>Reach 49R: Woodland Flow Path</b>	Avg. Flow Depth=0.28' Max Vel=3.14 fps Inflow=4.60 cfs 0.655 af n=0.050 L=95.0' S=0.0792 '/ Capacity=50.36 cfs Outflow=4.59 cfs 0.655 af
<b>Pond 1P: DOT CB</b>	Peak Elev=74.96' Storage=827 cf Inflow=4.09 cfs 0.415 af 8.0" Round Culvert n=0.012 L=40.0' S=0.0090 '/ Outflow=3.00 cfs 0.415 af
<b>Pond 3.0P: CB 36</b>	Peak Elev=89.98' Storage=10 cf Inflow=1.68 cfs 0.124 af 12.0" Round Culvert n=0.012 L=67.0' S=0.0060 '/ Outflow=1.68 cfs 0.124 af
<b>Pond 3.1P: CB 37</b>	Peak Elev=90.07' Storage=18 cf Inflow=2.48 cfs 0.185 af 12.0" Round Culvert n=0.012 L=112.0' S=0.0196 '/ Outflow=2.47 cfs 0.184 af
<b>Pond 3.2P: CB 40</b>	Peak Elev=88.24' Storage=24 cf Inflow=3.58 cfs 0.269 af 12.0" Round Culvert n=0.012 L=100.0' S=0.0050 '/ Outflow=3.57 cfs 0.269 af
<b>Pond 3.5P: 2x15" Culverts</b>	Peak Elev=59.31' Storage=22,568 cf Inflow=42.83 cfs 4.627 af Outflow=27.55 cfs 4.627 af
<b>Pond 20P: 12" Culvert</b>	Peak Elev=75.47' Storage=89 cf Inflow=2.66 cfs 0.234 af 12.0" Round Culvert n=0.012 L=46.0' S=0.0272 '/ Outflow=2.60 cfs 0.234 af
<b>Pond 21P: CB #7</b>	Peak Elev=74.14' Inflow=2.66 cfs 0.241 af 12.0" Round Culvert n=0.012 L=153.0' S=0.0097 '/ Outflow=2.66 cfs 0.241 af
<b>Pond 22P: CB #6-1</b>	Peak Elev=72.89' Inflow=2.44 cfs 0.178 af 12.0" Round Culvert n=0.012 L=30.0' S=0.0050 '/ Outflow=2.44 cfs 0.178 af
<b>Pond 23P: DMH #6</b>	Peak Elev=73.39' Inflow=6.89 cfs 0.621 af 15.0" Round Culvert n=0.012 L=103.0' S=0.0100 '/ Outflow=6.89 cfs 0.621 af
<b>Pond 24P: CB #5-1</b>	Peak Elev=70.01' Inflow=1.56 cfs 0.113 af 12.0" Round Culvert n=0.012 L=17.0' S=0.0047 '/ Outflow=1.56 cfs 0.113 af

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Type III 24-hr 50-year Rainfall=8.58"

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<b>Pond 25P: CB #5-2</b>	Peak Elev=69.76' Inflow=0.91 cfs 0.066 af 12.0" Round Culvert n=0.012 L=5.0' S=0.0160 '/' Outflow=0.91 cfs 0.066 af
<b>Pond 26P: DMH #5</b>	Peak Elev=75.05' Inflow=12.76 cfs 1.075 af 15.0" Round Culvert n=0.012 L=85.0' S=0.0049 '/' Outflow=12.76 cfs 1.075 af
<b>Pond 27P: DMH #4</b>	Peak Elev=72.99' Inflow=12.76 cfs 1.075 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0243 '/' Outflow=12.76 cfs 1.075 af
<b>Pond 28P: CB #3-1</b>	Peak Elev=67.86' Inflow=3.27 cfs 0.250 af 12.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/' Outflow=3.27 cfs 0.250 af
<b>Pond 29P: CB #3-2-2</b>	Peak Elev=68.44' Inflow=2.90 cfs 0.208 af 12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=2.90 cfs 0.208 af
<b>Pond 30P: CB #3-2-1</b>	Peak Elev=67.82' Inflow=1.31 cfs 0.106 af 12.0" Round Culvert n=0.012 L=4.0' S=0.0250 '/' Outflow=1.31 cfs 0.106 af
<b>Pond 31P: DMH #3-2</b>	Peak Elev=68.68' Inflow=4.20 cfs 0.314 af 12.0" Round Culvert n=0.012 L=24.0' S=0.0354 '/' Outflow=4.20 cfs 0.314 af
<b>Pond 32P: DMH #3</b>	Peak Elev=67.89' Inflow=20.21 cfs 1.639 af 24.0" Round Culvert n=0.012 L=106.0' S=0.0275 '/' Outflow=20.21 cfs 1.639 af
<b>Pond 33P: CB #9-1</b>	Peak Elev=65.70' Inflow=2.06 cfs 0.148 af 12.0" Round Culvert n=0.012 L=12.0' S=0.0958 '/' Outflow=2.06 cfs 0.148 af
<b>Pond 34P: CB #9-2</b>	Peak Elev=65.29' Inflow=0.60 cfs 0.049 af 12.0" Round Culvert n=0.012 L=16.0' S=0.0719 '/' Outflow=0.60 cfs 0.049 af
<b>Pond 35P: DMH #9</b>	Peak Elev=64.89' Inflow=4.69 cfs 0.365 af 15.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=4.69 cfs 0.365 af
<b>Pond 36P: DMH #8</b>	Peak Elev=64.12' Inflow=4.69 cfs 0.365 af 15.0" Round Culvert n=0.012 L=108.0' S=0.0050 '/' Outflow=4.69 cfs 0.365 af
<b>Pond 37P: DMH #1</b>	Peak Elev=65.79' Inflow=24.89 cfs 2.003 af 24.0" Round Culvert n=0.012 L=16.0' S=0.0050 '/' Outflow=24.89 cfs 2.003 af
<b>Pond 38P: Bioretention #1</b>	Peak Elev=65.76' Storage=29,380 cf Inflow=26.22 cfs 2.098 af Outflow=13.22 cfs 2.106 af
<b>Pond 40P: CB #26</b>	Peak Elev=73.42' Inflow=0.13 cfs 0.009 af 12.0" Round Culvert n=0.012 L=141.0' S=0.0200 '/' Outflow=0.13 cfs 0.009 af
<b>Pond 41P: CB #25-1</b>	Peak Elev=71.57' Inflow=1.57 cfs 0.117 af 12.0" Round Culvert n=0.012 L=6.0' S=0.0783 '/' Outflow=1.57 cfs 0.117 af
<b>Pond 42P: DMH #25</b>	Peak Elev=70.81' Inflow=1.69 cfs 0.126 af 15.0" Round Culvert n=0.012 L=39.0' S=0.0318 '/' Outflow=1.69 cfs 0.126 af
<b>Pond 43P: Stormtech #1</b>	Peak Elev=72.25' Storage=4,020 cf Inflow=4.93 cfs 0.387 af Outflow=1.47 cfs 0.387 af

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Type III 24-hr 50-year Rainfall=8.58"

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<b>Pond 44P: CB #22-1</b>	Peak Elev=68.12'	Inflow=0.63 cfs	0.045 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/'	Outflow=0.63 cfs	0.045 af	
<b>Pond 45P: DMH #22</b>	Peak Elev=66.46'	Inflow=1.84 cfs	0.432 af
15.0" Round Culvert n=0.012 L=80.0' S=0.0200 '/'	Outflow=1.84 cfs	0.432 af	
<b>Pond 46P: TD #21-1-1</b>	Peak Elev=65.45'	Inflow=0.33 cfs	0.024 af
6.0" Round Culvert n=0.012 L=38.0' S=0.0050 '/'	Outflow=0.33 cfs	0.024 af	
<b>Pond 47P: CB #21-1</b>	Peak Elev=64.88'	Inflow=0.42 cfs	0.030 af
12.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/'	Outflow=0.42 cfs	0.030 af	
<b>Pond 48P: DMH #21</b>	Peak Elev=64.99'	Inflow=2.23 cfs	0.462 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/'	Outflow=2.23 cfs	0.462 af	
<b>Pond 49P: Bioretention #2</b>	Peak Elev=66.86'	Storage=4,415 cf	Inflow=4.82 cfs
		Outflow=4.60 cfs	0.653 af
<b>Pond 70P: 12" CPP</b>	Peak Elev=74.88'	Inflow=0.58 cfs	0.042 af
12.0" Round Culvert n=0.012 L=62.0' S=0.0690 '/'	Outflow=0.58 cfs	0.042 af	
<b>Pond 71P: 12" CPP</b>	Peak Elev=74.48'	Inflow=0.87 cfs	0.064 af
12.0" Round Culvert n=0.012 L=70.0' S=0.0500 '/'	Outflow=0.87 cfs	0.064 af	
<b>Pond 72P: 15" CPP Tee</b>	Peak Elev=73.76'	Inflow=7.75 cfs	0.685 af
15.0" Round Culvert n=0.012 L=141.0' S=0.0100 '/'	Outflow=7.75 cfs	0.685 af	
<b>Pond 80P: S Porous</b>	Peak Elev=0.03'	Storage=4 cf	Inflow=0.02 cfs
		Outflow=0.02 cfs	0.026 af
<b>Pond 81P: N Porous</b>	Peak Elev=0.03'	Storage=12 cf	Inflow=0.06 cfs
		Outflow=0.06 cfs	0.070 af
<b>Link 100L: POA #100 - Culvert Outfall</b>		Inflow=3.00 cfs	0.415 af
		Primary=3.00 cfs	0.415 af
<b>Link 200L: POA #200 - East Boundary</b>		Inflow=18.46 cfs	2.821 af
		Primary=18.46 cfs	2.821 af
<b>Link 300L: POA # 300 - East Boundary</b>		Inflow=29.56 cfs	5.099 af
		Primary=29.56 cfs	5.099 af
<b>Link 400L: POA #400 - SW Boundary</b>		Inflow=2.13 cfs	0.151 af
		Primary=2.13 cfs	0.151 af

**Total Runoff Area = 18.773 ac   Runoff Volume = 8.573 af   Average Runoff Depth = 5.48"**  
**72.41% Pervious = 13.593 ac   27.59% Impervious = 5.180 ac**



# Section 5

## Precipitation Table

# Extreme Precipitation Tables

## Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	42.970 degrees North
Longitude	70.984 degrees West
Elevation	20 feet
Date/Time	Mon Aug 12 2024 15:23:07 GMT-0400 (Eastern Daylight Time)

### Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.26	0.40	0.50	0.66	0.82	1.04	<b>1yr</b>	0.71	0.99	1.22	1.57	2.04	2.67	2.87	<b>1yr</b>	2.36	2.76	3.17	3.88	4.50	<b>1yr</b>
<b>2yr</b>	0.32	0.50	0.62	0.82	1.03	1.30	<b>2yr</b>	0.89	1.18	1.52	1.94	2.48	3.19	3.54	<b>2yr</b>	2.83	3.40	3.92	4.64	5.29	<b>2yr</b>
<b>5yr</b>	0.38	0.59	0.74	0.98	1.26	1.62	<b>5yr</b>	1.09	1.47	1.90	2.44	3.15	4.06	4.55	<b>5yr</b>	3.60	4.38	5.01	5.94	6.71	<b>5yr</b>
<b>10yr</b>	0.42	0.66	0.83	1.13	1.47	1.91	<b>10yr</b>	1.27	1.74	2.26	2.92	3.77	4.88	5.51	<b>10yr</b>	4.32	5.30	6.03	7.16	8.03	<b>10yr</b>
<b>25yr</b>	0.49	0.78	0.99	1.36	1.81	2.38	<b>25yr</b>	1.56	2.16	2.82	3.68	4.79	6.21	7.10	<b>25yr</b>	5.49	6.83	7.72	9.17	10.19	<b>25yr</b>
<b>50yr</b>	0.55	0.88	1.13	1.57	2.12	2.82	<b>50yr</b>	1.83	2.55	3.36	4.40	5.74	7.46	8.61	<b>50yr</b>	6.60	8.28	9.30	11.06	12.22	<b>50yr</b>
<b>100yr</b>	0.61	0.99	1.28	1.82	2.48	3.34	<b>100yr</b>	2.14	3.02	4.00	5.26	6.88	8.96	10.43	<b>100yr</b>	7.93	10.03	11.21	13.36	14.65	<b>100yr</b>
<b>200yr</b>	0.70	1.14	1.48	2.11	2.92	3.95	<b>200yr</b>	2.52	3.57	4.75	6.28	8.24	10.77	12.65	<b>200yr</b>	9.53	12.16	13.52	16.14	17.57	<b>200yr</b>
<b>500yr</b>	0.82	1.36	1.77	2.57	3.61	4.94	<b>500yr</b>	3.12	4.47	5.97	7.95	10.48	13.74	16.32	<b>500yr</b>	12.16	15.69	17.33	20.74	22.38	<b>500yr</b>

### Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.24	0.37	0.45	0.61	0.75	0.89	<b>1yr</b>	0.64	0.87	0.97	1.25	1.53	2.29	2.53	<b>1yr</b>	2.03	2.43	2.88	3.50	4.03	<b>1yr</b>
<b>2yr</b>	0.32	0.49	0.60	0.82	1.01	1.19	<b>2yr</b>	0.87	1.16	1.37	1.81	2.32	3.10	3.44	<b>2yr</b>	2.75	3.31	3.81	4.50	5.12	<b>2yr</b>
<b>5yr</b>	0.36	0.55	0.68	0.94	1.19	1.42	<b>5yr</b>	1.03	1.39	1.62	2.11	2.72	3.75	4.17	<b>5yr</b>	3.32	4.01	4.59	5.58	6.19	<b>5yr</b>
<b>10yr</b>	0.40	0.61	0.75	1.05	1.36	1.63	<b>10yr</b>	1.18	1.59	1.82	2.39	3.06	4.29	4.80	<b>10yr</b>	3.80	4.62	5.29	6.53	7.08	<b>10yr</b>
<b>25yr</b>	0.46	0.70	0.87	1.24	1.63	1.95	<b>25yr</b>	1.40	1.91	2.12	2.78	3.57	4.96	5.78	<b>25yr</b>	4.39	5.56	6.36	8.03	8.90	<b>25yr</b>
<b>50yr</b>	0.51	0.77	0.96	1.38	1.86	2.25	<b>50yr</b>	1.61	2.20	2.37	3.11	4.00	5.61	6.63	<b>50yr</b>	4.97	6.38	7.30	9.40	10.31	<b>50yr</b>
<b>100yr</b>	0.57	0.86	1.08	1.56	2.14	2.58	<b>100yr</b>	1.85	2.53	2.65	3.48	4.48	6.33	7.59	<b>100yr</b>	5.61	7.30	8.39	11.00	11.93	<b>100yr</b>
<b>200yr</b>	0.64	0.96	1.22	1.77	2.46	2.97	<b>200yr</b>	2.12	2.90	2.96	3.89	5.01	7.11	9.80	<b>200yr</b>	6.29	9.42	9.64	12.89	13.83	<b>200yr</b>
<b>500yr</b>	0.75	1.12	1.44	2.09	2.98	3.58	<b>500yr</b>	2.57	3.50	3.43	4.50	5.84	8.23	12.06	<b>500yr</b>	7.28	11.59	11.58	15.91	16.78	<b>500yr</b>

### Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.28	0.44	0.54	0.72	0.89	1.08	<b>1yr</b>	0.77	1.06	1.26	1.70	2.15	2.93	3.17	<b>1yr</b>	2.59	3.05	3.53	4.20	4.92	<b>1yr</b>
<b>2yr</b>	0.33	0.51	0.63	0.86	1.05	1.26	<b>2yr</b>	0.91	1.23	1.48	1.94	2.48	3.35	3.67	<b>2yr</b>	2.96	3.53	4.07	4.84	5.57	<b>2yr</b>
<b>5yr</b>	0.40	0.62	0.77	1.06	1.35	1.62	<b>5yr</b>	1.16	1.58	1.87	2.47	3.15	4.40	4.98	<b>5yr</b>	3.89	4.79	5.46	6.31	7.27	<b>5yr</b>
<b>10yr</b>	0.48	0.74	0.91	1.27	1.64	1.97	<b>10yr</b>	1.42	1.93	2.26	3.00	3.78	5.49	6.29	<b>10yr</b>	4.86	6.05	6.87	7.81	9.03	<b>10yr</b>
<b>25yr</b>	0.59	0.90	1.13	1.61	2.11	2.56	<b>25yr</b>	1.82	2.50	2.93	3.89	4.83	7.49	8.60	<b>25yr</b>	6.63	8.27	9.28	10.38	11.42	<b>25yr</b>
<b>50yr</b>	0.70	1.06	1.32	1.90	2.56	3.12	<b>50yr</b>	2.21	3.05	3.56	4.72	5.84	9.39	10.93	<b>50yr</b>	8.31	10.51	11.68	12.88	14.03	<b>50yr</b>
<b>100yr</b>	0.83	1.25	1.56	2.26	3.10	3.79	<b>100yr</b>	2.67	3.70	4.34	5.76	7.06	11.79	13.87	<b>100yr</b>	10.44	13.34	14.69	15.99	17.26	<b>100yr</b>
<b>200yr</b>	0.97	1.46	1.86	2.69	3.75	4.62	<b>200yr</b>	3.23	4.52	5.30	7.02	8.52	14.85	15.76	<b>200yr</b>	13.14	15.15	18.51	19.85	21.25	<b>200yr</b>
<b>500yr</b>	1.22	1.81	2.33	3.38	4.81	5.99	<b>500yr</b>	4.15	5.86	6.89	9.14	10.96	20.16	21.15	<b>500yr</b>	17.84	20.34	25.08	26.44	28.02	<b>500yr</b>

## Section 6

# NRCS Soils Report Site Specific Soil Survey Geotechnical Report



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

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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](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.

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# Soil Map

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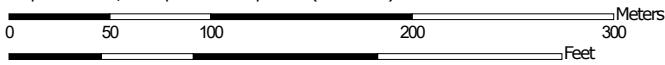
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Custom Soil Resource Report  
Soil Map



Map Scale: 1:3,750 if printed on A portrait (8.5" x 11") sheet.



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

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil 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 26, Aug 22, 2023

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
26B	Windsor loamy sand, 3 to 8 percent slopes	11.9	20.1%
32B	Boxford silt loam, 3 to 8 percent slopes	6.3	10.6%
32C	Boxford silt loam, 8 to 15 percent slopes	18.6	31.5%
33A	Scitico silt loam, 0 to 5 percent slopes	2.7	4.6%
63C	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	13.3	22.6%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	6.3	10.6%
<b>Totals for Area of Interest</b>		<b>59.1</b>	<b>100.0%</b>

## 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

## Custom Soil Resource Report

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

### 26B—Windsor loamy sand, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2svkf  
*Elevation:* 0 to 1,210 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 250 days  
*Farmland classification:* Farmland of local importance

#### Map Unit Composition

*Windsor and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Windsor

##### Setting

*Landform:* Outwash terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss

##### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 3 inches:* loamy sand  
*Bw - 3 to 25 inches:* loamy sand  
*C - 25 to 65 inches:* sand

##### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Excessively drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 4.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2s  
*Hydrologic Soil Group:* A  
*Ecological site:* F145XY008MA - Dry Outwash  
*Hydric soil rating:* No

## Minor Components

### Hinckley

*Percent of map unit:* 10 percent  
*Landform:* Eskers  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* F145XY008MA - Dry Outwash  
*Hydric soil rating:* No

### Deerfield, loamy sand

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* F144AY027MA - Moist Sandy Outwash  
*Hydric soil rating:* No

## 32B—Boxford silt loam, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 9cn4  
*Elevation:* 0 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:* Farmland of statewide importance

### Map Unit Composition

*Boxford and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Boxford

#### Setting

*Parent material:* Glaciomarine

#### Typical profile

*H1 - 0 to 2 inches:* silt loam  
*H2 - 2 to 13 inches:* silt loam  
*H3 - 13 to 23 inches:* silty clay loam  
*H4 - 23 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained

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*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)

*Depth to water table:* About 12 to 36 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 8.7 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* D

*Ecological site:* F144AY018NY - Moist Lake Plain

*Hydric soil rating:* No

### **Minor Components**

#### **Eldridge**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

#### **Scitico**

*Percent of map unit:* 10 percent

*Landform:* Marine terraces

*Hydric soil rating:* Yes

## **32C—Boxford silt loam, 8 to 15 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 9cn5

*Elevation:* 0 to 110 feet

*Mean annual precipitation:* 47 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**

*Boxford and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Boxford**

#### **Setting**

*Parent material:* Glaciomarine

#### **Typical profile**

*H1 - 0 to 2 inches:* silt loam

*H2 - 2 to 13 inches:* silt loam

*H3 - 13 to 23 inches:* silty clay loam

*H4 - 23 to 60 inches:* silty clay

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Moderately well drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)

*Depth to water table:* About 12 to 36 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* D

*Ecological site:* F144AY018NY - Moist Lake Plain

*Hydric soil rating:* No

### Minor Components

#### Scitico

*Percent of map unit:* 10 percent

*Landform:* Marine terraces

*Hydric soil rating:* Yes

#### Slope inclusion

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

## 33A—Scitico silt loam, 0 to 5 percent slopes

### Map Unit Setting

*National map unit symbol:* 9cn6

*Elevation:* 0 to 180 feet

*Mean annual precipitation:* 47 to 49 inches

*Mean annual air temperature:* 48 degrees F

*Frost-free period:* 155 to 165 days

*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Scitico and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Scitico

#### Setting

*Landform:* Marine terraces



## Custom Soil Resource Report

### Typical profile

*H1 - 0 to 6 inches:* silt loam  
*H2 - 6 to 12 inches:* silty clay loam  
*H3 - 12 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* F144AY019NH - Wet Lake Plain  
*Hydric soil rating:* Yes

### Minor Components

#### Maybid

*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

#### Boxford

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## 63C—Charlton fine sandy loam, 8 to 15 percent slopes, very stony

### Map Unit Setting

*National map unit symbol:* 2wh0p  
*Elevation:* 0 to 1,570 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:* Not prime farmland

### Map Unit Composition

*Charlton, very stony, and similar soils: 85 percent*

*Minor components: 15 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Charlton, Very Stony

#### Setting

*Landform: Hills, ground moraines, ridges*

*Landform position (two-dimensional): Summit, shoulder, backslope*

*Landform position (three-dimensional): 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

*Oe - 0 to 2 inches: moderately decomposed plant material*

*A - 2 to 4 inches: fine sandy loam*

*Bw - 4 to 27 inches: gravelly fine sandy loam*

*C - 27 to 65 inches: gravelly fine sandy loam*

#### Properties and qualities

*Slope: 8 to 15 percent*

*Surface area covered with cobbles, stones or boulders: 1.6 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*

*Frequency of ponding: None*

*Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)*

*Available water supply, 0 to 60 inches: Moderate (about 8.7 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

#### Sutton, very stony

*Percent of map unit: 5 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, very stony

*Percent of map unit: 5 percent*

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*Landform:* Drumlins, hills, ground moraines  
*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

### **Chatfield, very stony**

*Percent of map unit:* 3 percent  
*Landform:* Hills, ridges  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Side slope, crest, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

### **Leicester, very stony**

*Percent of map unit:* 2 percent  
*Landform:* Drainageways, ground moraines, hills, depressions  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## **313A—Deerfield loamy fine sand, 0 to 3 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2xfg8  
*Elevation:* 0 to 1,100 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:* Farmland of local importance

### **Map Unit Composition**

*Deerfield and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Deerfield**

#### **Setting**

*Landform:* Kame terraces, outwash plains, outwash deltas, outwash terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave, convex, linear  
*Across-slope shape:* Convex, linear, concave  
*Parent material:* Sandy outwash derived from granite, gneiss, and/or quartzite

#### **Typical profile**

*Ap - 0 to 9 inches:* loamy fine sand

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*Bw - 9 to 25 inches:* loamy fine sand  
*BC - 25 to 33 inches:* fine sand  
*Cg - 33 to 60 inches:* sand

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* About 15 to 37 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 11.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* A  
*Ecological site:* F144AY027MA - Moist Sandy Outwash  
*Hydric soil rating:* No

### Minor Components

#### Windsor

*Percent of map unit:* 7 percent  
*Landform:* Outwash plains, outwash deltas, kame terraces, outwash terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave, convex, linear  
*Across-slope shape:* Convex, linear, concave  
*Hydric soil rating:* No

#### Wareham

*Percent of map unit:* 5 percent  
*Landform:* Depressions, drainageways  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Sudbury

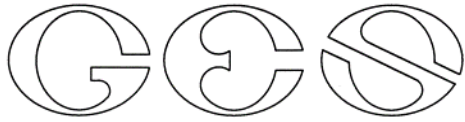
*Percent of map unit:* 2 percent  
*Landform:* Outwash terraces, outwash deltas, kame terraces, outwash plains  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave, convex, linear  
*Across-slope shape:* Convex, linear, concave  
*Hydric soil rating:* No

#### Ninigret

*Percent of map unit:* 1 percent  
*Landform:* Outwash terraces, outwash plains, kame terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Concave, convex  
*Hydric soil rating:* No



## Custom Soil Resource Report



GOVE ENVIRONMENTAL SERVICES, INC

**SITE-SPECIFIC SOIL SURVEY REPORT**

**For**

**5 White Oak Drive, Exeter NH**

**By**

**GES, Inc.**

**Project # 2022270**

**Date: 6-11-2024**

**1. MAPPING STANDARDS**

*Site-Specific Soil Mapping Standards for New Hampshire and Vermont.* SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 6-11-2024; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 40'.

Contours Interval: 2 feet

**2. LANDFORMS & EXISTING CONDITIONS:**

The site is located on a plain of glaciofluvial sands over marine silts and clays. The area has been extensively impacted by cutting for roadways, filling around structures and grading for lawns and gardens. A gas pipe line also runs through the site. The remaining natural soils are forested. Even where the sands are deeper than 40 inches, there is a silt/clay layer below that the holding the water and causes the soil to be moderately well drained.

**3. DATE SOIL MAP PRODUCED**

Date(s) of on-site field work: 6-11-2024

Date(s) of test pits: Soil probes 6-11-2024. Soil borings 9-1-2023.

Test pits recorded by: JP Gove recorded soil probes, S.W. Cole Engineering recorded soil borings.

**4. GEOGRAPHIC LOCATION AND SIZE OF SITE**

City or town where soil mapping was conducted: Exeter, NH

Location: TM 80 – 18 and 97 - 44

Size of area: Approximately 10 acres

Was the map for the entire lot? no

If no, where was the mapping conducted on the parcel: Area of proposed development.

**5. PURPOSE OF THE SOIL MAP**

Was the map prepared to meet the requirement of Alteration of Terrain? Yes

If no, what was the purpose of the map? n/a

Who was the map prepared for? Altus Engineering



**6. SOIL IDENTIFICATION LEGEND**

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
313	Deerfield fine sandy loam	311	B
538	Squamscott fine sandy loam	543	C
500/dbabb	Udorthents, smoothed	361	B

Special symbols: d = moderately well drained, b = glaciofluvial within 60", a = no restrictive layer, b = moderate Ksat, b = hydrologic soil group B

**SLOPE PHASE:**

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

**7. NARRATIVE MAP UNIT DESCRIPTIONS**

SITE-SPECIFIC MAP UNIT: 313

CORRELATED SOIL SERIES: Deerfield fine sandy loam

LANDSCAPE SETTING: Upper flats and slopes

CHARACTERISTIC SURFACE FEATURES: Forested, no surface stones

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Glaciofluvial sands (but marine silts below 40 inches)

NATURE OF DISSIMILAR INCLUSIONS: Eldridge and slope phases.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 10%



SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

A horizon, 0-10 inches, fine sandy loam, 10YR3/2, granular, friable, 0% coarse fragments,  
B horizon, 10-30 inches, fine sandy loam, 10YR5/6, weakly granular, friable, 0% coarse fragments.

C horizon, 30-40 inches, loamy sand, 10YR4/3, redox 5YR4/4, massive, friable, 0% coarse fragments, ESHWT = 30 inches, no OBSWT, perched by underlying silts/ clays, no lithic contact.

SITE-SPECIFIC MAP UNIT: 538

CORRELATED SOIL SERIES: Squamscott fine sandy loam

LANDSCAPE SETTING: Drainages and depressions

CHARACTERISTIC SURFACE FEATURES: Forested, no surface stones, evidence of ponding or surface drainage.

DRAINAGE CLASS: Poorly drained

PARENT MATERIAL: Sand over marine silts.

NATURE OF DISSIMILAR INCLUSIONS: Scitico and slope phases

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 10%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

A horizon, 0-6 inches, fine sandy loam, 10YR3/2, granular, friable, 0% coarse fragments.

B horizon, 6-15 inches, fine sandy loam, 10YR4/2, redox 5YR5/6, granular, friable, 0% coarse fragments, ESHWT = 6 inches, OBSWT = 10 inches, perched.

Cg horizon, 15 -20+ inches, silty clay loam, 2.5Y5/2, redox 5YR5/6, blocky, firm, 0 % coarse fragments, no lithic contact.



SITE-SPECIFIC MAP UNIT: 500/dbabb

CORRELATED SOIL SERIES: Udorthents, smoothed

LANDSCAPE SETTING: Cut, graded or filled areas

CHARACTERISTIC SURFACE FEATURES: Grass lawns or vegetated slopes.

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Fill over glaciofluvial sands

NATURE OF DISSIMILAR INCLUSIONS: Fill over 60" deep.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

A^ horizon, 0 to 2 feet, sand, 10YR4/4, massive, friable, 0% coarse fragments.

C horizon, 2 to 5 feet, loamy sand, 10YR4/6, redox 5YR4/4, massive, friable, 0% coarse fragments, ESHWT = 2 to 4 feet, no OBSWT, perched, no lithic contact.

## 8. **RESPONSIBLE SOIL SCIENTIST**

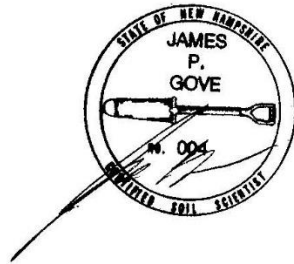
Name: James Gove

Certified Soil Scientist Number: 004

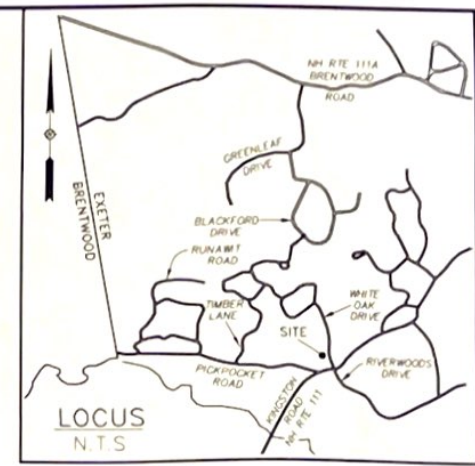
**9. OTHER DISTINGUISHING FEATURES OF SITE**

Is the site in a natural condition? Developed with some natural areas left.

If no, what is the nature of the disturbance? Mostly grading and filling for development.







**JVA**  
 JAMES VERRA & ASSOCIATES, INC.  
 101 SHATTUCK WAY, SUITE 8,  
 NEWINGTON, N.H. 03801-7876  
 603-436-3557  
 JOB NO. 23-2014  
 PLAN NO. 23-2014

**ALTUS**  
 ENGINEERING  
 133 Court Street Portsmouth, NH 03801  
 (603) 433-2336 www.altus-eng.com

ISSUED FOR: **ENGINEERING DESIGN**  
 ISSUE DATE: **SEPTEMBER 11, 2023**

REVISIONS:  
 NO. DESCRIPTION BY DATE  
 1. ENGINEERING DESIGN JCS 9/11/23

DRAWN BY: JCS  
 APPROVED BY: JCS  
 DRAWING FILE: 23-2014.DWG

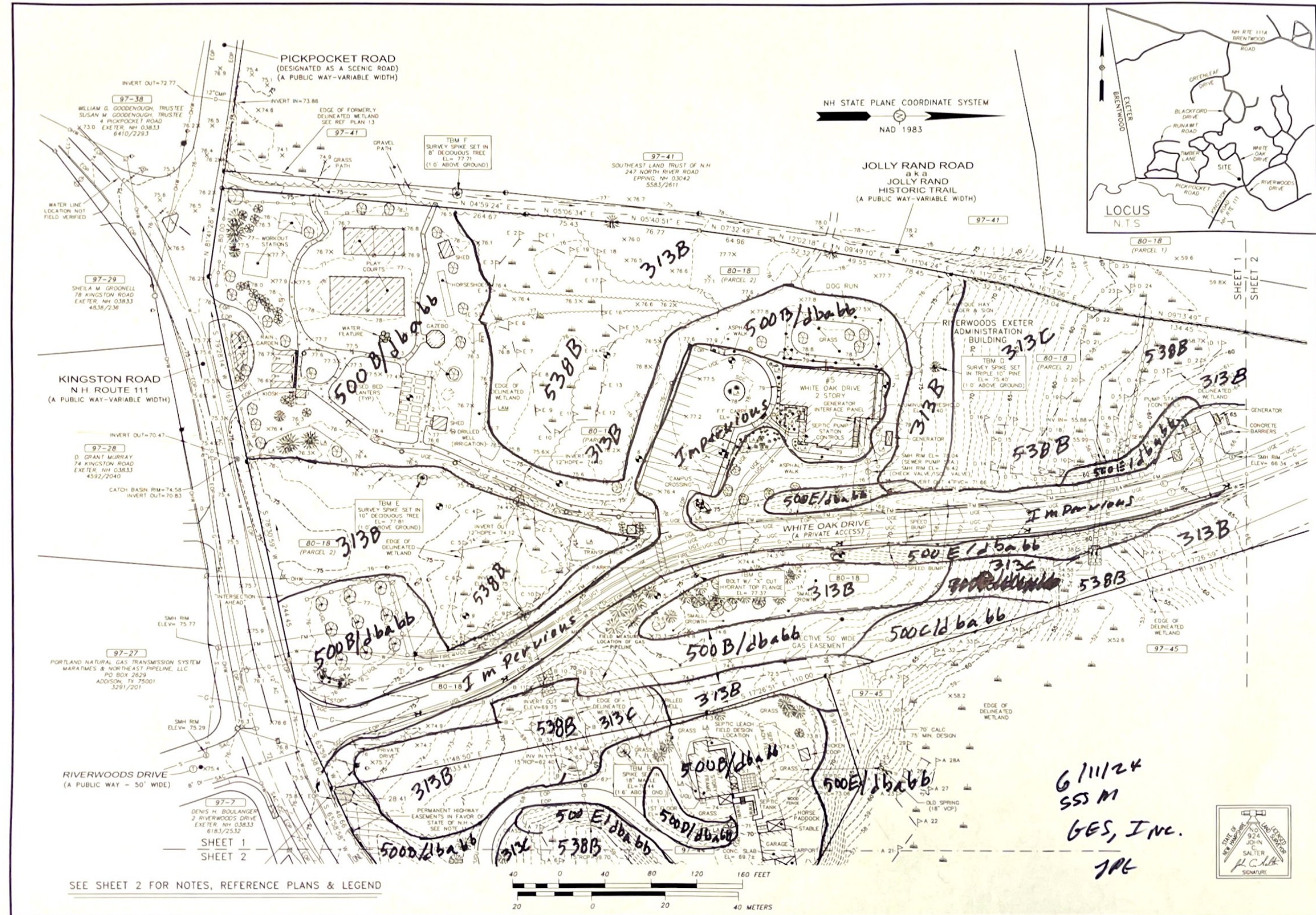
SCALE:  
 22" x 34" - 1" = 40'  
 11" x 17" - 1" = 80'

OWNER/APPLICANT:  
 THE RIVERWOODS COMPANY  
 AT EXETER, NEW HAMPSHIRE  
 5 WHITE OAK DRIVE  
 EXETER, N.H. 03833  
 ASSESSOR'S PARCELS  
 80-18 & 97-44

PROJECT:  
**PROPOSED SITE REDEVELOPMENT PLANS**  
 5 WHITE OAK DRIVE  
 EXETER, NH 03833  
 ASSESSOR'S PARCEL 80-18  
 67 KINGSTON ROAD  
 EXETER, NH 03833  
 ASSESSOR'S PARCEL 97-44

TITLE:  
**LIMITED EXISTING CONDITIONS PLAN**

SHEET NUMBER:  
**1 OF 2**



6/11/24  
 SSM  
 GES, Inc.  
 JRE

STATE OF NEW HAMPSHIRE  
 LAND SURVEYOR  
 JOHN SALTER  
 P.L.C. 116  
 SIGNATURE

SEE SHEET 2 FOR NOTES, REFERENCE PLANS & LEGEND



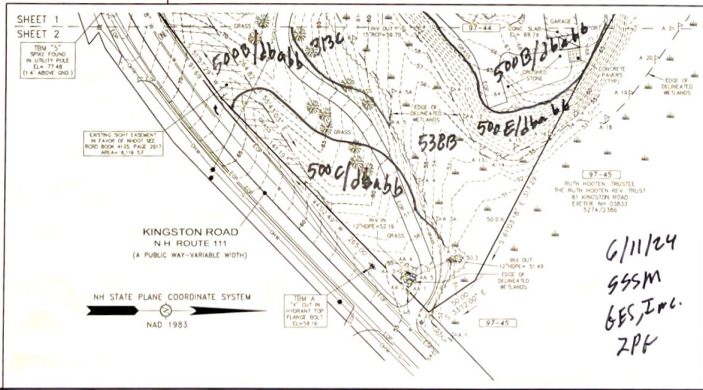
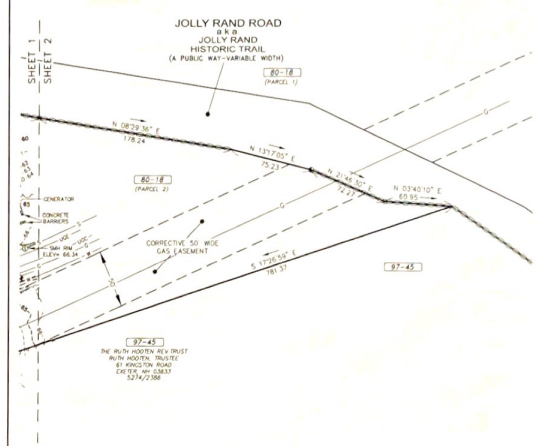
**NOTES**

- OWNER OF RECORD: THE RIVERWOODS COMPANY AT EXETER, NEW HAMPSHIRE  
ADDRESS: 5 WHITE OAK DRIVE, EXETER, NH 03833  
DEED REFERENCE: 589/1913 & 5851/1293 & 4667/2913  
TAX SHEET / LOT: 80-18  
PARCEL AREA: 8.508 ACRES  
SEE VOLUNTARY LOT MERGER DATED 11/30/2009 MERGING TAX PARCELS 97-42 & 97-43 INTO PARCEL 97-43 SEE RORD BOOK 5084 PAGE 723  
SEE VOLUNTARY LOT MERGER DATED 8/16/2010 MERGING TAX PARCELS 80-18 & 97-43 INTO PARCEL 80-18 SEE RORD BOOK 5206 PAGE 2825
- OWNER OF RECORD: THE RIVERWOODS COMPANY AT EXETER, NEW HAMPSHIRE  
ADDRESS: 5 WHITE OAK DRIVE, EXETER, NH 03833  
DEED REFERENCE: 589/2882  
TAX SHEET / LOT: 97-44  
PARCEL AREA: 2.236 ACRES
- ZONED: R-1 FRONT YARD SETBACK .25'  
MINIMUM LOT AREA 2 ACRES SIDE YARD SETBACK 15'  
FRONTAGE 150' REAR YARD SETBACK .25'
- ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS  
HORIZONTAL DATUM: NAD 83  
VERTICAL DATUM: RIVERWOODS "SITE"  
UNITS: S. SURVEY FOOT
- THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET
- THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (E.G. CATEN BASKETS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY ANY WRITING, SALES AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE
- BENCHMARKS SHOWN HEREON WERE FOUND UNLESS NOTED OTHERWISE
- THIS PLAN IS BASED UPON SURVEY WORK CONDUCTED BY THIS OFFICE 8/2008 TO 8/2023
- METLANDS DELINEATION PERFORMED 1/2023 BY BRENDA A. QUOJLEY, KNOWS 249 OF SOLE ENVIRONMENTAL SERVICES, INC. 8 ENVIRONMENTAL SER. BLDG. UNIT 1, EXETER, NH 03833-7907 METLANDS FLAGS WERE SURVEY LOCATED BY JAMES VERRA AND ASSOCIATES, INC.
- CONTRACTOR TO VERIFY "SITE" BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OF ESTABLISHMENT OF ANY GRADE/CELESTATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC. INC.
- PARCELS 80-18 (PARCEL 2), & 97-44 ARE IN FLOOD HAZARD AREA ZONE X (UNSHADED) AREA OF ANNUAL FLOOD PROBABILITIES AS SHOWN ON FLOOD INSURANCE RATE MAP 33052C040E, EFFECTIVE DATE 5/17/2005 AND AS SHOWN ON LHM 18-01-004P, EFFECTIVE DATE 11/25/2018
- PARCEL 97-44 IS SUBJECT TO A HIGHWAY EASEMENT IN FAVOR OF THE STATE OF N.H. SEE RORD BOOK 4448 PAGE 1193 & RORD PLAN D-43603 (REF. PLAN 14)

**REFERENCE PLANS**

- LOT LINE ADJUSTMENT PLAN OF LAND AND EASEMENT PLAN (INDROCKET KINGSTON AND JOLLY RAND ROADS, EXETER, N.H., REVISED TO 8-1-03, RORD PLAN D-30943, SHEETS 1 & 2
- BLADFORD PLACE, SUBDIVISION FOR TRUCK REALTY CORP., GREENLEAF DRIVE, EXETER, NH, SHEETS 1-4, RORD PLAN D-29899
- SUBDIVISION OF LAND, PAUL HOLLOWAY, JR., PICKPOCKET ROAD, EXETER, N.H., DATED 10-19-18, RORD PLAN D-4834
- PLAT OF LAND FOR MARTHA M. PENNELL, EXETER, N.H., DATED 5-1980, RORD PLAN D-9607
- PROPERTY OF NORMAN HOLDEN, SUBDIVISION OF 2-10-10S, EXETER, ROCKINGHAM COUNTY, NEW HAMPSHIRE, DATED 6-8-1972, RORD PLAN C-3008
- SUBDIVISION OF LAND FOR GORDON C. HAM IN EXETER, N.H. REVISED TO 8-1979, RORD PLAN D-3025
- LIMITED SUBDIVISION FOR GARY RAYMOND & LUARIE TOBIN-RAYMOND IN EXETER, N.H., REVISED TO 2-1986, RORD PLAN D-1491
- CONVERSION/EASEMENT PLAN, THE BOWLDERS AT RIVERWOODS & THE RIDGE AT RIVERWOODS, JOLLY RAND ROAD, PICKPOCKET ROAD & WHITE OAK DRIVE, EXETER, N.H., FOR THE RIVERWOODS COMPANY AT EXETER, NEW HAMPSHIRE, REVISED TO 8/9/2021, RORD PLAN D-42936
- SITE PLAN, THE RIDGE AT RIVERWOODS, KINGSTON, NH, FOR RIVERWOODS AT EXETER, REVISED TO 8-1-03, RORD PLAN D-30932
- PLAT OF LAND 77 KINGSTON ROAD, EXETER, N.H., FOR THE RIVERWOODS COMPANY AT EXETER, N.H., DATED 11/18/2008, RORD PLAN D-33705
- EXISTING CONDITIONS PLAN, 67 KINGSTON ROAD, EXETER, N.H., FOR THE RIVERWOODS GROUP, PLAN NO. 23006-8, DATED 7/8/2018, NOT RECORDED
- CONNECTER GAS PIPELINE EASEMENT PLAN, THE RIDGE AT RIVERWOODS, KINGSTON ROAD & WHITE OAK DRIVE, EXETER, N.H., FOR THE RIVERWOODS COMPANY AT EXETER, N.H., DATED 3/22/2022, RORD PLAN D-48254
- EXISTING CONDITIONS PLAN, 77 KINGSTON ROAD, EXETER, N.H., FOR THE RIVERWOODS COMPANY AT EXETER, N.H., PLAN NO. 23006-8, DATED 6/30/2010, NOT RECORDED
- EASEMENT PLAN, TAX MAP 97 - LOT 44, THE RIVERWOODS COMPANY AT EXETER, N.H. TO THE N.H. DEPARTMENT OF TRANSPORTATION, 67 KINGSTON ROAD, EXETER, N.H., REVISED TO 12/10/2020, RORD PLAN D-43603

- LEGEND:**
- STONE WALL
  - IRON ROD
  - IRON PIPE
  - DRILL HOLE
  - CHAIN LINK FENCE
  - PRIVACY FENCE
  - 110-5 TAX SHEET - LOT NUMBER
  - RSD ROCKINGHAM COUNTY REGISTRY OF DEEDS
  - EDP EDGE OF EASEMENT
  - SGD SLOPED FACED GRANITE CURB
  - INLAND LIGHT
  - ELECTRIC METER
  - FUSE UNIT
  - WELL
  - WATER GATE VALVE
  - HYDRANT
  - SIGN
  - ELECTRICAL PANEL
  - ELECTRICAL BOX
  - TREE LINE
  - BRUSH LINE
  - CONIFEROUS TREE
  - DECIDUOUS TREE
  - CONIFEROUS SHRUB
  - DECIDUOUS SHRUB
  - FENCE MARK
  - SHER LINE
  - WATER LINE
  - SEWER LINE
  - DRAIN LINE
  - GAS LINE
  - UNDERGROUND ELECTRIC
  - UNDERGROUND COMMUNICATIONS
  - UNDERGROUND LIGHTING CIRCUIT
  - LANDSCAPED AREA
  - MILDLY LANDSCAPED AREA
  - SPOI GRADE
  - WETLANDS AREA
  - ICE BAR
  - CRUSHED STONE
  - CEMENT CONCRETE
  - PROPOSED BORING



**JVA**  
JAMES VERRA & ASSOCIATES, INC.  
101 SHATTUCK WAY SUITE B  
NEWINGTON, N.H. 03853-3878  
603-436-3557  
JOB NO. 23-2014  
PLAN NO. 23-2014

**ALTUS**  
ENGINEERING  
113 Great Street Portsmouth, NH 03801  
603-433-2037 www.altus-eng.com

ISSUED FOR: **ENGINEERING DESIGN**

ISSUE DATE: **SEPTEMBER 11, 2023**

REVISIONS:  
NO. DESCRIPTION BY DATE  
1 ENGINEERING DESIGN JCS 9/11/23

DRAWN BY: JCS  
APPROVED BY: JCS  
DRAWING FILE: 23-2014-046

SCALE:  
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ASSESSOR'S PARCELS  
80-18 & 97-44

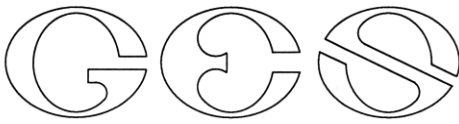
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EXETER, NH 03833  
ASSESSOR'S PARCEL  
97-44

TITLE:  
LIMITED EXISTING CONDITIONS PLAN

SHEET NUMBER:  
2 OF 2

6/11/24  
GSSM  
BES, Inc.  
ZPF



GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project River Woods, Exeter, NH

Client ALTUS

GES Project No. 2022270

MM/DD/YY Staff 09-24-2024

James Gove, CSS#004; Aspynn Kutz

**Test Pit No.** 1  
ESHWT:: 25"  
Termination @ 63"  
Refusal: no  
Obs. Water: None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-18"	10YR3/2	fine sandy loam	granular-friable-none
B 18-25"	10YR5/4	loamy sand	granular-friable-none
C1 25-54"	2.5Y5/3	loamy sand	massive-friable- 10% redox
C2 54-63"	2.5Y5/2	silty clay loam	massive-firm- 20% redox

**Test Pit No.** 2  
ESHWT:: 19"  
Termination @ 50"  
Refusal: No  
Obs. Water: None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-5"	10YR3/2	fine sandy loam	granular-friable-none
B 5-19"	10YR5/4	fine sandy loam	massive-friable-none
C 19-50"	2.5Y5/4	silt loam	massive-firm-30% redox

**Test Pit No.** 3  
ESHWT:: 11"  
Termination @ 63"  
Refusal: No  
Obs. Water: None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-6"	10YR3/2	fine sandy loam	granular-friable-none
B 6-11"	2.5Y5/4	silt loam	mazzive-friable-none
C 11-63"	2.5Y5/2	silty clay loam	blocky-firm-20% redox

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526

Ph (603) 778 0644 / Fax (603) 778 0654

*info@gesinc.biz*

*www.gesinc.biz*

**Test Pit No.**                   **5A**  
 ESHWT::                        33"  
 Termination @                66"  
 Refusal:                        No  
 Obs. Water:                   None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
Fill 1 0-33"	10YR5/4	gravelly fine sandy loam	massive-friable-none
Fill 2 33-66"	2.5Y5/1	silty clay loam	blocky-firm-10% redox

**Test Pit No.**                   **5B**  
 ESHWT::                        20"  
 Termination @                57"  
 Refusal:                        No  
 Obs. Water:                   None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
Fill 1 0-20"	2.5Y5/4	gravelly fine sandy loam	compacted/massive-friable-none
Fill 2 20-57"	2.5Y5/4	silty clay loam	blocky-firm-30% redox

**Test Pit No.**                   **6**  
 ESHWT::                        14"  
 Termination @                61"  
 Refusal:                        No  
 Obs. Water:                   44"

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-6"	10YR3/2	fine sandy loam	granular-friable-none
B 6-14"	2.5Y5/4	fine sandy loam	massive-friable-none
C 14-61"	2.5Y5/3	silt loam	massive-firm-20% redox

**Test Pit No.**                   **9**  
 ESHWT::                        25"  
 Termination @                64"  
 Refusal:                        No  
 Obs. Water:                   None

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-10"	10YR3/2	fine sandy loam	granular-friable-none
B 10-25"	2.5Y5/4	fine sandy loam	massive-friable-none
C 25-64"	2.5Y5/3	silt loam	massive-firm-20% redox



# REPORT

23-1662 S

September 27, 2023

## Preliminary Geotechnical Engineering Services

Proposed Assisted Living Facility  
Riverwoods at Exeter “The Ridge”  
White Oak Drive  
Exeter, New Hampshire

**Prepared For:**

Altus Engineering  
Attention: Erik Saari  
133 Court Street  
Portsmouth, New Hampshire 03801

**Prepared By:**

S. W. Cole Engineering, Inc.  
10 Centre Road  
Somersworth, New Hampshire 03878  
T: 603-692-0088

[www.swcole.com](http://www.swcole.com) | [info@swcole.com](mailto:info@swcole.com)



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23-1662 S

September 27, 2023

Altus Engineering  
Attention: Erik Saari  
133 Court Street  
Portsmouth, NH 03801

Subject: Preliminary Geotechnical Engineering Services  
Proposed Assisted Living Facility  
Riverwoods at Exeter “The Ridge”  
White Oak Drive  
Exeter, New Hampshire

Dear Erik:

In accordance with our Proposal, dated August 15, 2023, we performed test boring explorations and make preliminary geotechnical recommendations for site development. This report summarizes our findings and its contents are subject to the limitations set forth in Appendix A.

## **1.0 INTRODUCTION**

### **1.1 Scope and Purpose**

The purpose of our services was to explore subsurface conditions at the site in order to assess suitable foundation types and earthwork considerations associated with the proposed construction. Our scope of services included a preliminary geotechnical assessment of the subsurface findings and preparation of this report.

### **1.2 Site and Proposed Construction**

The site is located northwest of the intersection of White Oak Drive and Kingston Road (Route 111) in Exeter, New Hampshire. The site is comprised of a park/recreation area for residents to the southwest, wooded areas to the southeast, and the Riverwoods Group home in the north portion of the site. White Oaks Drive runs along the east side of the

site. The site topography is generally level west of White Oaks Drive between elevation 72 and 78 feet. The site slopes downward to the north toward a stream at elevation 56 feet.

Proposed construction includes a building covering about 58,000 square feet and multiple stories above grade. Below building parking is planned, however the elevation of the parking relative to the exterior grade is not known at this time and will be dependent on subsurface conditions. The building will have two interior courtyards. A perimeter loop road will surround the building. The alignment of White Oak Drive will be shifted to the east in the area of the proposed project.

Proposed and existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

## **2.0 EXPLORATION AND TESTING**

### **2.1 Explorations**

Eleven test borings (B-01 through B-11) were made at the site on August 31 and September 1, 2023 by Seaboard Drilling under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by Altus Engineering by survey. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C.

### **2.2 Testing**

The test borings were drilled using a combination of hollow stem auger and cased drive and wash boring techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) methods. SPT blow count results are shown on the logs. Vane Shear Testing (VST) was performed with boring B-06 and B-09 within the clay deposit.

Soil samples obtained from the explorations were returned to our laboratory for further visual classification and laboratory testing. One sieve analysis and seven moisture content tests were performed on select soil samples to assist with our evaluation. Test results are noted on the logs and attached in Appendix D.

### **3.0 SUBSURFACE CONDITIONS**

#### **3.1 Soil and Bedrock**

Beneath a surficial layer of topsoil or pavement with a thin layer of granular fill at some locations surrounding the existing building site, test borings B-01 through B-11 encountered a soil profile generally consisting of alternating layers of sand and silt to depths varying from 5 to 10 feet, overlying very stiff, brown, silty clay. With depth the clay transitioned to gray in color and becoming medium stiff with depth. With the exception of borings B-06 and B-09, the borings were terminated in the clay at depths of 17 to 22 feet. At borings B-06 and B-09 the clay was observed to extend to depths of 41.0 and 38.0 feet, respectively. Borings B-06 and B-09 were terminated within granular soils at depths of 17 to 22 feet.

Beneath the surficial layer of topsoil or pavement, test borings B-02 through B-04 encountered a granular fill layer of roughly 4 to 5 feet in thickness.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

#### **3.2 Groundwater**

Groundwater was encountered at depths varying from about 5 to 10 feet. Groundwater levels were indicated by signs of saturated soil samples. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

### **4.0 EVALUATION AND RECOMMENDATIONS**

#### **4.1 Foundation and Floor Slab Considerations**

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. Further considerations should be given to the relatively soft marine clay layer. Preliminary indicators are that the soil deposit has adequate bearing capacity for support of the proposed building on conventional spread footing foundations. However, the site grading and proposed building loading are not known and therefore design-phase explorations and evaluation should be targeted to assessing the consolidation (settlement) characteristics of the clay deposit relative to post-construction settlement.



Depending on the proposed below grade floor slab elevation, the below grade level will likely be below the observed saturated soils (groundwater level). Design phase explorations should include installation of groundwater piezometers to measure the ground water level. Perimeter foundation and subslab drainage is likely required to maintain water levels below the finish floor elevations.

Based on the available subsurface information, we anticipate the soil profile corresponds to Seismic Soil Site Class D (IBC 2018).

#### **4.2 Excavation and Dewatering Considerations**

Excavation work will generally encounter asphalt, uncontrolled fills and native sands and silts. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur ideally during drier, non-freezing weather of Spring, Summer and Fall. Final cuts to soil subgrades should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Excavations extending below the groundwater table, excavations will require dewatering efforts. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Given the slow permeability characteristics of the clay soils the sphere of pump locations is expected to be small and multiple sump and pump locations will be needed. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

#### **4.3 Soil Re-use**

Excavated soil from the site will primarily consist of silty clay soil and will not be suitable for re-use associated with the building construction. Offsite disposal and replacement with granular materials will be required.

#### **4.4 Recommendations for Additional Study**

We recommend additional test boring explorations on a more closely spaced grid be undertaken to better understand subsurface variations and target borings to explore and sample the clay thickness across the site. Laboratory consolidation testing and a consolidation-related settlement analysis is required. Additional services must also include

a design-phase geotechnical report containing further details on geotechnical parameters and site-specific earthwork recommendations.

## **5.0 CLOSURE**

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the design phase of the project.

Sincerely,

**S. W. Cole Engineering, Inc.**

Chad B. Michaud, P.E.  
Principal Geotechnical Engineer

ED:cbm

## **APPENDIX A**

### **Limitations**

This report has been prepared for the exclusive use of Altus Engineering for specific application to the proposed Assisted Living Facility at White Oak Drive in Exeter, New Hampshire. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

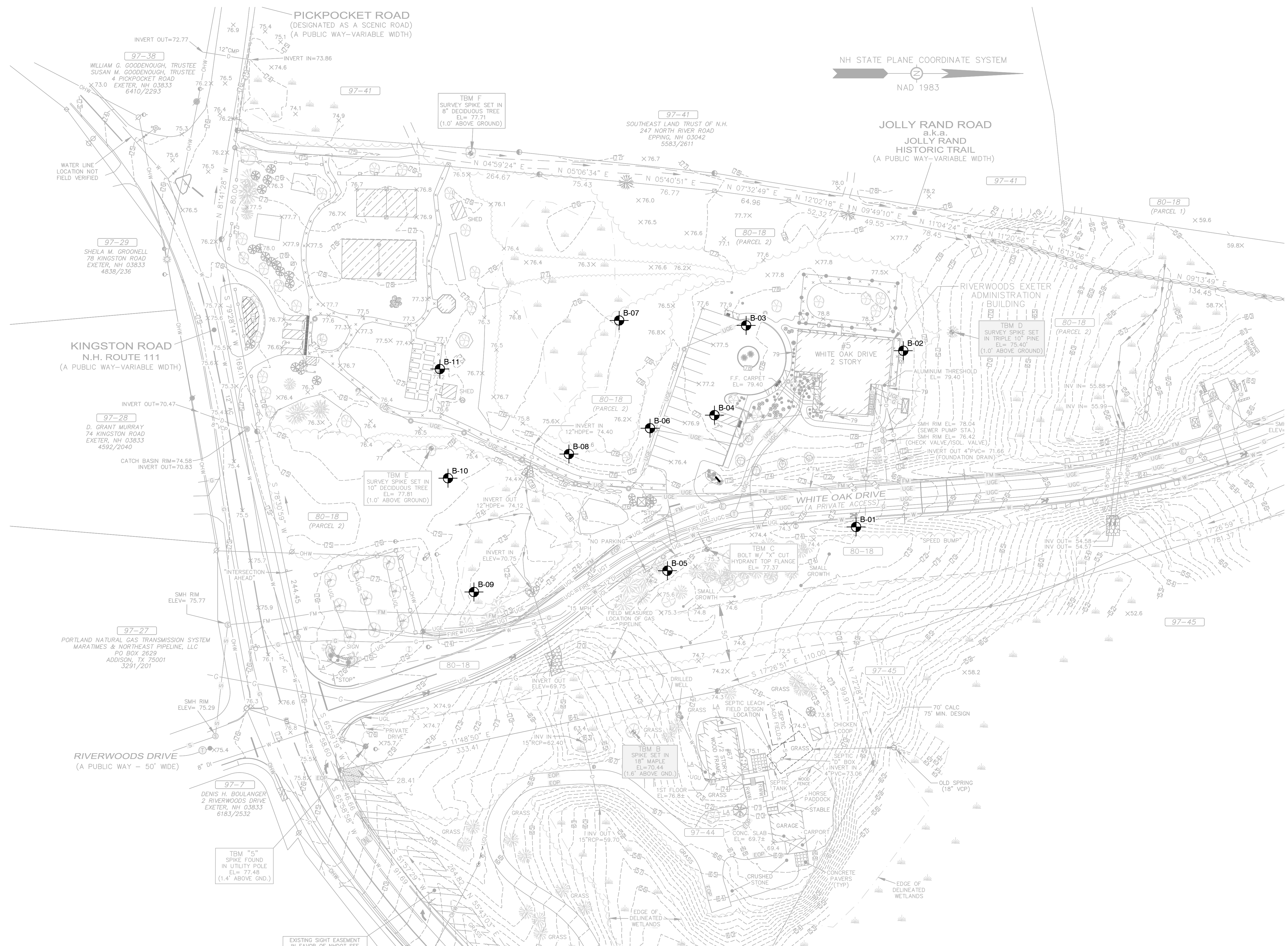
S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

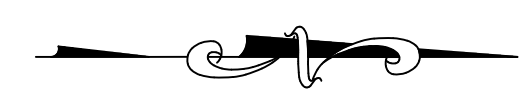
## **APPENDIX B**

### **Figures**





NH STATE PLANE COORDINATE SYSTEM  
NAD 1983

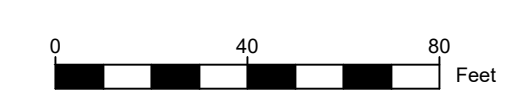


**LEGEND:**

APPROXIMATE BORING LOCATION

**NOTES:**

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=40' SCALE PLAN OF THE SITE ENTITLED "LIMITED EXISTING CONDITIONS PLAN," PREPARED BY ALTUS ENGINEERING, DATED 9/11/2023.
2. THE BORING LOCATIONS WERE SELECTED AND ESTABLISHED IN THE FIELD BY ALTUS ENGINEERING.
3. THE BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.



**S.W. COLE ENGINEERING, INC.**  
ALTUS ENGINEERING  
**EXPLORATION LOCATION PLAN**  
RIVERWOODS AT EXETER - THE EDGE  
WHITE OAKS DRIVE  
EXETER, NEW HAMPSHIRE

Job No.: 23-1662      Scale: 1" = 40'  
Date: 09/21/2023      Sheet: 1

## **APPENDIX C**

### **Exploration Logs and Key**



# BORING LOG

**BORING NO.:** B-01  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan    **ELEVATION (FT):** 71'    **TOTAL DEPTH (FT):** 17.0    **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling    **DRILLER:** Ryan Hackett    **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50    **AUGER ID/OD:** 2 1/4 in / 5 5/8 in    **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic    **HAMMER WEIGHT (lbs):** 140 / 300    **CASING ID/OD:** N/A / N/A    **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**    **HAMMER DROP (inch):** 30 / 16  
**WATER LEVEL DEPTHS (ft):**  $\nabla$  10 ft Soil became saturated

### GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 $\nabla$  Water Level  
 $\nabla$  At time of Drilling  
 $\nabla$  At Completion of Drilling  
 $\nabla$  After Drilling  
D = Split Spoon Sample  
U = Thin Walled Tube Sample  
R = Rock Core Sample  
V = Field Vane Shear  
Pen. = Penetration Length  
Rec. = Recovery Length  
bpf = Blows per Foot  
mpf = Minute per Foot  
WOR = Weight of Rods  
WOH = Weight of Hammer  
RQD = Rock Quality Designation  
PID = Photoionization Detector  
S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
Ø = Friction Angle (Estimated)  
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks								
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data							
70			1D		0-2	24/11	2-2-2-2												
			2D		2-4	24/24	2-2-2-2	q <sub>p</sub> =3.0 ksf		2.0									
	5		3D		5-7	24/24	5-6-5-5	q <sub>p</sub> =5.5 ksf											
	10		4D		10-12	24/24	2-1-2-2	q <sub>p</sub> =2.0 to 3.0 ksf		10.0									
	15		5D		15-17	24/24	1-1-2-2	q <sub>p</sub> =1.0 ksf											

Bottom of Exploration at 17.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-01

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23



# BORING LOG

**BORING NO.:** B-02  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 78'      **TOTAL DEPTH (FT):** 22.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):**  $\nabla$  5.5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
Water Level  
 $\nabla$  At time of Drilling      D = Split Spoon Sample      Pen. = Penetration Length      WOR = Weight of Rods      S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
 $\nabla$  At Completion of Drilling      U = Thin Walled Tube Sample      Rec. = Recovery Length      WOH = Weight of Hammer      q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
 $\nabla$  After Drilling      R = Rock Core Sample      bpf = Blows per Foot      RQD = Rock Quality Designation      Ø = Friction Angle (Estimated)  
V = Field Vane Shear      mpf = Minute per Foot      PID = Photoionization Detector      N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
			1D		0-2	24/11	3-5-4-3		0.3	Black, moist, organic silty SAND with roots (TOPSOIL)		
			2D		2-4	24/9	4-3-2-2		2.3	Brown, moist, loose, gravelly SAND, some silt (FILL) Light brown, moist, loose, SAND, some silt (FILL)		
	5		3D		5-7	24/20	6-6-8-8		5.3	Geo-fabric @ 5.3ft Alternating layers: Brown, saturated, medium dense, silty fine SAND and fine sandy SILT	$\nabla$	
	10		4D		10-12	24/24	5-4-5-5	q <sub>p</sub> =4.0 to 5.0 ksf	10.0	Brown to gray, saturated, stiff, silty CLAY		
	15		5D		15-17	24/24	3-1-3-3	q <sub>p</sub> =1.5 to 3.0 ksf	15.0	Gray, saturated, stiff, silty CLAY with occasional sand seams and partings		
	60									ROD PROBE Depth 17-22      Resistance HYD      Interpreted Soil Type Silty Clay		

Bottom of Exploration at 22.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-02





# BORING LOG

**BORING NO.:** B-03  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 78'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:** \_\_\_\_\_  
**HAMMER CORRECTION FACTOR:** \_\_\_\_\_      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):**  $\nabla$  10 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  
 At time of Drilling  
 At Completion of Drilling  
 After Drilling  
D = Split Spoon Sample  
U = Thin Walled Tube Sample  
R = Rock Core Sample  
V = Field Vane Shear  
Pen. = Penetration Length  
Rec. = Recovery Length  
bpf = Blows per Foot  
mpf = Minute per Foot  
WOR = Weight of Rods  
WOH = Weight of Hammer  
RQD = Rock Quality Designation  
PID = Photoionization Detector  
S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
Ø = Friction Angle (Estimated)  
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
			1D		0.25-2.3	24/17	14-15-14-11		0.3	3 inches of Hot Mix Asphalt		
			2D		2.25-4.3	24/24	12-9-8-8		2.3	Brown, moist, medium dense, gravelly SAND, some silt (FILL)		
	5		3D		5-7	24/18	9-8-10-10		5.0	Brown, moist, silty SAND, trace fine gravel (FILL)		
	70									Brown, saturated, silty fine SAND, with occasional silt seams		
	10		4D		10-12	24/24	4-3-9-10	q <sub>p</sub> =4.0 ksf	10.0	Brown, saturated, very stiff, clayey SILT with occasional sand seams	$\nabla$	
	65											
	15		5D		15-17	24/24	2-1-2-1	q <sub>p</sub> =2 ksf	15.0	Gray, saturated, stiff, silty CLAY		

Bottom of Exploration at 17.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-03



# BORING LOG

**BORING NO.:** B-04  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 77'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):**  $\nabla$  5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  
 At time of Drilling  
 At Completion of Drilling  
 After Drilling  
D = Split Spoon Sample  
U = Thin Walled Tube Sample  
R = Rock Core Sample  
V = Field Vane Shear  
Pen. = Penetration Length  
Rec. = Recovery Length  
bpf = Blows per Foot  
mpf = Minute per Foot  
WOR = Weight of Rods  
WOH = Weight of Hammer  
RQD = Rock Quality Designation  
PID = Photoionization Detector  
S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
Ø = Friction Angle (Estimated)  
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
			1D		0.25-2.3	24/14	12-15-14-17		0.3	3 inches of Hot Mix Asphalt		
			2D		2.25-4.3	24/24	13-9-11-11		2.3	Brown, moist to wet, medium dense, SAND some silt and gravel (FILL)		
	5		3D		5-7	24/14	4-8-9-11		5.0	Brown, moist, silty SAND (possible FILL)	$\nabla$	
	70									Alternating layers: Brown, saturated, medium dense, silty fine SAND and fine sandy SILT		
	10		4D		10-12	24/24	5-5-6-6	q <sub>p</sub> =3.0 to 4.0 ksf	10.0	Brown, saturated, very stiff, silty CLAY, some sand with occasional sand parting		
	65											
	15		5D		15-17	24/24	2-2-3-5	q <sub>p</sub> =2.0-3.0 ksf	15.0	Gray, saturated, stiff, silty CLAY		
	60											

Bottom of Exploration at 17.0 feet

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-04



# BORING LOG

**BORING NO.:** B-05  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 75'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:** \_\_\_\_\_  
**HAMMER CORRECTION FACTOR:** \_\_\_\_\_      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:** Water Level  
▽ At time of Drilling      D = Split Spoon Sample      Pen. = Penetration Length      WOR = Weight of Rods      S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
▽ At Completion of Drilling      U = Thin Walled Tube Sample      Rec. = Recovery Length      WOH = Weight of Hammer      q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
▽ After Drilling      R = Rock Core Sample      bpf = Blows per Foot      RQD = Rock Quality Designation      Ø = Friction Angle (Estimated)  
V = Field Vane Shear      mpf = Minute per Foot      PID = Photoionization Detector      N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD				
			1D		0-2	24/18	3-4-6-6		0.5	Black, moist, loose, sandy SILT, with organic silt and rootlets (TOPSOIL)	
			2D		2-4	24/17	9-10-8-8			Alternating layers: Tan/brown, moist to saturated, medium dense, silty fine SAND and fine sandy SILT	
70	5		3D		5-7	24/16	4-4-5-8	q <sub>p</sub> =2.0 to 3.0 ksf	5.5	Brown, saturated, stiff, CLAY and SILT, trace fine sand	▽
65	10		4D		10-12	24/24	3-3-4-3	q <sub>p</sub> =4.0 ksf	11.3	Gray, saturated, stiff, silty CLAY	
60	15		5D		15-17	24/24	2-1-2-2	q <sub>p</sub> =1.0 to 2.0 ksf		medium stiff to stiff	

Bottom of Exploration at 17.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-05



# BORING LOG

**BORING NO.:** B-06  
**SHEET:** 1 of 2  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 76'      **TOTAL DEPTH (FT):** 41.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Cased Boring  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** N/A / N/A      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** 4 in / 4 1/2 in      **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 6 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level: ▽ At time of Drilling, ▽ At Completion of Drilling, ▽ After Drilling  
 D = Split Spoon Sample, U = Thin Walled Tube Sample, R = Rock Core Sample, V = Field Vane Shear  
 Pen. = Penetration Length, Rec. = Recovery Length, bpf = Blows per Foot, mpf = Minute per Foot  
 WOR = Weight of Rods, WOH = Weight of Hammer, RQD = Rock Quality Designation, PID = Photoionization Detector  
 S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft., q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft., Ø = Friction Angle (Estimated), N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
75			1D		0-2	24/18	3-3-5-8		0.5	Brown, moist, loose, fine to medium SAND, some silt with rootlets (TOPSOIL)		
			2D		2-4	24/24	6-7-11-9		2.0	Brown, moist, loose, fine to medium SAND, some silt (FILL) Alternating layers: Tan/brown, moist to saturated, medium dense, silty fine SAND and fine sandy SILT		
70	5		3D		5-7	24/16	17-21-15-10		5.0	Brown, wet to saturated, stiff, fine sandy SILT with frequent fine sand layers and seams	▽	
65	10		4D		10-12	24/23	1-2-2-2	q <sub>e</sub> =2.0 to 3.0 ksf	10.5	Gray, saturated, stiff to very stiff, silty CLAY		
60	15		1V		15-15.8	9		S <sub>v</sub> =.54ksf		Medium Stiff		
			1V'		15.75-16	3				Vane 1V' only able to penetrate 3 inches, possible sand seams		

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

**BORING NO.:** B-06





# BORING LOG

**BORING NO.:** **B-06**  
**SHEET:** 2 of 2  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD				
			1U		25-27	24/20					
			2V		27-27.8	9		S <sub>v</sub> =+1.09ksf	Stiff  ROD PROBE <u>Depth</u> <u>Resistance</u> <u>Interpreted Soil Type</u> 29-41        HYD        Silty Clay		
			2V'		27.75-28.5	9		S <sub>v</sub> =+1.09ksf			
			1RP		28.5-41	150					

Bottom of Exploration at 41.0 feet  
(Probable cobble, boulder, or bedrock)

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** **B-06**



# BORING LOG

**BORING NO.:** B-07  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 76'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:** \_\_\_\_\_  
**HAMMER CORRECTION FACTOR:** \_\_\_\_\_      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  
 At time of Drilling  
 At Completion of Drilling  
 After Drilling  
D = Split Spoon Sample      U = Thin Walled Tube Sample      Pen. = Penetration Length      WOR = Weight of Rods      S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
R = Rock Core Sample      V = Field Vane Shear      Rec. = Recovery Length      WOH = Weight of Hammer      q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
bpf = Blows per Foot      RQD = Rock Quality Designation      Ø = Friction Angle (Estimated)  
mpf = Minute per Foot      PID = Photoionization Detector      N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks									
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data								
75			1D		0-2	24/16	1-1-2-2													
			2D		2-4	24/19	7-6-9-7		2.0		Alternating layers: Brown, saturated, medium dense, silty fine SAND, fine sandy SILT									
	5		3D		5-7	24/24	3-3-6-4		5.0		Brown, saturated, loose, fine sandy SILT, trace clay with frequent fine sand seams and partings									
	10		4D		10-12	24/24	1-2-2-2	q <sub>p</sub> =1.5 to 2.0 ksf	10.0		Gray, saturated, stiff, silty CLAY									
	15		5D		15-17	24/24	1-2-2-2	q <sub>p</sub> =1.5 to 2.0 ksf			medium stiff to stiff									
Bottom of Exploration at 17.0 feet																				

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-07



# BORING LOG

**BORING NO.:** B-08  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

### Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 75'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:** \_\_\_\_\_  
**HAMMER CORRECTION FACTOR:** \_\_\_\_\_      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil became saturated

### GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level:  $\nabla$  At time of Drilling,  $\nabla$  At Completion of Drilling,  $\nabla$  After Drilling  
 D = Split Spoon Sample, U = Thin Walled Tube Sample, R = Rock Core Sample, V = Field Vane Shear  
 Pen. = Penetration Length, Rec. = Recovery Length, bpf = Blows per Foot, mpf = Minute per Foot  
 WOR = Weight of Rods, WOH = Weight of Hammer, RQD = Rock Quality Designation, PID = Photoionization Detector  
 S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft., q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft., Ø = Friction Angle (Estimated), N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
			1D		0-2	24/12	1-2-3-2		0.4	Black, moist, loose, silty SAND, with rootlets and organic silts (TOPSOIL)		
			2D		2-4	24/22	5-6-7-8		2.0	Tan/brown, moist, medium dense, silty SAND with rootlets (TOPSOIL)		
70	5		3D		5-7	24/20	8-8-13-9			Brown, moist to saturated, medium dense, silty fine SAND and fine sandy SILT, some clay	$\nabla$	
65	10		4D		10-12	24/24	2-2-2-3	q <sub>e</sub> =2.0 to 3.0 ksf	10.0	Gray, saturated, stiff, silty CLAY with frequent sand and silt seams and parting		
60	15		5D		15-17	24/24	1-2-1-3	q <sub>e</sub> =2.0 to 3.0 ksf ID 23172S w =27.7 %				

Bottom of Exploration at 17.0 feet

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-08



# BORING LOG

**BORING NO.:** B-09  
**SHEET:** 1 of 2  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 73'      **TOTAL DEPTH (FT):** 40.6      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Cased Boring  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** N/A / N/A      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** 4 in / 4 1/2 in      **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level: ▽ At time of Drilling, ▽ At Completion of Drilling, ▽ After Drilling  
 D = Split Spoon Sample, U = Thin Walled Tube Sample, R = Rock Core Sample, V = Field Vane Shear  
 Pen. = Penetration Length, Rec. = Recovery Length, bpf = Blows per Foot, mpf = Minute per Foot  
 WOR = Weight of Rods, WOH = Weight of Hammer, RQD = Rock Quality Designation, PID = Photoionization Detector  
 S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft., q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft., Ø = Friction Angle (Estimated), N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD				
			1D		0-2	24/16	1-1-1-1		0.6	Black, moist, soft, sandy SILT, with rootlets and roots (TOPSOIL)	
			2D		2-4	24/15	7-9-7-7		2.0	Brown, moist, medium dense, silty fine SAND, with rootlets (FILL) Alternating layers: Tan/brown, moist to wet, medium dense, silty fine SAND and fine sandy SILT	
	5		3D		5-7	24/16	7-6-6-6	q <sub>p</sub> =4.0 ksf	5.0	Brown, wet, very stiff, clayey SILT with frequent sand partings and occasional sand seams	▽
	10		4D		10-12	24/24	1-1-1/12"	q <sub>p</sub> =2.0 to 3.0 ksf	10.0	Gray, saturated, stiff, silty CLAY	
	15		5D		15-17	24/24	1-1-2-3	q <sub>p</sub> =1.0 to 1.5 ksf ID 23173S w =28.5 %		medium stiff	
	20		6D		20-22	24/24	1-1-2-2	q <sub>p</sub> =1.0 to 1.5 ksf ID 23174S w =26.6 %		medium stiff	

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

**BORING NO.:** B-09





# BORING LOG

**BORING NO.:** **B-09**  
**SHEET:** 2 of 2  
**PROJECT NO.:** 23-1662  
**DATE START:** 9/1/2023  
**DATE FINISH:** 9/1/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION				Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)					Blow Count or RQD
			7D		25-27	24/24	WOH-1-1-2	q <sub>p</sub> =1.0 to 1.5 ksf ID 23175S w =26.7 %		medium stiff	
	30		8D		30-32	24/24	WOH/12" 1-2	q <sub>p</sub> =1.0 to 1.5 ksf ID 23176S w =25.2 %		medium stiff	
	35		9D		35-37	24/24	WOH/12" 1-2	q <sub>p</sub> =1.0 to 2.0 ksf ID 23177S w =23.1 %		medium stiff	
	35								38.0	Dark brown, saturated, dense, gravelly silty SAND (Glacial Till)	
	40		10D		40-40.6	7/2	14-25/1"				

Split Spoon Refusal at 40.6 feet  
(Probably cobble, boulder, or bedrock)

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** **B-09**



# BORING LOG

**BORING NO.:** B-10  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan      **ELEVATION (FT):** 75'      **TOTAL DEPTH (FT):** 17.0      **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling      **DRILLER:** Dale Griffin      **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50      **AUGER ID/OD:** 2 1/4 in / 5 5/8 in      **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic      **HAMMER WEIGHT (lbs):** 140 / 140      **CASING ID/OD:** N/A / N/A      **CORE BARREL:**  
**HAMMER CORRECTION FACTOR:**      **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil became saturated

## GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  
 At time of Drilling  
 At Completion of Drilling  
 After Drilling  
D = Split Spoon Sample  
U = Thin Walled Tube Sample  
R = Rock Core Sample  
V = Field Vane Shear  
Pen. = Penetration Length  
Rec. = Recovery Length  
bpf = Blows per Foot  
mpf = Minute per Foot  
WOR = Weight of Rods  
WOH = Weight of Hammer  
RQD = Rock Quality Designation  
PID = Photoionization Detector  
S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
Ø = Friction Angle (Estimated)  
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks	
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD					Field / Lab Test Data
			1D		0-2	24/20	1-1-2-4		0.3	Black, moist, loose, organic silty SAND, with rootlets (TOPSOIL)		
			2D		2-4	24/16	7-9-7-8		2.0	Brown, moist, medium dense, sandy SILT, with rootlets Alternating layers: Brown, moist to saturated, medium dense, silty fine SAND and fine sandy SILT, some clay		
70	5		3D		5-7	24/24	3-9-11-10					
65	10		4D		10-12	24/20	3-3-3-2	q <sub>p</sub> =3.0 to 4.0 ksf	10.0	Brown to gray, saturated, stiff to very stiff, silty CLAY, with frequent silt seams		
60	15		5D		15-17	24/24	3-3-3-3	q <sub>p</sub> =1.0 to 2.0 ksf		medium stiff to stiff		

Bottom of Exploration at 17.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-10



# BORING LOG

**BORING NO.:** B-11  
**SHEET:** 1 of 1  
**PROJECT NO.:** 23-1662  
**DATE START:** 8/31/2023  
**DATE FINISH:** 8/31/2023

**CLIENT:** Altus Engineering  
**PROJECT:** Proposed Assisted Living Facility  
**LOCATION:** White Oak Drive, Exeter, New Hampshire

## Drilling Information

**LOCATION:** See Exploration Location Plan    **ELEVATION (FT):** 77'    **TOTAL DEPTH (FT):** 17.0    **LOGGED BY:** John Cozens  
**DRILLING CO.:** Seaboard Drilling    **DRILLER:** Dale Griffin    **DRILLING METHOD:** Hollow Stem Auger  
**RIG TYPE:** Track Mounted Diedrich D-50    **AUGER ID/OD:** 2 1/4 in / 5 5/8 in    **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic / Automatic    **HAMMER WEIGHT (lbs):** 140 / 140    **CASING ID/OD:** N/A / N/A    **CORE BARREL:** \_\_\_\_\_  
**HAMMER CORRECTION FACTOR:** \_\_\_\_\_    **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):** 5 ft Soil becomes saturated

### GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  
 At time of Drilling  
 At Completion of Drilling  
 After Drilling  
D = Split Spoon Sample  
U = Thin Walled Tube Sample  
R = Rock Core Sample  
V = Field Vane Shear  
Pen. = Penetration Length  
Rec. = Recovery Length  
bpf = Blows per Foot  
mpf = Minute per Foot  
WOR = Weight of Rods  
WOH = Weight of Hammer  
RQD = Rock Quality Designation  
PID = Photoionization Detector  
S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
Ø = Friction Angle (Estimated)  
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD				
75    5  70   10  65   15   60	0-2		1D		0-2	24/15	7-7-6-4		Black to brown, moist, fine to coarse SAND, some silt, with rootlets and debris (brick and wood) (TOPSOIL/FILL)		
	2-4		2D		2-4	24/17	5-7-10-10	2.0	Alternating layers: Brown, moist, medium dense, silty fine SAND, fine sandy SILT		
	5-7		3D		5-7	24/24	7-8-11-9	5.0	Brown, saturated, medium dense, silty fine SAND		
	10-12		4D		10-12	24/24	5-4-7-7	q <sub>p</sub> =2.5-3.0 ksf	Brown, saturated, stiff, SILT, some fine sand, with frequent silty clay seams		
	15-17		5D		15-17	24/24	WOH-4-3-3	q <sub>p</sub> =2.0 ksf	Gray, saturated, stiff, silty CLAY		
Bottom of Exploration at 17.0 feet											

BORING / WELL 10-12-2022 23-1662.GPJ SWCE TEMPLATE.GDT 9/27/23

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-11

## **KEY TO NOTES & SYMBOLS**

### **Test Boring and Test Pit Explorations**

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

#### **Key to Symbols Used:**

w	-	water content, percent (dry weight basis)
q <sub>u</sub>	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S <sub>v</sub>	-	field vane shear strength, kips/sq. ft.
L <sub>v</sub>	-	lab vane shear strength, kips/sq. ft.
q <sub>p</sub>	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W <sub>L</sub>	-	liquid limit - Atterberg test
W <sub>P</sub>	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ <sub>T</sub>	-	total soil weight
γ <sub>B</sub>	-	buoyant soil weight

#### **Description of Proportions:**

Trace:	0 to 5%
Some:	5 to 12%
“Y”	12 to 35%
And	35+%
With	Undifferentiated

#### **Description of Stratified Soils**

Parting:	0 to 1/16” thickness
Seam:	1/16” to 1/2” thickness
Layer:	1/2” to 12” thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

**REFUSAL: Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

**REFUSAL: Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.



## Section 7

# BMP and Riprap Sizing Calculations



## FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: \_\_\_\_\_

**Bioretention Pond #1 (HydroCAD Node #38P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
4.05	ac	A = Area draining to the practice	
2.10	ac	$A_i$ = Impervious area draining to the practice	
0.52	decimal	l = Percent impervious area draining to the practice, in decimal form	
0.52	unitless	$R_v$ = Runoff coefficient = $0.05 + (0.9 \times l)$	
2.09	ac-in	WQV = 1" x $R_v$ x A	
7,596	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,899	cf	25% x WQV (check calc for sediment forebay volume)	
5,697	cf	75% x WQV (check calc for surface sand filter volume)	
CB's		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	$V_{SED}$ = Sediment forebay volume, if used for pretreatment	<b>≥ 25%WQV</b>
<b>Calculate time to drain if system IS NOT underdrained:</b>			
	sf	$A_{SA}$ = Surface area of the practice	
	iph	$K_{SAT_{DESIGN}}$ = Design infiltration rate <sup>1</sup>	
	Yes/No	If $K_{SAT}$ (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
-	hours	$T_{DRAIN}$ = Drain time = $V / (A_{SA} * I_{DESIGN})$	<b>≤ 72-hrs</b>
<b>Calculate time to drain if system IS underdrained:</b>			
62.96	ft	$E_{WQV}$ = Elevation of WQV (attach stage-storage table)	
0.40	cfs	$Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table)	
10.55	hours	$T_{DRAIN}$ = Drain time = $2WQV/Q_{WQV}$	<b>≤ 72-hrs</b>
60.50	feet	$E_{FC}$ = Elevation of the bottom of the filter course material <sup>2</sup>	
59.08	feet	$E_{UD}$ = Invert elevation of the underdrain (UD), if applicable	
63.25	feet	$E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
60.50	feet	$E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.42	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	<b>≥ 1'</b>
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	<b>≥ 1'</b>
(2.75)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	<b>≥ 1'</b>
65.76	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
66.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	<b>← yes</b>
<b>If a surface sand filter or underground sand filter is proposed:</b>			
YES	ac	Drainage Area check.	<b>&lt; 10 ac</b>
	cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	<b>≥ 75%WQV</b>
	inches	$D_{FC}$ = Filter course thickness	<b>18", or 24" if within GPA</b>
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	<b>← yes</b>

<b>If a bioretention area is proposed:</b>			
YES	ac	Drainage Area no larger than 5 ac?	← yes
7,887	cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	≥ WQV
18.0	inches	D <sub>FC</sub> = Filter course thickness	18", or 24" if within GPA
Sheet	C-13	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	> 3:1
Sheet	L-1	Note what sheet in the plan set contains the planting plans and surface cover	
<b>If porous pavement is proposed:</b>			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A <sub>SA</sub> = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D <sub>FC</sub> = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil).  $K_{sat_{design}}$  includes factor of safety. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet structure, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

7,596 cf WQV required, 7,887 cf WQV provided = 291 cf surplus

System will intercept the water table and will therefore have an impermeable liner making SHWT and bedrock not applicable.

TP #5A: SHWT @33", Termination @ 66", No Refusal

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*Type III 24-hr 2-year Rainfall=3.67"*

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**Stage-Area-Storage for Pond 38P: Bioretention #1**

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
60.50	5,501	5,501	0
60.70	5,501	5,554	55
60.90	5,501	5,606	110
61.10	5,501	5,659	165
61.30	5,501	5,711	220
61.50	5,501	5,764	275
61.70	5,501	5,817	330
61.90	5,641	5,976	1,179
62.10	5,815	6,157	2,326
62.30	5,975	6,326	3,505
62.50	6,137	6,497	4,716
62.70	6,301	6,671	5,960
62.90	6,467	6,846	7,236
63.10	6,635	7,024	8,547
63.30	6,805	7,204	9,891
63.50	6,978	7,386	11,269
63.70	7,152	7,570	12,682
63.90	7,329	7,757	14,130
64.10	7,509	7,947	15,614
64.30	7,692	8,140	17,134
64.50	7,878	8,336	18,691
64.70	8,065	8,534	20,285
64.90	8,255	8,735	21,917
65.10	8,448	8,937	23,587
65.30	8,642	9,143	25,296
65.50	8,839	9,351	27,044
65.70	9,038	9,561	28,832
65.90	<b>9,240</b>	<b>9,773</b>	<b>30,660</b>



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Type III 24-hr 2-year Rainfall=3.67"

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**Summary for Pond 38P: Bioretention #1**

[81] Warning: Exceeded Pond 37P by 0.92' @ 13.08 hrs

Inflow Area = 4.050 ac, 51.46% Impervious, Inflow Depth = 1.95" for 2-year event  
 Inflow = 8.32 cfs @ 12.09 hrs, Volume= 0.659 af  
 Outflow = 1.26 cfs @ 12.64 hrs, Volume= 0.667 af, Atten= 85%, Lag= 33.1 min  
 Primary = 1.26 cfs @ 12.64 hrs, Volume= 0.667 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Starting Elev= 61.75' Surf.Area= 5,501 sf Storage= 344 cf  
 Peak Elev= 63.47' @ 12.64 hrs Surf.Area= 6,948 sf Storage= 11,029 cf (10,685 cf above start)  
 Flood Elev= 66.00' Surf.Area= 9,341 sf Storage= 31,589 cf (31,245 cf above start)

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 169.4 min ( 971.5 - 802.1 )

Volume	Invert	Avail.Storage	Storage Description			
#1	60.50'	31,589 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
60.50	5,501	0.0	0	0	5,501	
61.75	5,501	5.0	344	344	5,830	
62.00	5,736	100.0	1,405	1,748	6,074	
63.00	6,551	100.0	6,139	7,887	6,935	
64.00	7,418	100.0	6,980	14,867	7,851	
65.00	8,351	100.0	7,880	22,747	8,836	
66.00	9,341	100.0	8,841	31,589	9,880	

Device	Routing	Invert	Outlet Devices
#1	Primary	59.00'	<b>24.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.00' / 58.85' S= 0.0050 1/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	59.08'	<b>6.0" Vert. Underdrain</b> C= 0.600
#3	Device 2	60.50'	<b>2.500 in/hr Exfiltration through Media over Wetted area</b> Phase-In= 0.01'
#4	Device 1	63.00'	<b>12.0" Vert. Orifice/Grate</b> C= 0.600
#5	Device 1	65.50'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=1.26 cfs @ 12.64 hrs HW=63.47' (Free Discharge)

- 1=Culvert (Passes 1.26 cfs of 28.16 cfs potential flow)
- 2=Underdrain (Passes 0.43 cfs of 1.92 cfs potential flow)
- 3=Exfiltration through Media (Exfiltration Controls 0.43 cfs)
- 4=Orifice/Grate (Orifice Controls 0.83 cfs @ 2.32 fps)
- 5=Orifice/Grate ( Controls 0.00 cfs)

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Type III 24-hr 2-year Rainfall=3.67"

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**Stage-Discharge for Pond 38P: Bioretention #1**

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
60.50	0.00	62.62	0.38	64.74	4.71
60.54	0.32	62.66	0.38	64.78	4.78
60.58	0.32	62.70	0.39	64.82	4.85
60.62	0.32	62.74	0.39	64.86	4.91
60.66	0.32	62.78	0.39	64.90	4.98
60.70	0.32	62.82	0.39	64.94	5.05
60.74	0.32	62.86	0.39	64.98	5.11
60.78	0.32	62.90	0.40	65.02	5.17
60.82	0.32	62.94	0.40	65.06	5.24
60.86	0.32	62.98	0.40	65.10	5.30
60.90	0.32	63.02	0.40	65.14	5.36
60.94	0.33	63.06	0.42	65.18	5.42
60.98	0.33	63.10	0.45	65.22	5.48
61.02	0.33	63.14	0.49	65.26	5.54
61.06	0.33	63.18	0.55	65.30	5.60
61.10	0.33	63.22	0.62	65.34	5.66
61.14	0.33	63.26	0.70	65.38	5.72
61.18	0.33	63.30	0.79	65.42	5.78
61.22	0.33	63.34	0.89	65.46	5.83
61.26	0.33	63.38	1.00	65.50	5.89
61.30	0.33	63.42	1.11	65.54	6.36
61.34	0.33	63.46	1.24	65.58	7.18
61.38	0.33	63.50	1.37	65.62	8.23
61.42	0.33	63.54	1.51	65.66	9.46
61.46	0.33	63.58	1.66	65.70	10.84
61.50	0.33	63.62	1.81	65.74	12.37
61.54	0.33	63.66	1.96	65.78	14.02
61.58	0.33	63.70	2.11	65.82	15.79
61.62	0.34	63.74	2.27	65.86	17.67
61.66	0.34	63.78	2.42	65.90	19.66
61.70	0.34	63.82	2.57	65.94	21.75
61.74	0.34	63.86	2.72	65.98	<b>23.93</b>
61.78	0.34	63.90	2.85		
61.82	0.34	63.94	2.98		
61.86	0.34	63.98	3.09		
61.90	0.35	64.02	3.18		
61.94	0.35	64.06	3.29		
61.98	0.35	64.10	3.39		
62.02	0.35	64.14	3.49		
62.06	0.35	64.18	3.58		
62.10	0.36	64.22	3.68		
62.14	0.36	64.26	3.77		
62.18	0.36	64.30	3.85		
62.22	0.36	64.34	3.94		
62.26	0.36	64.38	4.02		
62.30	0.37	64.42	4.11		
62.34	0.37	64.46	4.19		
62.38	0.37	64.50	4.26		
62.42	0.37	64.54	4.34		
62.46	0.37	64.58	4.42		
62.50	0.38	64.62	4.49		
62.54	0.38	64.66	4.56		
62.58	0.38	64.70	4.64		



## FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: \_\_\_\_\_

**Bioretention Pond #2 (HydroCAD Node #49P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

<u>Yes</u>	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
<u>1.15</u> ac	A = Area draining to the practice	
<u>0.77</u> ac	$A_i$ = Impervious area draining to the practice	
<u>0.67</u> decimal	l = Percent impervious area draining to the practice, in decimal form	
<u>0.65</u> unitless	$R_v$ = Runoff coefficient = $0.05 + (0.9 \times l)$	
<u>0.75</u> ac-in	WQV = 1" x $R_v$ x A	
<u>2,720</u> cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
<u>680</u> cf	25% x WQV (check calc for sediment forebay volume)	
<u>2,040</u> cf	75% x WQV (check calc for surface sand filter volume)	
<u>CB, PRETX, Isolator</u>	Method of Pretreatment? (not required for clean or roof runoff)	
<u>cf</u>	$V_{SED}$ = Sediment forebay volume, if used for pretreatment	<b>≥ 25%WQV</b>
<b>Calculate time to drain if system IS NOT underdrained:</b>		
<u>sf</u>	$A_{SA}$ = Surface area of the practice	
<u>iph</u>	$K_{SAT\_DESIGN}$ = Design infiltration rate <sup>1</sup>	
<u>Yes/No</u>	If $K_{SAT}$ (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
<u>- hours</u>	$T_{DRAIN}$ = Drain time = $V / (A_{SA} * I_{DESIGN})$	<b>≤ 72-hrs</b>
<b>Calculate time to drain if system IS underdrained:</b>		
<u>65.96</u> ft	$E_{WQV}$ = Elevation of WQV (attach stage-storage table)	
<u>0.11</u> cfs	$Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table)	
<u>13.74</u> hours	$T_{DRAIN}$ = Drain time = $2WQV/Q_{WQV}$	<b>≤ 72-hrs</b>
<u>62.50</u> feet	$E_{FC}$ = Elevation of the bottom of the filter course material <sup>2</sup>	
<u>61.50</u> feet	$E_{UD}$ = Invert elevation of the underdrain (UD), if applicable	
<u>65.08</u> feet	$E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
<u>60.75</u> feet	$E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
<u>1.00</u> feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	<b>≥ 1'</b>
<u>1.75</u> feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	<b>≥ 1'</b>
<u>(2.58)</u> feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	<b>≥ 1'</b>
<u>66.86</u> ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
<u>67.00</u> ft	Elevation of the top of the practice	
<u>YES</u>	50 peak elevation ≤ Elevation of the top of the practice	<b>← yes</b>
<b>If a surface sand filter or underground sand filter is proposed:</b>		
<u>YES</u> ac	Drainage Area check.	<b>&lt; 10 ac</b>
<u>cf</u>	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	<b>≥ 75%WQV</b>
<u>inches</u>	$D_{FC}$ = Filter course thickness	<b>18", or 24" if within GPA</b>
<u>Sheet</u>	Note what sheet in the plan set contains the filter course specification.	
<u>Yes/No</u>	Access grate provided?	<b>← yes</b>





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Type III 24-hr 50-year Rainfall=8.58"

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**Stage-Area-Storage for Pond 49P: Bioretention #2**

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
62.50	1,025	1,025	0
62.60	1,025	1,036	5
62.70	1,025	1,048	10
62.80	1,025	1,059	15
62.90	1,025	1,070	20
63.00	1,025	1,082	26
63.10	1,025	1,093	31
63.20	1,025	1,104	36
63.30	1,025	1,116	41
63.40	1,025	1,127	46
63.50	1,025	1,138	51
63.60	1,025	1,150	56
63.70	1,025	1,161	62
63.80	1,025	1,173	67
63.90	1,025	1,184	72
64.00	1,025	1,195	77
64.10	1,056	1,228	181
64.20	1,087	1,262	288
64.30	1,119	1,296	398
64.40	1,151	1,330	512
64.50	1,184	1,365	629
64.60	1,217	1,400	749
64.70	1,251	1,436	872
64.80	1,285	1,473	999
64.90	1,320	1,510	1,129
65.00	1,355	1,547	1,263
65.10	1,389	1,584	1,400
65.20	1,424	1,621	1,541
65.30	1,459	1,658	1,685
65.40	1,494	1,696	1,833
65.50	1,530	1,735	1,984
65.60	1,566	1,774	2,139
65.70	1,603	1,813	2,297
65.80	1,640	1,853	2,459
65.90	1,678	1,893	2,625
66.00	1,716	1,934	2,795
66.10	1,753	1,974	2,968
66.20	1,791	2,014	3,146
66.30	1,829	2,055	3,327
66.40	1,868	2,097	3,511
66.50	1,906	2,139	3,700
66.60	1,946	2,181	3,893
66.70	1,985	2,224	4,089
66.80	2,026	2,267	4,290
66.90	2,066	2,310	4,495
67.00	<b>2,107</b>	<b>2,354</b>	<b>4,703</b>

Available WQV  
=3,700 cf

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Type III 24-hr 50-year Rainfall=8.58"

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**Stage-Discharge for Pond 49P: Bioretention #2**

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
62.50	0.00	65.15	0.09
62.55	0.06	65.20	0.09
62.60	0.06	65.25	0.09
62.65	0.06	65.30	0.10
62.70	0.06	65.35	0.10
62.75	0.06	65.40	0.10
62.80	0.06	65.45	0.10
62.85	0.06	65.50	0.10
62.90	0.06	65.55	0.10
62.95	0.06	65.60	0.10
63.00	0.06	65.65	0.10
63.05	0.06	65.70	0.10
63.10	0.06	65.75	0.11
63.15	0.06	65.80	0.11
63.20	0.06	65.85	0.11
63.25	0.06	65.90	0.11
63.30	0.06	65.95	0.11
63.35	0.06	66.00	0.11
63.40	0.07	66.05	0.11
63.45	0.07	66.10	0.11
63.50	0.07	66.15	0.12
63.55	0.07	66.20	0.12
63.60	0.07	66.25	0.12
63.65	0.07	66.30	0.12
63.70	0.07	66.35	0.12
63.75	0.07	66.40	0.12
63.80	0.07	66.45	0.12
63.85	0.07	66.50	0.12
63.90	0.07	66.55	0.35
63.95	0.07	66.60	0.78
64.00	0.07	66.65	1.32
64.05	0.07	66.70	1.97
64.10	0.07	66.75	2.70
64.15	0.07	66.80	3.51
64.20	0.07	66.85	4.39
64.25	0.07	66.90	5.33
64.30	0.07	66.95	6.34
64.35	0.08	67.00	<b>7.40</b>
64.40	0.08		
64.45	0.08		
64.50	0.08		
64.55	0.08		
64.60	0.08		
64.65	0.08		
64.70	0.08		
64.75	0.08		
64.80	0.09		
64.85	0.09		
64.90	0.09		
64.95	0.09		
65.00	0.09		
65.05	0.09		
65.10	0.09		



## FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

**Type/Node Name:** \_\_\_\_\_ **Porous Pavement #1 (HydroCAD Node #80P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

	Yes	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
	0.04 ac	A = Area draining to the practice	
	0.04 ac	$A_i$ = Impervious area draining to the practice	
	0.96 decimal	l = Percent impervious area draining to the practice, in decimal form	
	0.91 unitless	$R_v$ = Runoff coefficient = $0.05 + (0.9 \times l)$	
	0.03 ac-in	WQV = 1" x $R_v$ x A	
	126 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
	32 cf	25% x WQV (check calc for sediment forebay volume)	
	95 cf	75% x WQV (check calc for surface sand filter volume)	
	N/A (porous pave)	Method of Pretreatment? (not required for clean or roof runoff)	
	cf	$V_{SED}$ = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	350 sf	$A_{SA}$ = Surface area of the practice	
	3.00 iph	$K_{sat\_DESIGN}$ = Design infiltration rate <sup>1</sup>	
	N/A Yes/No	If $K_{sat}$ (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
	1.4 hours	$T_{DRAIN}$ = Drain time = $V / (A_{SA} * I_{DESIGN})$	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	$E_{WQV}$ = Elevation of WQV (attach stage-storage table)	
	cfs	$Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table)	
	- hours	$T_{DRAIN}$ = Drain time = $2WQV/Q_{WQV}$	≤ 72-hrs
	feet	$E_{FC}$ = Elevation of the bottom of the filter course material <sup>2</sup>	
	feet	$E_{UD}$ = Invert elevation of the underdrain (UD), if applicable	
	feet	$E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	$E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
	- feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
	- feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
	- feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
	-	50 peak elevation ≤ Elevation of the top of the practice	← yes
<b>If a surface sand filter or underground sand filter is proposed:</b>			
	YES ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	≥ 75%WQV
	inches	$D_{FC}$ = Filter course thickness	18", or 24" if within GPA
	Sheet	Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes







## FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

**Type/Node Name:** \_\_\_\_\_ **Porous Pavement #2 (HydroCAD Node #81P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.10	ac	A = Area draining to the practice	
0.10	ac	$A_i$ = Impervious area draining to the practice	
0.99	decimal	l = Percent impervious area draining to the practice, in decimal form	
0.94	unitless	$R_v$ = Runoff coefficient = $0.05 + (0.9 \times l)$	
0.10	ac-in	WQV = 1" x $R_v$ x A	
352	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
88	cf	25% x WQV (check calc for sediment forebay volume)	
264	cf	75% x WQV (check calc for surface sand filter volume)	
N/A (porous pave)		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	$V_{SED}$ = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
<b>Calculate time to drain if system IS NOT underdrained:</b>			
1,497	sf	$A_{SA}$ = Surface area of the practice	
3.00	iph	$K_{SAT_{DESIGN}}$ = Design infiltration rate <sup>1</sup>	
		If $K_{SAT}$ (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
N/A	Yes/No		
0.9	hours	$T_{DRAIN}$ = Drain time = $V / (A_{SA} * I_{DESIGN})$	≤ 72-hrs
<b>Calculate time to drain if system IS underdrained:</b>			
	ft	$E_{WQV}$ = Elevation of WQV (attach stage-storage table)	
	cfs	$Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table)	
-	hours	$T_{DRAIN}$ = Drain time = $2WQV/Q_{WQV}$	≤ 72-hrs
	feet	$E_{FC}$ = Elevation of the bottom of the filter course material <sup>2</sup>	
	feet	$E_{UD}$ = Invert elevation of the underdrain (UD), if applicable	
	feet	$E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	$E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
<b>If a surface sand filter or underground sand filter is proposed:</b>			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	≥ 75%WQV
	inches	$D_{FC}$ = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes





## RIPRAP CALCULATIONS

**Location: Bio #1, 24" Culvert (HydroCAD Pond #38P)**

Project: 5015

Date: 10/14/2024

By: EBS

La	Apron Length, Ft.	Calculated
Tw	Tailwater, Ft.	<b>0.4</b>
Q	Flow, 10 Yr Storm, CFS	<b>4.21</b>
D50	Median Stone Dia., Ft.	Calculated
D	Depth of Stone, In	Calculated
Do	Pipe Diameter, Ft	<b>2.00</b>
W1	Width @ Start, Ft.	Calculated
W2	Width @ End, Ft	Calculated
W	Width of Channel	<b>4</b>

W1:  $3(Do)=$  6 Ft.

**Width @ Start: 6 Ft.**

D50:  $\frac{0.02(Q)^{4/3}}{Tw(Do)}$  D50= 0.17 Ft.  
or 2.0 In.

**Median Stone Size: 6 In.**

D:  $2.25 * D50$

**Depth of Riprap: 14 In.**

La: If  $Tw \leq Do/2$ :  $Do/2=$  1 Ft.  
and  $La=1.8Q/Do^{3/2} + 7Do$  Tw= 0.4 Ft.  
W2=width of channel  
or  
W2=3Do+La

If  $Tw > Do/2$ :  
and  $La=3Q/Do^{3/2} + 7Do$   
W2=width of channel  
or  
W2=3Do+0.4La

**Length of Apron: 17 Ft.**

**Width @ End: 4 Ft.**



## RIPRAP CALCULATIONS

**Location: DMH #21, 15" Culvert (HydroCAD Pond #48P)**

Project: 5015

Date: 10/14/2024

By: EBS

La	Apron Length, Ft.	Calculated
Tw	Tailwater, Ft.	2.7
Q	Flow, 10 Yr Storm, CFS	1.47
D50	Median Stone Dia., Ft.	Calculated
D	Depth of Stone, In	Calculated
Do	Pipe Diameter, Ft	1.25
W1	Width @ Start, Ft.	Calculated
W2	Width @ End, Ft	Calculated
W	Width of Channel	2

W1:  $3(\text{Do}) = 3.75 \text{ Ft.}$

**Width @ Start: 4 Ft.**

D50:  $\frac{0.02(Q)^{4/3}}{\text{Tw}(\text{Do})}$  D50= 0.01 Ft.  
or 0.1 In.

**Median Stone Size: 6 In.**

D:  $2.25 * \text{D50}$

**Depth of Riprap: 14 In.**

La: If  $\text{Tw} \leq \text{Do}/2$ :  $\text{Do}/2 = 0.625 \text{ Ft.}$   
and  $\text{La} = 1.8Q/\text{Do}^{3/2} + 7\text{Do}$   $\text{Tw} = 2.72 \text{ Ft.}$   
W2=width of channel  
or  
W2=3Do+La

If  $\text{Tw} > \text{Do}/2$ :  
and  $\text{La} = 3Q/\text{Do}^{3/2} + 7\text{Do}$   
W2=width of channel  
or  
W2=3Do+0.4La

**Length of Apron: 12 Ft.**

**Width @ End: 2 Ft.**





## RIPRAP CALCULATIONS

**Location: Bio #2, 15" Culvert (HydroCAD Pond #49P)**

Project: 5015

Date: 10/14/2024

By: EBS

La	Apron Length, Ft.	Calculated
Tw	Tailwater, Ft.	0.2
Q	Flow, 10 Yr Storm, CFS	2.15
D50	Median Stone Dia., Ft.	Calculated
D	Depth of Stone, In	Calculated
Do	Pipe Diameter, Ft	1.50
W1	Width @ Start, Ft.	Calculated
W2	Width @ End, Ft	Calculated
W	Width of Channel	4

W1:  $3(\text{Do}) = 4.5 \text{ Ft.}$

**Width @ Start: 5 Ft.**

D50:  $\frac{0.02(Q)^{4/3}}{\text{Tw}(\text{Do})}$  D50= 0.18 Ft.  
or 2.2 In.

**Median Stone Size: 6 In.**

D:  $2.25 * \text{D50}$

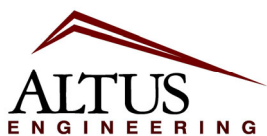
**Depth of Riprap: 14 In.**

La: If  $\text{Tw} \leq \text{Do}/2$ :  $\text{Do}/2 = 0.75 \text{ Ft.}$   
and  $\text{La} = 1.8Q/\text{Do}^{3/2} + 7\text{Do}$   $\text{Tw} = 0.2 \text{ Ft.}$   
and  $\text{W2} = \text{width of channel}$   
or  
 $\text{W2} = 3\text{Do} + \text{La}$

If  $\text{Tw} > \text{Do}/2$ :  
and  $\text{La} = 3Q/\text{Do}^{3/2} + 7\text{Do}$   
and  $\text{W2} = \text{width of channel}$   
or  
 $\text{W2} = 3\text{Do} + 0.4\text{La}$

**Length of Apron: 13 Ft.**

**Width @ End: 4 Ft.**



## Section 8

Stormwater Operations & Maintenance Plan

Stormtech Isolator Row O&M Manual

Inspection Form

Stormwater Management Plan

# STORMWATER INSPECTION AND MAINTENANCE MANUAL

## RiverWoods Supportive Living Health Center

Assessor's Map 97, Lot 23

**OWNER:**  
**RiverWoods Group**  
**7 Riverwoods Drive**  
**Exeter, NH 03833**

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

### **RESPONSIBLE PARTIES:**

<b>Owner:</b>	<u>The RiverWoods Company at Exeter</u>	<u>(603) 772-4700</u>
	Name Company	Phone

<b>Inspection:</b>	<u>The RiverWoods Company at Exeter</u>	<u>(603) 772-4700</u>
	Name Company	Phone

<b>Maintenance:</b>	<u>The RiverWoods Company at Exeter</u>	<u>(603) 772-4700</u>
	Name Company	Phone

### **NOTES:**

***Written inspection forms and maintenance logs shall be completed yearly by a qualified inspector retained the owner or assigns. Reports shall be submitted to the Exeter Public Works Department on or before January 31<sup>st</sup> of each year and a copy retained at the site's business office.***

***Photographs of each stormwater BMP are to be taken at each inspection and submitted with the annual inspection reports.***

***Inspection and maintenance responsibilities shall transfer to any future property owner(s).***

***This manual shall be updated as needed to reflect any changes related to any transfer of ownership and/or any delegation of inspection and maintenance responsibilities to another entity***



## **BIORETENTION PONDS (AKA RAINGARDENS)**

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*Function* – Bioretention ponds provide treatment to runoff prior to directing it to stormwater systems by filtering sediment and suspended solids, trapping them in the bottom of the garden and in the filter media itself. Additional treatment is provided by the native water-tolerant vegetation which removes nutrients and other pollutants through bio-uptake. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

Bioretention ponds shall be managed (Per AGR 3800 and RSA 430:53) to: prevent and control the spread of invasive plant, insect, and fungal species; minimize the adverse environmental and economic effects invasive species cause to agriculture, forests, wetlands, wildlife, and other natural resources of the state; and protect the public from potential health problems attributed to certain invasive species.

### *Maintenance*

- Inspect annually and after significant rainfall events.
- If a raingarden does not completely drain within 72-hours following a rainfall event, then a qualified professional shall be retained to assess the condition of the facility to determine measures required to restore its filtration and/or infiltration function(s), including but not limited to removal of accumulated sediments and/or replacement or reconstruction of the filter media. Filter media shall be replaced with material matching the specification on the design drawings or the NHDES Stormwater Manual.
- Replace any riprap dislodged from spillways, inlets and outlets.
- Remove any obstructions, litter and accumulated sediment or debris as warranted but no less than once a year.
- Mowing of any grassed area in or adjacent to a raingarden, including its berm, shall be performed at least twice per year (when areas are not inundated) to keep the vegetation in vigorous condition. The cut grass shall be removed to prevent the decaying organic litter from clogging the filter media or choking other vegetation.
- Select vegetation should be maintained in healthy condition. This may include pruning, removal and replacement of dead or diseased vegetation.
- Remove any invasive species, Per AGR 3800 and RSA 430:53.
- Remove any hard wood growth from raingardens.

## **CULVERTS AND DRAINAGE PIPES**

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*Function* – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas and to surface waters or closed drainage systems.

### *Maintenance*

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from the inlet and outlet to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.
- Riprap Areas - Culvert outlets and inlets shall be inspected during annual maintenance and operations for erosion and scour. If scour or creek erosion is identified, the outlet owner shall take appropriate means to prevent further erosion. Increased lengths of riprap may require a NHDES Permit and/or local permit.

## **DEEP SUMP CATCH BASINS**

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*Function* – Catch basins collect stormwater, primarily from paved surfaces and roofs. Stormwater from paved areas often contains sediment and contaminants. Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

### *Maintenance*

- Remove leaves and debris from structure grates on an as-needed basis.
- Sumps shall be inspected and cleaned annually and any removed sediment and debris shall be disposed of at a solid waste disposal facility.

## **RIP RAP OUTLETS, SWALES, LEVEL SPREADERS AND BUFFERS**

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*Function* – Rip rap outlets slow the velocity of runoff, minimizing erosion and maximizing the treatment capabilities of associated buffers. Vegetated buffers, either forested or meadow, slow runoff which promotes and reduces peak rates of runoff. The reduced velocities and the presence of vegetation encourage the filtration of sediment and the limited bio-uptake of nutrients.

### *Maintenance*

- Inspect riprap, level spreaders and buffers at least annually for signs of erosion, sediment buildup, or vegetation loss.
- Inspect level for signs of condensed flows. Level spreader and rip rap shall be maintained to disperse flows evenly over level spreader.
- If a meadow buffer, provide periodic mowing as needed to maintain a healthy stand of herbaceous vegetation.
- If a forested buffer, then the buffer should be maintained in an undisturbed condition, unless erosion occurs.
- If erosion of the buffer (forested or meadow) occurs, eroded areas should be repaired and replanted with vegetation similar to the remaining buffer. Corrective action should include eliminating the source of the erosion problem and may require retrofit or reconstruction of the level spreader.
- Remove debris and accumulated sediment and dispose of properly.

## **LANDSCAPED AREAS - FERTILIZER MANAGEMENT**

---

*Function* – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

### *Maintenance*

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.
- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.



## **LANDSCAPED AREAS - LITTER CONTROL**

---

*Function* – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

*Maintenance*

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

## **VEGETATIVE SWALES**

---

*Function* – Vegetative swales filter sediment from stormwater, promote infiltration, and the uptake of contaminates. They are designed to treat runoff and dispose of it safely into the natural drainage system.

*Maintenance*

- Timely maintenance is important to keep a swale in good working condition. Mowing of grassed swales shall be monthly to keep the vegetation in vigorous condition. The cut vegetation shall be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale.
- Fertilizing shall be bi-annual or as recommended from soil testing.
- Inspect swales following significant rainfall events.
- Woody vegetation shall not be allowed to become established in the swales or rock riprap outlet protection and if present shall be removed.
- Accumulated debris disrupts flow and leads to clogging and erosion. Remove debris and litter as necessary.
- Inspect for eroded areas. Determine cause of erosion and correct deficiency as required. Monitor repaired areas.

## **SUBSURFACE STORMWATER FACILITIES AND UNDERGROUND SAND FILTERS**

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*Function* – Underground sand filters are components of subsurface stormwater detention facilities that filter runoff through a layer of sand below the subsurface chambers. Runoff exits the filter layer by way of perforated underdrains in a bed of stone below the filter. Pretreatment is provided by a an “isolator row” of chambers wrapped in geotextile fabric which traps sediment and associated pollutants.

*Maintenance*

- Inspection of the isolator row should be done on an annual basis to determine sediment loading. See Stormtech Isolator Row O&M Manual for specific instructions.
- Cleaning of the isolator row should be done when sediment in the row is 3” deep or more.
- The system should be inspected annually to ensure that it is draining within 48 hours of a 1” or greater rainstorm. If inspection reveals that the system is not draining properly, the responsible party should contact an engineering professional familiar with similar systems to evaluate potential remedies. These may include, but are not limited to, a complete removal and replacement of the sand filter or crushed stone bedding.

## **CONTROL OF INVASIVE PLANTS**

---

*Function* – Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

### *Maintenance*

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described in the attached "Methods for Disposing Non-Native Invasive Plants" prepared by the UNH Cooperative Extension.

## **POROUS PAVEMENT**

---

*Function* – Porous pavement is designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. Proper maintenance of porous pavement is crucial for ensuring its longevity and functionality to infiltrate runoff.

### *Maintenance*

- Signs shall be installed indicating the location of porous pavement and the special maintenance required.
- New porous pavement shall be inspected several times in the first month after construction and at least annually thereafter. Inspections shall be conducted after major storms to check for surface ponding that might indicate possible clogging.
- Inspect annually for pavement deterioration or spalling.
- Vacuum sweeping shall be performed 2-4 times a year. Power washing may be required prior to vacuum sweeping to dislodge trapped particles.
- Sand and abrasives shall not be used for winter maintenance, as they will clog the pores; de-icing materials shall be used instead.
- Never reseal or repave with impermeable materials. If the porous pavement is damaged, it can be repaired using conventional, non-porous patching mixes as long as the cumulative area repaired does not exceed 10 percent of the paved area.

### **STREET/PARKING LOT SWEEPING (NON-POROUS PAVEMENT)**

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*Function* – Parking lots accumulate sand and debris. Street sweeping removes the sand and debris, which lowers transport of sediment and pollutants the stormwater systems and into the environment.

*Maintenance*

- A regular periodic cleaning schedule is recommended. The more frequent, the greater the sediment and pollutant removal. Regular cleaning of paved areas reduces the frequency of cleaning catch basins and drainage systems. It is recommended that the parking lots and access ways shall be swept at least once a month during winter months.

### **GENERAL CLEAN UP**

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- Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet filter, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.
- Once in operation, all paved areas of the site should be swept at least once annually at the end of winter/early spring prior to significant spring rains.

### **APPENDIX**

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- A. Stormwater System Operations and Maintenance Report
- B. Site Grading and Drainage Plan



# Isolator<sup>®</sup> Row O&M Manual





## THE ISOLATOR<sup>®</sup> ROW

### INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

### THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the overflow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

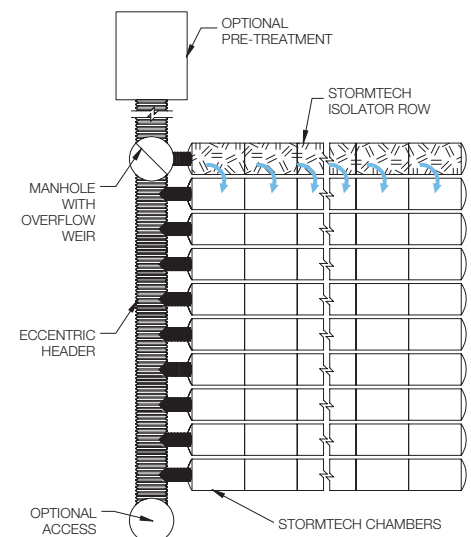
*Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)







## ISOLATOR ROW INSPECTION/MAINTENANCE

### INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

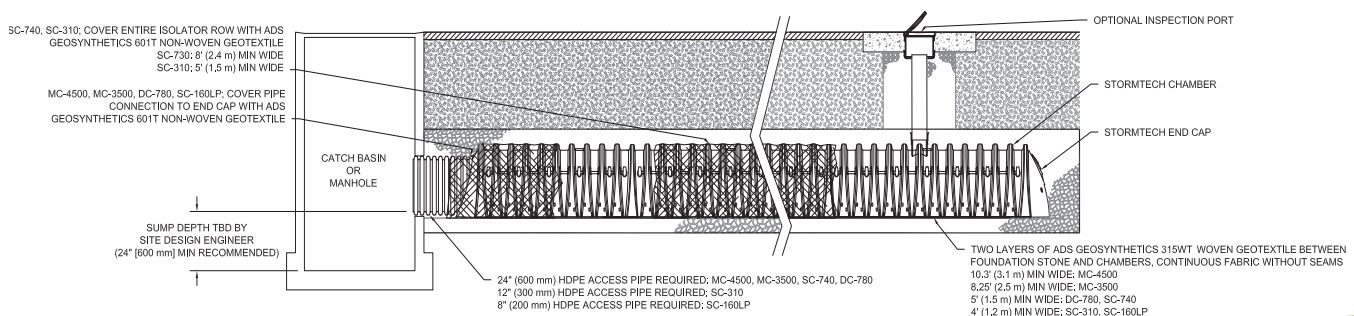
### MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

### StormTech Isolator Row (not to scale)

*Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.*



# ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

## STEP 1

Inspect Isolator Row for sediment.

- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
    - 2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

## STEP 2

Clean out Isolator Row using the JetVac process.

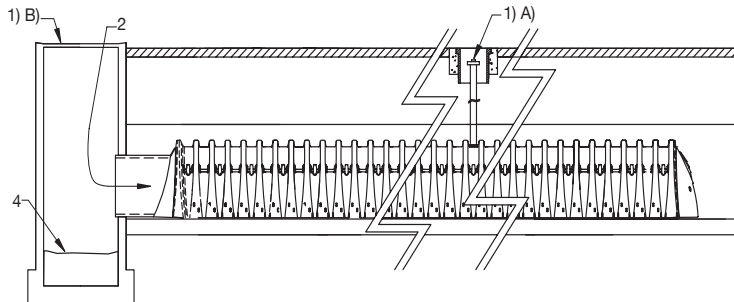
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

## STEP 3

Replace all caps, lids and covers, record observations and actions.

## STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



## SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)-(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM



## STORM WATER SYSTEM OPERATION AND MAINTENANCE REPORT

General Information		
<b>Project Name</b>		
<b>Owner</b>		
<b>Inspector's Name(s)</b>		
<b>Inspector's Contact Information</b>		
<b>Date of Inspection</b>	<b>Start Time:</b>	<b>End Time:</b>
<b>Type of Inspection:</b> <input type="checkbox"/> Annual Report <input type="checkbox"/> Post-storm event <input type="checkbox"/> Due to a discharge of significant amounts of sediment		
<b>Notes:</b>		

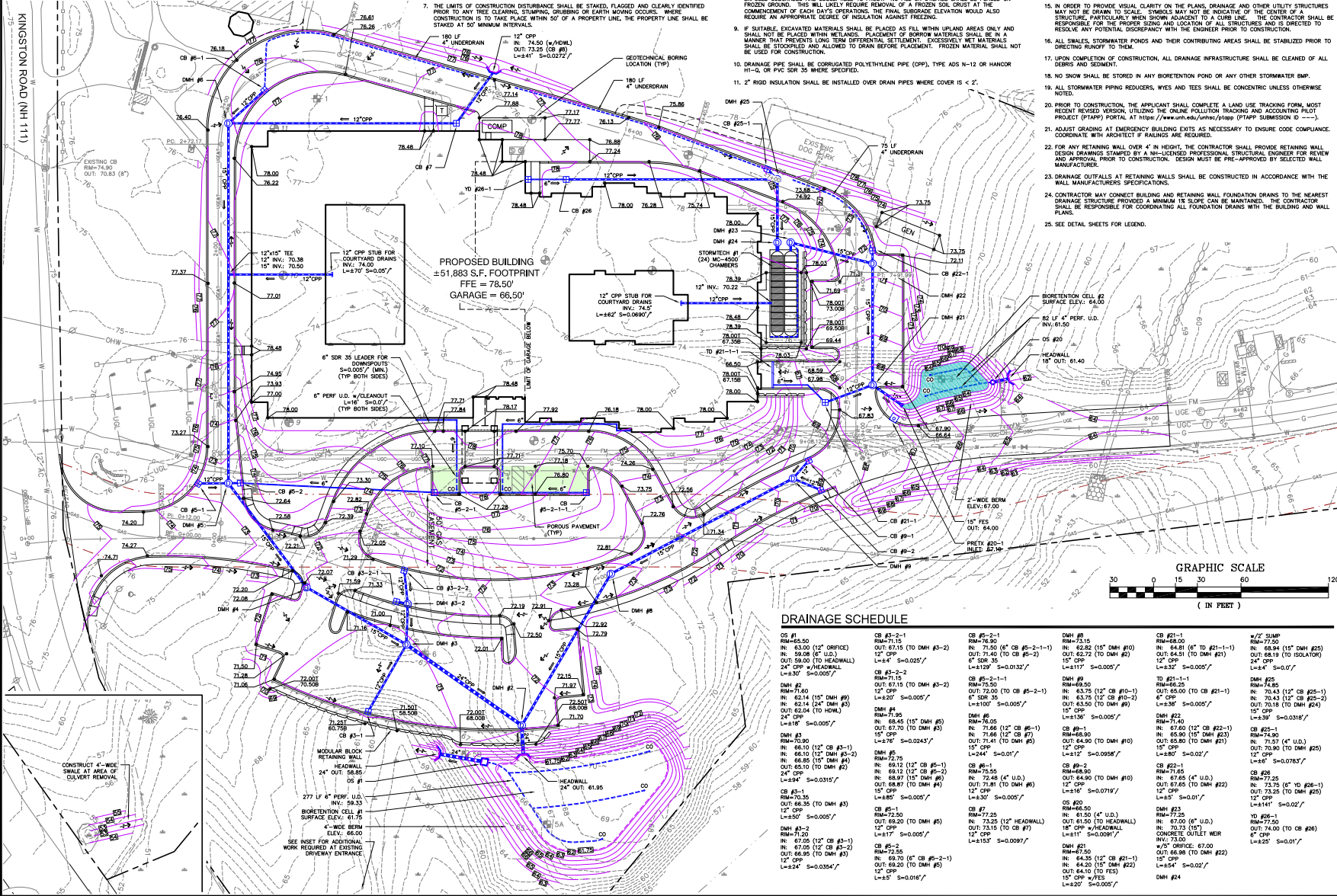
General Site Questions and Discharges of Significant Amounts of Sediment		
Subject	Status	Notes
<i>A discharge of significant amounts of sediment may be indicated by (but is not limited to) observations of the following. Note whether any are observed during this inspection:</i>		
<i>Notes/ Action taken:</i>		
1	Do the current site conditions reflect the attached site plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2	Is the site permanently stabilized, temporary erosion and sediment controls are removed, and stormwater discharges from construction activity are eliminated?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	Is there evidence of the discharge of significant amounts of sediment to surface waters, or conveyance systems leading to surface waters?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Permit Coverage and Plans				
#	BMP/Facility	Inspected	Corrective Action Needed and Notes	Date Corrected
	Catch Basins and Yard Drains	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Drainage Pipes	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Stormtech Isolator Row	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Riprap Aprons	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Site Vegetation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Bioretention Ponds	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	PRETX Units	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Porous Pavement	<input type="checkbox"/> Yes <input type="checkbox"/> No		

**GRADING AND DRAINAGE NOTES**

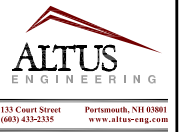
- DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
- CONTRACTOR SHALL OBTAIN A "DGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE MUNICIPAL ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
- ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
- UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
- PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
- THE LIMITS OF CONSTRUCTION DISTURBANCE SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY TREE CLEARING, STUMPING, GRUBBING OR EARTH MOVING OCCURS. WASTE CONSTRUCTION IS TO TAKE PLACE WITHIN 50' OF A PROPERTY LINE, THE PROPERTY LINE SHALL BE STAKED AT 50' MINIMUM INTERVAL.
- PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEMATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, ERECTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEMATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO A MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO MORE COMPETENT BEARING SOIL. THE FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SURFACE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
- IF SATURATED EXCAVATION MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. EXCESSIVE WETLANDS BORROW MATERIALS SHALL BE IN A CONTAINER THAT PREVENTS LONG TERM OPERATIONAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
- DRAINAGE PIPE SHALL BE CORRUGATED POLYETHYLENE PIPE (CPP), TYPE ADS N-12 OR HANCOR H1-Q, OR PVC SDR 35 WHERE SPECIFIED.
- 2" RIGID INSULATION SHALL BE INSTALLED OVER DRAIN PIPES WHERE COVER IS < 2'.
- ALL CATCH BASIN, MANHOLE AND OTHER DRAINAGE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 1" BELOW FINISH GRADE. ANY RIM ABOVE SURROUNDING FINISH GRADE SHALL NOT BE ACCEPTED UNLESS OTHERWISE SPECIFIED.
- ALL ROOF DRAIN RISERS SHALL BE LOCATED IN COORDINATION WITH THE ARCHITECTURAL PLANS TO MATCH DOWNSPOUT LOCATIONS. RISERS SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS AND SET TO FINISH GRADE PLUS 6" (MIN.).
- ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
- IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. DIMENSIONS MAY NOT BE INDICATIVE OF THE CENTER OF A STRUCTURE, PARTICULARLY WHEN SHOWN ADJACENT TO A CURB LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIGNS AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL SNALES, STORMWATER PONDS AND THEIR CONTRIBUTING AREAS SHALL BE STABILIZED PRIOR TO CONSTRUCTING RUNOFF TO THEM.
- UPON COMPLETION OF CONSTRUCTION, ALL DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
- NO SPOIL SHALL BE STORED IN ANY BIOTRENCH POND OR ANY OTHER STORMWATER BMP.
- ALL STORMWATER PIPING REDUCERS, WYES AND TEES SHALL BE CONCENTRIC UNLESS OTHERWISE NOTED.
- PRIOR TO CONSTRUCTION, THE APPLICANT SHALL COMPLETE A LAND USE TRACKING FORM, MOST RECENT REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL AT <https://www.unh.edu/unhrc/ptapp> (SUBMISSION ID ---).
- ADJUST GRADING AT EMERGENCY BUILDING EXITS AS NECESSARY TO ENSURE CODE COMPLIANCE. COORDINATE WITH ARCHITECT IF ANALYSIS IS REQUIRED.
- FOR ANY RETAINING WALL OVER 4' IN HEIGHT, THE CONTRACTOR SHALL PROVIDE RETAINING WALL DESIGN DRAWINGS STAMPED BY A NH-LICENSED PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. DESIGN MUST BE PRE-APPROVED BY SELECTED WALL MANUFACTURER.
- DRAINAGE OUTFALLS AT RETAINING WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE WALL MANUFACTURER'S SPECIFICATIONS.
- CONTRACTOR MAY CONNECT BUILDING AND RETAINING WALL FOUNDATION DRAINS TO THE NEAREST DRAINAGE STRUCTURE PROVIDED A MINIMUM 1% SLOPE CAN BE MAINTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL FOUNDATION DRAINS WITH THE BUILDING AND WALL PLANS.
- SEE DETAIL SHEETS FOR LEGEND.

KINGSTON ROAD (NH 111)



**DRAINAGE SCHEDULE**

CB #1-1 RIM=74.90 INV.=70.83 (8') 12\"/>	CB #2-1 RIM=76.90 INV.=72.83 (8') 12\"/>	DMH #1 RIM=73.15 INV.=70.18 (8') 12\"/>	CB #21-1 RIM=68.00 INV.=64.00 (8') 12\"/>
CB #3-1 RIM=75.00 INV.=71.00 (8') 12\"/>	CB #3-2-1 RIM=75.50 INV.=71.50 (8') 12\"/>	DMH #2 RIM=74.50 INV.=70.50 (8') 12\"/>	CB #22-1 RIM=67.00 INV.=63.00 (8') 12\"/>
CB #4-1 RIM=74.00 INV.=70.00 (8') 12\"/>	CB #4-2 RIM=74.50 INV.=70.50 (8') 12\"/>	DMH #3 RIM=73.50 INV.=69.50 (8') 12\"/>	CB #23-1 RIM=66.00 INV.=62.00 (8') 12\"/>
CB #5-1 RIM=73.00 INV.=69.00 (8') 12\"/>	CB #5-2 RIM=73.50 INV.=69.50 (8') 12\"/>	DMH #4 RIM=72.50 INV.=68.50 (8') 12\"/>	CB #24-1 RIM=65.00 INV.=61.00 (8') 12\"/>
CB #6-1 RIM=72.00 INV.=68.00 (8') 12\"/>	CB #6-2 RIM=72.50 INV.=68.50 (8') 12\"/>	DMH #5 RIM=71.50 INV.=67.50 (8') 12\"/>	CB #25-1 RIM=64.00 INV.=60.00 (8') 12\"/>
CB #7-1 RIM=71.00 INV.=67.00 (8') 12\"/>	CB #7-2 RIM=71.50 INV.=67.50 (8') 12\"/>	DMH #6 RIM=70.50 INV.=66.50 (8') 12\"/>	CB #26-1 RIM=63.00 INV.=59.00 (8') 12\"/>
CB #8-1 RIM=70.00 INV.=66.00 (8') 12\"/>	CB #8-2 RIM=70.50 INV.=66.50 (8') 12\"/>	DMH #7 RIM=69.50 INV.=65.50 (8') 12\"/>	CB #27-1 RIM=62.00 INV.=58.00 (8') 12\"/>
CB #9-1 RIM=69.00 INV.=65.00 (8') 12\"/>	CB #9-2 RIM=69.50 INV.=65.50 (8') 12\"/>	DMH #8 RIM=68.50 INV.=64.50 (8') 12\"/>	CB #28-1 RIM=61.00 INV.=57.00 (8') 12\"/>
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CB #13-1 RIM=65.00 INV.=61.00 (8') 12\"/>	CB #13-2 RIM=65.50 INV.=61.50 (8') 12\"/>	DMH #12 RIM=64.50 INV.=60.50 (8') 12\"/>	CB #32-1 RIM=57.00 INV.=53.00 (8') 12\"/>
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CB #18-1 RIM=60.00 INV.=56.00 (8') 12\"/>	CB #18-2 RIM=60.50 INV.=56.50 (8') 12\"/>	DMH #17 RIM=59.50 INV.=55.50 (8') 12\"/>	CB #37-1 RIM=52.00 INV.=48.00 (8') 12\"/>
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CB #20-1 RIM=58.00 INV.=54.00 (8') 12\"/>	CB #20-2 RIM=58.50 INV.=54.50 (8') 12\"/>	DMH #19 RIM=57.50 INV.=53.50 (8') 12\"/>	CB #39-1 RIM=50.00 INV.=46.00 (8') 12\"/>



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 ISSUE DATE: NOVEMBER 13, 2024

REVISIONS	NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION		EBS	09/10/24
1	REVISED PER COMMENTS		EBS	10/22/24
2	REVISED PER COMMENTS		EBS	11/23/24

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 APPROVED BY: \_\_\_\_\_ EBS  
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SCALE: 24" x 36" - 1" = 30'  
 11" x 17" - 1" = NOT TO SCALE  
 OWNER: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

APPLICANT: RIVERWOODS COMPANY AT EXETER  
 7 RIVERWOODS DRIVE EXETER, NH 03833

PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
 TAX MAP 97 LOT 23 5 WHITE OAK DRIVE EXETER, NH 03833

TITLE: STORMWATER MANAGEMENT PLAN  
 SHEET NUMBER: C-6



# Section 9

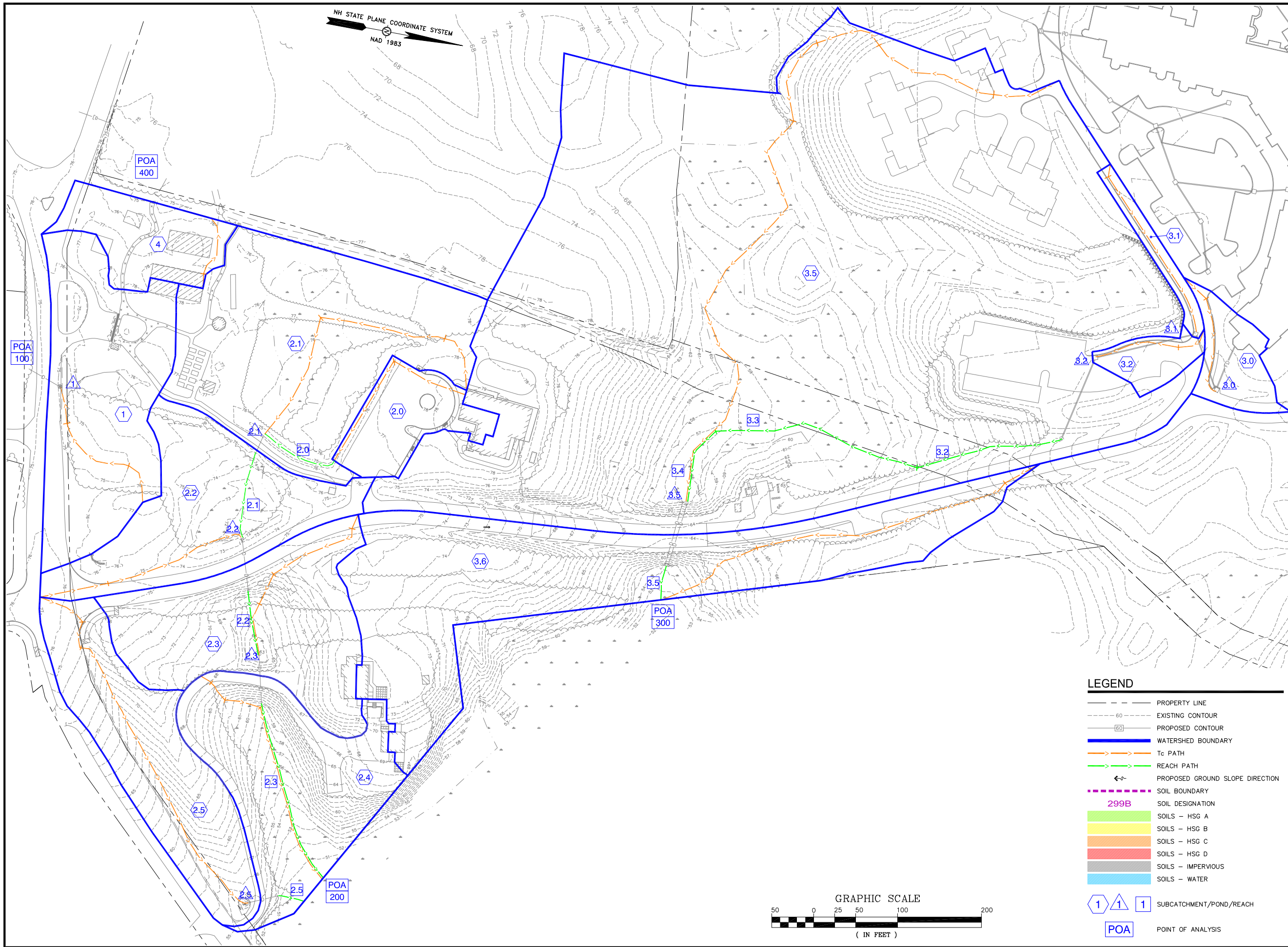
## Watershed Plans

Pre-Development Drainage Plan

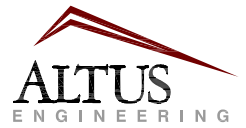
Pre-Development Soils Plan

Post-Development Drainage Plan

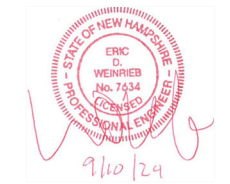
Post-Development Soils Plan



NH STATE PLANE COORDINATE SYSTEM  
NAD 1983



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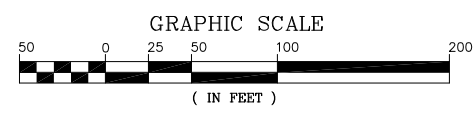
PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE: PRE-DEVELOPMENT WATERSHED PLAN

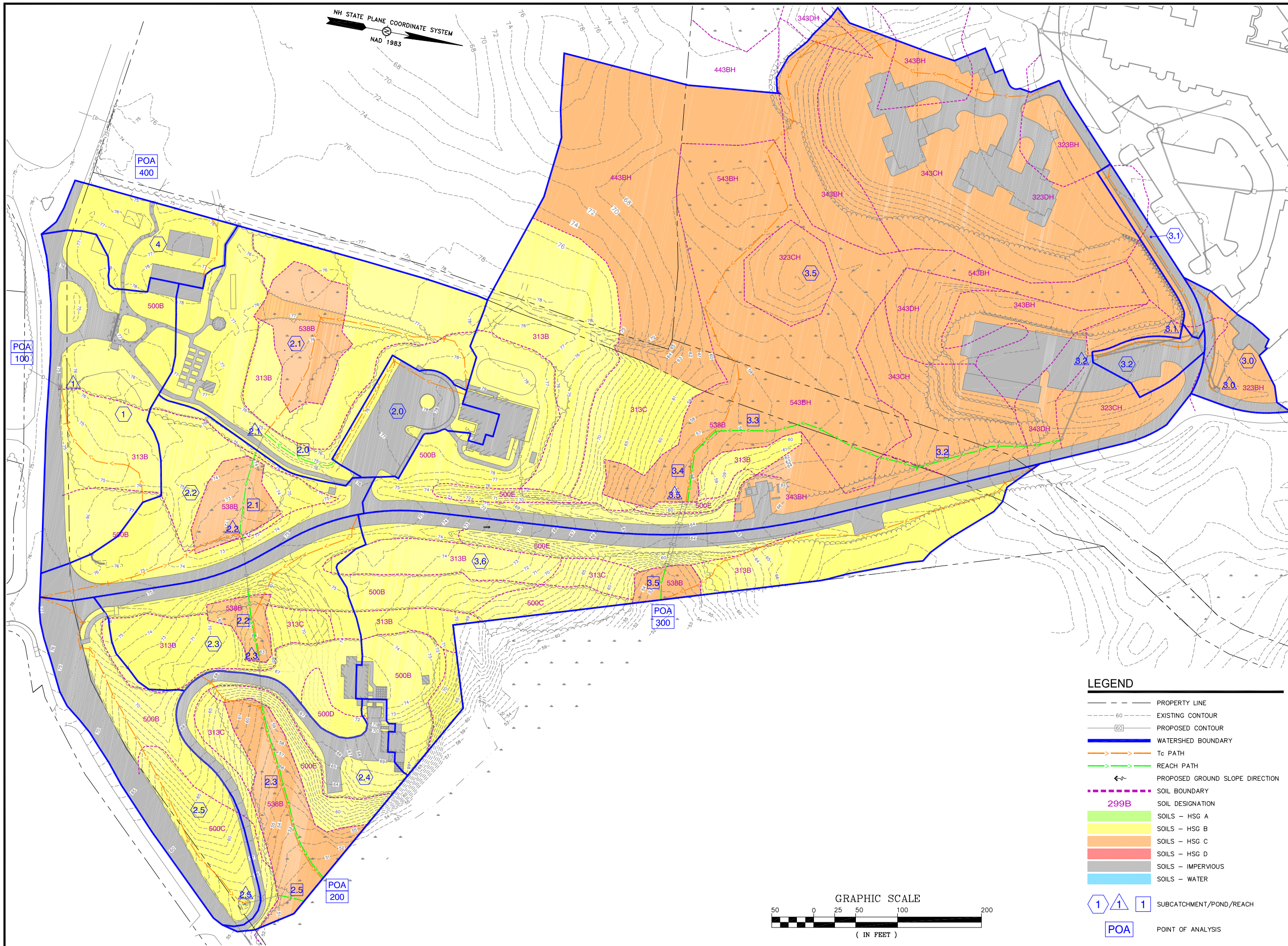
SHEET NUMBER: WS-1

**LEGEND**

- PROPERTY LINE
- - - 60' EXISTING CONTOUR
- - - 60' PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- REACH PATH
- PROPOSED GROUND SLOPE DIRECTION
- SOIL BOUNDARY
- 299B SOIL DESIGNATION
- SOILS - HSG A
- SOILS - HSG B
- SOILS - HSG C
- SOILS - HSG D
- SOILS - IMPERVIOUS
- SOILS - WATER
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS







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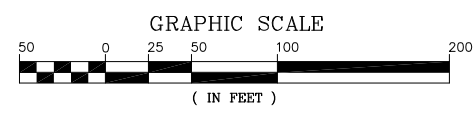
PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
TAX MAP 97 LOT 23  
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TITLE: PRE-DEVELOPMENT SOILS PLAN

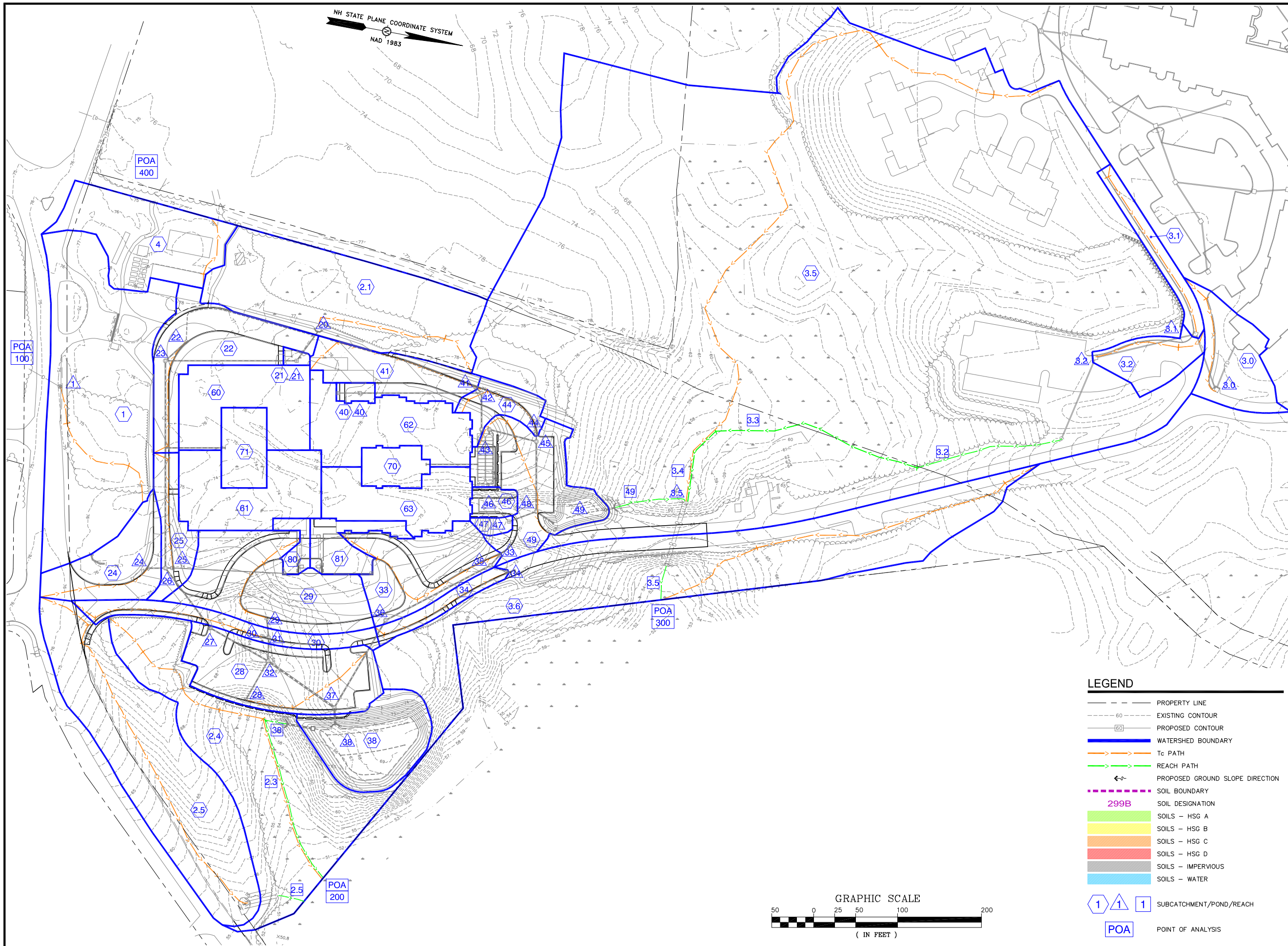
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**LEGEND**

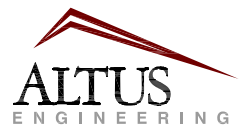
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- - - 60' PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- REACH PATH
- PROPOSED GROUND SLOPE DIRECTION
- SOIL BOUNDARY
- 299B SOIL DESIGNATION
- SOILS - HSG A
- SOILS - HSG B
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- SOILS - IMPERVIOUS
- SOILS - WATER
- 1 1 1 SUBCATCHMENT/POND/REACH
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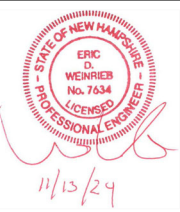




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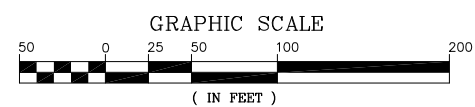
PROJECT:  
**RIVERWOODS  
SUPPORTIVE LIVING  
HEATH CENTER**  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE  
EXETER, NH 03833

TITLE:  
**POST-DEVELOPMENT  
WATERSHED PLAN**

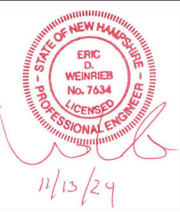
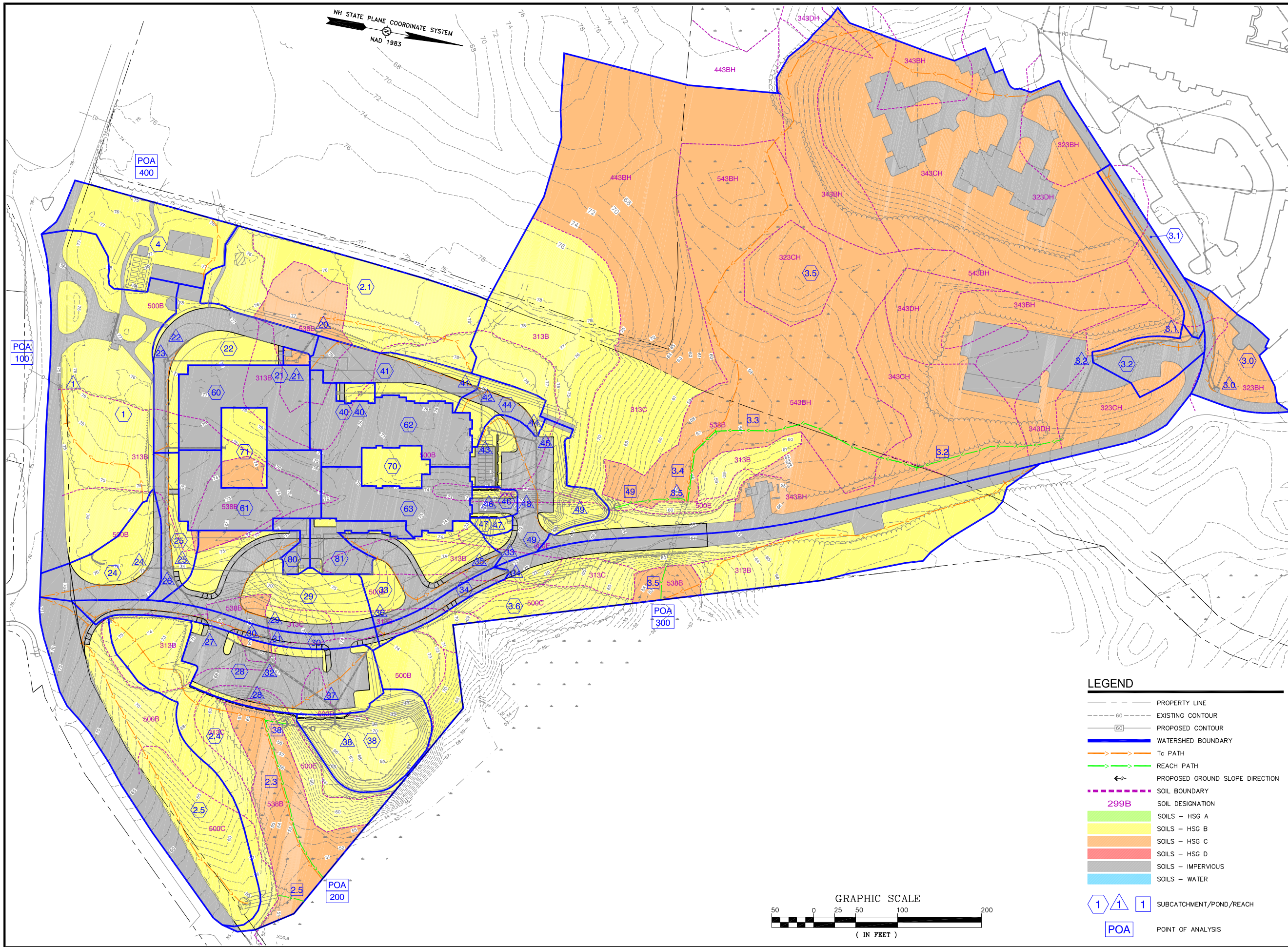
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**WS-3**

**LEGEND**

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- - - 60 PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- REACH PATH
- PROPOSED GROUND SLOPE DIRECTION
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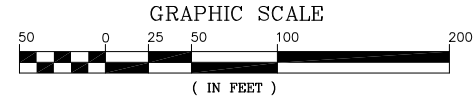
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PROJECT: RIVERWOODS SUPPORTIVE LIVING HEATH CENTER  
TAX MAP 97 LOT 23  
5 WHITE OAK DRIVE EXETER, NH 03833

TITLE: POST-DEVELOPMENT SOILS PLAN

SHEET NUMBER: WS-4

- LEGEND**
- PROPERTY LINE
  - - - - - EXISTING CONTOUR
  - - - - - PROPOSED CONTOUR
  - WATERSHED BOUNDARY
  - Tc PATH
  - REACH PATH
  - PROPOSED GROUND SLOPE DIRECTION
  - SOIL BOUNDARY
  - 299B SOIL DESIGNATION
  - SOILS - HSG A
  - SOILS - HSG B
  - SOILS - HSG C
  - SOILS - HSG D
  - SOILS - IMPERVIOUS
  - SOILS - WATER
  - 1 1 1 SUBCATCHMENT/POND/REACH
  - POA POINT OF ANALYSIS





# Section 7

## Traffic Impact and Access Study

(under separate cover in hard copy)

# TRAFFIC IMPACT AND ACCESS STUDY

RIVERWOODS REDEVELOPMENT  
EXETER, NEW HAMPSHIRE

# GPI

## GPI

116 South River Road  
Building B, Suite 1  
Bedford, NH 03110  
(603) 766-5229

**SUBMITTED TO:**

Altus Engineering  
133 Court Street  
Portsmouth, New Hampshire 03801



**September 2024**

(GPI Project No.: NEX-2400170.00)

*R. Bollinger*  
9/16/2024

**Altus Engineering  
Riverwoods Redevelopment  
Traffic Impact and Access Study  
September 16, 2024**

## TECHNICAL MEMORANDUM

**REF:** NEX-2400170.00

**DATE:** September 16, 2024

**TO:** Erik Saari  
Altus Engineering  
133 Court Street  
Portsmouth, NH 03801

**FROM:** Mr. Robert E. Bollinger, P.E., PTOE, Traffic Engineering Department Head  
Ms. Susannah E. Theriault, Senior Engineer  
Ms. Cecilia Donaldson, Designer

**RE:** Traffic Impact and Site Access Study  
Riverwoods Redevelopment  
5 White Oak Drive – Exeter, New Hampshire

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## INTRODUCTION





Greenman-Pedersen, Inc. (GPI) has prepared this *Traffic Impact and Site Access Study (TIAS)* for proposed site renovations at the Riverwoods retirement community located off Kingston Road (NH Route 111) in Exeter, New Hampshire. The site is presently occupied by three distinct “neighborhoods,” known as The Boulders, The Woods, and The Ridge. In addition to dwelling units (both independent living and assisted living), each neighborhood also provides some degree of medical services. The current development proposal is comprised of relocating all medical services from the three existing neighborhoods into a single new 149,907 square foot (SF) building, the Supportive Living Health Center. The relocation of medical services will allow for 73 additional independent living units: 21 new units in The Boulders; 28 new units in The Woods; and 24 new units in The Ridge.

Access and egress to the new Supportive Living Health Center, along with an affiliated parking area, will be provided via four new driveways on the west side of White Oak Drive, a private way, and two new driveways on the east side of White Oak Drive, on the north side of Kingston Road. No new driveways are proposed at any of the three existing neighborhoods. It should be noted that access to the public roadway system for the three existing neighborhoods is provided in the following manner. The Boulders and The Ridge, both located north of Kingston Road will continue to be served by both White Oak Drive, which intersects the north side of Kingston Road, and Timber Lane (a private way), which intersects the north side of Pickpocket Road. The Woods, located south of Kingston Road, will continue to be served by Riverwoods Drive, which is a public way immediately south of its intersection with Kingston Road, and transitions into a private way upon entering the Riverwoods campus driveway. The site location in relation to the surrounding roadways is shown on the attached map on Figure 1.





**LEGEND**

-  STUDY AREA INTERSECTION
-  PROPOSED MEDICAL FACILITY
-  PROPOSED RESIDENTIAL UNITS
-  RIVERWOODS CAMPUS

**FIGURE 1**

**SITE LOCATION MAP**



## EXISTING CONDITIONS

### Study Area

Evaluation of the traffic impacts associated with the proposed project requires an evaluation of existing and projected traffic volumes on the adjacent streets, the volume of traffic expected to be generated by the project, and the impact that this traffic will have on the adjacent streets and nearby intersections. In preparing the TIAS for the proposed redevelopment, the following unsignalized intersections have been analyzed and evaluated:

- Kingston Road at White Oak Drive and Riverwoods Drive
- Riverwoods Drive at Hillside Avenue
- Kingston Road at Pickpocket Road
- Pickpocket Road at Timber Lane

#### **Kingston Road (Route 111)**

Kingston Road (Route 111) is under the jurisdiction of the New Hampshire Department of Transportation (NHDOT) District 6, is classified as a major collector and generally runs in the northeast/southwest direction. Within the study area, Route 111 provides one travel lane in each direction with directional travel separated by a double yellow center line. The speed limit is posted at 35 miles per hour (mph) in both directions. Variable width shoulders are provided on both sides of the roadway with no designated pedestrian or bicycle accommodations. It should be noted that pedestrian and bicycle improvements are being constructed along Kingston Road (Route 111) as part of a redevelopment project by the Town of Exeter in conjunction with NHDOT. As part of the project, shoulders will be widened, a sidewalk will be extended to the east of the project site, and an enhanced pedestrian crossing will be constructed at Kingston Road/Riverwoods Drive/White Oak Drive.

#### **Pickpocket Road**

Pickpocket Road is under the jurisdiction of the Town of Exeter, is classified as a local road and generally runs in the east/west direction. Within the study area, Pickpocket Road provides one general purpose lane in each direction with no pavement markings delineating directional travel. The speed limit is posted at 25 mph in both directions. No bicycle or pedestrian accommodations are provided.

#### **White Oak Drive**

White Oak Drive is a private road under the jurisdiction of the Riverwoods complex. A speed limit of 15 mph in both directions is posted for the entirety of the Riverwoods community. White Oak Drive provides one general purpose travel lane in each direction with directional travel only separated within 100 feet of the intersection with Kingston Road. A shared use path is provided on the eastern side of the roadway to accommodate pedestrians and bicyclists.

#### **Pickpocket Road at Timber Lane**

Timber Lane intersects Pickpocket Road from the north to create a three-way unsignalized intersection with Timber Lane operating under STOP control. All approaches provide one general purpose lane for all movements. No pedestrian or bicycle accommodations are provided at the intersection.

### **Kingston Road at Pickpocket Road**

Pickpocket Road intersects Kingston Road from the west to form a three-way unsignalized intersection. The Pickpocket Road approach provides a left-turn lane under STOP control and a channelized right-turn with no pavement markings or signage. The Kingston Road approaches provide one general purpose lane for all movements. No pedestrian or bicycle accommodations are provided.

### **Kingston Road at White Oak Drive and Riverwoods Drive**

White Oak Drive intersects Kingston Road from the north and Riverwoods Drive intersects from the south to form a four-way unsignalized intersection. The minor road approaches, White Oak Drive and Riverwoods Drive operate under STOP control. The White Oak Drive southbound approach provides one lane from which all movements can be made, with directional travel separated by a double yellow centerline. The Riverwoods Drive northbound approach provides one general purpose lane with directional travel not separated. The Kingston Road westbound approach provides a shared left-turn/through lane and an exclusive right-turn lane. The Kingston Road eastbound approach provides one lane from which all movements can be made and a 12-foot shoulder. No pedestrian or bicycle accommodations are provided.

### **Riverwoods Drive at Hillside Avenue**

Riverwoods Drive intersects Riverwoods Drive from the south and Hillside Avenue intersects from the north to form a four-way unsignalized intersection. The mainline of Riverwoods Drive eastbound and westbound operate under free conditions, and approximately 90 feet east of the intersection, Riverwoods Drive dead-ends. At the intersection, the Riverwoods Drive minor approach (northbound) provides one lane in either direction with directional travel separated by a circular grass median, approximately 68 feet wide. The Hillside Avenue southbound approach is aligned across the Riverwoods Drive northbound exit lane and provides one general purpose lane. No pavement markings are provided delineating directional travel on the Riverwoods Drive mainline or the Hillside Avenue southbound approach. A shared use path is provided on the western side of Riverwoods Drive to accommodate pedestrians and bicyclists.

## **Traffic Volumes**

Base traffic conditions within the study area were developed by collecting manual turning movement counts (TMC) at the study area intersections on Tuesday, July 16, 2024 during the weekday AM peak period (7:00 to 9:00 AM) and weekday PM peak period (4:00 to 6:00 PM). Peak hours for the study area intersections were determined to be 7:15 to 8:15 AM and 4:00 to 5:00 PM. In addition, automatic traffic recorder (ATR) counts were collected along Kingston Road, Pickpocket Road, Riverwoods Drive, and White Oak Drive for a 48-hour period extending from Tuesday, July 16 through Wednesday, July 17, 2024 to obtain daily traffic volumes and vehicle travel speeds along the roadways. All traffic-count data are provided in the Appendix.

### **Seasonal Adjustment**

Traffic on a given roadway typically fluctuates throughout the year depending on the area and the type of roadway. Based on NHDOT guidelines for the preparation of a traffic study, existing traffic volumes must represent the peak of the monthly average peak-hour conditions. To determine if the data needed to be adjusted to account for this fluctuation, seasonal adjustment and historical count data provided by NHDOT were reviewed. The Group 4 (Urban Highways<sup>1</sup>), and the closest continuous count site of similar functional class still actively collecting data (Kingston<sup>2</sup> – NH 107/NH 125 south of the junction of NH 107/NH 125) were

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<sup>1</sup> NHDOT Data Management System; Group 4 (Urban Highways) Averages, 2019.

<sup>2</sup> NHDOT Count Station 82243052 – Kingston – NH 107/NH 125 south of the junction of NH 107/NH 125.

considered. The continuous count station did not provide enough data, therefore the Group 4 averages were utilized. This information revealed that July traffic volumes are 1-percent lower than peak-month conditions. Therefore, the traffic counts were upwardly adjusted to reflect peak-month conditions, as needed. The NHDOT seasonal adjustment factors are provided in the Appendix.

**COVID-19 Adjustment**

Due to the COVID-19 pandemic, current traffic volumes may vary from typical historic conditions. In order to determine what additional data adjustment may be required to reflect pre-pandemic traffic conditions, traffic-count data from a NHDOT continuous count station<sup>3</sup> was reviewed. The count station was chosen based on proximity, functional classification, and average daily volume. A comparative analysis was conducted between the full month of February 2019 and February 2024, the last full month for which data were available at the time of publication of this study; at the time of the analysis, the full months of March through July 2024 data were not yet available. The results of this analysis indicate the following upward adjustments in order to reflect pre-pandemic traffic-volume conditions:

- Weekday Daily 1.08
- Weekday AM Peak Hour 1.16
- Weekday PM Peak Hour 1.10

Supporting documentation for these results is included in the Appendix.

Table 1 summarizes the existing daily and peak-hour traffic volumes on Kingston Road, Pickpocket Road, Riverwoods Drive, and White Oak Drive. The 2024 Existing traffic-flow networks for the weekday AM and weekday PM peak hours are shown graphically on Figures 2 and 3.

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<sup>3</sup> NHDOT Count Station 02153001 – Exeter – NH 101 at milepost 127.4 between exits 11-12.

**TABLE 1**  
**Existing Traffic Volume Summary**

Location/Time Period	Daily Volume (vpd) <sup>a</sup>	Peak Hour Volume (vph) <sup>b</sup>	K Factor (%) <sup>c</sup>	Directional Distribution <sup>d</sup>
<b>Kingston Road (Route 111), West of White Oak Drive:</b> Weekday Daily <i>Weekday AM Peak Hour</i> <i>Weekday PM Peak Hour</i>	7,270	625 597	8.6 8.2	74% EB 63% WB
<b>Pickpocket Road, East of Timber Lane:</b> Weekday Daily <i>Weekday AM Peak Hour</i> <i>Weekday PM Peak Hour</i>	955	74 75	7.7 7.9	58% EB 55% WB
<b>Riverwoods Drive, West of Hillside Avenue:</b> Weekday Daily <i>Weekday AM Peak Hour</i> <i>Weekday PM Peak Hour</i>	1,140	77 87	6.8 7.6	68% EB 64% WB
<b>White Oak Drive, North of Kingston Road:</b> Weekday Daily <i>Weekday AM Peak Hour</i> <i>Weekday PM Peak Hour</i>	1,000	83 62	8.3 6.2	70% NB 71% SB

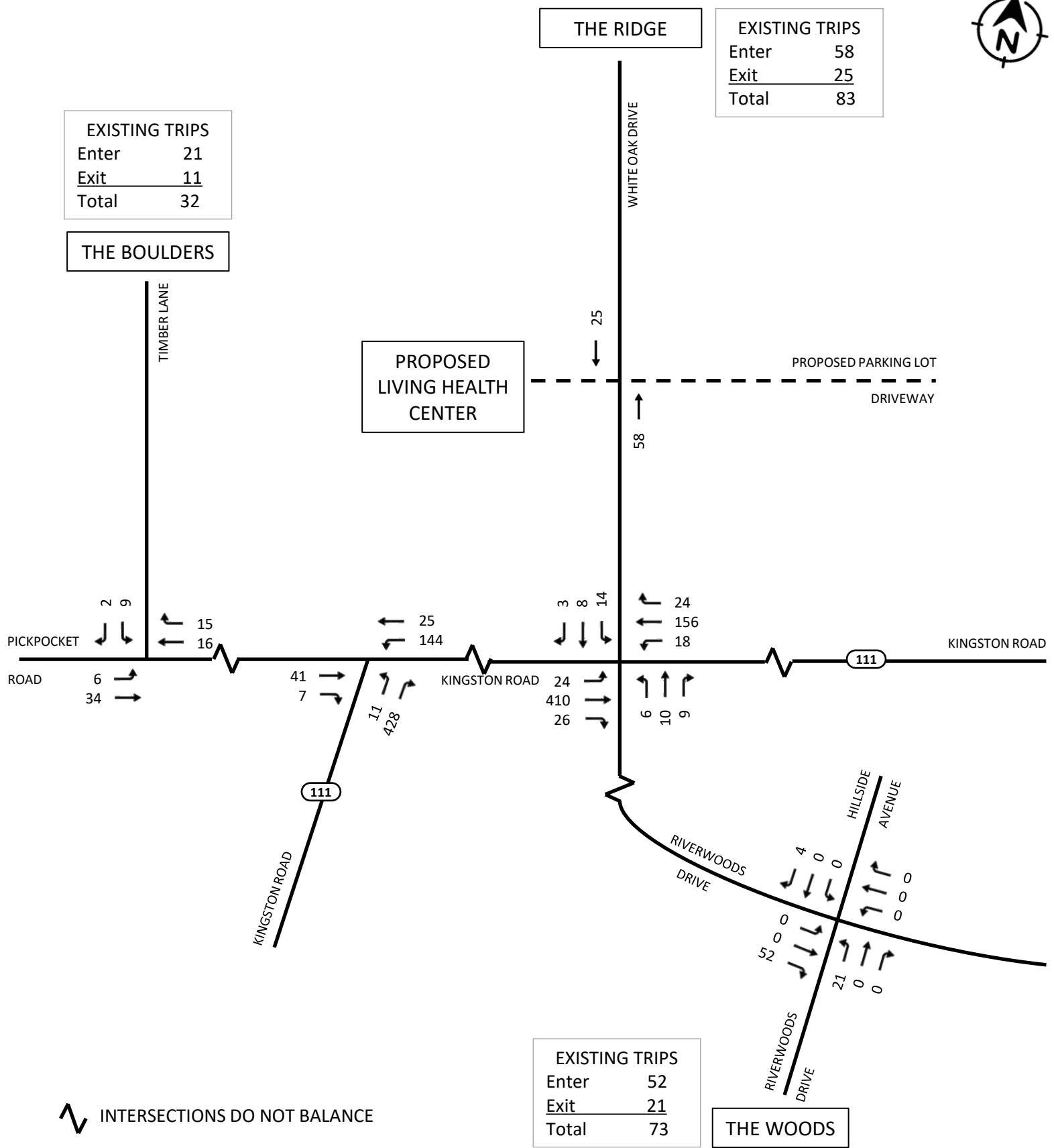
<sup>a</sup> In vehicles per day. Based on ATR count collected on July 16 through July 17, 2024, upward adjusted by 1-percent to represent peak-month conditions and 8-percent to represent pre-COVID conditions.

<sup>b</sup> In vehicles per hour. Volumes obtained from Figures 2 and 3.

<sup>c</sup> Percentage of daily traffic occurring during the peak hour.

<sup>d</sup> EB = eastbound, WB = westbound, NB = northbound and SB = southbound. Percentages from volumes on Figures 2 and 3.

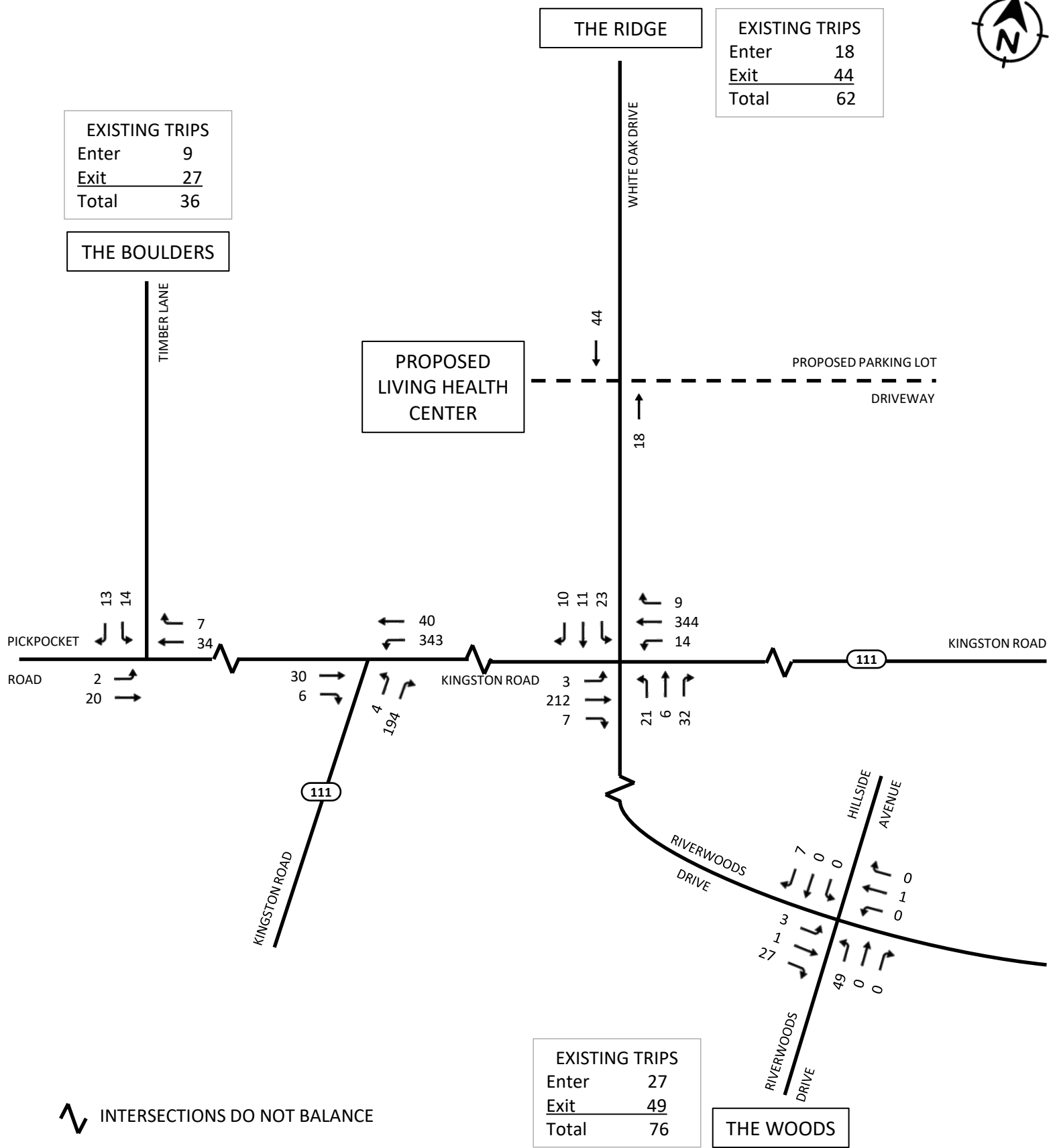




**FIGURE 2**

**2024 EXISTING WEEKDAY AM  
PEAK HOUR TRAFFIC VOLUMES**





**FIGURE 3**

**2024 EXISTING WEEKDAY PM  
 PEAK HOUR TRAFFIC VOLUMES**



## Collisions

Collision data from NHDOT for the study area intersections were researched for the latest three-year period available (2015-2017). The summary of the crashes is provided in Table 2.

The intersection of Riverwoods Road at Hillside Avenue experienced one collision over the three-year study period from an average of 0.33 per year. The collision occurred in August of 2015 and was a pedestrian collision resulting in a non-fatal injury. The collision occurred during the PM peak period under dry conditions.

The other study area intersections did not experience any collisions during the three-year study period.

The collision data received from NHDOT does not provide enough detail to determine if there is a safety issue correctable by engineering measures. Accordingly, collision data from the Exeter Police Department was requested. The data received from the Police Department provided three total crashes from the years 2021 to 2024 in the study area. The details from the Police Department data are also limited; however, due to the low number of collisions from both the NHDOT data and the Exeter Police Department data, it has been concluded that no safety issues exist.

**TABLE 2**  
**Collision Summary**

Location	Number of Collisions		Severity <sup>a</sup>				Percent During	
	Total	Average per Year	PD	PI	F	NR	Commuter Peak <sup>b</sup>	Wet/Icy Conditions <sup>c</sup>
Kingston Road at White Oak Drive/Riverwoods Drive	0	--	--	--	--	--	--	--
Riverwoods Road at Hillside Avenue	1	0.33	0	1	--	--	100%	0%
Kingston Road (Route 111) at Pickpocket Road	0	--	--	--	--	--	--	--
Pickpocket Road at Timber Lane	0	--	--	--	--	--	--	--

Source: NHDOT (2015-2017).

<sup>a</sup> PD = property damage only; PI = personal injury; F = fatality, NR = not reported.

<sup>b</sup> Percent of crashes that occurred during the weekday AM (7:00 AM-9:00 AM) and weekday PM (4:00 PM -6:00 PM) commuter peak periods.

<sup>c</sup> Represents the percentage of only "known" collisions occurring during inclement weather conditions.

## Vehicle Speeds

Vehicle speed measurements were conducted along Kingston Road, Pickpocket Road, Riverwoods Drive, and White Oak Drive as part of the data collected in July 2024. The speed data is provided in the Appendix and the results of the speed measurements are summarized in Table 3.

**TABLE 3**  
**Observed Travel Speeds**

Location/Direction	Posted Speed Limit <sup>a</sup>	Average Speed <sup>b</sup>	85 <sup>th</sup> Percentile Speed <sup>c</sup>
<b>Kingston Road (Route 111), West of White Oak Drive:</b> <i>Eastbound</i>	35	35	40
	<i>Westbound</i> 35	36	41
<b>Pickpocket Road, East of Timber Lane:</b> <i>Eastbound</i>	25	29	35
	<i>Westbound</i> 25	29	35
<b>Riverwoods Drive, West of Hillside Avenue:</b> <i>Southbound</i>	25	23	29
	<i>Northbound</i> 25	23	28
<b>White Oak Drive, North of Kingston Road:</b> <i>Southbound</i>	15	25	30
	<i>Northbound</i> 15	24	29

<sup>a</sup> In miles per hour (mph).

<sup>b</sup> Average speed at which observed vehicles travel.

<sup>c</sup> Speed at or below which 85 percent of all observed vehicles travel.

As shown in Table 3, on Kingston Road (Route 111) and Riverwoods Drive, the average speeds were found to be generally consistent with the posted speed limit and the 85<sup>th</sup> percentile speeds were found to be slightly higher. On Pickpocket Road and White Oak Drive, both the average and 85<sup>th</sup> percentile speeds were found to be higher than the posted speed.



## Sight Distance

To identify potential safety concerns associated with site access and egress, required sight distances were calculated at the existing roadways providing access to Riverwoods based on the minimum requirements as established by the American Association of State Highway and Transportation Officials (AASHTO).<sup>4</sup> AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported. In addition, the available sight distances were compared with the NHDOT requirement of 400 feet of All-Season Safe Sight Distance.

Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. Stopping sight distance is measured from an eye height of 3.5 feet to an object height of 2 feet above street level, equivalent to the taillight height of a passenger car. The SSD is measured along the centerline of the traveled way of the major road.

Intersection sight distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. By definition, ISD is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level. The use of an object height equal to the driver eye height makes intersection sight distances reciprocal (i.e., if one driver can see another vehicle, then the driver of that vehicle can also see the first vehicle). When the minor street is on an upgrade that exceeds 3 percent, grade correction factors are applied.

SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. The ISD, however, must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. In accordance with the AASHTO manual, *“If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.”* Accordingly, ISD should be at least equal to the distance required to allow a driver approaching the minor road to safely stop.

The available SSD and ISD at the existing roadways providing access to Riverwoods were measured and compared to minimum requirements as established by AASHTO. Based on the posted and observed speeds, the SSD and ISD requirements at this intersection were calculated. The sight distance calculations are included in the Appendix. The required minimum sight distances for the driveway were compared to the available distances, as shown in Table 4.

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<sup>4</sup> *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2018.

**TABLE 4**  
**Sight Distance Summary**

Location/Direction	Stopping Sight Distance (feet)		Intersection Sight Distance (feet)		
	Measured	Minimum Required <sup>a</sup>	Measured	Minimum Required <sup>b</sup>	Desirable <sup>c</sup>
<b>Riverwoods Drive at Riverwoods Drive approach:</b>					
<i>South of intersection (NB)</i>	310	180	305	180	280
<i>North of intersection (SB)</i>	440	190	445	190	240
<b>Kingston Road (Route 111) at Riverwoods Drive approach:</b>					
<i>East of intersection (WB)</i>	500+	315	500+	315	390
<i>West of intersection (EB)</i>	500	305	430	305	335
<b>Kingston Road (Route 111) at White Oak Drive approach:</b>					
<i>East of intersection (WB)</i>	325	315	315	315	335
<i>West of intersection (EB)</i>	500	305	450	305	390
<b>Pickpocket Road at Timber Lane approach:</b>					
<i>East of intersection (WB)</i>	395	250	235	250	240
<i>West of intersection (EB)</i>	287	250	200	250	280

<sup>a</sup> Values based on the values for the 85<sup>th</sup> percentile speed of 28 mph (NB) and 29 mph (SB) ON Riverwoods Drive, 40 mph (EB) and 41 mph (WB) on Kingston Road, and 35 mph (EB and WB) on Pickpocket Road.

<sup>b</sup> Values based on AASHTO requirements for SSD.

<sup>c</sup> Values based on AASHTO requirements for ISD for speed limit of 35 mph on Kingston Road and 25 on Riverwoods Drive and Pickpocket Road.

As indicated in Table 4, available sight distances at the existing site driveways, with the exception of Timber Lane at Pickpocket Road exceed the minimum and desirable SSD and ISD requirements recommended by AASHTO. Timber Lane does not exceed the minimum ISD requirements under existing conditions due to overgrown bushes on either side of Timber Lane. Accordingly, it is recommended to trim the existing vegetation in order to meet minimum requirements.

GPI will work with the applicant to ensure the driveways proposed on White Oak Drive meet the AASHTO sightline requirements.

## **FUTURE CONDITIONS**

To estimate the impact of site-generated traffic within the study area, existing traffic volumes were projected to the year expected opening year (2025) of the project, and to the future year of 2035. These design horizons were chosen to be consistent with NHDOT guidelines for the preparation of a traffic study. Traffic volumes on the roadway network at that time will include existing traffic and new traffic due to normal traffic growth, and traffic related to any significant development by others expected to be completed within the area by the 2025 and 2035 design years. Consideration of these factors resulted in the development of 2025 No-Build and 2035 No-Build traffic volumes, which projects traffic without the proposed project built. The incremental impacts of the proposed project may then be determined by adding site-generated traffic volumes (Build conditions) and making comparisons to the No-Build conditions.

### **Traffic Growth**

To develop the 2025 No-Build and 2035 No-Build forecast volumes, two components of traffic growth were considered. First, an annual growth percentage was determined based on the historical traffic count data obtained from NHDOT.<sup>5</sup> The historical traffic count data indicate that traffic in the area has been decreasing by approximately 0.54% per year since 2011. In order to provide a conservative (worst-case) analysis scenario, compounded annual traffic growth rate of 1.0 percent per year was assumed to account for general population growth and the traffic generated by smaller area developments. The NHDOT historical traffic volume data are provided in the Appendix.

Second, any traffic that may be generated by planned developments that may add a substantial volume of traffic through the study area during the design horizons was considered. Based on correspondence with the Town of Exeter, no projects were identified.

### **Planned Roadway Improvements**

Based on correspondence with the Town of Exeter, a project on Kingston Road in conjunction with NHDOT under NHDOT's Transportation Alternatives Program (TAP) was identified. The project's scope of work includes widening of shoulders along both sides of Kingston Road, extending of segments of sidewalk, and enhancing pedestrian crossings at specific locations. The shoulders along Kingston Road are proposed to be widened from the bridge over Little River, west to Pickpocket Road (approximately 1 mile). The five-foot sidewalk is proposed to be extended from the bridge over Little River, west to Tamarind Lane along the southern side of the road. To facilitate this redesign, existing roadway features, side slopes and existing vegetation will be modified. The sidewalk will be separated from the road by a five-foot wide bioretention swale. At the intersection with Riverwoods Drive and White Oak Drive, adjacent to the proposed site, a proposed crosswalk is to be located on the eastern leg of the intersection with a rectangular rapid flashing beacon. On the northeast corner of the intersection, a small ADA compliant sidewalk segment is proposed. The improvements within the study area of the proposed Riverwoods redevelopment are included in the Appendix.

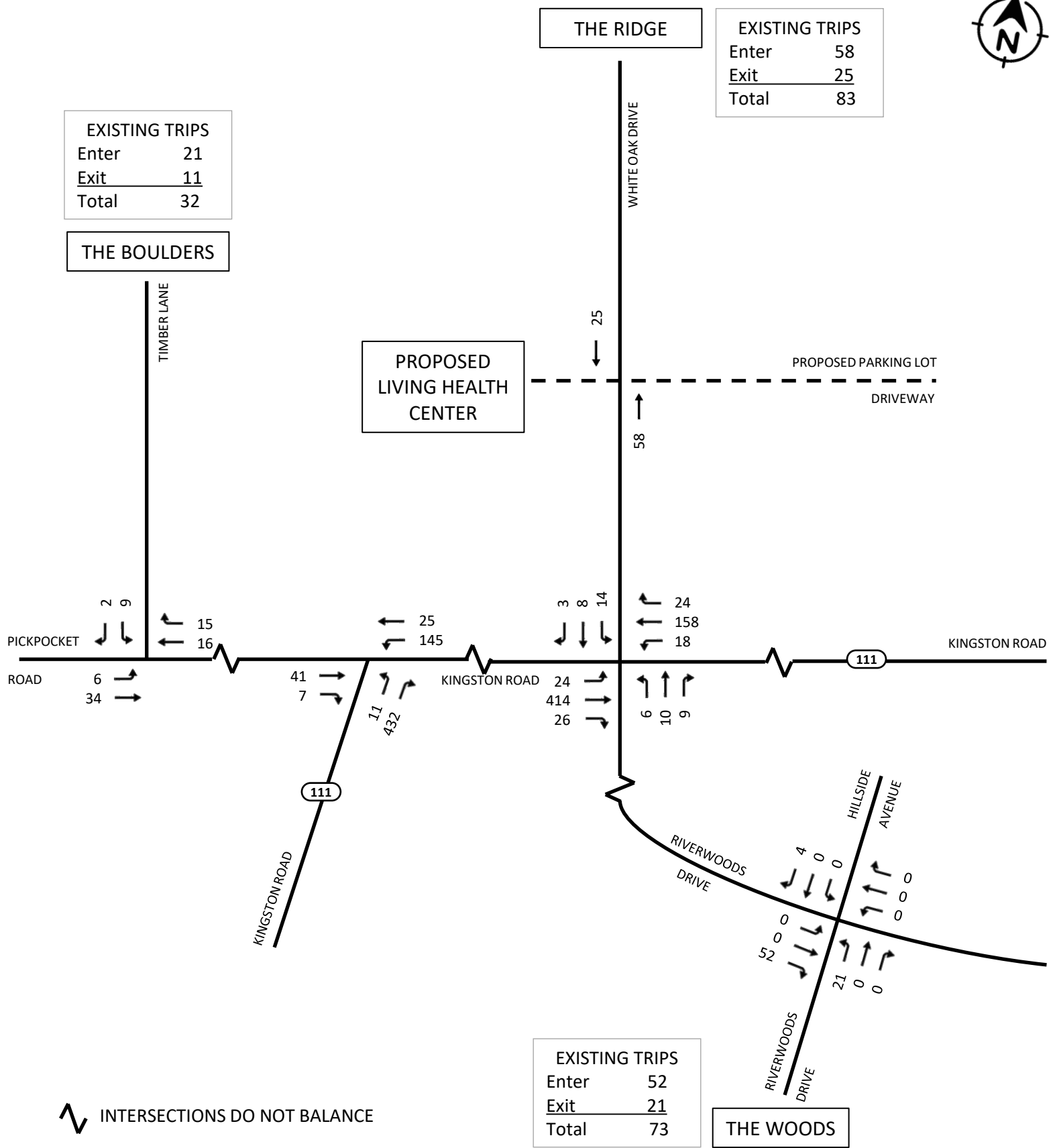
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<sup>5</sup> NHDOT Transportation Data Management System.

## **No-Build Conditions**

The 2025 No-Build peak-hour traffic volumes were developed by applying a 1.0-percent annual traffic growth rate to the 2024 Existing traffic. The 2035 No-Build peak hour traffic volumes were developed by applying an approximately 11.6-percent compounded annual traffic growth rate (1.0 percent compounded over eleven years) to the 2024 Existing traffic volumes. The 2025 No-Build peak-hour traffic volumes are shown graphically on Figures 4 and 5 for the weekday AM and PM, respectively. The 2035 No-Build peak-hour traffic volumes are shown graphically on Figures 6 and 7 for the weekday AM and PM, respectively.

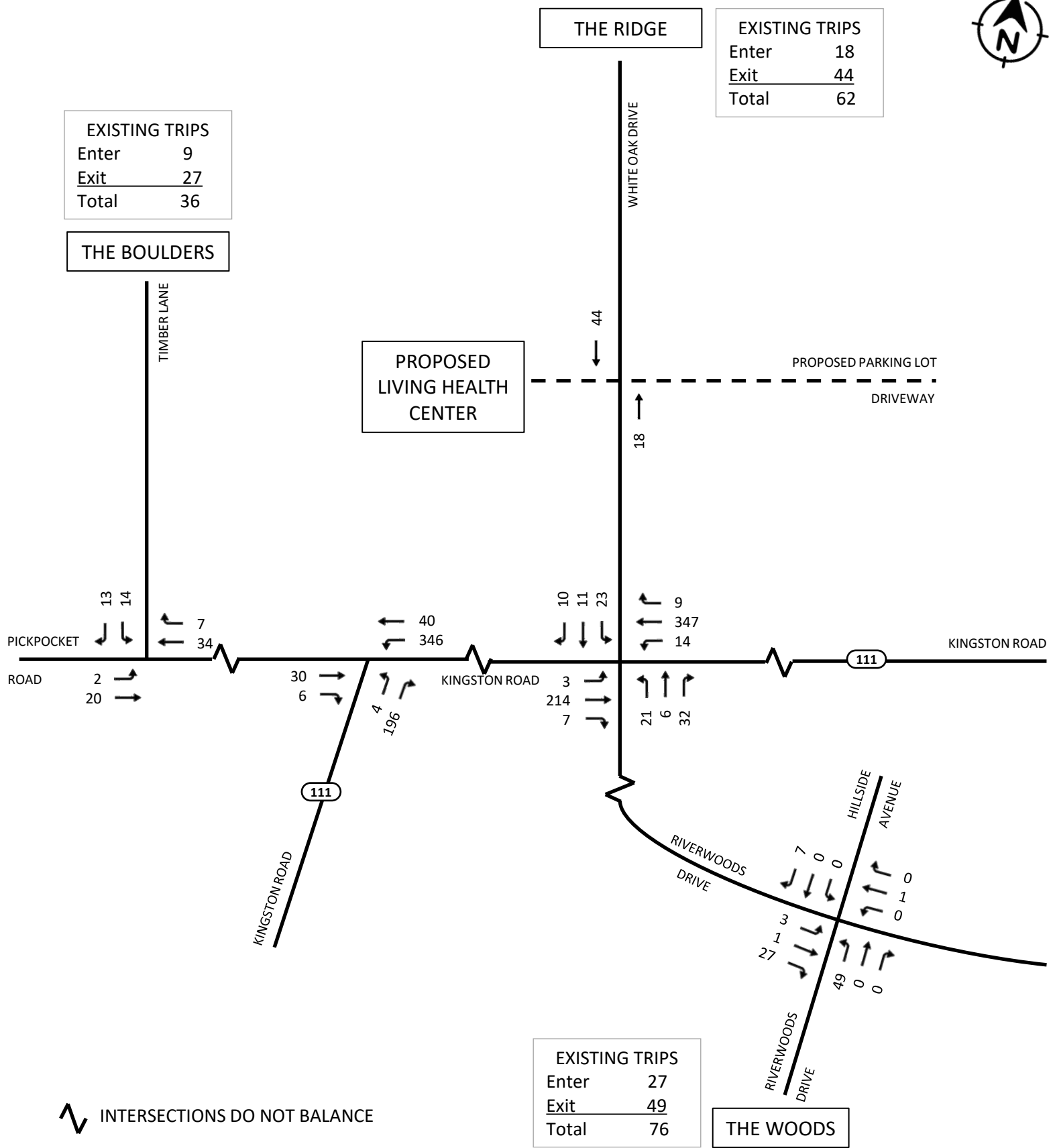




**FIGURE 4**

**2025 NO-BUILD WEEKDAY AM  
PEAK HOUR TRAFFIC VOLUMES**

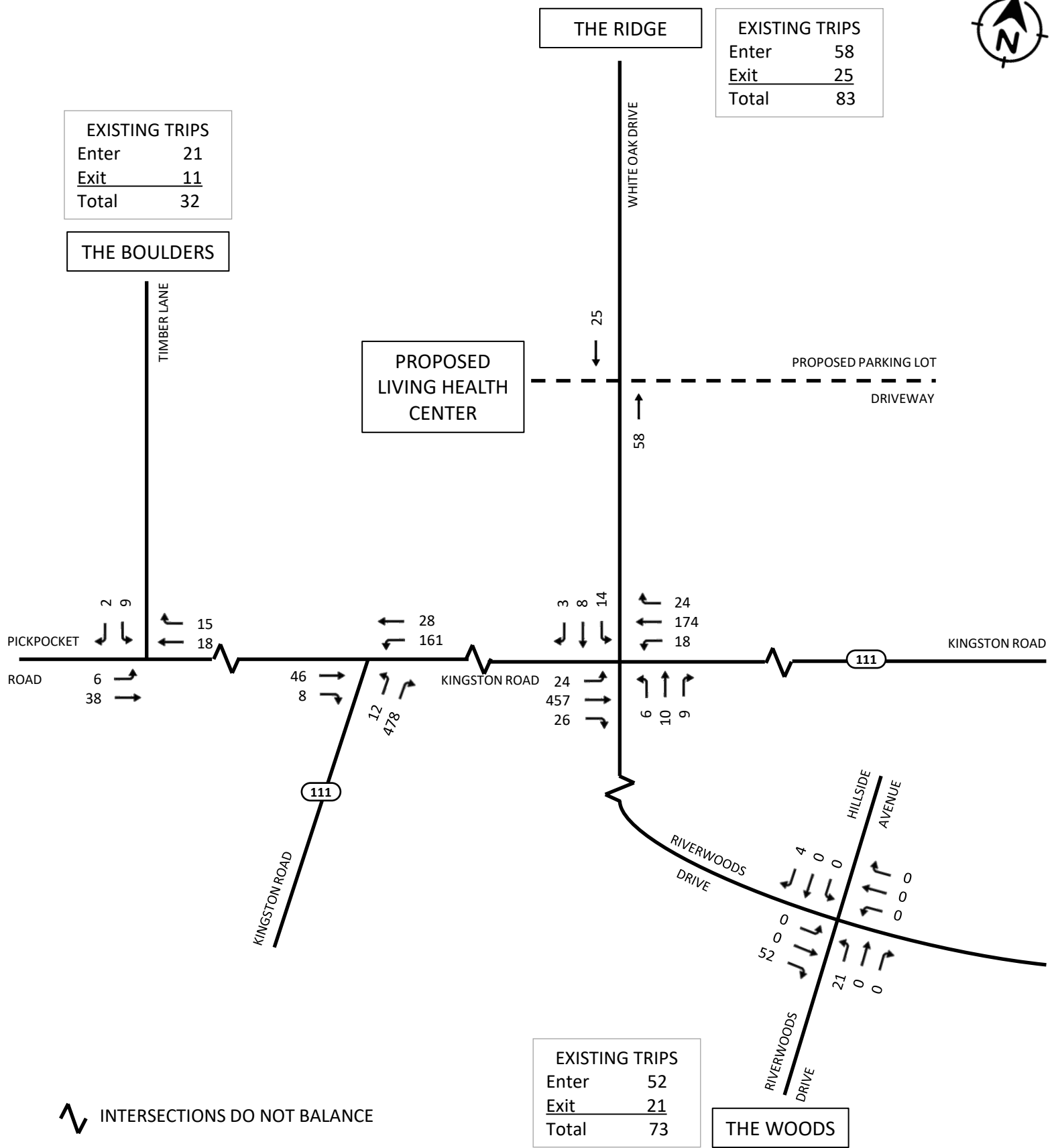




**FIGURE 5**

**2025 NO-BUILD WEEKDAY PM  
PEAK HOUR TRAFFIC VOLUMES**

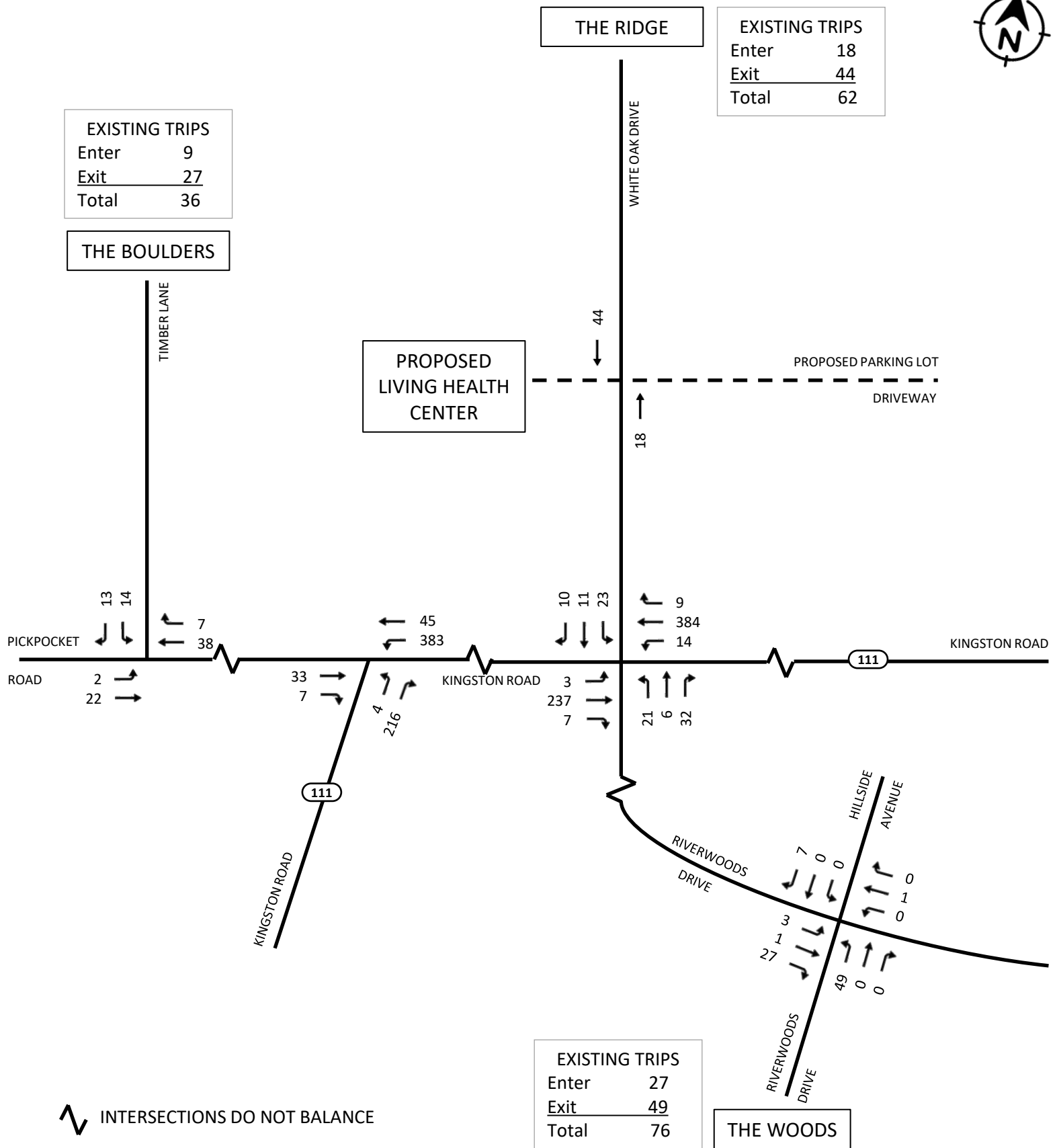




**FIGURE 6**

**2035 NO-BUILD WEEKDAY AM PEAK HOUR TRAFFIC VOLUMES**





**FIGURE 7**

**2035 NO-BUILD WEEKDAY PM  
 PEAK HOUR TRAFFIC VOLUMES**





## Trip Generation

Traffic to be generated by the additional independent living residential units was forecasted using data published by the Institute of Transportation Engineers (ITE)<sup>6</sup> for Land Use Code (LUC) 252 (Senior Adult Housing – Multifamily) based on a total of 73 units. The trip generation estimates are shown in Table 5, and supporting calculations are provided in the Appendix.

**TABLE 5**  
**Trip-Generation Summary**

Peak Hour/Direction	Additional Independent Living Residential Vehicle Trips			
	The Boulders <sup>a</sup>	The Woods <sup>b</sup>	The Ridge <sup>c</sup>	Total <sup>d</sup>
<b>Weekday Daily</b>	86	106	94	286
<b>Weekday AM Peak Hour:</b>				
<i>Enter</i>	2	2	2	6
<u><i>Exit</i></u>	<u>3</u>	<u>4</u>	<u>3</u>	<u>10</u>
<i>Total</i>	5	6	5	16
<b>Weekday PM Peak Hour:</b>				
<i>Enter</i>	3	4	3	10
<u><i>Exit</i></u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>8</u>
<i>Total</i>	5	7	6	18

<sup>a</sup> LUC 252 for 21 units.

<sup>b</sup> LUC 252 for 28 units.

<sup>c</sup> LUC 252 for 24 units.

<sup>d</sup> Total of The Boulders, The Woods, and The Ridge Vehicle Trips.

As shown in Table 5, the proposed independent living units are expected to generate 16 vehicle trips (6 entering and 10 exiting) during the weekday AM peak hour and 18 vehicle trips (10 entering and 8 exiting) during the weekday PM peak hour spread across the three campuses.

Traffic to be generated by the new Supportive Living Health Center were redistributed from the existing health facilities within The Boulders, The Woods, and The Ridge. A comparison of the existing health facilities and the proposed Heath Center, in terms of size and number of employees, is provided in Table 6.

<sup>6</sup> *Trip Generation Manual*, 11<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2021.

**TABLE 6**  
**Health Center Comparison**

Peak Hour/Direction	Health Facility Breakdown			
	The Boulders	The Woods	The Ridge	Total
<b>Current Health Facilities</b>	55,603 SF 21 Employees	50,699 SF 21 Employees	41,107 SF 25 Employees	147,409 SF 67 Employees
<b>Proposed Health Center</b>	--	--	--	149,907 SF 70 Employees

The new Health Center will provide assisted living, skilled nursing and memory care, along with support services such as food and beverage, senior activities, and administration. Any critical medical needs will need to go to the hospital, and no doctors' offices will be provided at the Health Center. The only new service to be provided by the new Health Center is memory care.

In order to redistribute traffic from the existing health facilities to the new Supportive Living Health Center, the trip estimates were broken down in three categories: employee trips, visitor trips, and resident trips.

- **Employee Trips** – 2 trips were redistributed during the peak hours per employee, 1 entering trip during AM peak hour and 1 exiting trip during the PM peak hour.
- **Visitor Trips** – Based on data from May, June, and July at the current Riverwoods health facilities, there are approximately 18 visitors per day, spread over the 3 campuses. To provide a conservative analysis, all visitors were assumed to enter during weekday AM peak hour and exit during weekday PM peak hour. Since the entering trips at The Boulders were all already re-distributed due to the conservative employee redistribution, the visitor redistribution was applied to The Woods and The Ridge campuses.
- **Resident Trips** – A shuttle currently runs a continuous route through all three campuses. The majority of the residents are expected to use this method of transportation to travel to and from the new Supportive Living Health Center, and therefore, no redistribution will be applied for the residents.

The detailed re-distribution for each campus during the weekday AM and PM peak hours is provided in the Appendix.

### Trip Distribution

Having estimated project-generated and redistributed trips, the next step is to determine the distribution of project traffic and assign these trips to the local roadway network. The distribution of the additional residential vehicle trips was based on the existing traffic patterns. The existing trips to the current health facilities were redistributed within the network to the new Supporting Living Health Center.

## Build Traffic Volumes

Based on the traffic generation and distribution estimates for this project, the traffic volumes associated with the proposed redevelopment were assigned to the roadway network. The site-generated traffic networks are shown on Figures 8 and 9 for the weekday AM and weekday PM peak hours, respectively. The site-generated traffic volumes were then added to the No-Build traffic volumes to develop the Build peak-hour traffic-volumes networks. The resulting 2025 and 2035 Build peak-hour flow networks are graphically depicted on Figures 10 through 13.

## Traffic Increases

The proposed redevelopment will result in increases in traffic within the study area network. As shown on Figures 8 and 9, traffic-volume increases beyond the study area are expected to be in the range of 2 to 12 vehicles. These increases represent, on average, one additional vehicle trip approximately every 5 to 30 minutes during the weekday peak hours.

## Site Access

In order to determine the appropriate geometric configuration of Kingston Road (Route 111) on its approaches to White Oak Drive and Riverwoods Drive, auxiliary turn lane warrant analyses were conducted. These analyses assessed the need for separate left- and right-turn lanes on the mainline approaches. Under the weekday AM conditions, an exclusive left-turn lane is warranted to turn from Kingston Road (Route 111) onto White Oak Drive. As the need for the eastbound left-turn lane is marginal (only warranted in the weekday AM peak hour when employees of the Supportive Living Health Center are entering the facility on White Oak Drive), construction of a turn lane is not recommended. Computations pertaining to this analysis are included in the Appendix.

**TABLE 6**  
**Auxiliary Lane Warrant Summary**

	From NH-111 onto White Oak Dr		From NH-111 onto Riverwoods Dr	
	<b>Left-Turn Warrant</b>			
	<b>Weekday AM</b>	<b>Weekday PM</b>	<b>Weekday AM</b>	<b>Weekday PM</b>
2025 Build	Yes	No	No	No
2035 Build	Yes	No	No	No
	<b>Right-Turn Warrant</b>			
	<b>Weekday AM</b>	<b>Weekday PM</b>	<b>Weekday AM</b>	<b>Weekday PM</b>
2025 Build	No	No	No	No
2035 Build	No	No	No	No



ADDITIONAL TRIPS RESIDENTIAL	
Enter	2
Exit	3
Total	5

RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(-21)	[0]
Exit	(0)	[0]
Total	(-21)	[0]

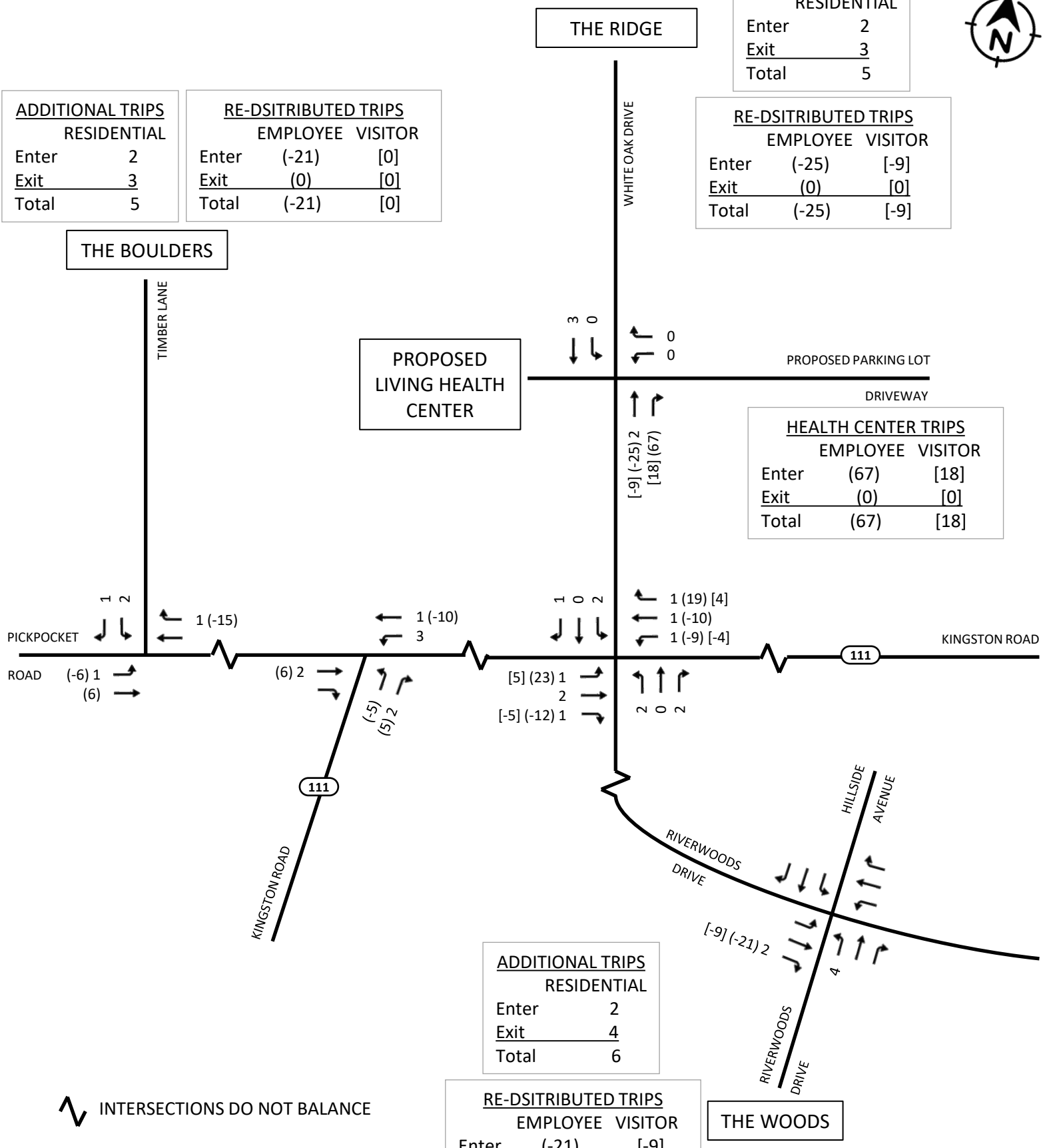
ADDITIONAL TRIPS RESIDENTIAL	
Enter	2
Exit	3
Total	5

RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(-25)	[-9]
Exit	(0)	[0]
Total	(-25)	[-9]

HEALTH CENTER TRIPS EMPLOYEE VISITOR		
Enter	(67)	[18]
Exit	(0)	[0]
Total	(67)	[18]

ADDITIONAL TRIPS RESIDENTIAL	
Enter	2
Exit	4
Total	6

RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(-21)	[-9]
Exit	(0)	[0]
Total	(-21)	[-9]



INTERSECTIONS DO NOT BALANCE

**FIGURE 8**

**SITE-GENERATED WEEKDAY AM  
PEAK HOUR TRAFFIC VOLUMES**



ADDITIONAL TRIPS RESIDENTIAL	
Enter	3
Exit	2
Total	5

RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(0)	[0]
Exit	(-21)	[0]
Total	(-21)	[0]

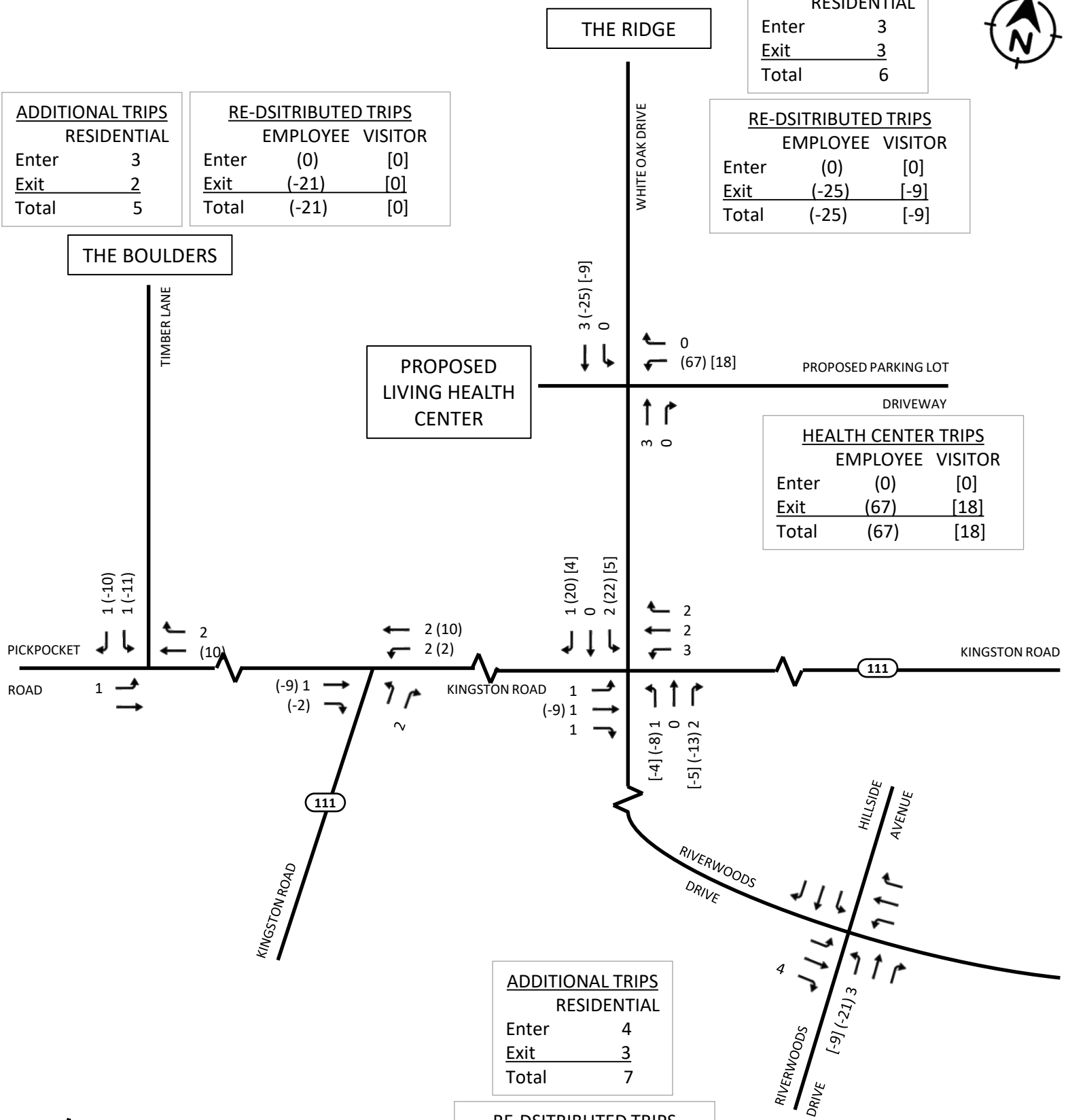
ADDITIONAL TRIPS RESIDENTIAL	
Enter	3
Exit	3
Total	6

RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(0)	[0]
Exit	(-25)	[-9]
Total	(-25)	[-9]

HEALTH CENTER TRIPS EMPLOYEE VISITOR		
Enter	(0)	[0]
Exit	(67)	[18]
Total	(67)	[18]

ADDITIONAL TRIPS RESIDENTIAL	
Enter	4
Exit	3
Total	7

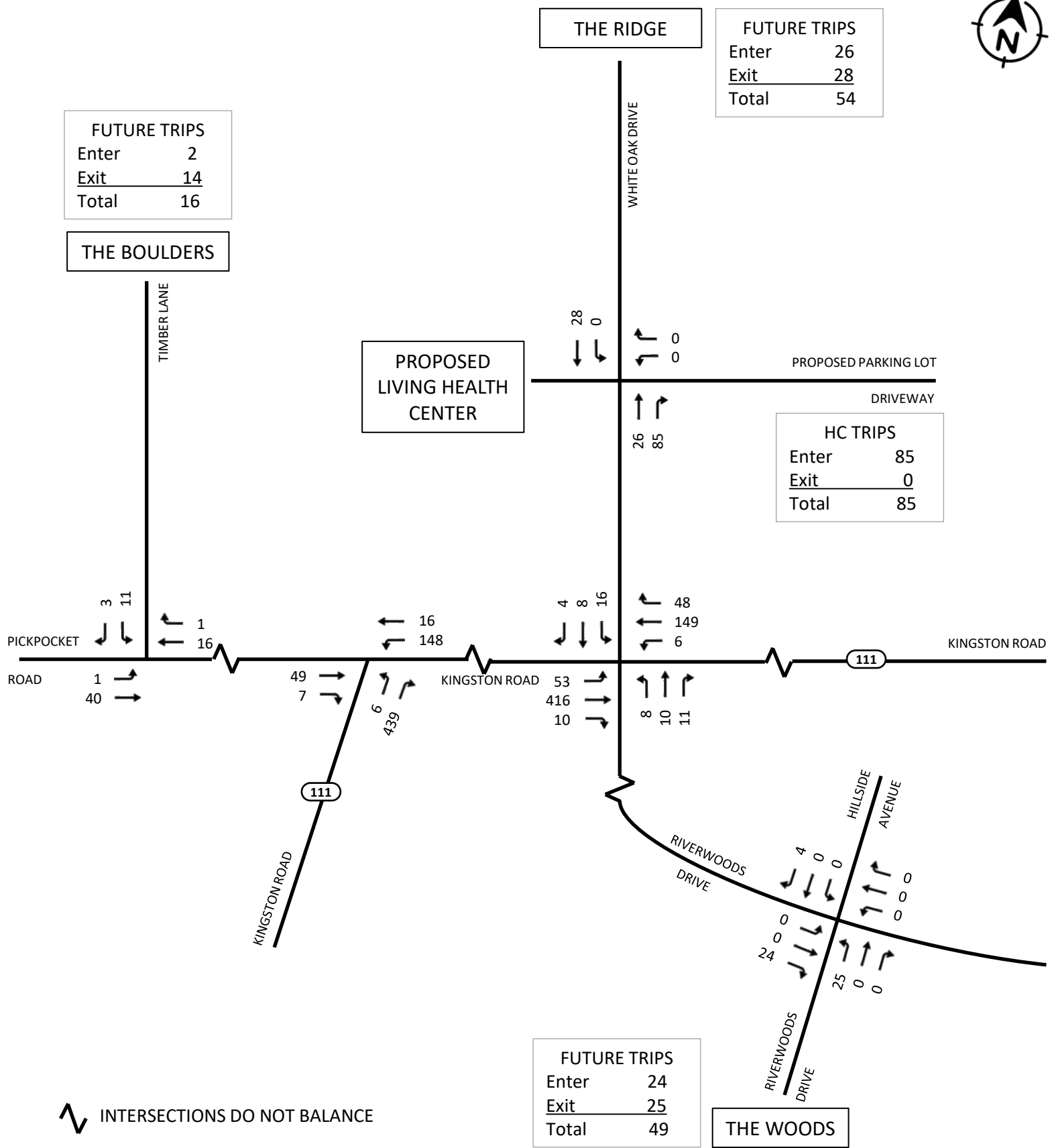
RE-DSITRIBUTED TRIPS EMPLOYEE VISITOR		
Enter	(0)	[0]
Exit	(-21)	[-9]
Total	(-21)	[-9]



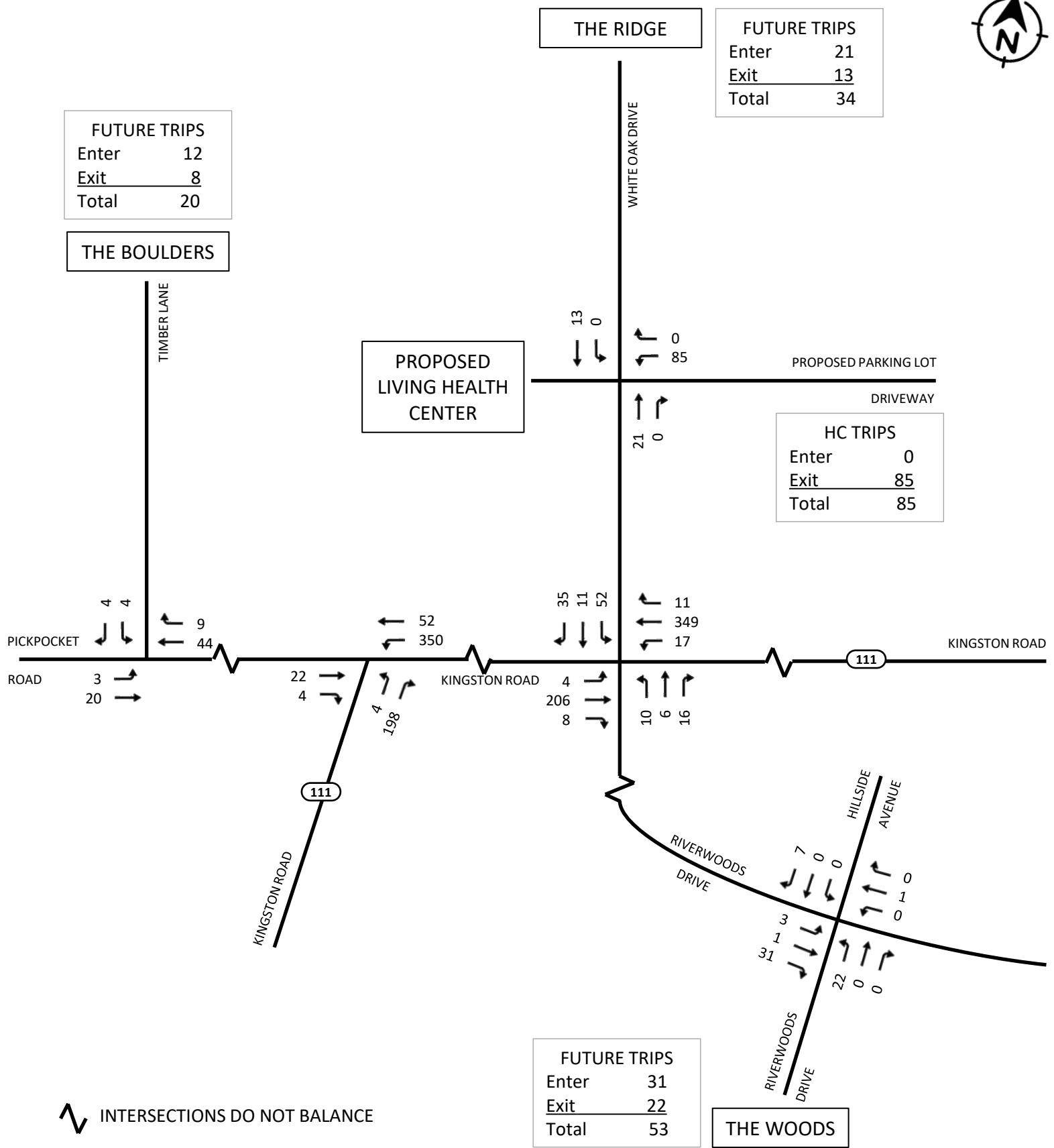
INTERSECTIONS DO NOT BALANCE

**FIGURE 9**  
SITE-GENERATED WEEKDAY PM  
PEAK HOUR TRAFFIC VOLUMES

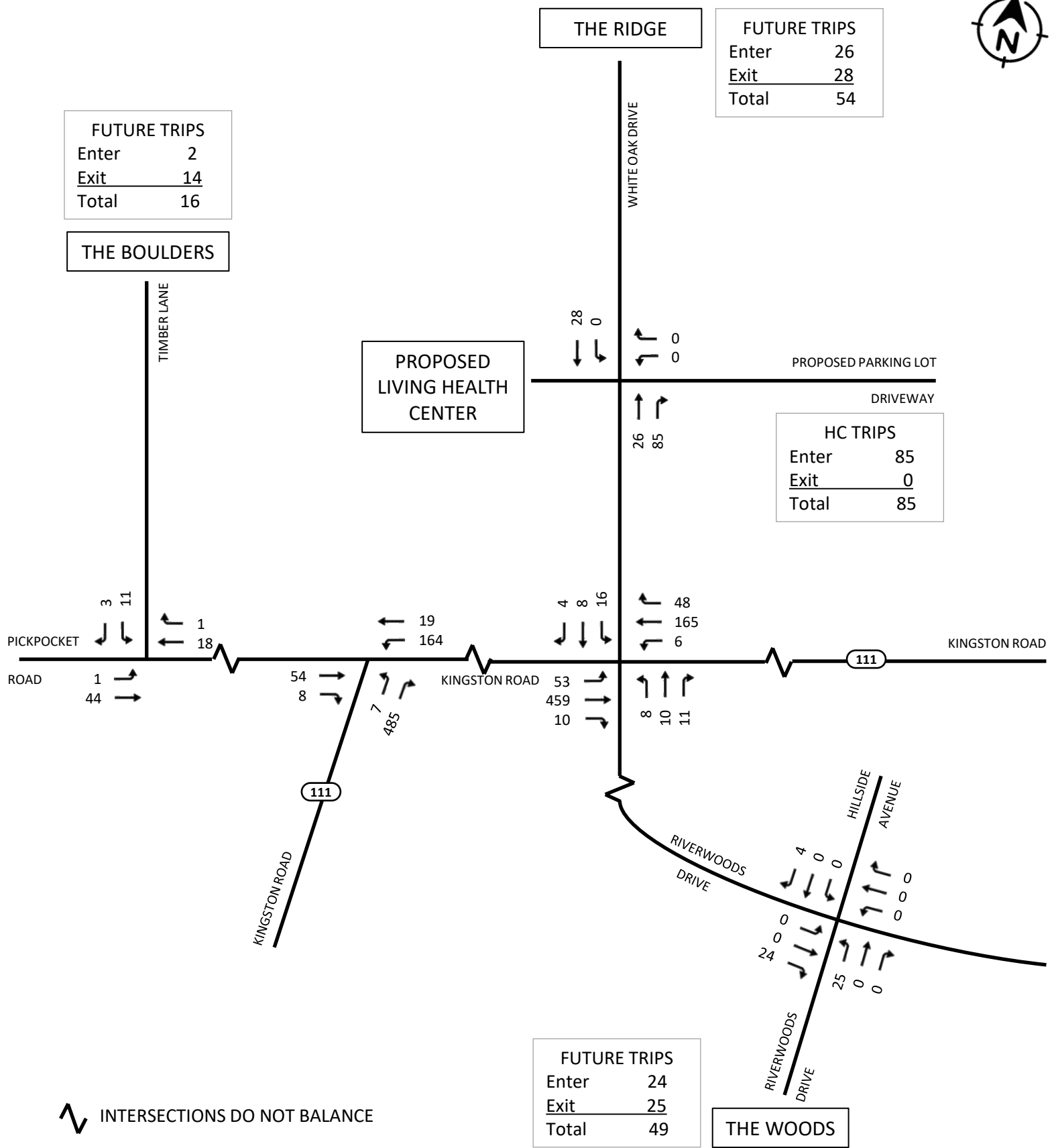




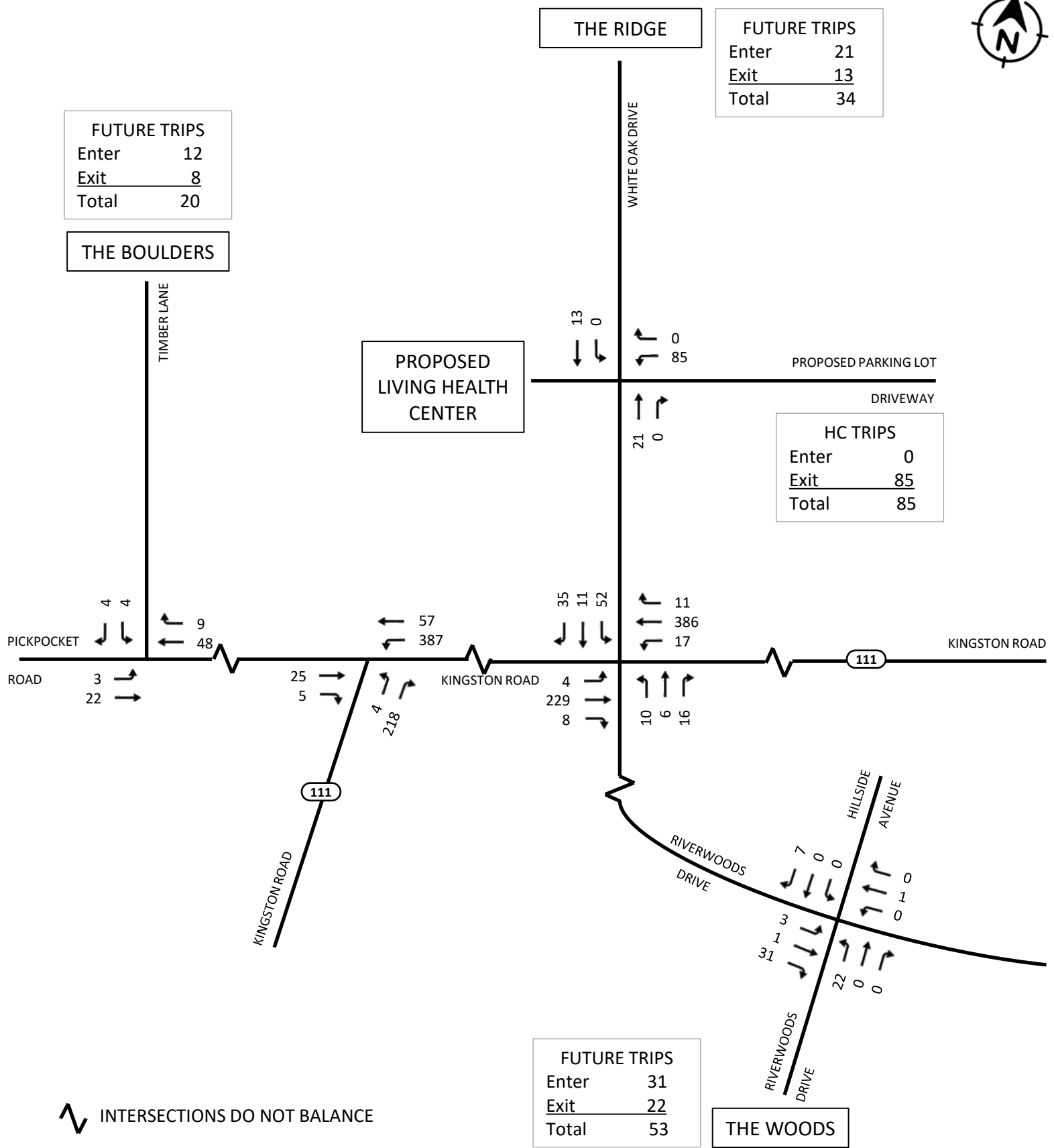
**FIGURE 10**  
 2025 BUILD WEEKDAY AM  
 PEAK HOUR TRAFFIC VOLUMES



**FIGURE 11**  
**2025 BUILD WEEKDAY PM**  
**PEAK HOUR TRAFFIC VOLUMES**



**FIGURE 12**  
 2035 BUILD WEEKDAY AM  
 PEAK HOUR TRAFFIC VOLUMES



**FIGURE 13**  
2035 BUILD WEEKDAY PM  
PEAK HOUR TRAFFIC VOLUMES

## CAPACITY AND QUEUE ANALYSIS

Capacity and queue analyses were conducted at all study area locations under 2024 Existing, 2025 No-Build, 2025 Build, 2035 No-Build, and 2035 Build traffic-volume conditions. The impact of site-generated traffic can be measured by comparing No-Build conditions to Build conditions.

### Methodology

The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM)<sup>7</sup> and is described in the Appendix. The TIAS utilizes the HCM 6<sup>th</sup> Edition methodology as it is the most recently approved method by NHDOT.

For unsignalized intersections, the 95<sup>th</sup> percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). In this case, the queue length is a function of the capacity of the movement and the movement's degree of saturation.

### Analysis Results

The results of the level-of-service (LOS) and queue analyses are shown in Table 7 (2025 conditions) and Table 8 (2035 conditions) and are discussed below. Capacity and queue analyses were conducted at the study area intersections utilizing *Synchro*<sup>8</sup> software. The capacity and queue analysis worksheets for all conditions are provided in the Appendix.

#### **Kingston Road (Route 111) at White Oak Drive & Riverwoods Drive**

As shown in Tables 7 and 8, under existing and all future traffic-volume conditions, the intersection of Kingston Road at White Oak Drive and Riverwoods Drive is expected to operate with all movements on Kingston Road at optimal levels (LOS A) and the minor road approaches at LOS C or better. With the proposed redevelopment in place, no drops in LOS are expected and the increases in delay on any movement are expected to be minimal (less than two seconds) under both opening year (2025 Build) and future year (2035 Build) conditions. The volume-to-capacity (v/c) ratios on all movements are expected to be well below 1.00 indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

#### **Riverwoods Drive at Hillside Avenue**

Under existing and all future traffic-volume conditions, the intersection of Riverwoods Drive at Hillside Avenue is expected to operate at optimal conditions (LOS A). The v/c ratios on all movements are expected to be well below 1.00 indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

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<sup>7</sup> *Highway Capacity Manual 6<sup>th</sup> Edition*, Transportation Research Board; Washington, D.C.; 2016.

<sup>8</sup> *Synchro plus SimTraffic 11*; Trafficware LLC.; Sugar Land, TX; 2019.



**Kingston Road (Route 111) at Pickpocket Road**

Under existing and all future traffic-volume conditions, the intersection of Kingston Road (Route 111) at Pickpocket Road is expected to operate at optimal conditions (LOS A). The v/c ratios on all movements are expected to be well below 1.00 indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

**Pickpocket Road at Timber Lane**

Under existing and all future traffic-volume conditions, the intersection of Pickpocket Road at Timber Lane is expected to operate at optimal conditions (LOS A). The v/c ratios on all movements are expected to be well below 1.00 indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

**White Oak Drive at Proposed Parking Lot Driveway**

Although there are multiple site driveways proposed on White Oak Drive, for a conservative analysis approach, all traffic associated with the Supportive Living Health Center have been assumed at one location. The proposed combined driveway approach is expected to operate at optimal levels (LOS A) during both, opening year (2025 Build) and future year (2035 Build) conditions with queue lengths of one vehicle or less.

**TABLE 7**  
**Intersection Capacity Analysis Summary**

Intersection/Peak Hour/Lane Group	2024 Existing				2025 No-Build				2025 Build			
	V/C <sup>a</sup>	Del. <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
<b>Kingston Road (Route 111) at White Oak Drive &amp; Riverwoods Drive</b>												
<i>Weekday AM:</i>												
Riverwoods Drive NB approach	0.09	17.4	C	--/ < 25	0.10	17.5	C	--/ < 25	0.12	18.5	C	--/ < 25
Kingston Road EB left turn	0.02	7.7	A	--/ < 25	0.02	7.7	A	--/ < 25	0.05	7.9	A	--/ < 25
Kingston Road WB left turn	0.02	8.7	A	--/ < 25	0.02	8.7	A	--/ < 25	0.01	8.6	A	--/ < 25
White Oak Drive SB approach	0.10	18.3	C	--/ < 25	0.10	18.4	C	--/ < 25	0.12	19.2	C	--/ < 25
<i>Weekday PM:</i>												
Riverwoods Drive NB approach	0.15	13.9	B	--/ < 25	0.15	14.0	B	--/ < 25	0.09	13.9	B	--/ < 25
Kingston Road EB left turn	0.00	8.1	A	--/ < 25	0.00	8.2	A	--/ < 25	0.00	8.2	A	--/ < 25
Kingston Road WB left turn	0.01	7.9	A	--/ < 25	0.01	7.9	A	--/ < 25	0.02	7.9	A	--/ < 25
White Oak Drive SB approach	0.15	16.7	C	--/ < 25	0.15	16.8	C	--/ < 25	0.30	18.0	C	--/ < 30
<b>Riverwoods Drive at Hillside Avenue</b>												
<i>Weekday AM:</i>												
Riverwoods Drive NB approach	0.03	9.1	A	--/ < 25	0.03	9.1	A	--/ < 25	0.04	9.0	A	--/ < 25
Riverwoods Drive EB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Riverwoods Drive WB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Hillside Avenue SB approach	0.01	8.3	A	--/ < 25	0.01	8.3	A	--/ < 25	0.01	8.3	A	--/ < 25
<i>Weekday PM:</i>												
Riverwoods Drive NB approach	0.10	9.3	A	--/ < 25	0.10	9.3	A	--/ < 25	0.05	9.1	A	--/ < 25
Riverwoods Drive EB left turn	0.00	7.2	A	--/ < 25	0.00	7.2	A	--/ < 25	0.00	7.2	A	--/ < 25
Riverwoods Drive WB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Hillside Avenue SB approach	0.01	8.4	A	--/ < 25	0.01	8.4	A	--/ < 25	0.01	8.4	A	--/ < 25

<sup>a</sup> Volume-to-capacity ratio.

<sup>b</sup> Average control delay in seconds per vehicle.

<sup>c</sup> Level of service.

<sup>d</sup> Average/95<sup>th</sup> percentile queue length in feet per lane (assuming 25 feet per vehicle).

**TABLE 7 (continued)**  
**Intersection Capacity Analysis Summary**

Intersection/Peak Hour/Lane Group	2024 Existing				2025 No-Build				2025 Build			
	V/C <sup>a</sup>	Del. <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
<b>Kingston Road (Route 111) at Pickpocket Road</b>												
<i>Weekday AM:</i>												
Pickpocket Road EB left turn	0.01	8.5	A	--/<25	0.01	8.5	A	--/<25	0.01	8.4	A	--/<25
Kingston Road NB left turn	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
<i>Weekday PM:</i>												
Pickpocket Road EB left turn	0.01	8.5	A	--/<25	0.01	8.5	A	--/<25	0.00	8.6	A	--/<25
Kingston Road NB left turn	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
<b>Pickpocket Road at Timber Lane</b>												
<i>Weekday AM:</i>												
Pickpocket Road EB left turn	0.01	7.3	A	--/<25	0.01	7.3	A	--/<25	0.01	7.2	A	--/<25
Timber Lane SB approach	0.02	9.1	A	--/<25	0.02	9.1	A	--/<25	0.02	9.0	A	--/<25
<i>Weekday PM:</i>												
Pickpocket Road EB left turn	0.00	7.3	A	--/<25	0.00	7.3	A	--/<25	0.00	7.3	A	--/<25
Timber Lane SB approach	0.03	8.8	A	--/<25	0.03	8.8	A	--/<25	0.01	8.8	A	--/<25
<b>White Oak Drive at Proposed Parking Lot Driveway</b>												
<i>Weekday AM:</i>												
Proposed Parking Lot WB Approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
<i>Weekday PM:</i>												
Proposed Parking Lot WB Approach	--	--	--	--/--	--	--	--	--/--	0.10	9.1	A	--/<25

<sup>a</sup> Volume-to-capacity ratio.

<sup>b</sup> Average control delay in seconds per vehicle.

<sup>c</sup> Level of service.

<sup>d</sup> Average/95<sup>th</sup> percentile queue length in feet per lane (assuming 25 feet per vehicle).

**TABLE 8**  
**Intersection Capacity Analysis Summary**

Intersection/Peak Hour/Lane Group	2024 Existing				2035 No-Build				2035 Build			
	V/C <sup>a</sup>	Del. <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
<b>Kingston Road (Route 111) at White Oak Drive &amp; Riverwoods Drive</b>												
<i>Weekday AM:</i>												
Riverwoods Drive NB approach	0.09	17.4	C	--/ < 25	0.09	17.4	C	--/ < 25	0.11	18.3	C	--/ < 25
Kingston Road EB left turn	0.02	7.7	A	--/ < 25	0.02	7.7	A	--/ < 25	0.05	7.9	A	--/ < 25
Kingston Road WB left turn	0.02	8.7	A	--/ < 25	0.02	8.7	A	--/ < 25	0.01	8.6	A	--/ < 25
White Oak Drive SB approach	0.10	18.3	C	--/ < 25	0.09	18.3	C	--/ < 25	0.11	19.0	C	--/ < 25
<i>Weekday PM:</i>												
Riverwoods Drive NB approach	0.15	13.9	B	--/ < 25	0.14	14.1	B	--/ < 25	0.08	14.0	B	--/ < 25
Kingston Road EB left turn	0.00	8.1	A	--/ < 25	0.00	8.2	A	--/ < 25	0.00	8.2	A	--/ < 25
Kingston Road WB left turn	0.01	7.9	A	--/ < 25	0.01	7.9	A	--/ < 25	0.02	7.9	A	--/ < 25
White Oak Drive SB approach	0.15	16.7	C	--/ < 25	0.14	17.0	C	--/ < 25	0.28	18.1	C	--/ < 30
<b>Riverwoods Drive at Hillside Avenue</b>												
<i>Weekday AM:</i>												
Riverwoods Drive NB approach	0.03	9.1	A	--/ < 25	0.03	9.0	A	--/ < 25	0.03	8.9	A	--/ < 25
Riverwoods Drive EB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Riverwoods Drive WB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Hillside Avenue SB approach	0.01	8.3	A	--/ < 25	0.00	8.3	A	--/ < 25	0.00	8.3	A	--/ < 25
<i>Weekday PM:</i>												
Riverwoods Drive NB approach	0.10	9.3	A	--/ < 25	0.06	8.9	A	--/ < 25	0.03	8.8	A	--/ < 25
Riverwoods Drive EB left turn	0.00	7.2	A	--/ < 25	0.00	7.2	A	--/ < 25	0.00	7.2	A	--/ < 25
Riverwoods Drive WB left turn	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25	0.00	0.0	A	--/ < 25
Hillside Avenue SB approach	0.01	8.4	A	--/ < 25	0.01	8.3	A	--/ < 25	0.01	8.3	A	--/ < 25

<sup>a</sup> Volume-to-capacity ratio.

<sup>b</sup> Average control delay in seconds per vehicle.

<sup>c</sup> Level of service.

<sup>d</sup> Average/95<sup>th</sup> percentile queue length in feet per lane (assuming 25 feet per vehicle).

**TABLE 8 (continued)**  
**Intersection Capacity Analysis Summary**

Intersection/Peak Hour/Lane Group	2024 Existing				2035 No-Build				2035 Build			
	V/C <sup>a</sup>	Del. <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
<b>Kingston Road (Route 111) at Pickpocket Road</b>												
<i>Weekday AM:</i>												
Pickpocket Road EB left turn	0.01	8.5	A	--/<25	0.01	8.5	A	--/<25	0.01	8.4	A	--/<25
Kingston Road NB left turn	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
<i>Weekday PM:</i>												
Pickpocket Road EB left turn	0.01	8.5	A	--/<25	0.01	8.5	A	--/<25	0.01	8.6	A	--/<25
Kingston Road NB left turn	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
<b>Pickpocket Road at Timber Lane</b>												
<i>Weekday AM:</i>												
Pickpocket Road EB left turn	0.01	7.3	A	--/<25	0.00	7.3	A	--/<25	0.00	7.2	A	--/<25
Timber Lane SB approach	0.02	9.1	A	--/<25	0.01	9.0	A	--/<25	0.02	8.9	A	--/<25
<i>Weekday PM:</i>												
Pickpocket Road EB left turn	0.00	7.3	A	--/<25	0.00	7.3	A	--/<25	0.00	7.3	A	--/<25
Timber Lane SB approach	0.03	8.8	A	--/<25	0.03	8.8	A	--/<25	0.01	8.8	A	--/<25
<b>White Oak Drive at Proposed Parking Lot Driveway</b>												
<i>Weekday AM:</i>												
Proposed Parking Lot WB Approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
<i>Weekday PM:</i>												
Proposed Parking Lot WB Approach	--	--	--	--/--	--	--	--	--/--	0.10	9.1	A	--/<25

<sup>a</sup> Volume-to-capacity ratio.

<sup>b</sup> Average control delay in seconds per vehicle.

<sup>c</sup> Level of service.

<sup>d</sup> Average/95<sup>th</sup> percentile queue length in feet per lane (assuming 25 feet per vehicle).



## CONCLUSIONS

Existing and future conditions in the study area have been described, analyzed, and evaluated with respect to traffic operations and the impact of the proposed redevelopment. Conclusions of this effort are presented below.

- The proposed redevelopment consists of site renovations at the Riverwoods retirement community located off Kingston Road (NH Route 111) in Exeter, New Hampshire. The site is presently occupied by three distinct “neighborhoods,” known as The Boulders, The Woods, and The Ridge. In addition to dwelling units (both independent living and assisted living), each neighborhood also provides some degree of medical services. The current development proposal is comprised of relocating all medical services from the three existing neighborhoods into a single new 149,907 square foot (SF) building, the Supportive Living Health Center. The relocation of medical services will allow for 73 additional independent living units: 21 new units in The Boulders; 28 new units in The Woods; and 24 new units in The Ridge.
- Access and egress to the new Supportive Living Health Center, along with an affiliated parking area, will be provided via four new driveways on the west side of White Oak Drive, a private way, and two new driveways on the east side of White Oak Drive, on the north side of Kingston Road. No new driveways are proposed at any of the three existing neighborhoods. It should be noted that access to the public roadway system for the three existing neighborhoods is provided in the following manner. The Boulders and The Ridge, both located north of Kingston Road will continue to be served by both White Oak Drive, which intersects the north side of Kingston Road, and Timber Lane (a private way), which intersects the north side of Pickpocket Road. The Woods, located south of Kingston Road, will continue to be served by Riverwoods Drive, which is a public way immediately south of its intersection with Kingston Road, and transitions into a private way upon entering the Riverwoods campus driveway.
- Available sight distances at the existing site driveways, with the exception of Timber Lane at Pickpocket Road exceed the minimum and desirable SSD and ISD requirements recommended by AASHTO. Timber Lane does not exceed the minimum ISD requirements under existing conditions due to overgrown bushes on either side of Timber Lane. Accordingly, it is recommended to trim the existing vegetation in order to meet minimum requirements.

GPI will work with the applicant to ensure the driveways proposed on White Oak Drive meet the AASHTO sightline requirements.

- The additional independent living residential units are expected to generate 16 vehicle trips (6 entering and 10 exiting) during the weekday AM peak hour and 18 vehicle trips (10 entering and 8 exiting) during the weekday PM peak hour spread across the three campuses. The new Supportive Living Health Center trips were redistributed from the existing health facilities within The Boulders, The Woods, and The Ridge.

- Under existing and all future traffic-volume conditions, the intersection of Kingston Road at White Oak Drive and Riverwoods Drive is expected to operate with all movements on Kingston Road at optimal levels (LOS A) and the minor road approaches at LOS C or better. With the proposed redevelopment in place, no drops in LOS are expected and the increases in delay on any movement are expected to be minimal (less than two seconds) under both opening year (2025 Build) and future year (2035 Build) conditions. The volume-to-capacity (v/c) ratios on all movements are expected to be well below 1.00 indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

At all other study area intersections, operations are expected to remain optimal (LOS A) with adequate capacity (v/c less than 1.00) to accommodate the anticipated traffic volumes.

**Based on the findings above, the proposed redevelopment can be safely and efficiently accommodated along the existing roadway network. No additional project-specific mitigation is warranted based on the incremental impacts of the development.**

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**- APPENDIX**

- *Traffic Count Data*
- *Traffic Volume Adjustment Data*
  - *Sight Distance Calculations*
- *Kingston Road TAP Project Construction Sheets*
  - *Trip Generation Calculations*
  - *Auxiliary Turn Lane Warrants*
  - *Capacity Analysis Methodology*
- *Capacity and Queue Analysis Worksheets*

**TRAFFIC COUNT DATA**

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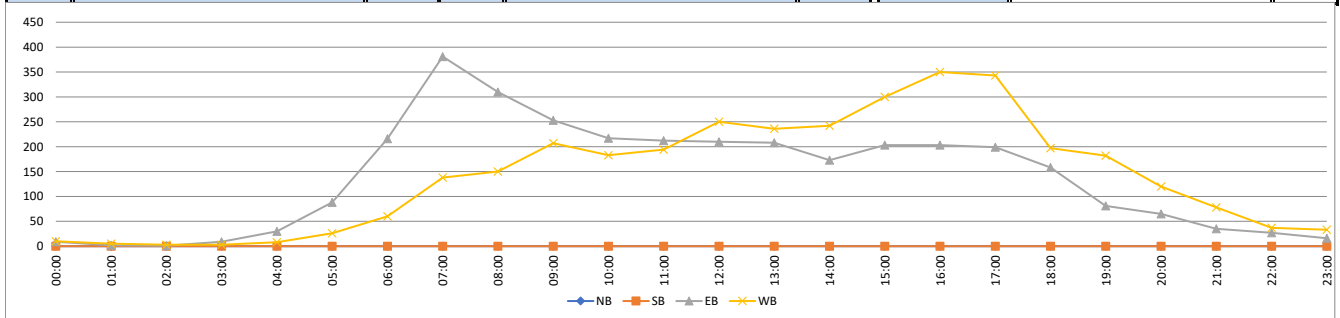
### VOLUME

#### SR 111/Kingston Rd Bet Pickpocket Rd & White Oak Dr/Riverwoods Dr

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_001

DAILY TOTALS						NB	SB	EB	WB	Total	DAILY TOTALS							
						0	0	3,306	3,355	6,661								
15-Minutes Interval											Hourly Intervals							
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	
0:00			0	3	3	12:00			44	70	114	00:00	01:00			9	10	19
0:15			8	3	11	12:15			55	74	129	01:00	02:00			2	5	7
0:30			1	3	4	12:30			62	53	115	02:00	03:00			1	3	4
0:45			0	1	1	12:45			49	53	102	03:00	04:00			9	3	12
1:00			1	2	3	13:00			59	87	146	04:00	05:00			30	8	38
1:15			1	1	2	13:15			58	48	106	05:00	06:00			88	26	114
1:30			0	2	2	13:30			43	44	87	06:00	07:00			216	60	276
1:45			0	0	0	13:45			48	57	105	07:00	08:00			381	138	519
2:00			0	0	0	14:00			37	53	90	08:00	09:00			310	150	460
2:15			0	0	0	14:15			45	54	99	09:00	10:00			253	207	460
2:30			1	2	3	14:30			42	72	114	10:00	11:00			217	183	400
2:45			0	1	1	14:45			49	63	112	11:00	12:00			212	194	406
3:00			1	2	3	15:00			50	79	129	12:00	13:00			210	250	460
3:15			3	0	3	15:15			46	60	106	13:00	14:00			208	236	444
3:30			1	0	1	15:30			53	70	123	14:00	15:00			173	242	415
3:45			4	1	5	15:45			54	91	145	15:00	16:00			203	300	503
4:00			3	1	4	16:00			51	105	156	16:00	17:00			203	350	553
4:15			5	3	8	16:15			47	89	136	17:00	18:00			199	343	542
4:30			8	2	10	16:30			53	81	134	18:00	19:00			158	197	355
4:45			14	2	16	16:45			52	75	127	19:00	20:00			81	182	263
5:00			9	2	11	17:00			41	114	155	20:00	21:00			65	120	185
5:15			22	7	29	17:15			47	82	129	21:00	22:00			35	78	113
5:30			32	10	42	17:30			60	82	142	22:00	23:00			27	37	64
5:45			25	7	32	17:45			51	65	116	23:00	00:00			16	33	49
6:00			38	9	47	18:00			28	55	83	STATISTICS						
6:15			47	9	56	18:15			39	50	89						Peak Period	00:00 to 12:00
6:30			57	21	78	18:30			46	53	99	Volume		1728	987	2715		
6:45			74	21	95	18:45			45	39	84	Peak Hour		7:15	10:45	7:15		
7:00			65	28	93	19:00			28	47	75	Peak Volume		406	209	547		
7:15			108	29	137	19:15			14	60	74	Peak Hour Factor		0.787	0.871	0.824		
7:30			79	44	123	19:30			21	43	64	Peak Period	12:00 to 00:00					
7:45			129	37	166	19:45			18	32	50	Volume		1578	2368	3946		
8:00			90	31	121	20:00			22	29	51	Peak Hour		12:30	15:45	15:45		
8:15			76	40	116	20:15			20	33	53	Peak Volume		228	366	571		
8:30			80	40	120	20:30			12	34	46	Peak Hour Factor		0.919	0.871	0.915		
8:45			64	39	103	20:45			11	24	35	Peak Period	07:00 to 09:00					
9:00			66	47	113	21:00			13	33	46	Volume		691	288	979		
9:15			65	59	124	21:15			10	17	27	Peak Hour		7:15	7:30	7:15		
9:30			63	61	124	21:30			8	12	20	Peak Volume		406	152	547		
9:45			59	40	99	21:45			4	16	20	Peak Hour Factor		0.787	0.864	0.824		
10:00			62	48	110	22:00			5	11	16	Peak Period	16:00 to 18:00					
10:15			55	43	98	22:15			13	11	24	Volume		402	693	1095		
10:30			44	37	81	22:30			3	8	11	Peak Hour		16:00	16:15	16:00		
10:45			56	55	111	22:45			6	7	13	Peak Volume		203	359	553		
11:00			52	50	102	23:00			5	8	13	Peak Hour Factor		0.958	0.787	0.886		
11:15			49	44	93	23:15			4	12	16							
11:30			50	60	110	23:30			3	8	11							
11:45			61	40	101	23:45			4	5	9							
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1728</b>	<b>987</b>	<b>2715</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1578</b>	<b>2368</b>	<b>3946</b>							
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>64%</b>	<b>36%</b>	<b>41%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>40%</b>	<b>60%</b>	<b>59%</b>							











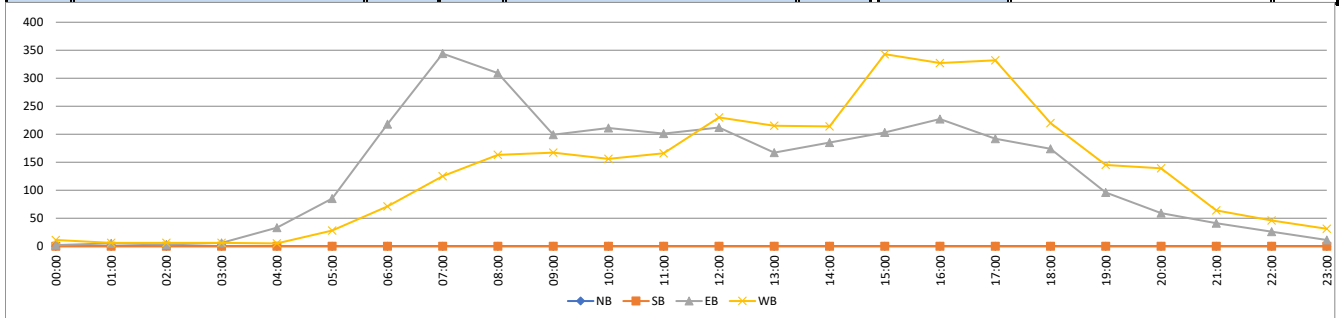
### VOLUME

#### SR 111/Kingston Rd Bet Pickpocket Rd & White Oak Dr/Riverwoods Dr

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_001

DAILY TOTALS						NB	SB	EB	WB	Total	DAILY TOTALS						
						0	0	3,209	3,216	6,425							
15-Minutes Interval											Hourly Intervals						
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			1	4	5	12:00			52	45	97	00:00 01:00			2	11	13
0:15			0	2	2	12:15			52	55	107	01:00 02:00			5	6	11
0:30			0	4	4	12:30			54	53	107	02:00 03:00			3	6	9
0:45			1	1	2	12:45			54	77	131	03:00 04:00			6	6	12
1:00			1	3	4	13:00			46	55	101	04:00 05:00			33	5	38
1:15			1	2	3	13:15			36	51	87	05:00 06:00			85	28	113
1:30			0	0	0	13:30			43	55	98	06:00 07:00			218	71	289
1:45			3	1	4	13:45			42	54	96	07:00 08:00			344	125	469
2:00			0	4	4	14:00			31	41	72	08:00 09:00			309	163	472
2:15			0	0	0	14:15			47	47	94	09:00 10:00			199	167	366
2:30			2	0	2	14:30			60	63	123	10:00 11:00			211	156	367
2:45			1	2	3	14:45			47	63	110	11:00 12:00			201	166	367
3:00			1	3	4	15:00			44	82	126	12:00 13:00			212	230	442
3:15			1	1	2	15:15			56	86	142	13:00 14:00			167	215	382
3:30			2	0	2	15:30			55	92	147	14:00 15:00			185	214	399
3:45			2	2	4	15:45			48	83	131	15:00 16:00			203	343	546
4:00			0	1	1	16:00			52	94	146	16:00 17:00			227	327	554
4:15			2	2	4	16:15			57	75	132	17:00 18:00			192	332	524
4:30			10	1	11	16:30			56	79	135	18:00 19:00			174	220	394
4:45			21	1	22	16:45			62	79	141	19:00 20:00			96	145	241
5:00			8	3	11	17:00			47	107	154	20:00 21:00			59	139	198
5:15			27	5	32	17:15			48	89	137	21:00 22:00			41	64	105
5:30			24	12	36	17:30			43	73	116	22:00 23:00			26	46	72
5:45			26	8	34	17:45			54	63	117	23:00 00:00			11	31	42
6:00			32	14	46	18:00			49	70	119	<b>STATISTICS</b> NB SB EB WB TOTAL Peak Period 00:00 to 12:00 Volume 1616 910 2526 Peak Hour 7:15 8:30 7:30 Peak Volume 363 170 507 Peak Hour Factor 0.926 0.720 0.899					
6:15			51	15	66	18:15			46	66	112						
6:30			61	18	79	18:30			48	35	83	Peak Period 12:00 to 00:00 Volume 1593 2306 3899 Peak Hour 16:00 15:15 16:30 Peak Volume 227 355 567 Peak Hour Factor 0.915 0.944 0.920					
6:45			74	24	98	18:45			31	49	80	Peak Period 07:00 to 09:00 Volume 653 288 941 Peak Hour 7:15 8:00 7:30 Peak Volume 363 163 507 Peak Hour Factor 0.926 0.886 0.899					
7:00			62	28	90	19:00			30	42	72	Peak Period 16:00 to 18:00 Volume 419 659 1078 Peak Hour 16:00 16:30 16:30 Peak Volume 227 354 567 Peak Hour Factor 0.915 0.827 0.920					
7:15			88	28	116	19:15			33	41	74						
7:30			98	43	141	19:30			18	31	49						
7:45			96	26	122	19:45			15	31	46						
8:00			81	43	124	20:00			22	37	59						
8:15			74	46	120	20:15			16	46	62						
8:30			96	43	139	20:30			12	30	42						
8:45			58	31	89	20:45			9	26	35						
9:00			60	37	97	21:00			10	14	24						
9:15			45	59	104	21:15			11	18	29						
9:30			48	37	85	21:30			15	15	30						
9:45			46	34	80	21:45			5	17	22						
10:00			47	39	86	22:00			5	11	16						
10:15			57	28	85	22:15			10	21	31						
10:30			56	47	103	22:30			5	5	10						
10:45			51	42	93	22:45			6	9	15						
11:00			56	38	94	23:00			2	9	11						
11:15			52	33	85	23:15			5	7	12						
11:30			51	55	106	23:30			3	11	14						
11:45			42	40	82	23:45			1	4	5						
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1616</b>	<b>910</b>	<b>2526</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1593</b>	<b>2306</b>	<b>3899</b>						
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>64%</b>	<b>36%</b>	<b>39%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>41%</b>	<b>59%</b>	<b>61%</b>						







**SPEED**

**SR 111/Kingston Rd Bet Pickpocket Rd & White Oak Dr/Riverwoods Dr**

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_001

Time	EASTBOUND														Total	WESTBOUND														Total	TOTALS														Total		
	5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70			
12:00	0	0	0	8	26	8	1	1	0	0	0	0	0	0	44	0	1	0	6	45	16	2	0	0	0	0	0	0	70	0	1	0	14	71	24	3	1	0	0	0	0	0	0	0	0	0	114
12:15	1	0	2	7	26	17	2	0	0	0	0	0	0	0	55	1	0	4	15	34	19	1	0	0	0	0	0	74	2	0	6	22	60	36	3	0	0	0	0	0	0	0	0	0	129		
12:30	0	0	1	7	33	17	2	1	0	0	0	0	0	0	62	0	0	1	4	21	25	2	0	0	0	0	0	53	0	0	2	11	54	42	5	1	0	0	0	0	0	0	0	0	115		
12:45	0	2	3	4	19	18	2	1	0	0	0	0	0	0	49	0	0	0	14	22	14	3	0	0	0	0	0	53	0	2	3	18	41	32	5	1	0	0	0	0	0	0	0	0	102		
13:00	0	0	1	16	22	19	1	0	0	0	0	0	0	0	59	0	0	0	28	43	11	4	1	0	0	0	0	87	0	0	1	44	65	30	5	1	0	0	0	0	0	0	0	146			
13:15	0	0	1	11	29	15	2	0	0	0	0	0	0	0	58	2	1	0	8	20	16	1	0	0	0	0	0	48	2	1	1	19	49	31	3	0	0	0	0	0	0	0	0	106			
13:30	2	1	5	13	15	7	0	0	0	0	0	0	0	0	43	1	1	1	10	16	15	0	0	0	0	0	0	44	3	2	6	23	31	22	0	0	0	0	0	0	0	0	0	87			
13:45	0	5	7	17	16	3	0	0	0	0	0	0	0	0	48	0	0	1	18	25	12	1	0	0	0	0	0	57	0	5	8	35	41	15	1	0	0	0	0	0	0	0	0	105			
14:00	4	1	7	8	6	10	1	0	0	0	0	0	0	0	37	0	0	4	11	27	10	1	0	0	0	0	0	53	4	1	11	19	33	20	2	0	0	0	0	0	0	0	0	90			
14:15	0	0	7	14	13	9	2	0	0	0	0	0	0	0	45	0	0	0	13	26	15	0	0	0	0	0	0	54	0	0	7	27	39	24	2	0	0	0	0	0	0	0	0	99			
14:30	1	0	8	7	15	9	2	0	0	0	0	0	0	0	42	0	0	1	15	32	22	2	0	0	0	0	0	72	1	0	9	22	47	31	4	0	0	0	0	0	0	0	0	114			
14:45	0	1	9	10	16	12	1	0	0	0	0	0	0	0	49	0	0	1	10	43	9	0	0	0	0	0	0	63	0	1	10	20	59	21	1	0	0	0	0	0	0	0	0	112			
15:00	0	0	2	7	15	22	4	0	0	0	0	0	0	0	50	0	0	0	15	35	24	5	0	0	0	0	0	79	0	0	2	22	50	46	9	0	0	0	0	0	0	0	0	129			
15:15	0	0	3	7	19	14	3	0	0	0	0	0	0	0	46	0	0	0	10	26	22	2	0	0	0	0	0	60	0	0	3	17	45	36	5	0	0	0	0	0	0	0	0	106			
15:30	0	0	1	8	24	16	4	0	0	0	0	0	0	0	53	0	0	1	7	32	25	5	0	0	0	0	0	70	0	0	2	15	56	41	9	0	0	0	0	0	0	0	0	123			
15:45	0	0	1	5	20	23	5	0	0	0	0	0	0	0	54	0	0	1	12	28	40	9	1	0	0	0	0	91	0	0	2	17	48	63	14	1	0	0	0	0	0	0	0	145			
16:00	0	1	2	8	23	13	4	0	0	0	0	0	0	0	51	2	1	3	7	29	46	17	0	0	0	0	0	105	2	2	5	15	52	59	21	0	0	0	0	0	0	0	0	156			
16:15	0	1	0	5	15	16	10	0	0	0	0	0	0	0	47	0	0	0	4	27	42	15	1	0	0	0	0	89	0	1	0	9	42	58	25	1	0	0	0	0	0	0	0	136			
16:30	0	0	0	4	31	15	3	0	0	0	0	0	0	0	53	0	0	2	15	59	5	0	0	0	0	0	0	81	0	0	6	46	74	8	0	0	0	0	0	0	0	0	0	134			
16:45	0	0	0	7	15	26	4	0	0	0	0	0	0	0	52	0	0	0	4	18	36	16	0	0	1	0	0	75	0	0	0	11	33	62	20	0	0	1	0	0	0	0	0	127			
17:00	1	0	0	0	18	18	4	0	0	0	0	0	0	0	41	1	0	0	3	23	73	13	0	1	0	0	0	114	2	0	0	3	41	91	17	0	1	0	0	0	0	0	0	155			
17:15	0	0	1	3	13	26	4	0	0	0	0	0	0	0	47	0	0	0	4	16	46	15	1	0	0	0	0	82	0	0	1	7	29	72	19	1	0	0	0	0	0	0	0	129			
17:30	0	0	1	7	16	34	2	0	0	0	0	0	0	0	60	0	0	0	1	31	43	7	0	0	0	0	0	82	0	0	1	8	47	77	9	0	0	0	0	0	0	0	0	142			
17:45	0	0	2	3	17	26	2	1	0	0	0	0	0	0	51	0	0	0	1	18	29	12	2	2	1	0	0	65	0	0	2	4	35	55	14	3	2	1	0	0	0	0	0	116			
18:00	0	1	0	3	16	6	2	0	0	0	0	0	0	0	28	0	0	0	1	23	22	8	1	0	0	0	0	55	0	1	0	4	39	28	10	1	0	0	0	0	0	0	0	83			
18:15	0	0	0	1	20	15	3	0	0	0	0	0	0	0	39	0	0	1	6	15	18	8	1	0	1	0	0	50	0	0	1	7	35	33	11	1	0	1	0	0	0	0	89				
18:30	0	0	0	4	8	30	4	0	0	0	0	0	0	0	46	0	0	0	3	9	31	9	1	0	0	0	0	53	0	0	0	7	17	61	13	1	0	0	0	0	0	0	99				
18:45	0	0	0	3	8	25	7	2	0	0	0	0	0	0	45	0	0	0	2	17	16	4	0	0	0	0	0	39	0	0	0	5	25	41	11	2	0	0	0	0	0	0	0	75			
19:00	0	0	0	2	7	10	8	0	1	0	0	0	0	0	28	0	0	0	4	14	15	11	3	0	0	0	0	47	0	0	0	6	21	25	19	3	1	0	0	0	0	0	0	84			
19:15	0	0	0	1	6	5	2	0	0	0	0	0	0	0	14	0	0	0	0	24	25	10	1	0	0	0	0	60	0	0	0	1	30	30	12	1	0	0	0	0	0	0	0	74			
19:30	0	0	0	3	7	8	3	0	0	0	0	0	0	0	21	0	0	0	5	17	14	7	0	0	0	0	0	43	0	0	0	8	24	22	10	0	0	0	0	0	0	0	0	64			
19:45	0	0	1	2	6	6	3	0	0	0	0	0	0	0	18	0	0	0	0	15	11	5	1	0	0	0	0	32	0	0	1	2	21	17	8	1	0	0	0	0	0	0	50				
20:00	0	0	0	1	2	18	1	0	0	0	0	0	0	0	22	0	0	0	1	10	18	0	0	0	0	0	0	29	0	0	0	2	12	36	1	0	0	0	0	0	0	0	0	51			
20:15	0	0	0	0	7	9	4	0	0	0	0	0	0	0	20	0	0	0	0	19	14	0	0	0	0	0	0	33	0	0	0	0	26	23	4	0	0	0	0	0	0	0	53				
20:30	0	0	0	1	6	5	0	0	0	0	0	0	0	0	12	0	0	0	4	14	10	5	0	1	0	0	0	34	0	0	0	5	20	15	5	0	1	0	0	0	0	0	46				
20:45	1	0	0	1	3	5	1	0	0	0	0	0	0	0	11	3	0	0	2	9	7	2	1	0	0	0	0	24	4	0	0	3	12	12	3	1	0	0	0	0	0	0	35				
21:00	1	0	0	1	4	5	0	1	0	1	0	0	0	0	13	3	0	0	1	13	12	2	2	0	0	0	0	33	4	0	0	2	17	17	2	3	0	1	0	0	0	0	46				
21:15	1	0	0	1	1	3	2	1	1	0	0	0	0	0	10	1	0	0	1	11	1	0	2	0	1	0	0	17	2	0	0	2	12	4	2	3	1	1	0	0	0	0	27				
21:30	1	0	0	1	2	2	2	0	0	0	0	0	0	0	8	0	0	0	1	4	2	4	1	0	0	0	0	12	1	0	0	2	6	4	6	1	0	0	0	0	0	0	20				
21:45	0	0	0	1	0	1	2	0	0	0	0	0	0	0	4	0	0	0	1	9	3	0	2	1	0	0	0	16	0	0	0	2	9	4	2	2	1	0	0	0	0	0	20				
22:00	0	0	0	0	2	3	0	0	0	0	0	0	0	0	5	0	0	0	0	1	4	4	2	0																							







SPEED

SR 111/Kingston Rd Bet Pickpocket Rd & White Oak Dr/Riverwoods Dr

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_001

Time	EASTBOUND														Total	WESTBOUND														Total	TOTALS														Total
	5	15	20	25	30	35	40	45	50	55	60	65	70	99		5	15	20	25	30	35	40	45	50	55	60	65	70	99		5	15	20	25	30	35	40	45	50	55	60	65	70	99	
12:00	1	0	2	7	19	14	8	1	0	0	0	0	0	52	1	0	1	2	14	20	7	0	0	0	0	0	45	2	0	3	9	33	34	15	1	0	0	0	0	0	97				
12:15	0	0	1	11	13	19	8	0	0	0	0	0	0	52	0	0	0	3	26	19	7	0	0	0	0	0	55	0	0	1	14	39	38	15	0	0	0	0	0	107					
12:30	0	0	1	5	19	24	4	0	1	0	0	0	0	54	0	0	0	2	22	27	2	0	0	0	0	0	53	0	0	1	7	41	51	6	0	1	0	0	0	107					
12:45	0	0	2	3	19	25	5	0	0	0	0	0	0	54	0	0	2	6	33	30	5	1	0	0	0	0	77	0	0	4	9	52	55	10	1	0	0	0	0	131					
13:00	0	0	0	8	12	20	6	0	0	0	0	0	0	46	0	0	0	1	19	28	7	0	0	0	0	0	55	0	0	0	9	31	48	13	0	0	0	0	0	101					
13:15	0	0	3	8	13	11	0	1	0	0	0	0	0	36	0	0	1	3	26	18	3	0	0	0	0	0	51	0	0	4	11	39	29	3	1	0	0	0	0	87					
13:30	2	0	0	6	18	15	2	0	0	0	0	0	0	43	0	1	0	4	17	30	2	1	0	0	0	0	55	2	1	0	10	35	45	4	1	0	0	0	0	98					
13:45	0	0	1	5	13	17	5	1	0	0	0	0	0	42	0	0	0	3	18	26	5	2	0	0	0	0	54	0	0	1	8	31	43	10	3	0	0	0	0	96					
14:00	0	0	1	4	9	11	6	0	0	0	0	0	0	31	0	0	0	6	10	16	9	0	0	0	0	0	41	0	0	1	10	19	27	15	0	0	0	0	0	72					
14:15	0	0	1	7	20	17	2	0	0	0	0	0	0	47	0	0	0	4	16	21	6	0	0	0	0	0	47	0	0	1	11	36	38	8	0	0	0	0	0	94					
14:30	0	0	0	11	19	26	4	0	0	0	0	0	0	60	0	0	2	2	29	21	9	0	0	0	0	0	63	0	0	2	13	48	47	13	0	0	0	0	0	123					
14:45	0	0	2	7	11	21	6	0	0	0	0	0	0	47	0	0	1	11	22	27	2	0	0	0	0	0	63	0	0	3	18	33	48	8	0	0	0	0	0	110					
15:00	0	0	1	2	17	19	5	0	0	0	0	0	0	44	0	0	0	2	28	42	10	0	0	0	0	0	82	0	0	1	4	45	61	15	0	0	0	0	0	126					
15:15	0	0	1	3	10	28	13	1	0	0	0	0	0	56	0	0	1	2	25	46	10	2	0	0	0	0	86	0	0	2	5	35	74	23	3	0	0	0	0	142					
15:30	0	1	1	10	21	13	9	0	0	0	0	0	0	55	0	0	2	11	16	51	12	0	0	0	0	0	92	0	1	3	21	37	64	21	0	0	0	0	0	0	147				
15:45	0	0	1	9	11	22	4	1	0	0	0	0	0	48	0	0	0	4	26	45	8	0	0	0	0	0	83	0	0	1	13	37	67	12	1	0	0	0	0	131					
16:00	0	0	0	3	21	25	3	0	0	0	0	0	0	52	0	0	0	5	25	41	18	4	1	0	0	0	94	0	0	0	8	46	66	21	4	1	0	0	0	0	146				
16:15	0	0	0	2	18	30	7	0	0	0	0	0	0	57	0	0	0	2	17	39	16	1	0	0	0	0	75	0	0	0	4	35	69	23	1	0	0	0	0	0	132				
16:30	0	0	0	5	13	30	8	0	0	0	0	0	0	56	0	0	1	1	24	36	15	2	0	0	0	0	79	0	0	1	6	37	66	23	2	0	0	0	0	0	135				
16:45	0	1	1	2	12	32	13	1	0	0	0	0	0	62	0	0	0	4	13	48	13	1	0	0	0	0	79	0	1	1	6	25	80	26	2	0	0	0	0	0	141				
17:00	0	0	1	5	15	21	4	1	0	0	0	0	0	47	0	1	0	3	24	55	21	3	0	0	0	0	107	0	1	1	8	39	76	25	4	0	0	0	0	0	154				
17:15	0	0	2	3	12	27	4	0	0	0	0	0	0	48	0	0	0	0	21	54	14	0	0	0	0	0	89	0	0	2	3	33	81	18	0	0	0	0	0	0	137				
17:30	0	0	0	3	5	27	8	0	0	0	0	0	0	43	0	0	0	2	20	35	14	1	0	1	0	0	73	0	0	0	5	25	62	22	1	0	1	0	0	0	116				
17:45	0	0	1	2	11	38	2	0	0	0	0	0	0	54	0	0	0	4	11	28	20	0	0	0	0	0	63	0	0	1	6	22	66	22	0	0	0	0	0	0	117				
18:00	0	0	0	2	16	26	4	1	0	0	0	0	0	49	0	0	0	1	12	44	12	1	0	0	0	0	70	0	0	0	3	28	70	16	2	0	0	0	0	0	119				
18:15	0	0	0	7	13	19	7	0	0	0	0	0	0	46	0	0	0	1	9	39	16	1	0	0	0	0	66	0	0	0	8	22	58	23	1	0	0	0	0	0	112				
18:30	0	1	0	4	13	24	5	1	0	0	0	0	0	48	0	0	0	0	8	15	9	3	0	0	0	0	35	0	1	0	4	21	39	14	4	0	0	0	0	0	83				
18:45	0	0	0	3	6	16	6	0	0	0	0	0	0	31	0	0	0	2	16	25	6	0	0	0	0	0	49	0	0	0	5	22	41	12	0	0	0	0	0	0	80				
19:00	0	0	0	4	4	18	4	0	0	0	0	0	0	30	0	0	0	1	9	25	7	0	0	0	0	0	42	0	0	0	5	13	43	11	0	0	0	0	0	0	72				
19:15	0	0	0	2	5	21	5	0	0	0	0	0	0	33	0	0	0	1	13	20	6	1	0	0	0	0	41	0	0	0	3	18	41	11	1	0	0	0	0	0	74				
19:30	0	0	0	0	3	9	5	1	0	0	0	0	0	18	0	0	0	1	5	20	5	0	0	0	0	0	31	0	0	0	1	8	29	10	1	0	0	0	0	0	49				
19:45	0	0	0	0	3	6	5	1	0	0	0	0	0	15	0	0	0	0	14	9	6	2	0	0	0	0	31	0	0	0	0	17	15	11	3	0	0	0	0	0	46				
20:00	0	0	2	2	8	10	0	0	0	0	0	0	0	22	0	0	1	5	15	12	3	1	0	0	0	0	37	0	0	3	7	23	22	3	1	0	0	0	0	0	59				
20:15	0	0	0	2	2	7	5	0	0	0	0	0	0	16	0	0	1	4	16	23	2	0	0	0	0	0	46	0	0	1	6	18	30	7	0	0	0	0	0	0	62				
20:30	0	0	0	3	3	4	2	0	0	0	0	0	0	12	0	0	0	2	10	15	3	0	0	0	0	0	30	0	0	0	5	13	19	5	0	0	0	0	0	0	42				
20:45	0	0	0	2	5	2	0	0	0	0	0	0	0	9	0	0	0	2	9	10	4	1	0	0	0	0	26	0	0	0	4	14	12	4	1	0	0	0	0	0	35				
21:00	0	0	0	0	5	4	1	0	0	0	0	0	0	10	0	0	0	0	6	7	1	0	0	0	0	0	14	0	0	0	0	5	10	8	1	0	0	0	0	0	24				
21:15	0	0	0	0	4	4	3	0	0	0	0	0	0	11	0	0	0	1	2	5	6	3	1	0	0	0	18	0	0	0	1	6	9	9	3	1	0	0	0	0	29				
21:30	0	0	0	1	3	7	4	0	0	0	0	0	0	15	0	0	0	1	3	5	3	1	2	0	0	0	15	0	0	0	2	6	12	7	1	2	0	0	0	0	30				
21:45	0	0	0	1	2	2	0	0	0	0	0	0	0	5	0	0	0	0	1	6	2	3	3	2	0	0	17	0	0	0	1	3	8	2	3	3	2	0	0	0	22				
22:00	0	0	0	1	2	1	1	0	0	0	0	0	0	5	0	0	0	0	1	2	5	2	1	0	0	0	11	0	0	0	1	3	3	6	2	1	0	0	0	0	16				
22:15	0	0	0	1	5	3	1	0	0	0	0	0	0	10	0	0	0	1	3	8	3	3	3	0	0	0	21	0	0	0	2	8	11	4	3	3	0	0	0	0	31				
22:30	0	0	0	1	2	0	2	0	0	0	0	0	0	5	0	0	0	0	1	3	1	0	0	0	0	0	5	0	0	0	1	3	3	3	0	0	0	0	0	0	10				
22:45	0	0	0	0	1	3	1	0	1	0	0	0	0	6	1	0	0	1	1	2	3	0	0	0	0	0	9	1</																	









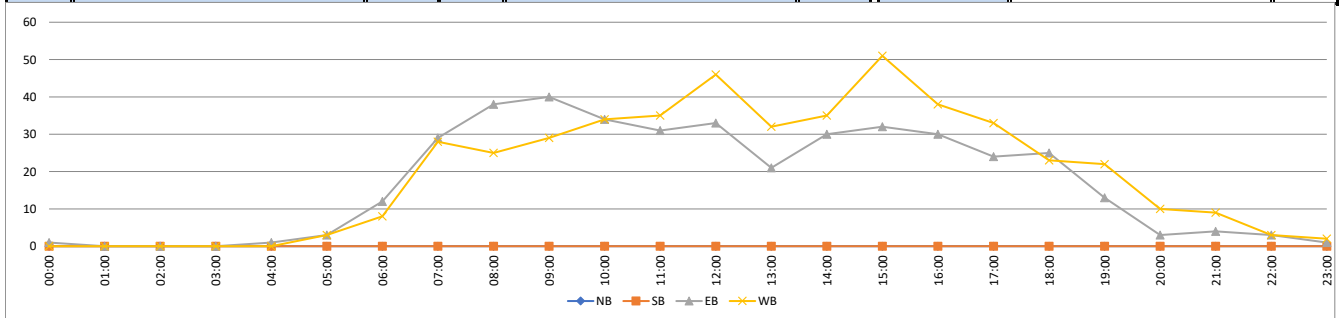
### VOLUME

### Pickpocket Rd E/O Timber Ln

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_002

DAILY TOTALS						NB					SB					EB					WB					Total																																																																																																																											
						0					0					408					466					874																																																																																																																											
15-Minutes Interval											Hourly Intervals																																																																																																																																										
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL																																																																																																																																				
0:00			1	0	1	12:00			5	16	21	00:00	01:00			1	0	1																																																																																																																																			
0:15			0	0	0	12:15			12	15	27	01:00	02:00			0	0	0																																																																																																																																			
0:30			0	0	0	12:30			7	7	14	02:00	03:00			0	0	0																																																																																																																																			
0:45			0	0	0	12:45			9	8	17	03:00	04:00			0	0	0																																																																																																																																			
1:00			0	0	0	13:00			4	9	13	04:00	05:00			1	0	1																																																																																																																																			
1:15			0	0	0	13:15			3	6	9	05:00	06:00			3	3	6																																																																																																																																			
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3:00			0	0	0	15:00			6	16	22	12:00	13:00			33	46	79																																																																																																																																			
3:15			0	0	0	15:15			10	7	17	13:00	14:00			21	32	53																																																																																																																																			
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3:45			0	0	0	15:45			8	16	24	15:00	16:00			32	51	83																																																																																																																																			
4:00			0	0	0	16:00			7	11	18	16:00	17:00			30	38	68																																																																																																																																			
4:15			0	0	0	16:15			7	8	15	17:00	18:00			24	33	57																																																																																																																																			
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6:00			1	1	2	18:00			5	5	10	<table border="1"> <thead> <tr> <th colspan="6">STATISTICS</th> </tr> <tr> <th></th><th>NB</th><th>SB</th><th>EB</th><th>WB</th><th>TOTAL</th> </tr> </thead> <tbody> <tr> <td>Peak Period</td><td colspan="5">00:00 to 12:00</td> </tr> <tr> <td>Volume</td><td colspan="2"></td><td>189</td><td>162</td><td>351</td> </tr> <tr> <td>Peak Hour</td><td colspan="2"></td><td>7:45</td><td>10:45</td><td>8:30</td> </tr> <tr> <td>Peak Volume</td><td colspan="2"></td><td>43</td><td>38</td><td>76</td> </tr> <tr> <td>Peak Hour Factor</td><td colspan="2"></td><td>0.768</td><td>0.864</td><td>0.905</td> </tr> <tr> <td>Peak Period</td><td colspan="5">12:00 to 00:00</td> </tr> <tr> <td>Volume</td><td colspan="2"></td><td>219</td><td>304</td><td>523</td> </tr> <tr> <td>Peak Hour</td><td colspan="2"></td><td>14:30</td><td>15:00</td><td>15:00</td> </tr> <tr> <td>Peak Volume</td><td colspan="2"></td><td>35</td><td>51</td><td>83</td> </tr> <tr> <td>Peak Hour Factor</td><td colspan="2"></td><td>0.795</td><td>0.797</td><td>0.865</td> </tr> <tr> <td>Peak Period</td><td colspan="5">07:00 to 09:00</td> </tr> <tr> <td>Volume</td><td colspan="2"></td><td>67</td><td>53</td><td>120</td> </tr> <tr> <td>Peak Hour</td><td colspan="2"></td><td>7:45</td><td>7:15</td><td>7:45</td> </tr> <tr> <td>Peak Volume</td><td colspan="2"></td><td>43</td><td>29</td><td>72</td> </tr> <tr> <td>Peak Hour Factor</td><td colspan="2"></td><td>0.768</td><td>0.806</td><td>0.783</td> </tr> <tr> <td>Peak Period</td><td colspan="5">16:00 to 18:00</td> </tr> <tr> <td>Volume</td><td colspan="2"></td><td>54</td><td>71</td><td>125</td> </tr> <tr> <td>Peak Hour</td><td colspan="2"></td><td>16:00</td><td>16:30</td><td>16:00</td> </tr> <tr> <td>Peak Volume</td><td colspan="2"></td><td>30</td><td>39</td><td>68</td> </tr> <tr> <td>Peak Hour Factor</td><td colspan="2"></td><td>0.682</td><td>0.975</td><td>0.850</td> </tr> </tbody> </table>						STATISTICS							NB	SB	EB	WB	TOTAL	Peak Period	00:00 to 12:00					Volume			189	162	351	Peak Hour			7:45	10:45	8:30	Peak Volume			43	38	76	Peak Hour Factor			0.768	0.864	0.905	Peak Period	12:00 to 00:00					Volume			219	304	523	Peak Hour			14:30	15:00	15:00	Peak Volume			35	51	83	Peak Hour Factor			0.795	0.797	0.865	Peak Period	07:00 to 09:00					Volume			67	53	120	Peak Hour			7:45	7:15	7:45	Peak Volume			43	29	72	Peak Hour Factor			0.768	0.806	0.783	Peak Period	16:00 to 18:00					Volume			54	71	125	Peak Hour			16:00	16:30	16:00	Peak Volume			30	39	68	Peak Hour Factor			0.682	0.975	0.850
STATISTICS																																																																																																																																																					
	NB	SB	EB	WB	TOTAL																																																																																																																																																
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Volume			189	162	351																																																																																																																																																
Peak Hour			7:45	10:45	8:30																																																																																																																																																
Peak Volume			43	38	76																																																																																																																																																
Peak Hour Factor			0.768	0.864	0.905																																																																																																																																																
Peak Period	12:00 to 00:00																																																																																																																																																				
Volume			219	304	523																																																																																																																																																
Peak Hour			14:30	15:00	15:00																																																																																																																																																
Peak Volume			35	51	83																																																																																																																																																
Peak Hour Factor			0.795	0.797	0.865																																																																																																																																																
Peak Period	07:00 to 09:00																																																																																																																																																				
Volume			67	53	120																																																																																																																																																
Peak Hour			7:45	7:15	7:45																																																																																																																																																
Peak Volume			43	29	72																																																																																																																																																
Peak Hour Factor			0.768	0.806	0.783																																																																																																																																																
Peak Period	16:00 to 18:00																																																																																																																																																				
Volume			54	71	125																																																																																																																																																
Peak Hour			16:00	16:30	16:00																																																																																																																																																
Peak Volume			30	39	68																																																																																																																																																
Peak Hour Factor			0.682	0.975	0.850																																																																																																																																																
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7:30			7	6	13	19:30			3	8	11																																																																																																																																										
7:45			14	9	23	19:45			2	1	3																																																																																																																																										
8:00			11	6	17	20:00			3	3	6																																																																																																																																										
8:15			7	4	11	20:15			0	2	2																																																																																																																																										
8:30			11	10	21	20:30			0	5	5																																																																																																																																										
8:45			9	5	14	20:45			0	0	0																																																																																																																																										
9:00			12	9	21	21:00			1	4	5																																																																																																																																										
9:15			10	10	20	21:15			1	2	3																																																																																																																																										
9:30			8	8	16	21:30			2	1	3																																																																																																																																										
9:45			10	2	12	21:45			0	2	2																																																																																																																																										
10:00			8	9	17	22:00			1	1	2																																																																																																																																										
10:15			6	8	14	22:15			1	0	1																																																																																																																																										
10:30			7	6	13	22:30			1	0	1																																																																																																																																										
10:45			13	11	24	22:45			0	2	2																																																																																																																																										
11:00			8	8	16	23:00			1	0	1																																																																																																																																										
11:15			10	9	19	23:15			0	1	1																																																																																																																																										
11:30			6	10	16	23:30			0	0	0																																																																																																																																										
11:45			7	8	15	23:45			0	1	1																																																																																																																																										
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>189</b>	<b>162</b>	<b>351</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>219</b>	<b>304</b>	<b>523</b>																																																																																																																																										
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>54%</b>	<b>46%</b>	<b>40%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>42%</b>	<b>58%</b>	<b>60%</b>																																																																																																																																										











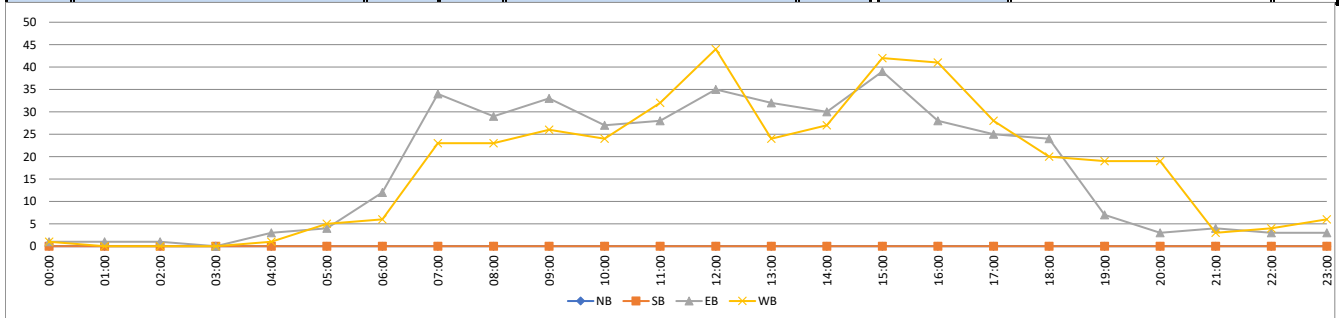
### VOLUME

#### Pickpocket Rd E/O Timber Ln

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_002

DAILY TOTALS						NB					SB					EB					WB					Total				
						0					0					406					418					824				
15-Minutes Interval											Hourly Intervals																			
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL													
0:00			1	1	2	12:00			12	8	20	00:00	01:00			1	1	2												
0:15			0	0	0	12:15			7	12	19	01:00	02:00			1	0	1												
0:30			0	0	0	12:30			9	14	23	02:00	03:00			1	0	1												
0:45			0	0	0	12:45			7	10	17	03:00	04:00			0	0	0												
1:00			0	0	0	13:00			9	7	16	04:00	05:00			3	1	4												
1:15			1	0	1	13:15			9	4	13	05:00	06:00			4	5	9												
1:30			0	0	0	13:30			6	5	11	06:00	07:00			12	6	18												
1:45			0	0	0	13:45			8	8	16	07:00	08:00			34	23	57												
2:00			0	0	0	14:00			8	3	11	08:00	09:00			29	23	52												
2:15			0	0	0	14:15			1	7	8	09:00	10:00			33	26	59												
2:30			0	0	0	14:30			9	6	15	10:00	11:00			27	24	51												
2:45			1	0	1	14:45			12	11	23	11:00	12:00			28	32	60												
3:00			0	0	0	15:00			10	10	20	12:00	13:00			35	44	79												
3:15			0	0	0	15:15			15	11	26	13:00	14:00			32	24	56												
3:30			0	0	0	15:30			8	8	16	14:00	15:00			30	27	57												
3:45			0	0	0	15:45			6	13	19	15:00	16:00			39	42	81												
4:00			0	1	1	16:00			7	18	25	16:00	17:00			28	41	69												
4:15			0	0	0	16:15			8	4	12	17:00	18:00			25	28	53												
4:30			0	0	0	16:30			8	11	19	18:00	19:00			24	20	44												
4:45			3	0	3	16:45			5	8	13	19:00	20:00			7	19	26												
5:00			0	0	0	17:00			8	11	19	20:00	21:00			3	19	22												
5:15			2	1	3	17:15			3	5	8	21:00	22:00			4	3	7												
5:30			0	2	2	17:30			6	6	12	22:00	23:00			3	4	7												
5:45			2	2	4	17:45			8	6	14	23:00	00:00			3	6	9												
6:00			1	1	2	18:00			5	7	12	STATISTICS																		
6:15			1	2	3	18:15			6	3	9																			
6:30			5	3	8	18:30			10	1	11	Peak Period	00:00	to	12:00															
6:45			5	0	5	18:45			3	9	12	Volume				173	141	314												
7:00			7	4	11	19:00			3	5	8	Peak Hour				7:15	10:45	10:45												
7:15			8	7	15	19:15			2	5	7	Peak Volume				38	36	67												
7:30			10	7	17	19:30			1	6	7	Peak Hour Factor				0.864	0.563	0.670												
7:45			9	5	14	19:45			1	3	4	Peak Period	12:00	to	00:00															
8:00			11	7	18	20:00			1	3	4	Volume				233	277	510												
8:15			5	7	12	20:15			1	7	8	Peak Hour				14:30	15:15	15:15												
8:30			5	3	8	20:30			1	5	6	Peak Volume				46	50	86												
8:45			8	6	14	20:45			0	4	4	Peak Hour Factor				0.767	0.694	0.827												
9:00			12	3	15	21:00			0	0	0	Peak Period	07:00	to	09:00															
9:15			6	13	19	21:15			2	2	4	Volume				63	46	109												
9:30			9	3	12	21:30			2	0	2	Peak Hour				7:15	7:15	7:15												
9:45			6	7	13	21:45			0	1	1	Peak Volume				38	26	64												
10:00			5	8	13	22:00			1	1	2	Peak Hour Factor				0.864	0.929	0.889												
10:15			9	3	12	22:15			1	1	2	Peak Period	16:00	to	18:00															
10:30			3	4	7	22:30			1	0	1	Volume				53	69	122												
10:45			10	9	19	22:45			0	2	2	Peak Hour				16:15	16:00	16:00												
11:00			9	16	25	23:00			0	4	4	Peak Volume				29	41	69												
11:15			6	3	9	23:15			2	1	3	Peak Hour Factor				0.906	0.569	0.690												
11:30			6	8	14	23:30			1	0	1	Peak Period																		
11:45			7	5	12	23:45			0	1	1	Volume																		
TOTALS	0	0	173	141	314	TOTALS	0	0	233	277	510																			
SPLIT %	0%	0%	55%	45%	38%	SPLIT %	0%	0%	46%	54%	62%																			













**SPEED**

Pickpocket Rd E/O Timber Ln

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_002

Time	EASTBOUND														Total	WESTBOUND														Total	TOTALS														Total					
	5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80						
0:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2				
0:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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4:45	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
5:45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
6:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
6:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
6:30	0	0	1	2	2	0	0	0	0	0	0	0	0	0	5	0	0	1	2	0	0	0	0	0	0	0	0	3	0	0	2	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8		
6:45	0	0	0	3	2	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5		
7:00	0	0	2	4	1	0	0	0	0	0	0	0	0	0	7	0	0	1	1	0	2	0	0	0	0	0	0	4	0	0	3	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	11		
7:15	0	0	2	3	2	1	0	0	0	0	0	0	0	0	8	0	0	5	0	2	0	0	0	0	0	0	0	7	0	0	7	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	15		
7:30	0	1	1	4	4	0	0	0	0	0	0	0	0	0	10	0	0	5	2	0	0	0	0	0	0	0	7	0	1	6	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17		
7:45	0	0	1	5	1	2	0	0	0	0	0	0	0	0	9	0	0	2	2	1	0	0	0	0	0	0	5	0	0	3	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14		
8:00	0	1	3	2	3	2	0	0	0	0	0	0	0	0	11	0	1	3	1	2	0	0	0	0	0	0	7	0	2	6	3	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18		
8:15	0	0	1	1	3	0	0	0	0	0	0	0	0	0	5	0	2	0	1	2	2	0	0	0	0	0	3	0	2	1	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12		
8:30	0	0	1	2	1	1	0	0	0	0	0	0	0	0	5	0	0	1	2	0	0	0	0	0	0	0	7	0	0	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
8:45	0	0	1	5	2	0	0	0	0	0	0	0	0	0	8	0	1	1	3	1	0	0	0	0	0	0	6	0	1	2	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
9:00	0	2	4	3	3	0	0	0	0	0	0	0	0	0	12	0	0	2	1	0	0	0	0	0	0	3	0	2	6	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
9:15	0	0	0	2	3	1	0	0	0	0	0	0	0	0	6	1	0	2	4	5	1	0	0	0	0	13	1	0	2																					











## VOLUME

### Riverwoods Dr W/O Hillside Ave

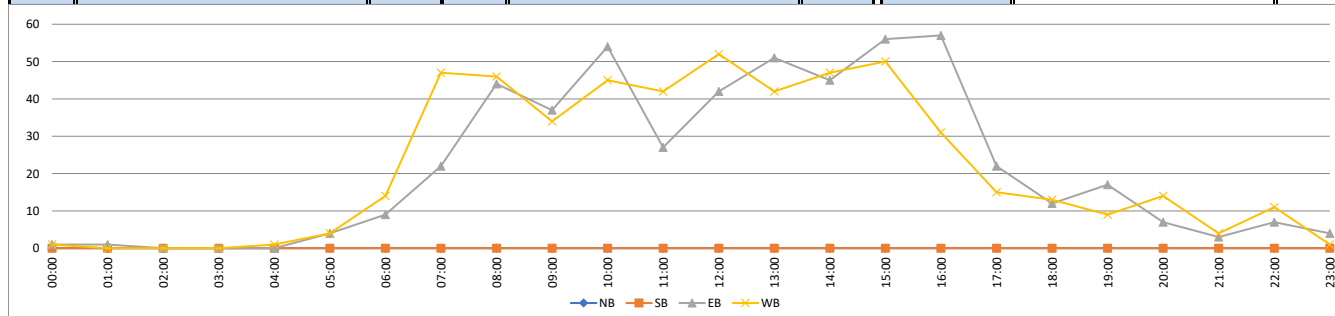
Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_003

DAILY TOTALS					NB	SB	EB	WB	Total	DAILY TOTALS				
					0	0	522	523	1,045					

15-Minutes Interval											Hourly Intervals							
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	
0:00			0	0	0	12:00			12	14	26	00:00	01:00			1	1	2
0:15			1	1	2	12:15			11	15	26	01:00	02:00			1	0	1
0:30			0	0	0	12:30			4	11	15	02:00	03:00			0	0	0
0:45			0	0	0	12:45			15	12	27	03:00	04:00			0	0	0
1:00			0	0	0	13:00			11	14	25	04:00	05:00			0	1	1
1:15			0	0	0	13:15			19	13	32	05:00	06:00			4	4	8
1:30			1	0	1	13:30			11	6	17	06:00	07:00			9	14	23
1:45			0	0	0	13:45			10	9	19	07:00	08:00			22	47	69
2:00			0	0	0	14:00			7	14	21	08:00	09:00			44	46	90
2:15			0	0	0	14:15			9	11	20	09:00	10:00			37	34	71
2:30			0	0	0	14:30			16	8	24	10:00	11:00			54	45	99
2:45			0	0	0	14:45			13	14	27	11:00	12:00			27	42	69
3:00			0	0	0	15:00			11	12	23	12:00	13:00			42	52	94
3:15			0	0	0	15:15			15	11	26	13:00	14:00			51	42	93
3:30			0	0	0	15:30			13	12	25	14:00	15:00			45	47	92
3:45			0	0	0	15:45			17	15	32	15:00	16:00			56	50	106
4:00			0	0	0	16:00			26	17	43	16:00	17:00			57	31	88
4:15			0	0	0	16:15			13	6	19	17:00	18:00			22	15	37
4:30			0	0	0	16:30			12	5	17	18:00	19:00			12	13	25
4:45			0	1	1	16:45			6	3	9	19:00	20:00			17	9	26
5:00			2	0	2	17:00			8	3	11	20:00	21:00			7	14	21
5:15			1	1	2	17:15			7	4	11	21:00	22:00			3	4	7
5:30			0	2	2	17:30			4	5	9	22:00	23:00			7	11	18
5:45			1	1	2	17:45			3	3	6	23:00	00:00			4	1	5
6:00			3	3	6	18:00			4	3	7	STATISTICS						
6:15			1	4	5	18:15			2	2	4		NB	SB	EB	WB	TOTAL	
6:30			1	3	4	18:30			1	3	4	Peak Period	00:00 to 12:00					
6:45			4	4	8	18:45			5	5	10	Volume			199	234	433	
7:00			8	13	21	19:00			13	4	17	Peak Hour	10:00 to 10:00					
7:15			3	10	13	19:15			3	1	4	Peak Volume			54	53	99	
7:30			5	8	13	19:30			1	1	2	Peak Hour Factor			0.711	0.736	0.825	
7:45			6	16	22	19:45			0	3	3	Peak Period	12:00 to 00:00					
8:00			10	18	28	20:00			1	3	4	Volume			323	289	612	
8:15			8	9	17	20:15			3	4	7	Peak Hour	15:15 to 15:15					
8:30			12	10	22	20:30			1	4	5	Peak Volume			71	55	126	
8:45			14	9	23	20:45			2	3	5	Peak Hour Factor			0.683	0.809	0.733	
9:00			19	8	27	21:00			1	1	2	Peak Period	07:00 to 09:00					
9:15			7	10	17	21:15			1	3	4	Volume			66	93	159	
9:30			6	8	14	21:30			0	0	0	Peak Hour	8:00 to 7:45					
9:45			5	8	13	21:45			1	0	1	Peak Volume			44	53	90	
10:00			10	7	17	22:00			3	1	4	Peak Hour Factor			0.786	0.736	0.804	
10:15			7	18	25	22:15			1	3	4	Peak Period	16:00 to 18:00					
10:30			19	11	30	22:30			0	5	5	Volume			79	46	125	
10:45			18	9	27	22:45			3	2	5	Peak Hour	16:00 to 16:00					
11:00			8	9	17	23:00			4	0	4	Peak Volume			57	31	88	
11:15			5	12	17	23:15			0	1	1	Peak Hour Factor			0.548	0.456	0.512	
11:30			6	9	15	23:30			0	0	0							
11:45			8	12	20	23:45			0	0	0							
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>199</b>	<b>234</b>	<b>433</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>323</b>	<b>289</b>	<b>612</b>							
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>46%</b>	<b>54%</b>	<b>41%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>53%</b>	<b>47%</b>	<b>59%</b>							









### VOLUME

#### Riverwoods Dr W/O Hillside Ave

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_003

DAILY TOTALS						NB	SB	EB	WB	Total	DAILY TOTALS																																																																																																																																			
						0	0	491	497	988																																																																																																																																				
15-Minutes Interval											Hourly Intervals																																																																																																																																			
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL																																																																																																																													
0:00			3	1	4	12:00			9	8	17	00:00 01:00			4	2	6																																																																																																																													
0:15			1	1	2	12:15			9	9	18	01:00 02:00			0	0	0																																																																																																																													
0:30			0	0	0	12:30			9	7	16	02:00 03:00			0	0	0																																																																																																																													
0:45			0	0	0	12:45			10	12	22	03:00 04:00			0	0	0																																																																																																																													
1:00			0	0	0	13:00			11	7	18	04:00 05:00			1	3	4																																																																																																																													
1:15			0	0	0	13:15			8	6	14	05:00 06:00			3	5	8																																																																																																																													
1:30			0	0	0	13:30			10	11	21	06:00 07:00			12	18	30																																																																																																																													
1:45			0	0	0	13:45			8	11	19	07:00 08:00			22	45	67																																																																																																																													
2:00			0	0	0	14:00			9	10	19	08:00 09:00			30	33	63																																																																																																																													
2:15			0	0	0	14:15			8	9	17	09:00 10:00			40	37	77																																																																																																																													
2:30			0	0	0	14:30			9	11	20	10:00 11:00			34	45	79																																																																																																																													
2:45			0	0	0	14:45			13	12	25	11:00 12:00			40	37	77																																																																																																																													
3:00			0	0	0	15:00			19	10	29	12:00 13:00			37	36	73																																																																																																																													
3:15			0	0	0	15:15			15	12	27	13:00 14:00			37	35	72																																																																																																																													
3:30			0	0	0	15:30			11	8	19	14:00 15:00			39	42	81																																																																																																																													
3:45			0	0	0	15:45			7	18	25	15:00 16:00			52	48	100																																																																																																																													
4:00			0	0	0	16:00			21	9	30	16:00 17:00			49	31	80																																																																																																																													
4:15			1	0	1	16:15			5	6	11	17:00 18:00			32	18	50																																																																																																																													
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6:00			3	1	4	18:00			7	4	11	<b>STATISTICS</b> <table border="1"> <thead> <tr> <th></th> <th>NB</th> <th>SB</th> <th>EB</th> <th>WB</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td>Peak Period</td> <td colspan="4">00:00 to 12:00</td> <td></td> </tr> <tr> <td>Volume</td> <td colspan="4">186 225</td> <td>411</td> </tr> <tr> <td>Peak Hour</td> <td colspan="4">10:30 10:30</td> <td>10:30</td> </tr> <tr> <td>Peak Volume</td> <td colspan="4">47 51</td> <td>98</td> </tr> <tr> <td>Peak Hour Factor</td> <td colspan="4">0.734 0.671</td> <td>0.700</td> </tr> <tr> <td>Peak Period</td> <td colspan="4">12:00 to 00:00</td> <td></td> </tr> <tr> <td>Volume</td> <td colspan="4">305 272</td> <td>577</td> </tr> <tr> <td>Peak Hour</td> <td colspan="4">14:45 15:00</td> <td>14:30</td> </tr> <tr> <td>Peak Volume</td> <td colspan="4">58 48</td> <td>101</td> </tr> <tr> <td>Peak Hour Factor</td> <td colspan="4">0.763 0.667</td> <td>0.871</td> </tr> <tr> <td>Peak Period</td> <td colspan="4">07:00 to 09:00</td> <td></td> </tr> <tr> <td>Volume</td> <td colspan="4">52 78</td> <td>130</td> </tr> <tr> <td>Peak Hour</td> <td colspan="4">7:30 7:15</td> <td>7:30</td> </tr> <tr> <td>Peak Volume</td> <td colspan="4">30 46</td> <td>73</td> </tr> <tr> <td>Peak Hour Factor</td> <td colspan="4">0.750 0.885</td> <td>0.793</td> </tr> <tr> <td>Peak Period</td> <td colspan="4">16:00 to 18:00</td> <td></td> </tr> <tr> <td>Volume</td> <td colspan="4">81 49</td> <td>130</td> </tr> <tr> <td>Peak Hour</td> <td colspan="4">16:00 16:00</td> <td>16:00</td> </tr> <tr> <td>Peak Volume</td> <td colspan="4">49 31</td> <td>80</td> </tr> <tr> <td>Peak Hour Factor</td> <td colspan="4">0.583 0.861</td> <td>0.667</td> </tr> </tbody> </table>						NB	SB	EB	WB	TOTAL	Peak Period	00:00 to 12:00					Volume	186 225				411	Peak Hour	10:30 10:30				10:30	Peak Volume	47 51				98	Peak Hour Factor	0.734 0.671				0.700	Peak Period	12:00 to 00:00					Volume	305 272				577	Peak Hour	14:45 15:00				14:30	Peak Volume	58 48				101	Peak Hour Factor	0.763 0.667				0.871	Peak Period	07:00 to 09:00					Volume	52 78				130	Peak Hour	7:30 7:15				7:30	Peak Volume	30 46				73	Peak Hour Factor	0.750 0.885				0.793	Peak Period	16:00 to 18:00					Volume	81 49				130	Peak Hour	16:00 16:00				16:00	Peak Volume	49 31				80	Peak Hour Factor	0.583 0.861				0.667
	NB	SB	EB	WB	TOTAL																																																																																																																																									
Peak Period	00:00 to 12:00																																																																																																																																													
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11:45			11	8	19	23:45			0	1	1																																																																																																																																			
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>186</b>	<b>225</b>	<b>411</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>305</b>	<b>272</b>	<b>577</b>																																																																																																																																			
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>45%</b>	<b>55%</b>	<b>42%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>53%</b>	<b>47%</b>	<b>58%</b>																																																																																																																																			





### SPEED Riverwoods Dr W/O Hillside Ave

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_003

Time	EASTBOUND														Total	WESTBOUND														Total	TOTALS																				
	5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70							
0:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00	0	1	0	2	1	0	0	0	0	0	0	0	0	0	4	0	0	3	1	0	0	0	0	0	0	0	0	4	0	0	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
6:00	0	1	3	5	0	0	0	0	0	0	0	0	0	0	9	1	0	8	5	0	0	0	0	0	0	0	0	14	1	1	11	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
7:00	3	6	6	6	1	0	0	0	0	0	0	0	0	0	22	2	6	24	15	0	0	0	0	0	0	0	47	5	12	30	21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69
8:00	3	4	17	14	5	1	0	0	0	0	0	0	0	0	44	4	8	20	13	1	0	0	0	0	0	0	46	7	12	37	27	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90
9:00	1	3	13	18	1	1	0	0	0	0	0	0	0	0	37	0	5	16	11	2	0	0	0	0	0	34	1	8	29	29	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	
10:00	2	7	22	21	2	0	0	0	0	0	0	0	0	0	54	2	8	27	7	1	0	0	0	0	0	45	4	15	49	28	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	
11:00	0	5	10	11	1	0	0	0	0	0	0	0	0	0	27	1	6	24	10	1	0	0	0	0	0	42	1	11	34	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	
12:00	5	7	16	10	4	0	0	0	0	0	0	0	0	0	42	8	6	27	10	1	0	0	0	0	0	52	13	13	43	20	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94
13:00	2	14	25	8	2	0	0	0	0	0	0	0	0	0	51	4	8	21	9	0	0	0	0	0	0	42	6	22	46	17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93
14:00	5	13	23	4	0	0	0	0	0	0	0	0	0	0	45	6	9	25	7	0	0	0	0	0	0	47	11	22	48	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92
15:00	3	12	23	17	1	0	0	0	0	0	0	0	0	0	56	0	9	32	7	2	0	0	0	0	0	50	3	21	55	24	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106
16:00	1	1	22	29	4	0	0	0	0	0	0	0	0	0	57	1	1	16	11	2	0	0	0	0	0	31	2	2	38	40	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88
17:00	0	2	4	12	4	0	0	0	0	0	0	0	0	0	22	0	1	7	7	0	0	0	0	0	0	15	0	3	11	19	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
18:00	1	3	6	1	1	0	0	0	0	0	0	0	0	0	12	1	1	5	5	1	0	0	0	0	0	13	2	4	11	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
19:00	0	2	8	6	1	0	0	0	0	0	0	0	0	0	17	1	1	6	1	0	0	0	0	0	0	9	1	3	14	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
20:00	1	0	4	2	0	0	0	0	0	0	0	0	0	0	7	0	3	7	3	1	0	0	0	0	0	14	1	3	11	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
21:00	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3	0	0	2	2	0	0	0	0	0	0	4	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
22:00	1	1	3	2	0	0	0	0	0	0	0	0	0	0	7	0	1	4	5	0	1	0	0	0	0	11	1	2	7	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	
23:00	0	1	1	1	1	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	1	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Totals	28	83	209	170	30	2	0	0	0	0	0	0	0	0	522	31	73	275	129	14	1	0	0	0	0	523	59	156	484	299	44	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,045
% of Totals	5%	16%	40%	33%	6%	0%									100%	6%	14%	53%	25%	3%	0%				100%	6%	15%	46%	29%	4%	0%																	100%			

STATISTICS	Time	EASTBOUND														Total	WESTBOUND														Total																		
		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70				
00:00 - 12:00	%	2%	5%	14%	15%	2%	0%	0%	0%	0%	0%	0%	0%	0%	38%	2%	6%	23%	12%	7%	0%	0%	0%	0%	0%	45%	4%	11%	37%	27%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	83%
Peak Hour	7:45	10:30	10:00	10:15	8:00	8:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:00	11:45	10:30	10:15	7:45	9:15	0:00	0:00	0:00	0:00	7:45	11:45	10:30	10:15	8:30	8:00	8:30	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:00			
Peak Volume	4	10	22	22	5	2	0	0	0	0	0	0	0	54	8	9	30	19	3	0	0	0	0	53	10	19	50	31	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99			
12:00 - 24:00	%	4%	11%	26%	18%	3%	0%	0%	0%	0%	0%	0%	0%	62%	4%	8%	29%	13%	1%	0%	0%	0%	0%	55%	8%	18%	56%	31%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	117%			
Peak Hour	14:45	13:15	12:45	15:45	16:30	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	15:15	12:00	13:15	15:15	12:30	15:15	21:45	12:00	12:00	12:00	15:15	12:00	13:15	15:15	15:45	15:15	21:45	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	15:15					
Peak Volume	6	16	27	35	6	0	0	0	0	0	0	0	0	71	8	10	33	12	4	1	0	0	0	55	13	26	59	45	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126				
07:00 - 09:00	%	1%	2%	4%	4%	1%	0%	0%	0%	0%	0%	0%	0%	13%	1%	3%	8%	5%	0%	0%	0%	0%	0%	18%	2%	5%	13%	9%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%			
Peak Hour	7:45	7:00	8:00	8:00	8:00	7:45	7:00	7:00	7:00	7:00	7:00	7:00	7:00	8:00	7:15	7:30	7:00	7:45	7:15	7:00	7:00	7:00	7:00	7:45	7:45	7:30	8:00	7:45	7:00																				





**SPEED**  
Riverwoods Dr W/O Hillside Ave

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_003

Time	EASTBOUND														Total	WESTBOUND														Total	TOTALS													
	5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70
	15	20	25	30	35	40	45	50	55	60	65	70	99	15		20	25	30	35	40	45	50	55	60	65	70	99	15	20		25	30	35	40	45	50	55	60	65	70	99			
0:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0	0	0	0	0	0	2	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	6	
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	3	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	4
5:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	0	1	2	1	1	0	0	0	0	0	0	0	5	0	3	3	1	1	0	0	0	0	0	0	0	0	0	0	8	
6:00	3	1	4	4	0	0	0	0	0	0	0	0	0	12	3	2	8	5	0	0	0	0	0	0	0	0	18	6	3	12	9	0	0	0	0	0	0	0	0	0	0	0	30	
7:00	2	3	14	3	0	0	0	0	0	0	0	0	0	22	2	11	20	9	3	0	0	0	0	0	0	0	45	4	14	34	12	3	0	0	0	0	0	0	0	0	0	0	67	
8:00	6	12	12	0	0	0	0	0	0	0	0	0	0	30	3	7	17	6	0	0	0	0	0	0	0	33	9	19	29	6	0	0	0	0	0	0	0	0	0	0	0	0	63	
9:00	9	19	11	1	0	0	0	0	0	0	0	0	0	40	6	11	16	4	0	0	0	0	0	0	0	37	15	30	27	5	0	0	0	0	0	0	0	0	0	0	0	0	77	
10:00	8	16	7	2	1	0	0	0	0	0	0	0	0	34	2	18	24	1	0	0	0	0	0	0	0	45	10	34	31	3	1	0	0	0	0	0	0	0	0	0	0	0	79	
11:00	5	13	13	8	1	0	0	0	0	0	0	0	0	40	2	11	15	7	2	0	0	0	0	0	0	37	7	24	28	15	3	0	0	0	0	0	0	0	0	0	0	0	77	
12:00	4	7	16	8	1	1	0	0	0	0	0	0	0	37	1	6	15	13	1	0	0	0	0	0	0	36	5	13	31	21	2	1	0	0	0	0	0	0	0	0	0	0	73	
13:00	3	9	10	12	3	0	0	0	0	0	0	0	0	37	1	11	16	6	1	0	0	0	0	0	0	35	4	20	26	18	4	0	0	0	0	0	0	0	0	0	0	0	72	
14:00	1	5	21	10	2	0	0	0	0	0	0	0	0	39	0	8	17	14	3	0	0	0	0	0	0	42	1	13	38	24	5	0	0	0	0	0	0	0	0	0	0	0	81	
15:00	4	6	20	19	3	0	0	0	0	0	0	0	0	52	3	9	26	9	1	0	0	0	0	0	0	48	7	15	46	28	4	0	0	0	0	0	0	0	0	0	0	0	100	
16:00	1	6	22	14	6	0	0	0	0	0	0	0	0	49	2	2	14	12	1	0	0	0	0	0	0	31	3	8	36	26	7	0	0	0	0	0	0	0	0	0	0	0	80	
17:00	4	7	11	7	3	0	0	0	0	0	0	0	0	32	1	2	10	3	2	0	0	0	0	0	0	18	5	9	21	10	5	0	0	0	0	0	0	0	0	0	0	0	50	
18:00	0	7	11	6	4	0	0	0	0	0	0	0	0	28	0	2	9	2	1	1	0	0	0	0	0	15	0	9	20	8	5	1	0	0	0	0	0	0	0	0	0	0	43	
19:00	0	3	4	7	0	1	0	0	0	0	0	0	0	15	0	0	6	2	1	0	0	0	0	0	0	9	0	3	10	9	1	1	0	0	0	0	0	0	0	0	0	0	24	
20:00	0	1	2	2	1	0	0	0	0	0	0	0	0	6	2	6	7	3	0	0	0	0	0	0	0	18	2	7	9	5	1	0	0	0	0	0	0	0	0	0	0	0	24	
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	2	2	0	0	0	0	0	0	8	0	1	3	2	2	0	0	0	0	0	0	0	0	0	0	0	8	
22:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	4	2	1	0	0	0	0	0	0	7	0	0	4	3	1	0	0	0	0	0	0	0	0	0	0	0	8	
23:00	0	0	3	4	2	0	0	0	0	0	0	0	0	9	0	0	2	1	2	0	0	0	0	0	0	5	0	0	5	5	4	0	0	0	0	0	0	0	0	0	0	0	14	
Totals	50	119	184	109	27	2	0	0	0	0	0	0	0	491	28	108	234	103	22	2	0	0	0	0	497	78	227	418	212	49	4	0	0	0	0	0	0	0	0	0	0	988		
% of Totals	10%	24%	37%	22%	5%	0%								100%	6%	22%	47%	21%	4%	0%					100%	8%	23%	42%	21%	5%	0%												100%	

STATISTICS	EASTBOUND														Total	WESTBOUND														Total										
	00:00-12:00	12:00-24:00	07:00-09:00	16:00-18:00	%	Peak Hour	Peak Volume	00:00-12:00	12:00-24:00	07:00-09:00	16:00-18:00	%	Peak Hour	Peak Volume		00:00-12:00	12:00-24:00	07:00-09:00	16:00-18:00	%	Peak Hour	Peak Volume	00:00-12:00	12:00-24:00	07:00-09:00	16:00-18:00	%	Peak Hour	Peak Volume											
	33	17	8	5	7%	9:15	12	19	17	8	2%	7:45	6	18		15	52	30	11	5	1%	7:30	30	225	51	27	78	13	13		13	13	10%	9:15	51					
00:00 - 12:00	33	17	8	5	7%	9:15	12	19	17	8	2%	7:45	6	18	15	52	30	11	5	1%	7:30	30	225	51	27	78	13	13	13	13	10%	9:15	51							
Peak Hour	9:15	10:30	7:15	11:45	11:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:30	9:15	10:15	10:30	7:15	6:45	4:00	0:00	0:00	0:00	0:00	10:30	9:15	10:30	10:30	11:45	11:15	4:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	10:30
Peak Volume	12	20	15	10	2	1	0	0	0	0	0	0	47	7	20	26	11	3	1	0	0	0	0	51	19	37	36	21	5	1	0	0	0	0	0	0	0	0	0	98
12:00 - 24:00	17	51	120	90	25	2	0	0	0	0	0	0	305	10	47	129	69	16	1	0	0	0	0	272	27	98	249	159	41	3	0	0	0	0	0	0	0	0	0	577
Peak Hour	12:00	12:45	14:15	14:45	16:15	12:00	12:00	12:00	12:00	12:00	12:00	12:00	14:45	15:30	13:15	15:00	14:00	13:30	17:30	12:00	12:00	12:00	15:00	15:00	13:00	14:15	15:15	16:15	18:15	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	14:30	
Peak Volume	4	10	26	21	8	1	0	0	0	0	0	0	58	4	13	26	14	3	1	0	0	0	48	7	20	48	33	9	2	0	0	0	0	0	0	0	0	0	101	
07:00 - 09:00	8	15	26	3	0	0	0	0	0	0	0	0	52	5	18	37	15	3	0	0	0	0	78	13	33	63	18	3	0	0	0	0	0	0	0	0	0	0	0	130
Peak Hour	7:45	8:00	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:30	7:30	7:00	7:00	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:15	7:45	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:30	
Peak Volume	6	12	15	3	0	0	0	0	0	0	0	0	30	5	11	20	11	3	0	0	0	0	45	11	20	35	13	3	0	0	0	0	0	0	0	0	0	0	0	73
16:00 - 18:00	5	13	33	21	9	0	0	0	0	0	0	0	81	3	4	24	15	3	0	0	0	0	49	8	17	57	36	12	0	0	0	0	0	0	0	0	0	0	0	130
Peak Hour	16:30	16:30	16:00	16:00	16:15	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:30	16:15	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:45	16:30	16:00	16:00	16:15	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	
Peak Volume	4	9	22																																					













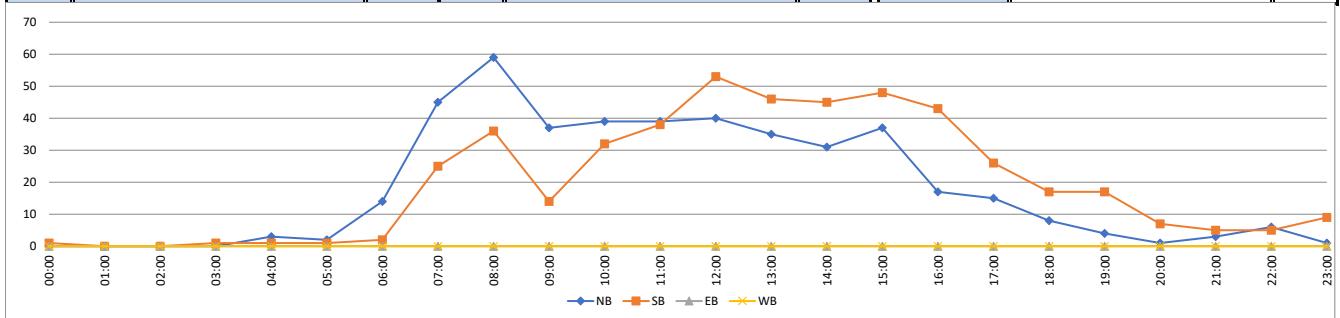
## VOLUME

### White Oak Dr N/O SR 111/Kingston Rd

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_600011\_004

DAILY TOTALS					NB	SB	EB	WB	Total	DAILY TOTALS							
					436	472	0	0	908								
15-Minutes Interval										Hourly Intervals							
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	0	1			1	12:00	8	11			19	00:00	0	1			1
0:15	0	0			0	12:15	9	12			21	01:00	0	0			0
0:30	0	0			0	12:30	14	19			33	02:00	0	0			0
0:45	0	0			0	12:45	9	11			20	03:00	0	1			1
1:00	0	0			0	13:00	14	11			25	04:00	3	1			4
1:15	0	0			0	13:15	9	11			20	05:00	2	1			3
1:30	0	0			0	13:30	4	15			19	06:00	14	2			16
1:45	0	0			0	13:45	8	9			17	07:00	45	25			70
2:00	0	0			0	14:00	5	7			12	08:00	59	36			95
2:15	0	0			0	14:15	7	14			21	09:00	37	14			51
2:30	0	0			0	14:30	12	10			22	10:00	39	32			71
2:45	0	0			0	14:45	7	14			21	11:00	39	38			77
3:00	0	1			1	15:00	9	16			25	12:00	40	53			93
3:15	0	0			0	15:15	7	4			11	13:00	35	46			81
3:30	0	0			0	15:30	11	13			24	14:00	31	45			76
3:45	0	0			0	15:45	10	15			25	15:00	37	48			85
4:00	1	0			1	16:00	4	16			20	16:00	17	43			60
4:15	0	0			0	16:15	6	7			13	17:00	15	26			41
4:30	1	1			2	16:30	5	11			16	18:00	8	17			25
4:45	1	0			1	16:45	2	9			11	19:00	4	17			21
5:00	1	0			1	17:00	2	16			18	20:00	1	7			8
5:15	0	0			0	17:15	7	6			13	21:00	3	5			8
5:30	0	0			0	17:30	2	2			4	22:00	6	5			11
5:45	1	1			2	17:45	4	2			6	23:00	1	9			10
6:00	1	0			1	18:00	3	5			8	STATISTICS					
6:15	2	0			2	18:15	2	2			4		NB	SB	EB	WB	TOTAL
6:30	9	1			10	18:30	2	7			9	Peak Period	00:00 to 12:00				
6:45	2	1			3	18:45	1	3			4	Volume	238	151			389
7:00	7	6			13	19:00	0	3			3	Peak Hour	8:00 11:00				8:00
7:15	15	5			20	19:15	2	10			12	Volume	59	38			95
7:30	7	6			13	19:30	1	3			4	Peak Hour Factor	0.615	0.792			0.679
7:45	16	8			24	19:45	1	1			2	Peak Period	12:00 to 00:00				
8:00	14	6			20	20:00	1	2			3	Volume	198	321			519
8:15	11	8			19	20:15	0	3			3	Peak Hour	12:15 14:15				12:15
8:30	10	11			21	20:30	0	2			2	Peak Volume	46	54			99
8:45	24	11			35	20:45	0	0			0	Peak Hour Factor	0.821	0.844			0.750
9:00	13	3			16	21:00	1	4			5	Peak Period	07:00 to 09:00				
9:15	9	5			14	21:15	1	0			1	Volume	104	61			165
9:30	10	2			12	21:30	0	1			1	Peak Hour	8:00 8:00				8:00
9:45	5	4			9	21:45	1	0			1	Peak Volume	59	36			95
10:00	5	14			19	22:00	0	2			2	Peak Hour Factor	0.615	0.818			0.679
10:15	6	5			11	22:15	2	1			3	Peak Period	16:00 to 18:00				
10:30	10	7			17	22:30	2	1			3	Volume	32	69			101
10:45	18	6			24	22:45	2	1			3	Peak Hour	16:00 16:00				16:00
11:00	11	12			23	23:00	1	7			8	Peak Volume	17	43			60
11:15	11	6			17	23:15	0	0			0	Peak Hour Factor	0.708	0.672			0.750
11:30	8	11			19	23:30	0	1			1						
11:45	9	9			18	23:45	0	1			1						
<b>TOTALS</b>	<b>238</b>	<b>151</b>	<b>0</b>	<b>0</b>	<b>389</b>	<b>TOTALS</b>	<b>198</b>	<b>321</b>	<b>0</b>	<b>0</b>	<b>519</b>						
<b>SPLIT %</b>	<b>61%</b>	<b>39%</b>	<b>0%</b>	<b>0%</b>	<b>43%</b>	<b>SPLIT %</b>	<b>38%</b>	<b>62%</b>	<b>0%</b>	<b>0%</b>	<b>57%</b>						











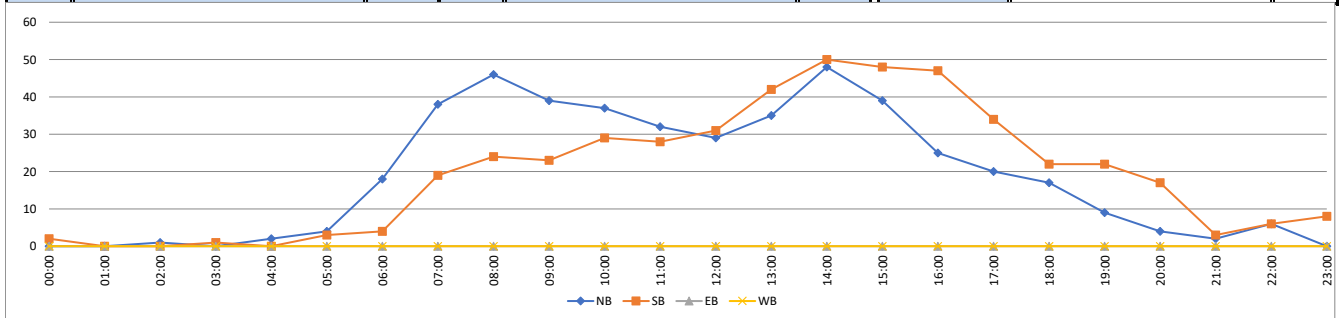
### VOLUME

#### White Oak Dr N/O SR 111/Kingston Rd

Day: Wednesday  
Date: 7/17/2024

City: Exeter  
Project #: NH24\_600011\_004

DAILY TOTALS					NB	SB	EB	WB	Total	DAILY TOTALS							
					451	463	0	0	914								
15-Minutes Interval										Hourly Intervals							
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	0	2			2	12:00	7	6			13	00:00	0	2			2
0:15	0	0			0	12:15	5	5			10	01:00	0	0			0
0:30	0	0			0	12:30	6	6			12	02:00	1	0			1
0:45	0	0			0	12:45	11	14			25	03:00	0	1			1
1:00	0	0			0	13:00	11	11			22	04:00	2	0			2
1:15	0	0			0	13:15	5	12			17	05:00	4	3			7
1:30	0	0			0	13:30	8	6			14	06:00	18	4			22
1:45	0	0			0	13:45	11	13			24	07:00	38	19			57
2:00	0	0			0	14:00	5	13			18	08:00	46	24			70
2:15	0	0			0	14:15	13	8			21	09:00	39	23			62
2:30	1	0			1	14:30	17	15			32	10:00	37	29			66
2:45	0	0			0	14:45	13	14			27	11:00	32	28			60
3:00	0	1			1	15:00	8	19			27	12:00	29	31			60
3:15	0	0			0	15:15	7	11			18	13:00	35	42			77
3:30	0	0			0	15:30	16	6			22	14:00	48	50			98
3:45	0	0			0	15:45	8	12			20	15:00	39	48			87
4:00	0	0			0	16:00	13	22			35	16:00	25	47			72
4:15	0	0			0	16:15	2	6			8	17:00	20	34			54
4:30	0	0			0	16:30	5	14			19	18:00	17	22			39
4:45	2	0			2	16:45	5	5			10	19:00	9	22			31
5:00	0	0			0	17:00	6	14			20	20:00	4	17			21
5:15	2	0			2	17:15	6	8			14	21:00	2	3			5
5:30	1	0			1	17:30	3	9			12	22:00	6	6			12
5:45	1	3			4	17:45	5	3			8	23:00	0	8			8
6:00	3	1			4	18:00	0	6			6	<b>STATISTICS</b>					
6:15	3	2			5	18:15	5	2			7						
6:30	10	0			10	18:30	7	5			12	Peak Period	00:00	to	12:00		
6:45	2	1			3	18:45	5	9			14	Volume	217	133		350	
7:00	7	3			10	19:00	3	4			7	Peak Hour	7:30	10:45		7:45	
7:15	9	5			14	19:15	2	12			14	Peak Volume	51	35		77	
7:30	11	5			16	19:30	1	2			3	Peak Hour Factor	0.750	0.729		0.837	
7:45	11	6			17	19:45	3	4			7	Peak Period	12:00	to	00:00		
8:00	17	6			23	20:00	0	10			10	Volume	234	330		564	
8:15	12	6			18	20:15	3	4			7	Peak Hour	14:15	14:30		14:15	
8:30	10	9			19	20:30	0	1			1	Peak Volume	51	59		107	
8:45	7	3			10	20:45	1	2			3	Peak Hour Factor	0.750	0.776		0.836	
9:00	9	6			15	21:00	0	0			0	Peak Period	07:00	to	09:00		
9:15	17	7			24	21:15	0	2			2	Volume	84	43		127	
9:30	7	6			13	21:30	0	0			0	Peak Hour	7:30	7:45		7:45	
9:45	6	4			10	21:45	2	1			3	Peak Volume	51	27		77	
10:00	9	4			13	22:00	0	0			0	Peak Hour Factor	0.750	0.750		0.837	
10:15	7	7			14	22:15	3	0			3	Peak Period	16:00	to	18:00		
10:30	11	6			17	22:30	3	0			3	Volume	45	81		126	
10:45	10	12			22	22:45	0	6			6	Peak Hour	16:00	16:00		16:00	
11:00	9	3			12	23:00	0	2			2	Peak Volume	25	47		72	
11:15	10	12			22	23:15	0	3			3	Peak Hour Factor	0.481	0.534		0.514	
11:30	5	8			13	23:30	0	2			2						
11:45	8	5			13	23:45	0	1			1						
<b>TOTALS</b>	<b>217</b>	<b>133</b>	<b>0</b>	<b>0</b>	<b>350</b>	<b>TOTALS</b>	<b>234</b>	<b>330</b>	<b>0</b>	<b>0</b>	<b>564</b>						
<b>SPLIT %</b>	<b>62%</b>	<b>38%</b>	<b>0%</b>	<b>0%</b>	<b>38%</b>	<b>SPLIT %</b>	<b>41%</b>	<b>59%</b>	<b>0%</b>	<b>0%</b>	<b>62%</b>						









SPEED

White Oak Dr N/O SR 111/Kingston Rd

Day: Tuesday  
Date: 7/16/2024

City: Exeter  
Project #: NH24\_60011\_004

Time	NORTHBOUND													Total	SOUTHBOUND													Total	TOTALS													Total					
	5	15	20	25	30	35	40	45	50	55	60	65	70		5	15	20	25	30	35	40	45	50	55	60	65	70		5	15	20	25	30	35	40	45	50	55	60	65	70						
12:00	0	2	5	1	0	0	0	0	0	0	0	0	0	8	0	3	7	1	0	0	0	0	0	0	0	0	11	0	5	12	2	0	0	0	0	0	0	0	0	0	0	0	0	19			
12:15	0	2	3	3	1	0	0	0	0	0	0	0	0	9	0	0	4	6	1	1	0	0	0	0	0	0	12	0	2	7	9	2	1	0	0	0	0	0	0	0	0	0	0	21			
12:30	1	6	5	2	0	0	0	0	0	0	0	0	0	14	4	3	9	3	0	0	0	0	0	0	0	19	5	9	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	33			
12:45	0	4	4	1	0	0	0	0	0	0	0	0	0	9	2	3	2	4	0	0	0	0	0	0	0	11	2	7	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	20			
13:00	0	3	9	2	0	0	0	0	0	0	0	0	0	14	2	2	4	3	0	0	0	0	0	0	0	11	2	5	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	25			
13:15	0	4	4	1	0	0	0	0	0	0	0	0	0	9	1	3	6	1	0	0	0	0	0	0	0	11	1	7	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	20			
13:30	0	0	2	2	0	0	0	0	0	0	0	0	0	4	1	4	5	5	0	0	0	0	0	0	0	15	1	4	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	19			
13:45	0	2	2	4	0	0	0	0	0	0	0	0	0	8	2	2	4	1	0	0	0	0	0	0	0	9	2	4	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17		
14:00	0	1	1	3	0	0	0	0	0	0	0	0	0	5	0	2	3	2	0	0	0	0	0	0	0	7	0	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	12			
14:15	1	2	3	1	0	0	0	0	0	0	0	0	0	7	0	2	7	5	0	0	0	0	0	0	0	14	1	4	10	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21		
14:30	0	1	9	2	0	0	0	0	0	0	0	0	0	12	2	0	5	3	0	0	0	0	0	0	0	10	2	1	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22		
14:45	0	4	2	1	0	0	0	0	0	0	0	0	0	7	3	3	5	1	2	0	0	0	0	0	0	14	3	7	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	21		
15:00	1	1	2	5	0	0	0	0	0	0	0	0	0	9	0	2	8	5	1	0	0	0	0	0	0	16	1	3	10	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	25		
15:15	0	0	3	4	0	0	0	0	0	0	0	0	0	7	0	4	0	0	0	0	0	0	0	0	0	4	0	4	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11		
15:30	0	4	4	3	0	0	0	0	0	0	0	0	0	11	0	1	7	3	2	0	0	0	0	0	0	13	0	5	11	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
15:45	0	1	6	3	0	0	0	0	0	0	0	0	0	10	0	2	4	8	1	0	0	0	0	0	0	15	0	3	10	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	
16:00	0	1	1	2	0	0	0	0	0	0	0	0	0	4	1	1	7	6	1	0	0	0	0	0	0	16	1	2	8	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	
16:15	0	3	2	1	0	0	0	0	0	0	0	0	0	6	0	0	2	4	1	0	0	0	0	0	7	0	3	4	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13		
16:30	0	0	3	2	0	0	0	0	0	0	0	0	0	5	0	1	7	2	0	0	0	0	0	0	11	0	1	4	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
16:45	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	2	3	4	0	0	0	0	0	0	9	0	2	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
17:00	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	1	10	4	1	0	0	0	0	16	0	0	1	12	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	
17:15	0	0	4	3	0	0	0	0	0	0	0	0	0	7	0	0	0	3	2	1	0	0	0	0	6	0	0	4	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13		
17:30	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	
17:45	1	0	2	1	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	0	0	0	0	2	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
18:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3	0	0	1	3	1	0	0	0	0	0	5	0	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
18:15	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1	1	0	0	0	0	0	0	0	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
18:30	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	3	4	0	0	0	0	0	0	7	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
18:45	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	3	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
19:15	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	2	6	2	0	0	0	0	0	10	0	0	2	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
19:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
19:45	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
20:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
20:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
20:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
20:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1	0	0	0	0	0	4	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
21:15	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
21:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
21:45	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	1																	





SPEED

White Oak Dr N/O SR 111/Kingston Rd

Day: Wednesday

City: Exeter

Date: 7/17/2024

Project #: NH24\_600011\_004

Time	NORTHBOUND														Total	SOUTHBOUND														Total	TOTALS														Total
	5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	25	30	35	40	45	50	55	60	65	70	70	
	15	20	25	30	35	40	45	50	55	60	65	70	99	15		20	25	30	35	40	45	50	55	60	65	70	99	15	20		25	30	35	40	45	50	55	60	65	70	99				
12:00	0	0	5	1	1	0	0	0	0	0	0	0	0	7	0	0	1	4	1	0	0	0	0	0	0	6	0	0	6	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	13
12:15	1	2	1	1	0	0	0	0	0	0	0	0	0	5	0	2	1	2	0	0	0	0	0	0	0	5	1	4	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
12:30	0	1	2	3	0	0	0	0	0	0	0	0	0	6	0	0	1	3	2	0	0	0	0	0	0	6	0	1	3	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	12
12:45	0	2	5	3	1	0	0	0	0	0	0	0	0	11	0	1	3	8	2	0	0	0	0	0	0	14	0	3	8	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	25
13:00	0	0	5	5	1	0	0	0	0	0	0	0	0	11	1	2	4	4	0	0	0	0	0	0	11	1	2	9	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
13:15	0	1	1	3	0	0	0	0	0	0	0	0	0	5	1	1	6	4	0	0	0	0	0	0	12	1	2	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
13:30	0	0	6	2	0	0	0	0	0	0	0	0	0	8	0	0	4	1	1	0	0	0	0	0	6	0	0	10	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
13:45	0	1	6	3	1	0	0	0	0	0	0	0	0	11	0	0	7	6	0	0	0	0	0	0	13	0	1	13	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
14:00	0	1	1	3	0	0	0	0	0	0	0	0	0	5	0	0	4	7	2	0	0	0	0	0	13	0	1	5	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
14:15	2	2	7	2	0	0	0	0	0	0	0	0	0	13	0	0	5	3	0	0	0	0	0	0	8	2	2	12	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
14:30	0	3	11	3	0	0	0	0	0	0	0	0	0	17	2	0	5	7	1	0	0	0	0	0	15	2	3	16	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
14:45	0	3	7	2	1	0	0	0	0	0	0	0	0	13	0	4	6	4	0	0	0	0	0	0	14	0	7	13	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
15:00	0	0	4	2	2	0	0	0	0	0	0	0	0	8	1	5	7	5	1	0	0	0	0	0	19	1	5	11	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
15:15	1	2	2	2	0	0	0	0	0	0	0	0	0	7	0	1	8	2	0	0	0	0	0	0	11	1	3	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
15:30	0	2	8	4	2	0	0	0	0	0	0	0	0	16	0	0	2	3	1	0	0	0	0	6	0	2	10	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
15:45	0	2	4	2	0	0	0	0	0	0	0	0	0	8	1	0	5	5	1	0	0	0	0	12	1	2	9	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
16:00	1	1	6	4	1	0	0	0	0	0	0	0	0	13	2	5	5	8	2	0	0	0	0	22	3	6	11	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
16:15	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	1	2	1	0	0	0	0	6	1	2	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
16:30	0	2	2	1	0	0	0	0	0	0	0	0	0	5	0	1	2	9	2	0	0	0	0	14	0	3	4	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
16:45	0	0	2	3	0	0	0	0	0	0	0	0	0	5	0	0	1	4	0	0	0	0	0	5	0	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
17:00	0	0	4	1	1	0	0	0	0	0	0	0	0	6	0	1	5	3	0	0	0	0	0	14	0	1	9	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
17:15	0	1	3	2	0	0	0	0	0	0	0	0	0	6	0	0	2	4	2	0	0	0	0	8	0	1	5	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
17:30	0	0	0	1	2	0	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	9	0	0	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
17:45	0	0	2	3	0	0	0	0	0	0	0	0	0	5	0	0	1	1	1	0	0	0	0	3	0	0	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	6	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
18:15	0	1	2	2	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	0	0	0	2	0	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
18:30	0	1	2	2	1	1	0	0	0	0	0	0	0	7	0	1	3	0	1	0	0	0	0	5	0	2	5	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
18:45	0	0	3	1	1	0	0	0	0	0	0	0	0	5	0	0	0	6	3	0	0	0	0	9	0	0	3	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
19:00	0	0	2	1	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0	4	0	0	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
19:15	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	6	6	0	0	0	0	0	12	0	0	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
19:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3		
19:45	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	1	2	1	0	0	0	0	4	0	0	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	0	0	0	0	0	10	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
20:15	0	0	2	0	1	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	0	0	4	0	0	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
20:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
20:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
21:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21:45	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
22:00	0	0	0	0																																									



# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 2-Way Stop(NB/SB)

**Project ID:** 24-600010-001  
**Date:** 7/16/2024

### Data - Total

NS/EW Streets:	White Oak Dr/Riverwoods Dr				White Oak Dr/Riverwoods Dr				SR 111/Kingston Rd				SR 111/Kingston Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	3	1	4	0	4	2	1	0	2	56	5	0	6	24	5	0	113
7:15 AM	1	1	2	0	2	1	2	0	7	93	6	0	4	27	7	0	153
7:30 AM	1	3	0	0	4	1	1	0	4	72	4	0	2	41	2	0	135
7:45 AM	1	2	3	0	5	3	0	0	9	107	9	0	5	36	9	0	189
8:00 AM	3	4	4	0	3	3	0	0	4	78	7	0	7	29	6	0	148
8:15 AM	3	2	3	0	3	3	1	0	2	71	2	0	4	36	7	0	137
8:30 AM	3	2	8	0	2	2	3	0	1	75	5	0	3	35	7	0	146
8:45 AM	1	5	6	0	6	4	3	0	5	57	2	0	4	35	12	0	140
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	16	20	30	0	29	19	11	0	34	609	40	0	35	263	55	0	1161
	24.24%	30.30%	45.45%	0.00%	49.15%	32.20%	18.64%	0.00%	4.98%	89.17%	5.86%	0.00%	9.92%	74.50%	15.58%	0.00%	
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	6	10	9	0	14	8	3	0	24	350	26	0	18	133	24	0	625
<b>PEAK HR FACTOR :</b>	0.500	0.625	0.563	0.000	0.700	0.667	0.375	0.000	0.667	0.818	0.722	0.000	0.643	0.811	0.667	0.000	0.827
	0.568				0.781				0.800				0.875				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	12	2	14	0	8	7	2	0	1	46	4	0	6	87	1	0	190
4:15 PM	4	2	7	0	3	1	3	0	1	47	0	0	5	80	4	0	157
4:30 PM	5	2	5	0	7	2	2	0	0	50	2	0	2	73	3	0	153
4:45 PM	0	0	6	0	5	1	3	0	1	48	1	0	1	70	1	0	137
5:00 PM	2	0	6	0	12	0	4	0	0	41	3	0	0	109	2	0	179
5:15 PM	4	1	2	0	3	1	2	0	0	45	1	0	2	76	6	0	143
5:30 PM	1	1	2	0	0	0	0	0	0	57	3	0	3	81	1	0	149
5:45 PM	1	1	1	0	3	0	2	0	0	53	0	0	3	59	3	0	126
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	29	9	43	0	41	12	18	0	3	387	14	0	22	635	21	0	1234
	35.80%	11.11%	53.09%	0.00%	57.75%	16.90%	25.35%	0.00%	0.74%	95.79%	3.47%	0.00%	3.24%	93.66%	3.10%	0.00%	
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	21	6	32	0	23	11	10	0	3	191	7	0	14	310	9	0	637
<b>PEAK HR FACTOR :</b>	0.438	0.750	0.571	0.000	0.719	0.393	0.833	0.000	0.750	0.955	0.438	0.000	0.583	0.891	0.563	0.000	0.838
	0.527				0.647				0.966				0.886				

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 2-Way Stop(NB/SB)

**Project ID:** 24-600010-001  
**Date:** 7/16/2024

### Data - Cars

NS/EW Streets:	White Oak Dr/Riverwoods Dr				White Oak Dr/Riverwoods Dr				SR 111/Kingston Rd				SR 111/Kingston Rd				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	1	1	4	0	4	2	1	0	2	55	4	0	6	21	5	0	106
7:15 AM	1	1	2	0	2	1	2	0	7	92	6	0	4	26	7	0	151
7:30 AM	1	2	0	0	4	1	1	0	3	67	3	0	1	40	2	0	125
7:45 AM	0	2	3	0	5	2	0	0	9	104	9	0	5	34	9	0	182
8:00 AM	3	2	3	0	3	3	0	0	4	76	5	0	6	29	6	0	140
8:15 AM	3	2	2	0	3	3	1	0	2	67	1	0	4	34	7	0	129
8:30 AM	2	1	8	0	2	2	2	0	1	73	4	0	3	31	7	0	136
8:45 AM	1	5	6	0	5	4	3	0	4	54	2	0	4	35	12	0	135
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	21.43%	28.57%	50.00%	0.00%	50.00%	32.14%	17.86%	0.00%	4.89%	89.91%	5.20%	0.00%	9.76%	73.96%	16.27%	0.00%	1104
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	5	7	8	0	14	7	3	0	23	339	23	0	16	129	24	0	598
<b>PEAK HR FACTOR :</b>	0.417	0.875	0.667	0.000	0.700	0.583	0.375	0.000	0.639	0.815	0.639	0.000	0.667	0.806	0.667	0.000	0.821
	0.625				0.857				0.789				0.880				
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	12	2	13	0	8	7	2	0	1	44	3	0	6	85	1	0	184
4:15 PM	3	2	7	0	3	0	3	0	1	47	0	0	4	76	3	0	149
4:30 PM	5	2	5	0	7	1	2	0	0	47	2	0	2	73	3	0	149
4:45 PM	0	0	6	0	5	1	3	0	1	48	1	0	1	69	1	0	136
5:00 PM	2	0	6	0	12	0	4	0	0	41	3	0	0	107	2	0	177
5:15 PM	4	1	2	0	3	1	2	0	0	43	1	0	2	76	6	0	141
5:30 PM	1	0	2	0	0	0	0	0	0	57	3	0	3	81	1	0	148
5:45 PM	1	1	1	0	3	0	2	0	0	51	0	0	3	59	3	0	124
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	35.90%	10.26%	53.85%	0.00%	59.42%	14.49%	26.09%	0.00%	0.76%	95.94%	3.30%	0.00%	3.15%	93.85%	3.00%	0.00%	1208
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	20	6	31	0	23	9	10	0	3	186	6	0	13	303	8	0	618
<b>PEAK HR FACTOR :</b>	0.417	0.750	0.596	0.000	0.719	0.321	0.833	0.000	0.750	0.969	0.500	0.000	0.542	0.891	0.667	0.000	0.840
	0.528				0.618				0.975				0.880				

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 2-Way Stop(NB/SB)

**Project ID:** 24-600010-001  
**Date:** 7/16/2024

### Data - HT

NS/EW Streets:	White Oak Dr/Riverwoods Dr				White Oak Dr/Riverwoods Dr				SR 111/Kingston Rd				SR 111/Kingston Rd				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	0	2
7:30 AM	0	1	0	0	0	0	0	0	1	5	1	0	1	1	0	0	10
7:45 AM	1	0	0	0	0	1	0	0	0	3	0	0	0	2	0	0	7
8:00 AM	0	2	1	0	0	0	0	0	0	2	2	0	1	0	0	0	8
8:15 AM	0	0	1	0	0	0	0	0	0	4	1	0	0	2	0	0	8
8:30 AM	1	1	0	0	0	0	1	0	0	2	1	0	0	4	0	0	10
8:45 AM	0	0	0	0	1	0	0	0	1	3	0	0	0	0	0	0	5
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	40.00%	40.00%	20.00%	0.00%	33.33%	33.33%	33.33%	0.00%	6.90%	72.41%	20.69%	0.00%	13.33%	86.67%	0.00%	0.00%	57
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																TOTAL
<b>PEAK HR VOL :</b>	1	3	1	0	0	1	0	0	1	11	3	0	2	4	0	0	27
<b>PEAK HR FACTOR :</b>	0.250	0.375	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.550	0.375	0.000	0.500	0.500	0.000	0.000	0.675
	0.417				0.250				0.536				0.750				
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	1	0	0	0	1	0	0	0	2	1	0	0	2	0	0	6
4:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	1	4	1	0	8
4:30 PM	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	33.33%	33.33%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	90.00%	10.00%	0.00%	9.09%	81.82%	9.09%	0.00%	26
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL
<b>PEAK HR VOL :</b>	1	0	1	0	0	2	0	0	0	5	1	0	1	7	1	0	19
<b>PEAK HR FACTOR :</b>	0.250	0.000	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.417	0.250	0.000	0.250	0.438	0.250	0.000	0.594
	0.500				0.500				0.500				0.375				

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 2-Way Stop(NB/SB)

**Project ID:** 24-600010-001  
**Date:** 7/16/2024

### Data - Bikes

NS/EW Streets:	White Oak Dr/Riverwoods Dr				White Oak Dr/Riverwoods Dr				SR 111/Kingston Rd				SR 111/Kingston Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	1	0	0	0	1	0	0	0	2	0	0	0	1	1	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	3
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	3
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.750
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0	0	0	0	0	0	0	0	2
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250

National Data & Surveying Services  
**Intersection Turning Movement Count**

**Location:** White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd  
**City:** Exeter

**Project ID:** 24-600010-001  
**Date:** 7/16/2024

**Data - Pedestrians (Crosswalks)**

NS/EW Streets:	White Oak Dr/Riverwoods Dr	White Oak Dr/Riverwoods Dr	SR 111/Kingston Rd	SR 111/Kingston Rd					
<b>AM</b>	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	2	3	0	0	5
7:15 AM	0	0	0	0	0	2	0	0	2
7:30 AM	0	1	0	0	1	0	0	1	3
7:45 AM	1	0	1	0	0	0	1	0	3
8:00 AM	2	0	0	2	0	3	2	0	9
8:15 AM	0	1	0	0	3	0	0	0	4
8:30 AM	0	2	0	0	1	1	1	2	7
8:45 AM	1	0	0	0	0	3	0	0	4
<b>TOTAL VOLUMES :</b>	EB 4	WB 4	EB 1	WB 2	NB 7	SB 12	NB 4	SB 3	TOTAL 37
<b>APPROACH %'s :</b>	50.00%	50.00%	33.33%	66.67%	36.84%	63.16%	57.14%	42.86%	
<b>PEAK HR :</b>	<b>07:15 AM - 08:15 AM</b>								TOTAL
<b>PEAK HR VOL :</b>	3	1	1	2	1	5	3	1	17
<b>PEAK HR FACTOR :</b>	0.375	0.250	0.250	0.250	0.250	0.417	0.375	0.250	0.472
	0.500		0.375		0.500		0.500		

<b>PM</b>	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	1	0	0	1	0	1	1	0	4
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	EB 1	WB 0	EB 0	WB 1	NB 0	SB 1	NB 1	SB 0	TOTAL 4
<b>APPROACH %'s :</b>	100.00%	0.00%	0.00%	100.00%	0.00%	100.00%	100.00%	0.00%	
<b>PEAK HR :</b>	<b>04:00 PM - 05:00 PM</b>								TOTAL
<b>PEAK HR VOL :</b>	1	0	0	1	0	1	1	0	4
<b>PEAK HR FACTOR :</b>	0.250			0.250	0.250	0.250	0.250	0.250	0.250
	0.250		0.250		0.250		0.250		





Project ID: 24-600010-001

Location: White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd

City: Exeter

Day: Tuesday

Date: 7/16/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	White Oak Dr/Riverwoods Dr Northbound						White Oak Dr/Riverwoods Dr Southbound						SR 111/Kingston Rd Eastbound						SR 111/Kingston Rd Westbound						Int. Total	
	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total		
7:00 AM	3	1	4	0	0	8	4	2	1	0	0	7	2	56	5	0	0	63	6	24	5	0	5	35	113	
7:15 AM	1	1	2	0	0	4	2	1	2	0	0	5	7	93	6	0	0	106	4	27	7	0	2	38	153	
7:30 AM	1	3	0	0	0	4	4	1	1	0	1	6	4	72	4	0	1	80	2	41	2	0	1	45	135	
7:45 AM	1	2	3	0	1	6	5	3	0	0	1	8	9	107	9	0	1	125	5	36	9	0	0	50	189	
Total	6	7	9	0	1	22	15	7	4	0	2	26	22	328	24	0	2	374	17	128	23	0	8	168	590	
8:00 AM	3	4	4	0	2	11	3	3	0	0	2	6	4	78	7	0	2	89	7	29	6	0	3	42	148	
8:15 AM	3	2	3	0	0	8	3	3	1	0	1	7	2	71	2	0	0	75	4	36	7	0	3	47	137	
8:30 AM	3	2	8	0	0	13	2	2	3	0	2	7	1	75	5	0	3	81	3	35	7	0	2	45	146	
8:45 AM	1	5	6	0	0	12	6	4	3	0	1	13	5	57	2	0	0	64	4	35	12	0	3	51	140	
Total	10	13	21	0	2	44	14	12	7	0	6	33	12	281	16	0	5	309	18	135	32	0	11	185	571	
***BREAK***																										
4:00 PM	12	2	14	0	1	28	8	7	2	0	1	17	1	46	4	0	1	51	6	87	1	0	1	94	190	
4:15 PM	4	2	7	0	0	13	3	1	3	0	0	7	1	47	0	0	0	48	5	80	4	0	0	89	157	
4:30 PM	5	2	5	0	0	12	7	2	2	0	0	11	0	50	2	0	0	52	2	73	3	0	0	78	153	
4:45 PM	0	0	6	0	0	6	5	1	3	0	0	9	1	48	1	0	0	50	1	70	1	0	0	72	137	
Total	21	6	32	0	1	59	23	11	10	0	1	44	3	191	7	0	1	201	14	310	9	0	1	333	637	
5:00 PM	2	0	6	0	0	8	12	0	4	0	0	16	0	41	3	0	0	44	0	109	2	0	0	111	179	
5:15 PM	4	1	2	0	0	7	3	1	2	0	0	6	0	45	1	0	0	46	2	76	6	0	0	84	143	
5:30 PM	1	1	2	0	0	4	0	0	0	0	0	0	0	57	3	0	0	60	3	81	1	0	0	85	149	
5:45 PM	1	1	1	0	0	3	3	0	2	0	0	5	0	53	0	0	0	53	3	59	3	0	0	65	126	
Total	8	3	11	0	0	22	18	1	8	0	0	27	0	196	7	0	0	203	8	325	12	0	0	345	597	
Grand Total	45	29	73	0	4	147	70	31	29	0	9	130	37	996	54	0	8	1087	57	898	76	0	20	1031	2395	
Apprch %	30.6	19.7	49.7	0.0	2.7	53.8	23.8	22.3	0.0	6.9	3.4	91.6	5.0	0.0	0.7	5.5	87.1	7.4	0.0	1.9						
Total %	1.9	1.2	3.0	0.0	0.2	6.1	2.9	1.3	1.2	0.0	0.4	5.4	1.5	41.6	2.3	0.0	0.3	45.4	2.4	37.5	3.2	0.0	0.8	43.0		
Cars, PU, Vans	40	24	70	0		134	69	28	28	0		125	35	966	47	0		1048	54	876	75	0		1005	2312	
% Cars, PU, Vans	88.9	82.8	95.9	0.0		91.2	98.6	90.3	96.6	0.0		96.2	94.6	97.0	87.0	0.0		96.4	94.7	97.6	98.7	0.0		97.5	96.5	
Heavy trucks	5	5	3	0		13	1	3	1	0		5	2	30	7	0		39	3	22	1	0		26	83	
%Heavy trucks	11.1	17.2	4.1	0.0		8.8	1.4	9.7	3.4	0.0		3.8	5.4	3.0	13.0	0.0		3.6	5.3	2.4	1.3	0.0		2.5	3.5	

Project ID: 24-600010-001

Location: White Oak Dr/Riverwoods Dr & SR 111/Kingston Rd

City: Exeter

### PEAK HOURS

Day: Tuesday

Date: 7/16/2024

**AM**

Start Time	White Oak Dr/Riverwoods Dr Northbound					White Oak Dr/Riverwoods Dr Southbound					SR 111/Kingston Rd Eastbound					SR 111/Kingston Rd Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	1	1	2	0	4	2	1	2	0	5	7	93	6	0	106	4	27	7	0	38	153
7:30 AM	1	3	0	0	4	4	1	1	0	6	4	72	4	0	80	2	41	2	0	45	135
7:45 AM	1	2	3	0	6	5	3	0	0	8	9	107	9	0	125	5	36	9	0	50	189
8:00 AM	3	4	4	0	11	3	3	0	0	6	4	78	7	0	89	7	29	6	0	42	148
Total Volume	6	10	9	0	25	14	8	3	0	25	24	350	26	0	400	18	133	24	0	175	625
% App. Total	24.0	40.0	36.0	0.0	100	56.0	32.0	12.0	0.0	100	6.0	87.5	6.5	0.0	100	10.3	76.0	13.7	0.0	100	
PHF	0.568					0.781					0.800					0.875					0.827
Cars, PU, Vans	5	7	8	0	20	14	7	3	0	24	23	339	23	0	385	16	129	24	0	169	598
% Cars, PU, Vans	83.3	70.0	88.9	0.0	80.0	100.0	87.5	100.0	0.0	96.0	95.8	96.9	88.5	0.0	96.3	88.9	97.0	100.0	0.0	96.6	95.7
Heavy trucks	1	3	1	0	5	0	1	0	0	1	1	11	3	0	15	2	4	0	0	6	27
% Heavy trucks	16.7	30.0	11.1	0.0	20.0	0.0	12.5	0.0	0.0	4.0	4.2	3.1	11.5	0.0	3.8	11.1	3.0	0.0	0.0	3.4	4.3

**PM**

Start Time	White Oak Dr/Riverwoods Dr Northbound					White Oak Dr/Riverwoods Dr Southbound					SR 111/Kingston Rd Eastbound					SR 111/Kingston Rd Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	12	2	14	0	28	8	7	2	0	17	1	46	4	0	51	6	87	1	0	94	190
4:15 PM	4	2	7	0	13	3	1	3	0	7	1	47	0	0	48	5	80	4	0	89	157
4:30 PM	5	2	5	0	12	7	2	2	0	11	0	50	2	0	52	2	73	3	0	78	153
4:45 PM	0	0	6	0	6	5	1	3	0	9	1	48	1	0	50	1	70	1	0	72	137
Total Volume	21	6	32	0	59	23	11	10	0	44	3	191	7	0	201	14	310	9	0	333	637
% App. Total	35.6	10.2	54.2	0.0	100	52.3	25.0	22.7	0.0	100	1.5	95.0	3.5	0.0	100	4.2	93.1	2.7	0.0	100	
PHF	0.527					0.647					0.966					0.886					0.838
Cars, PU, Vans	20	6	31	0	57	23	9	10	0	42	3	186	6	0	195	13	303	8	0	324	618
% Cars, PU, Vans	95.2	100.0	96.9	0.0	96.6	100.0	81.8	100.0	0.0	95.5	100.0	97.4	85.7	0.0	97.0	92.9	97.7	88.9	0.0	97.3	97.0
Heavy trucks	1	0	1	0	2	0	2	0	0	2	0	5	1	0	6	1	7	1	0	9	19
% Heavy trucks	4.8	0.0	3.1	0.0	3.4	0.0	18.2	0.0	0.0	4.5	0.0	2.6	14.3	0.0	3.0	7.1	2.3	11.1	0.0	2.7	3.0

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Riverwoods Dr & Hillside Ave/Riverwoods Dr  
**City:** Exeter  
**Control:** 1-Way Stop(EB)

**Project ID:** 24-600010-002  
**Date:** 7/16/2024

### Data - Total

NS/EW Streets:	Riverwoods Dr				Riverwoods Dr				Hillside Ave/Riverwoods Dr				Hillside Ave/Riverwoods Dr				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	12	0	7	0	0	0	0	0	1	0	21
7:15 AM	0	0	0	0	0	0	10	0	3	0	0	0	0	0	0	0	13
7:30 AM	0	0	0	0	0	0	9	0	5	0	0	0	0	0	0	0	14
7:45 AM	0	0	0	0	0	0	16	0	3	0	0	0	0	0	3	0	22
8:00 AM	0	0	0	0	0	0	17	0	10	0	0	0	0	0	1	0	28
8:15 AM	0	0	0	0	0	0	9	0	6	0	0	0	0	0	2	0	17
8:30 AM	0	0	1	0	0	0	10	0	9	0	0	0	0	0	1	0	21
8:45 AM	0	0	0	0	1	0	8	0	13	0	0	0	0	0	1	0	23
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	1	0	2	0	91	0	56	0	0	0	0	0	9	0	159
	0.00%	0.00%	100.00%	0.00%	2.15%	0.00%	97.85%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
<b>PEAK HR :</b>	08:00 AM - 09:00 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	1	0	1	0	44	0	38	0	0	0	0	0	5	0	89
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.250	0.000	0.250	0.000	0.647	0.000	0.731	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.795
	0.250				0.662				0.731				0.625				
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	2	0	15	0	25	0	0	0	0	0	1	0	43
4:15 PM	0	0	0	0	0	1	5	0	10	0	0	0	0	0	3	0	19
4:30 PM	0	1	0	0	1	0	4	0	11	0	0	0	0	0	0	0	17
4:45 PM	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	9
5:00 PM	0	0	0	0	0	0	3	0	7	0	0	0	0	0	1	0	11
5:15 PM	0	0	0	0	1	0	3	0	6	1	0	0	1	0	1	0	13
5:30 PM	0	0	0	0	2	0	3	0	4	0	0	0	0	0	0	0	9
5:45 PM	0	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	7
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	1	0	0	6	1	39	0	69	1	0	0	1	0	10	0	128
	0.00%	100.00%	0.00%	0.00%	13.04%	2.17%	84.78%	0.00%	98.57%	1.43%	0.00%	0.00%	9.09%	0.00%	90.91%	0.00%	
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL
<b>PEAK HR VOL :</b>	0	1	0	0	3	1	27	0	49	0	0	0	0	0	7	0	88
<b>PEAK HR FACTOR :</b>	0.000	0.250	0.000	0.000	0.375	0.250	0.450	0.000	0.490	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.512
	0.250				0.456				0.490				0.583				

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Riverwoods Dr & Hillside Ave/Riverwoods Dr  
**City:** Exeter  
**Control:** 1-Way Stop(EB)

**Project ID:** 24-600010-002  
**Date:** 7/16/2024

### Data - Cars

NS/EW Streets:	Riverwoods Dr				Riverwoods Dr				Hillside Ave/Riverwoods Dr				Hillside Ave/Riverwoods Dr				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	11	0	5	0	0	0	0	0	1	0	18
7:15 AM	0	0	0	0	0	0	10	0	3	0	0	0	0	0	0	0	13
7:30 AM	0	0	0	0	0	0	7	0	4	0	0	0	0	0	0	0	11
7:45 AM	0	0	0	0	0	0	15	0	2	0	0	0	0	0	3	0	20
8:00 AM	0	0	0	0	0	0	14	0	7	0	0	0	0	0	1	0	22
8:15 AM	0	0	0	0	0	0	8	0	5	0	0	0	0	0	2	0	15
8:30 AM	0	0	1	0	0	0	9	0	7	0	0	0	0	0	1	0	18
8:45 AM	0	0	0	0	1	0	8	0	13	0	0	0	0	0	1	0	23
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	1	0	2	0	82	0	46	0	0	0	0	0	9	0	140
	0.00%	0.00%	100.00%	0.00%	2.38%	0.00%	97.62%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
<b>PEAK HR :</b>	08:00 AM - 09:00 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	1	0	1	0	39	0	32	0	0	0	0	0	5	0	78
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.250	0.000	0.250	0.000	0.696	0.000	0.615	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.848
	0.250				0.714				0.615				0.625				
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	2	0	14	0	24	0	0	0	0	0	1	0	41
4:15 PM	0	0	0	0	0	0	4	0	9	0	0	0	0	0	3	0	16
4:30 PM	0	1	0	0	1	0	3	0	11	0	0	0	0	0	0	0	16
4:45 PM	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	9
5:00 PM	0	0	0	0	0	0	3	0	7	0	0	0	0	0	1	0	11
5:15 PM	0	0	0	0	1	0	3	0	6	1	0	0	1	0	1	0	13
5:30 PM	0	0	0	0	2	0	3	0	3	0	0	0	0	0	0	0	8
5:45 PM	0	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	7
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	1	0	0	6	0	36	0	66	1	0	0	1	0	10	0	121
	0.00%	100.00%	0.00%	0.00%	14.29%	0.00%	85.71%	0.00%	98.51%	1.49%	0.00%	0.00%	9.09%	0.00%	90.91%	0.00%	
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL
<b>PEAK HR VOL :</b>	0	1	0	0	3	0	24	0	47	0	0	0	0	0	7	0	82
<b>PEAK HR FACTOR :</b>	0.000	0.250	0.000	0.000	0.375	0.000	0.429	0.000	0.490	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.500
	0.250				0.422				0.490				0.583				



# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Riverwoods Dr & Hillside Ave/Riverwoods Dr  
**City:** Exeter  
**Control:** 1-Way Stop(EB)

**Project ID:** 24-600010-002  
**Date:** 7/16/2024

### Data - HT

NS/EW Streets:	Riverwoods Dr				Riverwoods Dr				Hillside Ave/Riverwoods Dr				Hillside Ave/Riverwoods Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>	
<b>APPROACH %'s :</b>	0	0	0	0	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0	0	0	0	19	
<b>PEAK HR :</b>	08:00 AM - 09:00 AM				0	0	5	0	6	0	0	0	0	0	0	0	0	11
<b>PEAK HR VOL :</b>	0	0	0	0	0.000	0.000	0.417	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.458	
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.458	
							0.417				0.500							
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
4:15 PM	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	3	
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>	
<b>APPROACH %'s :</b>	0	0	0	0	0.00%	25.00%	75.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0	0	0	0	7	
<b>PEAK HR :</b>	04:00 PM - 05:00 PM				0	1	3	0	2	0	0	0	0	0	0	0	0	6
<b>PEAK HR VOL :</b>	0	0	0	0	0.000	0.250	0.750	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.250	0.750	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	
							0.500				0.500							

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Riverwoods Dr & Hillside Ave/Riverwoods Dr  
**City:** Exeter  
**Control:** 1-Way Stop(EB)

**Project ID:** 24-600010-002  
**Date:** 7/16/2024

### Data - Bikes

NS/EW Streets:	Riverwoods Dr				Riverwoods Dr				Hillside Ave/Riverwoods Dr				Hillside Ave/Riverwoods Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%									
<b>PEAK HR :</b>	08:00 AM - 09:00 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.00%	100.00%	0.00%	0.00%													
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0

National Data & Surveying Services  
**Intersection Turning Movement Count**

**Location:** Riverwoods Dr & Hillside Ave/Riverwoods Dr  
**City:** Exeter

**Project ID:** 24-600010-002  
**Date:** 7/16/2024

**Data - Pedestrians (Crosswalks)**

NS/EW Streets:	Riverwoods Dr		Riverwoods Dr		Hillside Ave/Riverwoods Dr		Hillside Ave/Riverwoods Dr		
<b>AM</b>	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	1	1	2	1	0	0	0	1	6
7:45 AM	0	0	1	0	0	0	0	0	1
8:00 AM	1	1	0	0	0	0	0	0	2
8:15 AM	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	2	0	0	0	0	0	0	2
<b>TOTAL VOLUMES :</b>	EB 3	WB 4	EB 3	WB 1	NB 0	SB 1	NB 0	SB 1	TOTAL 13
<b>APPROACH %'s :</b>	42.86%	57.14%	75.00%	25.00%	0.00%	100.00%	0.00%	100.00%	
<b>PEAK HR :</b>	<b>08:00 AM - 09:00 AM</b>								TOTAL
<b>PEAK HR VOL :</b>	2	3	0	0	0	0	0	0	5
<b>PEAK HR FACTOR :</b>	0.500	0.375	0.625						0.625

<b>PM</b>	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	1	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	EB 0	WB 0	EB 1	WB 1	NB 0	SB 0	NB 0	SB 0	TOTAL 2
<b>APPROACH %'s :</b>			50.00%	50.00%					
<b>PEAK HR :</b>	<b>04:00 PM - 05:00 PM</b>								TOTAL
<b>PEAK HR VOL :</b>	0	0	1	1	0	0	0	0	2
<b>PEAK HR FACTOR :</b>			0.250	0.250	0.250				0.250

# Riverwoods Dr & Hillside Ave/Riverwoods Dr

## Peak Hour Turning Movement Count

ID: 24-600010-002  
City: Exeter

Day: Tuesday  
Date: 7/16/2024

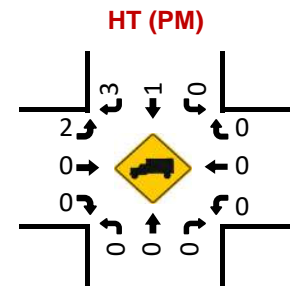
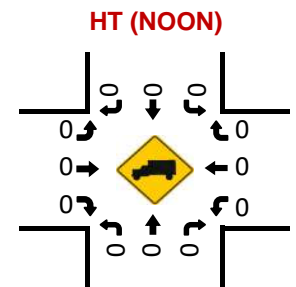
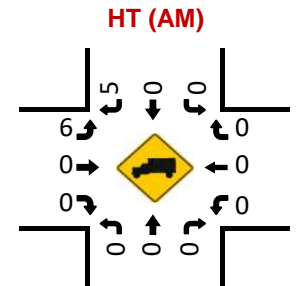
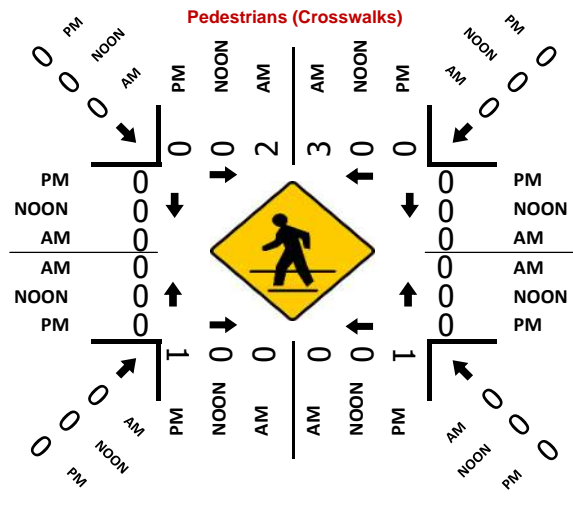
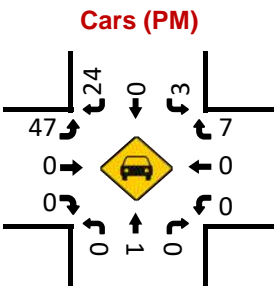
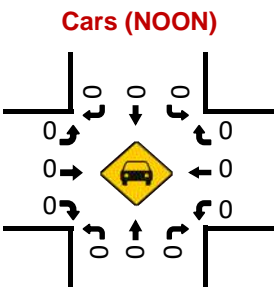
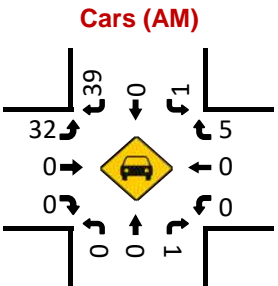
PEAK HOURS	Riverwoods Dr					COUNT PERIODS
	SOUTHBOUND					
08:00 AM - 09:00 AM	AM	44	0	1	0	43 AM
NONE	NOON	0	0	0	0	0 NOON
04:00 PM - 05:00 PM	PM	27	1	3	0	57 PM

PEAK HOURS	Riverwoods Dr					COUNT PERIODS
	NORTHBOUND					
08:00 AM - 09:00 AM	AM	44	0	27	0	7 AM
NONE	NOON	0	0	0	0	0 NOON
04:00 PM - 05:00 PM	PM	38	0	49	0	0 PM

CONTROL	
1-Way Stop(EB)	
TEV	89 AM, 0 NOON, 88 PM
PHF	0.79 AM, 0.51 PM



Project ID: 24-600010-002  
 Location: Riverwoods Dr & Hillside Ave/Riverwoods Dr  
 City: Exeter

Day: Tuesday  
 Date: 7/16/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Riverwoods Dr Northbound						Riverwoods Dr Southbound						Hillside Ave/Riverwoods Dr Eastbound						Hillside Ave/Riverwoods Dr Westbound						Int. Total
	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	1	0	12	0	0	13	7	0	0	0	0	7	0	0	1	0	1	1	21
7:15 AM	0	0	0	0	0	0	0	0	10	0	0	10	3	0	0	0	0	3	0	0	0	0	0	0	13
7:30 AM	0	0	0	0	3	0	0	0	9	0	2	9	5	0	0	0	1	5	0	0	0	0	0	0	14
7:45 AM	0	0	0	0	1	0	0	0	16	0	0	16	3	0	0	0	0	3	0	0	3	0	0	3	22
Total	0	0	0	0	4	0	1	0	47	0	2	48	18	0	0	0	1	18	0	0	4	0	1	4	70
8:00 AM	0	0	0	0	0	0	0	0	17	0	2	17	10	0	0	0	0	10	0	0	1	0	0	1	28
8:15 AM	0	0	0	0	0	0	0	0	9	0	1	9	6	0	0	0	0	6	0	0	2	0	0	2	17
8:30 AM	0	0	1	0	0	1	0	0	10	0	0	10	9	0	0	0	0	9	0	0	1	0	0	1	21
8:45 AM	0	0	0	0	0	0	1	0	8	0	2	9	13	0	0	0	0	13	0	0	1	0	0	1	23
Total	0	0	1	0	0	1	1	0	44	0	5	45	38	0	0	0	0	38	0	0	5	0	0	5	89
***BREAK***																									
4:00 PM	0	0	0	0	0	0	2	0	15	0	0	17	25	0	0	0	0	25	0	0	1	0	0	1	43
4:15 PM	0	0	0	0	0	0	0	1	5	0	0	6	10	0	0	0	0	10	0	0	3	0	0	3	19
4:30 PM	0	1	0	0	0	1	1	0	4	0	0	5	11	0	0	0	0	11	0	0	0	0	0	0	17
4:45 PM	0	0	0	0	2	0	0	0	3	0	0	3	3	0	0	0	0	3	0	0	3	0	0	3	9
Total	0	1	0	0	2	1	3	1	27	0	0	31	49	0	0	0	0	49	0	0	7	0	0	7	88
5:00 PM	0	0	0	0	0	0	0	0	3	0	0	3	7	0	0	0	0	7	0	0	1	0	0	1	11
5:15 PM	0	0	0	0	0	0	1	0	3	0	0	4	6	1	0	0	0	7	1	0	1	0	0	2	13
5:30 PM	0	0	0	0	0	0	2	0	3	0	0	5	4	0	0	0	0	4	0	0	0	0	0	0	9
5:45 PM	0	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	3	0	0	1	0	0	1	7
Total	0	0	0	0	0	0	3	0	12	0	0	15	20	1	0	0	0	21	1	0	3	0	0	4	40
Grand Total	0	1	1	0	6	2	8	1	130	0	7	139	125	1	0	0	1	126	1	0	19	0	1	20	287
Apprch %	0.0	50.0	50.0	0.0	300.0		5.8	0.7	93.5	0.0	5.0		99.2	0.8	0.0	0.0	0.8		5.0	0.0	95.0	0.0	5.0		
Total %	0.0	0.3	0.3	0.0	2.1	0.7	2.8	0.3	45.3	0.0	2.4	48.4	43.6	0.3	0.0	0.0	0.3	43.9	0.3	0.0	6.6	0.0	0.3	7.0	
Cars, PU, Vans	0	1	1	0		2	8	0	118	0		126	112	1	0	0		113	1	0	19	0		20	261
% Cars, PU, Vans	0.0	100.0	100.0	0.0		100.0	100.0	0.0	90.8	0.0		90.6	89.6	100.0	0.0	0.0		89.7	100.0	0.0	100.0	0.0		100.0	90.9
Heavy trucks	0	0	0	0		0	0	1	12	0		13	13	0	0	0		13	0	0	0	0		0	26
% Heavy trucks	0.0	0.0	0.0	0.0		0.0	0.0	100.0	9.2	0.0		9.4	10.4	0.0	0.0	0.0		10.3	0.0	0.0	0.0	0.0		0.0	9.1



Project ID: 24-600010-002

Location: Riverwoods Dr & Hillside Ave/Riverwoods Dr

City: Exeter

### PEAK HOURS

Day: Tuesday

Date: 7/16/2024

#### AM

Start Time	Riverwoods Dr Northbound					Riverwoods Dr Southbound					Hillside Ave/Riverwoods Dr Eastbound					Hillside Ave/Riverwoods Dr Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	0	0	0	0	0	0	0	17	0	17	10	0	0	0	10	0	0	1	0	1	28
8:15 AM	0	0	0	0	0	0	0	9	0	9	6	0	0	0	6	0	0	2	0	2	17
8:30 AM	0	0	1	0	1	0	0	10	0	10	9	0	0	0	9	0	0	1	0	1	21
8:45 AM	0	0	0	0	0	1	0	8	0	9	13	0	0	0	13	0	0	1	0	1	23
Total Volume	0	0	1	0	1	1	0	44	0	45	38	0	0	0	38	0	0	5	0	5	89
% App. Total	0.0	0.0	100.0	0.0	100	2.2	0.0	97.8	0.0	100	100.0	0.0	0.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.250					0.662					0.731					0.625	0.795				
Cars, PU, Vans	0	0	1	0	1	1	0	39	0	40	32	0	0	0	32	0	0	5	0	5	78
% Cars, PU, Vans	0.0	0.0	100.0	0.0	100.0	100.0	0.0	88.6	0.0	88.9	84.2	0.0	0.0	0.0	84.2	0.0	0.0	100.0	0.0	100.0	87.6
Heavy trucks	0	0	0	0	0	0	0	5	0	5	6	0	0	0	6	0	0	0	0	0	11
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	0.0	11.1	15.8	0.0	0.0	0.0	15.8	0.0	0.0	0.0	0.0	0.0	12.4

#### PM

Start Time	Riverwoods Dr Northbound					Riverwoods Dr Southbound					Hillside Ave/Riverwoods Dr Eastbound					Hillside Ave/Riverwoods Dr Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	0	0	0	0	2	0	15	0	17	25	0	0	0	25	0	0	1	0	1	43
4:15 PM	0	0	0	0	0	0	1	5	0	6	10	0	0	0	10	0	0	3	0	3	19
4:30 PM	0	1	0	0	1	1	0	4	0	5	11	0	0	0	11	0	0	0	0	0	17
4:45 PM	0	0	0	0	0	0	0	3	0	3	3	0	0	0	3	0	0	3	0	3	9
Total Volume	0	1	0	0	1	3	1	27	0	31	49	0	0	0	49	0	0	7	0	7	88
% App. Total	0.0	100.0	0.0	0.0	100	9.7	3.2	87.1	0.0	100	100.0	0.0	0.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.250					0.456					0.490					0.583	0.512				
Cars, PU, Vans	0	1	0	0	1	3	0	24	0	27	47	0	0	0	47	0	0	7	0	7	82
% Cars, PU, Vans	0.0	100.0	0.0	0.0	100.0	100.0	0.0	88.9	0.0	87.1	95.9	0.0	0.0	0.0	95.9	0.0	0.0	100.0	0.0	100.0	93.2
Heavy trucks	0	0	0	0	0	0	1	3	0	4	2	0	0	0	2	0	0	0	0	0	8
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	100.0	11.1	0.0	12.9	4.1	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	6.8

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Pickpocket Rd & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 1-Way Stop(SB)

**Project ID:** 24-600010-003  
**Date:** 7/16/2024

### Data - Total

NS/EW Streets:	Pickpocket Rd				Pickpocket Rd				SR 111/Kingston Rd				SR 111/Kingston Rd				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	0	0	2	65	0	0	0	24	4	0	96
7:15 AM	0	0	0	0	6	0	3	0	4	99	0	0	0	25	5	0	142
7:30 AM	0	0	0	0	5	0	3	0	0	74	0	0	0	40	6	0	128
7:45 AM	0	0	0	0	13	0	0	0	4	113	0	0	0	32	5	0	167
8:00 AM	0	0	0	0	11	0	0	0	1	79	0	0	0	26	5	0	122
8:15 AM	0	0	0	0	9	0	0	0	1	67	0	0	0	36	4	0	117
8:30 AM	0	0	0	0	11	0	1	0	2	70	0	0	0	31	9	0	124
8:45 AM	0	0	0	0	8	0	2	0	1	54	0	0	0	34	5	0	104
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	64	0	9	0	15	621	0	0	0	248	43	0	1000
					87.67%	0.00%	12.33%	0.00%	2.36%	97.64%	0.00%	0.00%	0.00%	85.22%	14.78%	0.00%	
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	35	0	6	0	9	365	0	0	0	123	21	0	559
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.673	0.000	0.500	0.000	0.563	0.808	0.000	0.000	0.000	0.769	0.875	0.000	0.837
							0.788				0.799				0.783		
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	8	0	0	0	3	42	0	0	0	95	9	0	157
4:15 PM	0	0	0	0	7	0	1	0	0	40	0	0	0	80	8	0	136
4:30 PM	0	0	0	0	8	0	2	0	1	48	0	0	0	69	10	0	138
4:45 PM	0	0	0	0	4	0	2	0	0	45	0	0	0	65	9	0	125
5:00 PM	0	0	0	0	0	0	1	0	1	41	0	0	0	101	11	0	155
5:15 PM	0	0	0	0	5	0	2	0	1	42	0	0	0	75	7	0	132
5:30 PM	0	0	0	0	5	0	4	0	1	55	0	0	0	78	5	0	148
5:45 PM	0	0	0	0	4	0	3	0	3	47	0	0	0	58	4	0	119
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	41	0	15	0	10	360	0	0	0	621	63	0	1110
					73.21%	0.00%	26.79%	0.00%	2.70%	97.30%	0.00%	0.00%	0.00%	90.79%	9.21%	0.00%	
<b>PEAK HR :</b>	04:45 PM - 05:45 PM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	14	0	9	0	3	183	0	0	0	319	32	0	560
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.700	0.000	0.563	0.000	0.750	0.832	0.000	0.000	0.000	0.790	0.727	0.000	0.903
							0.639				0.830				0.783		

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Pickpocket Rd & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 1-Way Stop(SB)

**Project ID:** 24-600010-003  
**Date:** 7/16/2024

### Data - Cars

NS/EW Streets:	Pickpocket Rd				Pickpocket Rd				SR 111/Kingston Rd				SR 111/Kingston Rd				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	1	0	0	0	2	63	0	0	0	20	3	0	89
7:15 AM	0	0	0	0	6	0	3	0	4	98	0	0	0	25	4	0	140
7:30 AM	0	0	0	0	4	0	3	0	0	68	0	0	0	39	6	0	120
7:45 AM	0	0	0	0	13	0	0	0	4	110	0	0	0	29	5	0	161
8:00 AM	0	0	0	0	10	0	0	0	1	76	0	0	0	26	5	0	118
8:15 AM	0	0	0	0	8	0	0	0	1	63	0	0	0	34	4	0	110
8:30 AM	0	0	0	0	10	0	1	0	1	68	0	0	0	26	8	0	114
8:45 AM	0	0	0	0	8	0	1	0	1	50	0	0	0	34	5	0	99
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	60	0	8	0	14	596	0	0	0	233	40	0	951
					88.24%	0.00%	11.76%	0.00%	2.30%	97.70%	0.00%	0.00%	0.00%	85.35%	14.65%	0.00%	
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	33	0	6	0	9	352	0	0	0	119	20	0	539
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.635	0.000	0.500	0.000	0.563	0.800	0.000	0.000	0.000	0.763	0.833	0.000	0.837
						0.750				0.792				0.772			
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	7	0	0	0	2	40	0	0	0	94	8	0	151
4:15 PM	0	0	0	0	7	0	1	0	0	40	0	0	0	76	7	0	131
4:30 PM	0	0	0	0	8	0	2	0	1	45	0	0	0	69	10	0	135
4:45 PM	0	0	0	0	4	0	2	0	0	45	0	0	0	64	9	0	124
5:00 PM	0	0	0	0	0	0	1	0	1	41	0	0	0	100	11	0	154
5:15 PM	0	0	0	0	5	0	1	0	1	40	0	0	0	74	7	0	128
5:30 PM	0	0	0	0	5	0	4	0	1	55	0	0	0	78	5	0	148
5:45 PM	0	0	0	0	4	0	3	0	3	45	0	0	0	58	4	0	117
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	40	0	14	0	9	351	0	0	0	613	61	0	1088
					74.07%	0.00%	25.93%	0.00%	2.50%	97.50%	0.00%	0.00%	0.00%	90.95%	9.05%	0.00%	
<b>PEAK HR :</b>	04:45 PM - 05:45 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	14	0	8	0	3	181	0	0	0	316	32	0	554
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.700	0.000	0.500	0.000	0.750	0.823	0.000	0.000	0.000	0.790	0.727	0.000	0.899
						0.611				0.821				0.784			

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Pickpocket Rd & SR 111/Kingston Rd  
**City:** Exeter  
**Control:** 1-Way Stop(SB)

**Project ID:** 24-600010-003  
**Date:** 7/16/2024

### Data - HT

NS/EW Streets:	Pickpocket Rd				Pickpocket Rd				SR 111/Kingston Rd				SR 111/Kingston Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	1	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	1	0	0	0	0	6	0	0	0	1	0	0	8
7:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6
8:00 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	4
8:15 AM	0	0	0	0	1	0	0	0	0	4	0	0	0	2	0	0	7
8:30 AM	0	0	0	0	1	0	0	0	1	2	0	0	0	5	1	0	10
8:45 AM	0	0	0	0	0	0	1	0	0	4	0	0	0	0	0	0	5
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	4	0	1	0	1	25	0	0	0	15	3	0	49
					80.00%	0.00%	20.00%	0.00%	3.85%	96.15%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	2	0	0	0	0	13	0	0	0	4	1	0	20
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.542	0.000	0.000	0.000	0.333	0.250	0.000	0.625
					0.500				0.542				0.417				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	1	0	0	0	1	2	0	0	0	1	1	0	6
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5
4:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	1	0	1	0	1	9	0	0	0	8	2	0	22
					50.00%	0.00%	50.00%	0.00%	10.00%	90.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	
<b>PEAK HR :</b>	04:45 PM - 05:45 PM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	1	0	0	2	0	0	0	3	0	0	6
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.375
					0.250				0.250				0.750				

# National Data & Surveying Services

## Intersection Turning Movement Count

Location: Pickpocket Rd & SR 111/Kingston Rd  
 City: Exeter  
 Control: 1-Way Stop(SB)

Project ID: 24-600010-003  
 Date: 7/16/2024

### Data - Bikes

NS/EW Streets:	Pickpocket Rd				Pickpocket Rd				SR 111/Kingston Rd				SR 111/Kingston Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0	0	0	0	3
<b>PEAK HR :</b>	07:15 AM - 08:15 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500
							0.250				0.250						
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	0	0	0	0	0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	4
<b>PEAK HR :</b>	04:45 PM - 05:45 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.500
															0.500		



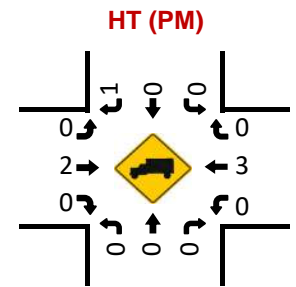
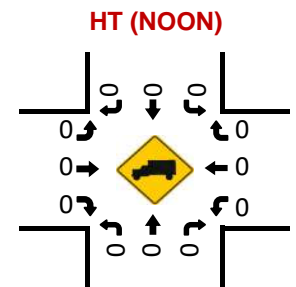
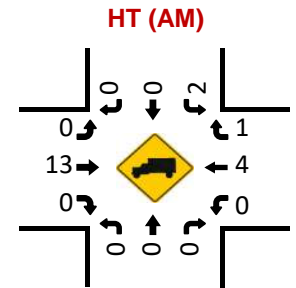
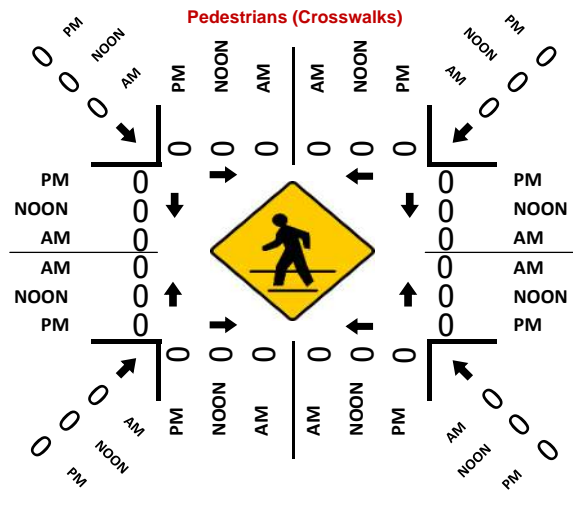
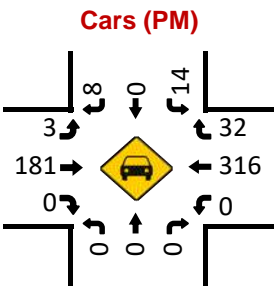
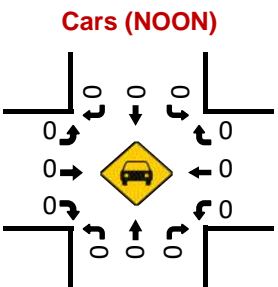
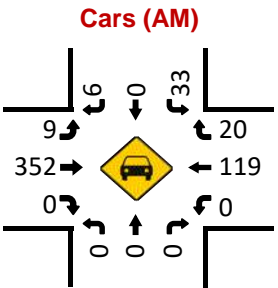
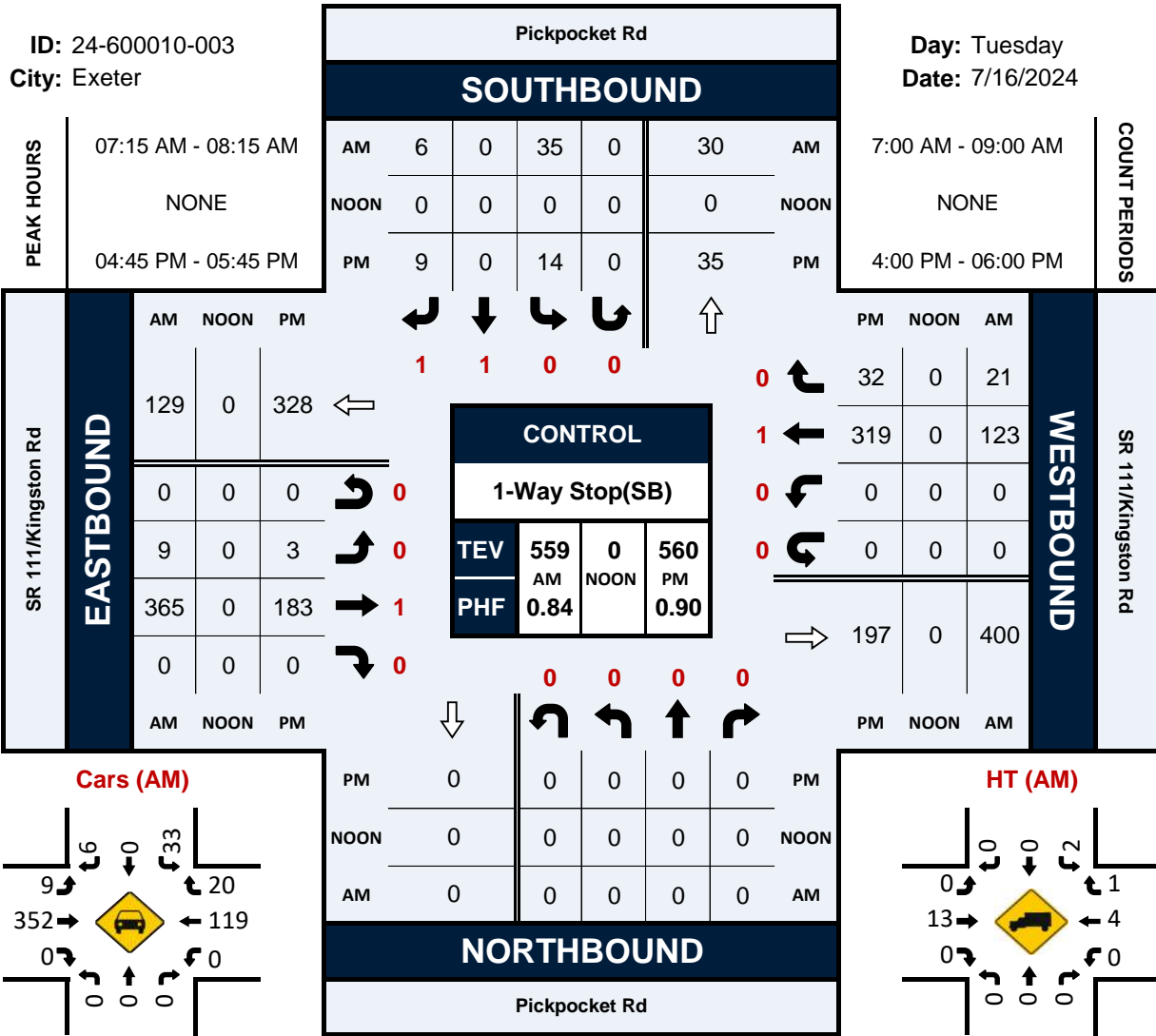


# Pickpocket Rd & SR 111/Kingston Rd

## Peak Hour Turning Movement Count

ID: 24-600010-003  
City: Exeter

Day: Tuesday  
Date: 7/16/2024



Project ID: 24-60010-003  
 Location: Pickpocket Rd & SR 111/Kingston Rd  
 City: Exeter

Day: Tuesday  
 Date: 7/16/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Pickpocket Rd Northbound						Pickpocket Rd Southbound						SR 111/Kingston Rd Eastbound						SR 111/Kingston Rd Westbound						Int. Total	
	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	1	2	65	0	0	0	67	0	24	4	0	0	28	96	
7:15 AM	0	0	0	0	0	0	6	0	3	0	0	9	4	99	0	0	0	103	0	25	5	0	0	30	142	
7:30 AM	0	0	0	0	0	0	5	0	3	0	0	8	0	74	0	0	0	74	0	40	6	0	0	46	128	
7:45 AM	0	0	0	0	0	0	13	0	0	0	0	13	4	113	0	0	0	117	0	32	5	0	0	37	167	
Total	0	0	0	0	0	0	25	0	6	0	0	31	10	351	0	0	0	361	0	121	20	0	0	141	533	
8:00 AM	0	0	0	0	0	0	11	0	0	0	0	11	1	79	0	0	0	80	0	26	5	0	0	31	122	
8:15 AM	0	0	0	0	0	0	9	0	0	0	0	9	1	67	0	0	0	68	0	36	4	0	0	40	117	
8:30 AM	0	0	0	0	0	0	11	0	1	0	0	12	2	70	0	0	0	72	0	31	9	0	0	40	124	
8:45 AM	0	0	0	0	0	0	8	0	2	0	0	10	1	54	0	0	0	55	0	34	5	0	0	39	104	
Total	0	0	0	0	0	0	39	0	3	0	0	42	5	270	0	0	0	275	0	127	23	0	0	150	467	
***BREAK***																										
4:00 PM	0	0	0	0	0	0	8	0	0	0	0	8	3	42	0	0	0	45	0	95	9	0	0	104	157	
4:15 PM	0	0	0	0	0	0	7	0	1	0	0	8	0	40	0	0	0	40	0	80	8	0	0	88	136	
4:30 PM	0	0	0	0	0	0	8	0	2	0	0	10	1	48	0	0	0	49	0	69	10	0	0	79	138	
4:45 PM	0	0	0	0	0	0	4	0	2	0	0	6	0	45	0	0	0	45	0	65	9	0	0	74	125	
Total	0	0	0	0	0	0	27	0	5	0	0	32	4	175	0	0	0	179	0	309	36	0	0	345	556	
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1	41	0	0	0	42	0	101	11	0	0	112	155	
5:15 PM	0	0	0	0	0	0	5	0	2	0	0	7	1	42	0	0	0	43	0	75	7	0	0	82	132	
5:30 PM	0	0	0	0	0	0	5	0	4	0	0	9	1	55	0	0	0	56	0	78	5	0	0	83	148	
5:45 PM	0	0	0	0	0	0	4	0	3	0	0	7	3	47	0	0	0	50	0	58	4	0	0	62	119	
Total	0	0	0	0	0	0	14	0	10	0	0	24	6	185	0	0	0	191	0	312	27	0	0	339	554	
Grand Total	0	0	0	0	0	0	105	0	24	0	0	129	25	981	0	0	0	1006	0	869	106	0	0	975	2110	
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	81.4	0.0	18.6	0.0	0.0	129	2.5	97.5	0.0	0.0	0.0	1006	0.0	89.1	10.9	0.0	0.0	975	2110	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	1.1	0.0	0.0	6.1	1.2	46.5	0.0	0.0	0.0	47.7	0.0	41.2	5.0	0.0	0.0	46.2	119	
Cars, PU, Vans	0	0	0	0	0	0	100	0	22	0	0	122	23	947	0	0	0	970	0	846	101	0	0	947	2039	
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	95.2	0.0	91.7	0.0	0.0	94.6	92.0	96.5	0.0	0.0	0.0	96.4	0.0	97.4	95.3	0.0	0.0	97.1	96.6	
Heavy trucks	0	0	0	0	0	0	5	0	2	0	0	7	2	34	0	0	0	36	0	23	5	0	0	28	71	
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	8.3	0.0	0.0	5.4	8.0	3.5	0.0	0.0	0.0	3.6	0.0	2.6	4.7	0.0	0.0	2.9	3.4	

Project ID: 24-600010-003

Location: Pickpocket Rd & SR 111/Kingston Rd

City: Exeter

### PEAK HOURS

Day: Tuesday

Date: 7/16/2024

#### AM

Start Time	Pickpocket Rd Northbound					Pickpocket Rd Southbound					SR 111/Kingston Rd Eastbound					SR 111/Kingston Rd Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	0	0	0	0	0	6	0	3	0	9	4	99	0	0	103	0	25	5	0	30	142
7:30 AM	0	0	0	0	0	5	0	3	0	8	0	74	0	0	74	0	40	6	0	46	128
7:45 AM	0	0	0	0	0	13	0	0	0	13	4	113	0	0	117	0	32	5	0	37	167
8:00 AM	0	0	0	0	0	11	0	0	0	11	1	79	0	0	80	0	26	5	0	31	122
Total Volume	0	0	0	0	0	35	0	6	0	41	9	365	0	0	374	0	123	21	0	144	559
% App. Total	0.0	0.0	0.0	0.0	0	85.4	0.0	14.6	0.0	100	2.4	97.6	0.0	0.0	100	0.0	85.4	14.6	0.0	100	
PHF						0.788					0.799					0.783					0.837
Cars, PU, Vans	0	0	0	0	0	33	0	6	0	39	9	352	0	0	361	0	119	20	0	139	539
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	94.3	0.0	100.0	0.0	95.1	100.0	96.4	0.0	0.0	96.5	0.0	96.7	95.2	0.0	96.5	96.4
Heavy trucks	0	0	0	0	0	2	0	0	0	2	0	13	0	0	13	0	4	1	0	5	20
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	4.9	0.0	3.6	0.0	0.0	3.5	0.0	3.3	4.8	0.0	3.5	3.6

#### PM

Start Time	Pickpocket Rd Northbound					Pickpocket Rd Southbound					SR 111/Kingston Rd Eastbound					SR 111/Kingston Rd Westbound					Int. Total
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	0	0	0	0	0	4	0	2	0	6	0	45	0	0	45	0	65	9	0	74	125
5:00 PM	0	0	0	0	0	0	0	1	0	1	1	41	0	0	42	0	101	11	0	112	155
5:15 PM	0	0	0	0	0	5	0	2	0	7	1	42	0	0	43	0	75	7	0	82	132
5:30 PM	0	0	0	0	0	5	0	4	0	9	1	55	0	0	56	0	78	5	0	83	148
Total Volume	0	0	0	0	0	14	0	9	0	23	3	183	0	0	186	0	319	32	0	351	560
% App. Total	0.0	0.0	0.0	0.0	0	60.9	0.0	39.1	0.0	100	1.6	98.4	0.0	0.0	100	0.0	90.9	9.1	0.0	100	
PHF						0.639					0.830					0.783					0.903
Cars, PU, Vans	0	0	0	0	0	14	0	8	0	22	3	181	0	0	184	0	316	32	0	348	554
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	100.0	0.0	88.9	0.0	95.7	100.0	98.9	0.0	0.0	98.9	0.0	99.1	100.0	0.0	99.1	98.9
Heavy trucks	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	3	0	0	3	6
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	4.3	0.0	1.1	0.0	0.0	1.1	0.0	0.9	0.0	0.0	0.9	1.1

# National Data & Surveying Services

## Intersection Turning Movement Count

Location: Timber Ln & Pickpocket Rd  
 City: Exeter  
 Control: 1-Way Stop(SB)

Project ID: 24-600010-004  
 Date: 7/16/2024

### Data - Total

NS/EW Streets:	Timber Ln				Timber Ln				Pickpocket Rd				Pickpocket Rd							
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
7:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	3	2	0	7			
7:15 AM	0	0	0	0	0	0	1	0	1	6	0	0	0	5	3	0	16			
7:30 AM	0	0	0	0	3	0	1	0	0	4	0	0	0	3	3	0	14			
7:45 AM	0	0	0	0	4	0	0	0	5	10	0	0	0	4	5	0	28			
8:00 AM	0	0	0	0	2	0	0	0	0	9	0	0	0	2	4	0	17			
8:15 AM	0	0	0	0	2	0	0	0	2	5	0	0	0	2	2	0	13			
8:30 AM	0	0	0	0	4	0	0	0	2	7	0	0	0	4	5	0	22			
8:45 AM	0	0	0	0	0	0	0	0	0	9	0	1	0	4	1	0	15			
<b>TOTAL VOLUMES :</b>	0	0	0	0	15	0	2	0	11	51	0	1	0	27	25	0	TOTAL			
<b>APPROACH %'s :</b>	0	0	0	0	88.24%	0.00%	11.76%	0.00%	17.46%	80.95%	0.00%	1.59%	0.00%	51.92%	48.08%	0.00%	132			
<b>PEAK HR :</b>	07:45 AM - 08:45 AM																TOTAL			
<b>PEAK HR VOL :</b>	0	0	0	0	12	0	0	0	9	31	0	0	0	12	16	0	80			
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.450	0.775	0.000	0.000	0.000	0.750	0.800	0.000	0.714			
					0.750				0.667				0.778							
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	TOTAL			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
4:00 PM	0	0	0	0	6	0	3	0	0	1	0	0	0	8	3	0	21			
4:15 PM	0	0	0	0	1	0	5	0	0	7	0	0	0	6	2	0	21			
4:30 PM	0	0	0	0	5	0	4	0	0	6	0	0	0	8	1	0	24			
4:45 PM	0	0	0	0	2	0	1	0	2	4	0	0	0	9	1	0	19			
5:00 PM	0	0	0	0	0	0	2	0	0	3	0	0	0	8	2	0	15			
5:15 PM	0	0	0	0	0	0	1	0	0	5	0	0	0	8	1	0	15			
5:30 PM	0	0	0	0	1	0	1	0	2	9	0	0	0	6	0	0	19			
5:45 PM	0	0	0	0	0	0	2	0	0	6	0	0	0	7	0	0	15			
<b>TOTAL VOLUMES :</b>	0	0	0	0	15	0	19	0	4	41	0	0	0	60	10	0	TOTAL			
<b>APPROACH %'s :</b>	0	0	0	0	44.12%	0.00%	55.88%	0.00%	8.89%	91.11%	0.00%	0.00%	0.00%	85.71%	14.29%	0.00%	149			
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL			
<b>PEAK HR VOL :</b>	0	0	0	0	14	0	13	0	2	18	0	0	0	31	7	0	85			
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.583	0.000	0.650	0.000	0.250	0.643	0.000	0.000	0.000	0.861	0.583	0.000	0.885			
					0.750				0.714				0.864							



# National Data & Surveying Services

## Intersection Turning Movement Count

Location: Timber Ln & Pickpocket Rd  
 City: Exeter  
 Control: 1-Way Stop(SB)

Project ID: 24-600010-004  
 Date: 7/16/2024

### Data - Cars

NS/EW Streets:	Timber Ln				Timber Ln				Pickpocket Rd				Pickpocket Rd							
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL			
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0		0	2	2
7:00 AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
7:15 AM	0	0	0	0	0	0	1	0	1	6	0	0	0	4	3	0				
7:30 AM	0	0	0	0	3	0	1	0	0	3	0	0	0	3	3	0				
7:45 AM	0	0	0	0	4	0	0	0	5	10	0	0	0	4	5	0				
8:00 AM	0	0	0	0	1	0	0	0	0	9	0	0	0	2	4	0				
8:15 AM	0	0	0	0	1	0	0	0	2	5	0	0	0	2	2	0				
8:30 AM	0	0	0	0	4	0	0	0	2	6	0	0	0	3	4	0				
8:45 AM	0	0	0	0	0	0	0	0	0	8	0	1	0	4	1	0				
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
<b>APPROACH %'s :</b>	0	0	0	0	13	0	2	0	11	48	0	1	0	24	24	0				
					86.67%	0.00%	13.33%	0.00%	18.33%	80.00%	0.00%	1.67%	0.00%	50.00%	50.00%	0.00%				
<b>PEAK HR :</b>	07:45 AM - 08:45 AM																			
<b>PEAK HR VOL :</b>	0	0	0	0	10	0	0	0	9	30	0	0	0	11	15	0				
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.450	0.750	0.000	0.000	0.000	0.688	0.750	0.000				
						0.625				0.650				0.722						
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL			
0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0		8	2	0
4:00 PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
4:15 PM	0	0	0	0	6	0	3	0	0	7	0	0	0	6	1	0				
4:30 PM	0	0	0	0	1	0	5	0	0	7	0	0	0	8	1	0				
4:45 PM	0	0	0	0	5	0	4	0	0	6	0	0	0	8	1	0				
5:00 PM	0	0	0	0	2	0	1	0	2	4	0	0	0	9	1	0				
5:15 PM	0	0	0	0	0	0	2	0	0	3	0	0	0	8	2	0				
5:30 PM	0	0	0	0	0	0	1	0	0	4	0	0	0	8	1	0				
5:45 PM	0	0	0	0	1	0	1	0	2	9	0	0	0	6	0	0				
	0	0	0	0	0	0	2	0	0	6	0	0	0	7	0	0				
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU				
<b>APPROACH %'s :</b>	0	0	0	0	15	0	19	0	4	40	0	0	0	60	8	0				
					44.12%	0.00%	55.88%	0.00%	9.09%	90.91%	0.00%	0.00%	0.00%	88.24%	11.76%	0.00%				
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																			
<b>PEAK HR VOL :</b>	0	0	0	0	14	0	13	0	2	18	0	0	0	31	5	0				
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.583	0.000	0.650	0.000	0.250	0.643	0.000	0.000	0.000	0.861	0.625	0.000				
						0.750				0.714				0.900						

# National Data & Surveying Services

## Intersection Turning Movement Count

Location: Timber Ln & Pickpocket Rd  
 City: Exeter  
 Control: 1-Way Stop(SB)

Project ID: 24-600010-004  
 Date: 7/16/2024

### Data - HT

NS/EW Streets:	Timber Ln				Timber Ln				Pickpocket Rd				Pickpocket Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	2	0	0	0	0	3	0	0	0	3	1	0	9
	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	
<b>PEAK HR :</b>	07:45 AM - 08:45 AM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	2	0	0	0	0	1	0	0	0	1	1	0	5
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.417
						0.500				0.250				0.250			
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	<b>TOTAL</b>
<b>APPROACH %'s :</b>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	3
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																<b>TOTAL</b>
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500
														0.500			

# National Data & Surveying Services

## Intersection Turning Movement Count

Location: Timber Ln & Pickpocket Rd  
 City: Exeter  
 Control: 1-Way Stop(SB)

Project ID: 24-600010-004  
 Date: 7/16/2024

### Data - Bikes

NS/EW Streets:	Timber Ln				Timber Ln				Pickpocket Rd				Pickpocket Rd				
<b>AM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0	0	0	0	3
<b>PEAK HR :</b>	07:45 AM - 08:45 AM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500
					0.250				0.250								
<b>PM</b>	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
<b>PEAK HR :</b>	04:00 PM - 05:00 PM																TOTAL
<b>PEAK HR VOL :</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PEAK HR FACTOR :</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0

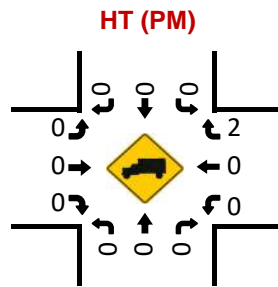
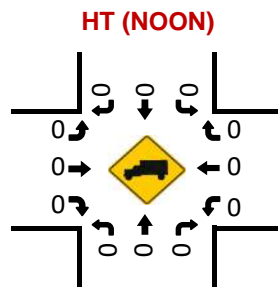
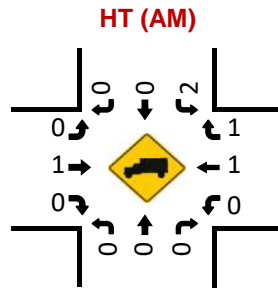
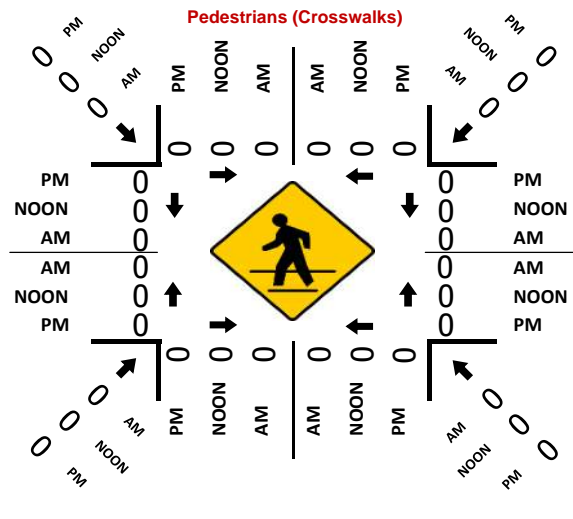
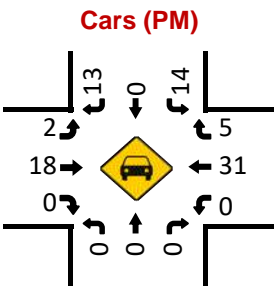
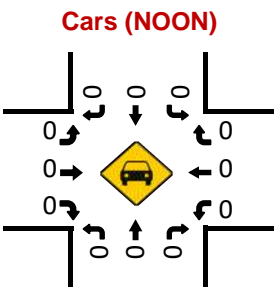
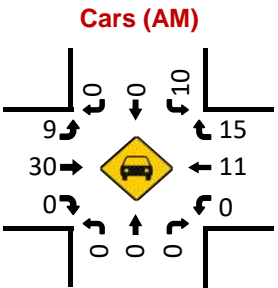
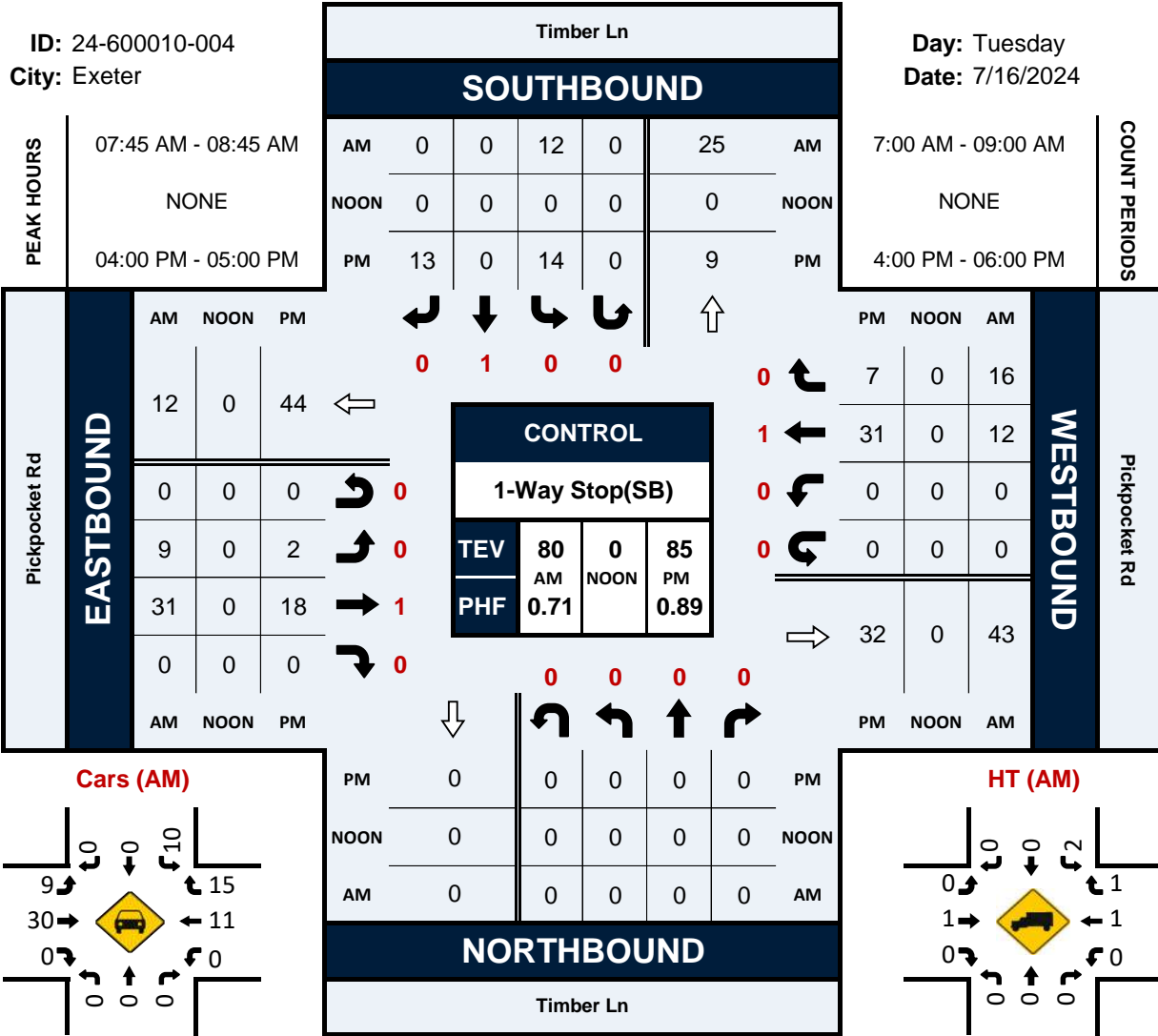


# Timber Ln & Pickpocket Rd

## Peak Hour Turning Movement Count

ID: 24-600010-004  
City: Exeter

Day: Tuesday  
Date: 7/16/2024





Project ID: 24-600010-004  
 Location: Timber Ln & Pickpocket Rd  
 City: Exeter

Day: Tuesday  
 Date: 7/16/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Timber Ln Northbound						Timber Ln Southbound						Pickpocket Rd Eastbound						Pickpocket Rd Westbound						Int. Total		
	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	3	2	0	0	0	5	7
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1	6	0	0	0	7	0	5	3	0	0	0	8	16	
7:30 AM	0	0	0	0	0	0	3	0	1	0	0	4	0	4	0	0	1	4	0	3	3	0	0	0	6	14	
7:45 AM	0	0	0	0	0	0	4	0	0	0	0	4	5	10	0	0	0	15	0	4	5	0	0	0	9	28	
Total	0	0	0	0	0	0	7	0	2	0	0	9	7	21	0	0	1	28	0	15	13	0	0	0	28	65	
8:00 AM	0	0	0	0	0	0	2	0	0	0	0	2	0	9	0	0	0	9	0	2	4	0	0	0	6	17	
8:15 AM	0	0	0	0	0	0	2	0	0	0	0	2	2	5	0	0	0	7	0	2	2	0	0	0	4	13	
8:30 AM	0	0	0	0	0	0	4	0	0	0	0	4	2	7	0	0	0	9	0	4	5	0	0	0	9	22	
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	9	0	1	0	10	0	4	1	0	0	0	5	15	
Total	0	0	0	0	0	0	8	0	0	0	1	8	4	30	0	1	0	35	0	12	12	0	0	0	24	67	
***BREAK***																											
4:00 PM	0	0	0	0	0	0	6	0	3	0	0	9	0	1	0	0	0	1	0	8	3	0	0	0	11	21	
4:15 PM	0	0	0	0	0	0	1	0	5	0	0	6	0	7	0	0	0	7	0	6	2	0	0	0	8	21	
4:30 PM	0	0	0	0	0	0	5	0	4	0	0	9	0	6	0	0	0	6	0	8	1	0	0	0	9	24	
4:45 PM	0	0	0	0	0	0	2	0	1	0	0	3	2	4	0	0	0	6	0	9	1	0	0	0	10	19	
Total	0	0	0	0	0	0	14	0	13	0	0	27	2	18	0	0	0	20	0	31	7	0	0	0	38	85	
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	3	0	0	0	3	0	8	2	0	0	0	10	15	
5:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	0	5	0	8	1	0	0	0	9	15	
5:30 PM	0	0	0	0	0	0	1	0	1	0	0	2	2	9	0	0	0	11	0	6	0	0	0	0	6	19	
5:45 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	6	0	0	0	6	0	7	0	0	0	0	7	15	
Total	0	0	0	0	0	0	1	0	6	0	0	7	2	23	0	0	0	25	0	29	3	0	0	0	32	64	
Grand Total	0	0	0	0	0	0	30	0	21	0	1	51	15	92	0	1	1	108	0	87	35	0	0	0	122	281	
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	58.8	0.0	41.2	0.0	2.0	18.1	13.9	85.2	0.0	0.9	0.9	38.4	0.0	71.3	28.7	0.0	0.0	0.0	43.4		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	7.5	0.0	0.4	18.1	5.3	32.7	0.0	0.4	0.4	38.4	0.0	31.0	12.5	0.0	0.0	0.0	43.4		
Cars, PU, Vans	0	0	0	0	0	0	28	0	21	0	0	49	15	88	0	1	1	104	0	84	32	0	0	0	116	269	
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	93.3	0.0	100.0	0.0	0.0	96.1	100.0	95.7	0.0	100.0	0.0	96.3	0.0	96.6	91.4	0.0	0.0	0.0	95.1	95.7	
Heavy trucks	0	0	0	0	0	0	2	0	0	0	0	2	0	4	0	0	0	4	0	3	3	0	0	0	6	12	
% Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	3.9	0.0	4.3	0.0	0.0	0.0	3.7	0.0	3.4	8.6	0.0	0.0	0.0	4.9	4.3	

Project ID: 24-600010-004  
 Location: Timber Ln & Pickpocket Rd  
 City: Exeter

**PEAK HOURS**

Day: Tuesday  
 Date: 7/16/2024

**AM**

Start Time	Timber Ln Northbound					Timber Ln Southbound					Pickpocket Rd Eastbound					Pickpocket Rd Westbound					Int. Total			
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total				
Peak Hour Analysis from 07:00 AM - 09:00 AM																								
Peak Hour for Entire Intersection Begins at 07:45 AM																								
7:45 AM	0	0	0	0	0	4	0	0	0	4	5	10	0	0	15	0	4	5	0	9	28			
8:00 AM	0	0	0	0	0	2	0	0	0	2	0	9	0	0	9	0	2	4	0	6	17			
8:15 AM	0	0	0	0	0	2	0	0	0	2	2	5	0	0	7	0	2	2	0	4	13			
8:30 AM	0	0	0	0	0	4	0	0	0	4	2	7	0	0	9	0	4	5	0	9	22			
Total Volume	0	0	0	0	0	12	0	0	0	12	9	31	0	0	40	0	12	16	0	28	80			
% App. Total	0.0	0.0	0.0	0.0	0	100.0	0.0	0.0	0.0	100	22.5	77.5	0.0	0.0	100	0.0	42.9	57.1	0.0	100				
PHF											0.750											0.667	0.778	0.714
Cars, PU, Vans	0	0	0	0	0	10	0	0	0	10	9	30	0	0	39	0	11	15	0	26	75			
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	83.3	0.0	0.0	0.0	83.3	100.0	96.8	0.0	0.0	97.5	0.0	91.7	93.8	0.0	92.9	93.8			
Heavy trucks	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	0	1	1	0	2	5			
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	16.7	0.0	3.2	0.0	0.0	2.5	0.0	8.3	6.3	0.0	7.1	6.3			

**PM**

Start Time	Timber Ln Northbound					Timber Ln Southbound					Pickpocket Rd Eastbound					Pickpocket Rd Westbound					Int. Total			
	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total				
Peak Hour Analysis from 04:00 PM - 06:00 PM																								
Peak Hour for Entire Intersection Begins at 04:00 PM																								
4:00 PM	0	0	0	0	0	6	0	3	0	9	0	1	0	0	1	0	8	3	0	11	21			
4:15 PM	0	0	0	0	0	1	0	5	0	6	0	7	0	0	7	0	6	2	0	8	21			
4:30 PM	0	0	0	0	0	5	0	4	0	9	0	6	0	0	6	0	8	1	0	9	24			
4:45 PM	0	0	0	0	0	2	0	1	0	3	2	4	0	0	6	0	9	1	0	10	19			
Total Volume	0	0	0	0	0	14	0	13	0	27	2	18	0	0	20	0	31	7	0	38	85			
% App. Total	0.0	0.0	0.0	0.0	0	51.9	0.0	48.1	0.0	100	10.0	90.0	0.0	0.0	100	0.0	81.6	18.4	0.0	100				
PHF											0.750											0.714	0.864	0.885
Cars, PU, Vans	0	0	0	0	0	14	0	13	0	27	2	18	0	0	20	0	31	5	0	36	83			
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	100.0	0.0	100.0	71.4	0.0	94.7	97.6			
Heavy trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2			
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	5.3	2.4			

**TRAFFIC VOLUME ADJUSTMENT DATA**

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Year 2019 Monthly Data

Group 4 Averages: Urban Highways

<u>Month</u>	<u>ADT</u>	<u>Adjustment to Average</u>	<u>Adjustment to Peak</u>	<u>GROUP</u>	<u>COUNTER</u>	<u>TOWN</u>	<u>LOCATION</u>
January	11,431	1.12	1.23	04	02051003	BOW	NH 3A south of Robinson Rd
February	11,848	1.08	1.18	04	02089001	CHICHESTER	NH 28 (Suncook Valley Rd) north of Bear Hill Rd
March	12,141	1.06	1.15	04	02091001	CLAREMONT	NH 12/103 east of Vermont SL
April	12,860	1.00	1.09	04	62099056	CONCORD	NH 106 (Sheep Davis Rd) at Loudon TL (north of Ashby Rd)
May	13,551	0.95	1.03	04	72099278	CONCORD	US 3 (Fisherville Rd) north of Sewalls Falls Rd
June	13,785	0.93	1.02	04	02125001	DOVER	Dover Point Rd south of Thornwood Ln
July	13,942	0.92	1.01	04	02133021	DURHAM	US 4 east of NH 108
August	14,016	0.92	1.00	04	82197076	HAMPTON	US 1 (Lafayette Rd) south of Ramp to NH 101
September	13,379	0.96	1.05	04	02253025	LEBANON	NH 120 1 mile south of Hanover TL (south of Lahaye Dr)
October	13,339	0.96	1.05	04	02255001	LEE	NH 125 (Calef Hwy) north of Pinkham Rd
November	12,265	1.05	1.14	04	02287001	MARLBOROUGH	NH 12 at Swanzev TL
December	11,496	1.12	1.22	04	02297001	MERRIMACK	US 3 (Daniel Webster Hwy) north of Hilton Dr
Average ADT:	12,838			04	02303001	MILFORD*	NH 101A at Amherst TL (west of Overlook Dr)
Peak ADT:	14,016			04	02315051	NASHUA*	NH 111 (Bridge / Ferry St) at Hudson TL
				04	02339001	NEWPORT	NH 10 1 mile south of Croydon TL (north of Corbin Rd)
				04	02345001	NORTH HAMPTON	US 1 (Lafayette Rd) north of North Rd
				04	62387052	RINDGE*	US 202 at Jaffrey TL (north of County Rd)
				04	02445001	TEMPLE	NH 101 at Wilton TL (west of Old County Farm Rd)
				04	02489001	WINDHAM	NH 28 at Derry TL (north of Northland Rd)

\* denotes counter that is not included in calculation

Count 1						
N/A For Aggregated Counts						
INTERVAL:60-MIN						
Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	173	-10.9
1:00-2:00	-	-	-	-	113	-19.9
2:00-3:00	-	-	-	-	98	-16.0
3:00-4:00	-	-	-	-	171	5.4
4:00-5:00	-	-	-	-	425	1.2
5:00-6:00	-	-	-	-	1170	1.8
6:00-7:00	-	-	-	-	2533	0.6
7:00-8:00	-	-	-	-	3744	-3.3
8:00-9:00	-	-	-	-	3430	1.7
9:00-10:00	-	-	-	-	2378	-2.1
10:00-11:00	-	-	-	-	2132	-0.8
11:00-12:00	-	-	-	-	2219	-7.3
12:00-13:00	-	-	-	-	2328	-8.4
13:00-14:00	-	-	-	-	2351	-9.7
14:00-15:00	-	-	-	-	2851	-10.6
15:00-16:00	-	-	-	-	3608	-13.9
16:00-17:00	-	-	-	-	4094	-10.7
17:00-18:00	-	-	-	-	4161	-7.4
18:00-19:00	-	-	-	-	2383	-21.1
19:00-20:00	-	-	-	-	1389	-16.6
20:00-21:00	-	-	-	-	1035	-30.7
21:00-22:00	-	-	-	-	762	-21.5
22:00-23:00	-	-	-	-	497	-37.3
23:00-24:00	-	-	-	-	339	-26.2
<b>Total</b>	Counts = 20				<b>44384</b>	<b>-8.8</b>

Count Criteria	
Local Id	02153001
Start Date	02/01/2019
End Date	02/28/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 2						
N/A For Aggregated Counts						
INTERVAL:15-MIN						
Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	35	40	34	29	138	-33.2
1:00-2:00	25	26	27	23	101	-31.0
2:00-3:00	20	23	25	25	93	-21.2
3:00-4:00	29	38	46	57	170	4.8
4:00-5:00	67	87	109	146	409	-2.7
5:00-6:00	200	257	296	336	1089	-5.4
6:00-7:00	369	470	619	679	2137	-16.3
7:00-8:00	652	768	874	927	3221	-18.3
8:00-9:00	798	810	782	698	3088	-8.8
9:00-10:00	585	584	576	542	2287	-6.0
10:00-11:00	492	531	533	549	2105	-2.1
11:00-12:00	534	549	549	564	2196	-8.3
12:00-13:00	575	581	574	588	2318	-8.8
13:00-14:00	574	587	612	643	2416	-7.0
14:00-15:00	653	708	751	756	2868	-10.0
15:00-16:00	806	841	913	907	3467	-17.9
16:00-17:00	910	965	968	931	3774	-18.8
17:00-18:00	980	1018	841	711	3550	-23.2
18:00-19:00	632	585	490	396	2103	-33.3
19:00-20:00	376	353	298	272	1299	-23.3
20:00-21:00	255	249	226	211	941	-39.9
21:00-22:00	214	214	171	151	750	-23.1
22:00-23:00	131	118	116	96	461	-44.5
23:00-24:00	85	72	62	60	279	-45.0
<b>Total</b>	Counts = 21				<b>41260</b>	<b>-16.1</b>

Count Criteria	
Local Id	02153001
Start Date	02/01/2024
End Date	02/29/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

3744 / 3221      1.16

4161 / 3774      1.10

44384 / 41260      1.08

LOCATION INFO	
Location ID	02153001
Type	SPOT
Funct'l Class	2
Located On	NH Route 101 W
Loc On Alias	NH 101 AT MILEPOST 127.4 BETWEEN EXITS 11-12 (EB-WB) (01153150 - 01153151)
Direction	2-WAY
County	ROCKINGHAM
Community	EXETER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT



**Traffic Growth Rate<sup>a</sup>**

Location	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Rate
STATION 62153060 - EXETER - NH 111 (KINGSTON RD) AT KINGSTON TL			4,600			4,700			5,124		1.82%
STATION 82153067 - EXETER - NH 111 (FRONT ST) WEST OF LITTLE RIVER			7,600			7,300			6,990		-1.38%
STATION 82153020 - EXETER - NH 111 (FRONT ST) EAST OF WASHINGTON ST		7,900			7,700			7,402			-1.08%
STATION 82243077 - KINGSTON - NH 111 (EXETER RD) EAST OF LITTLE RIVER ROAD			4,200			4,400			4,334		0.53%
STATION 82243052 - KINGSTON - NH 107/NH 125 SOUTH OF THE JCT OF NH 107/NH 125			15,000			14,000			12,592		-2.87%
STATION 82153108 - EXETER - POWDER MILL ROAD AT B&M RR CROSSING		830			1,000			924			1.90%
STATION 82055057 - BRENTWOOD - PICKPOCKET RD OVER DUDLEY BROOK			1,100			1,000			968		-2.10%
STATION 82239011 - KENSINGTON - NORTH HAVERHILL RD (NH 108) AT EAST KINGSTON TL		2,700			2,800			2,512			-1.17%

Average Annual Growth Rate = **-0.54%**

**USE 1%**

Per NHDOT current threshold

<sup>a</sup> Source: Based upon historical data; NHDOT Transportation Data Management System.

**SIGHT DISTANCE CALCULATIONS**

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## AASHTO Recommended Sight Distance Summary (Passenger Vehicles)

LOCATION: Riverwoods Drive at Riverwoods Drive

Side Street Direction: EB  
 Number of Lanes on Mainline = 2  
 Median Width (Feet) = 0

**STOPPING SIGHT DISTANCE**

Mainline Direction: SB  
 85th Percentile Speed (V) = 29 MPH  
 Grade (G) = 0.3%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 188 FT  

<b>SSD =</b>	<b>190 FT</b>
--------------	---------------

Mainline Direction: NB  
 85th Percentile Speed (V) = 28 MPH  
 Grade (G) = -0.3%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 179 FT  

<b>SSD =</b>	<b>180 FT</b>
--------------	---------------

**INTERSECTION SIGHT DISTANCE**

RIGHT TURN FROM STOP: North of Driveway  
 Posted Speed (V) = 25 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 6.5 seconds  
 ISD (Right Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 239 FT  

<b>ISD (Right Turn from Stop) =</b>	<b>240 FT</b>
-------------------------------------	---------------

LEFT TURN FROM STOP: South of Driveway  
 Posted Speed (V) = 25 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 7.5 seconds  
 ISD (Left Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 276 FT  

<b>ISD (Left Turn from Stop) =</b>	<b>280 FT</b>
------------------------------------	---------------

## AASHTO Recommended Sight Distance Summary (Passenger Vehicles)

LOCATION: Kingston Road at Riverwoods Drive

Side Street Direction: NB  
 Number of Lanes on Mainline = 2  
 Median Width (Feet) = 0

**STOPPING SIGHT DISTANCE**

Mainline Direction: EB  
 85th Percentile Speed (V) = 40 MPH  
 Grade (G) = -0.7%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 301 FT  

<b>SSD =</b>	<b>305 FT</b>
--------------	---------------

Mainline Direction: WB  
 85th Percentile Speed (V) = 41 MPH  
 Grade (G) = 0.7%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 313 FT  

<b>SSD =</b>	<b>315 FT</b>
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**INTERSECTION SIGHT DISTANCE**

RIGHT TURN FROM STOP: West of Driveway  
 Posted Speed (V) = 35 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 6.5 seconds  
 ISD (Right Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 335 FT  

<b>ISD (Right Turn from Stop) =</b>	<b>335 FT</b>
-------------------------------------	---------------

LEFT TURN FROM STOP: East of Driveway  
 Posted Speed (V) = 35 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 7.5 seconds  
 ISD (Left Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 386 FT  

<b>ISD (Left Turn from Stop) =</b>	<b>390 FT</b>
------------------------------------	---------------

## AASHTO Recommended Sight Distance Summary (Passenger Vehicles)

LOCATION: Kingston Road at White Oak Drive

Side Street Direction: SB  
 Number of Lanes on Mainline = 2  
 Median Width (Feet) = 0

### STOPPING SIGHT DISTANCE

Mainline Direction: WB  
 85th Percentile Speed (V) = 41 MPH  
 Grade (G) = 0.7%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 313 FT  

<b>SSD =</b>	<b>315 FT</b>
--------------	---------------

Mainline Direction: EB  
 85th Percentile Speed (V) = 40 MPH  
 Grade (G) = -0.7%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 301 FT  

<b>SSD =</b>	<b>305 FT</b>
--------------	---------------

### INTERSECTION SIGHT DISTANCE

RIGHT TURN FROM STOP: East of Driveway  
 Posted Speed (V) = 35 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 6.5 seconds  
 ISD (Right Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 335 FT  

<b>ISD (Right Turn from Stop) =</b>	<b>335 FT</b>
-------------------------------------	---------------

LEFT TURN FROM STOP: West of Driveway  
 Posted Speed (V) = 35 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 7.5 seconds  
 ISD (Left Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 386 FT  

<b>ISD (Left Turn from Stop) =</b>	<b>390 FT</b>
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## AASHTO Recommended Sight Distance Summary (Passenger Vehicles)

LOCATION: Pickpocket Lane at Timber Lane

Side Street Direction: SB  
 Number of Lanes on Mainline = 2  
 Median Width (Feet) = 0

### STOPPING SIGHT DISTANCE

Mainline Direction: WB  
 85th Percentile Speed (V) = 35 MPH  
 Grade (G) = 1.1%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 247 FT  

<b>SSD =</b>	<b>250 FT</b>
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Mainline Direction: EB  
 85th Percentile Speed (V) = 35 MPH  
 Grade (G) = -1.1%  
 Apply Grade Adjustment No  
 Brake Reaction Time (T) = 2.5 seconds  
 Deceleration Rate (A) = 11.2 ft/s<sup>2</sup>  
 SSD = 1.47 V \* T + 1.075 V<sup>2</sup>/A = 247 FT  

<b>SSD =</b>	<b>250 FT</b>
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### INTERSECTION SIGHT DISTANCE

RIGHT TURN FROM STOP: East of Driveway  
 Posted Speed (V) = 25 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 6.5 seconds  
 ISD (Right Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 239 FT  

<b>ISD (Right Turn from Stop) =</b>	<b>240 FT</b>
-------------------------------------	---------------

LEFT TURN FROM STOP: West of Driveway  
 Posted Speed (V) = 25 MPH  
 Minor Street Approach Grade (G) = 0.0%  
 Apply Grade Adjustment No  
 Time Gap (t<sub>g</sub>) = 7.5 seconds  
 ISD (Left Turn from Stop) = 1.47 \* t<sub>g</sub> \* V = 276 FT  

<b>ISD (Left Turn from Stop) =</b>	<b>280 FT</b>
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**KINGSTON ROAD TAP PROJECT CONSTRUCTION SHEETS**



# Town Of Exeter, New Hampshire

## Kingston Road TAP Project

### Exeter 40436, X-A004(406)

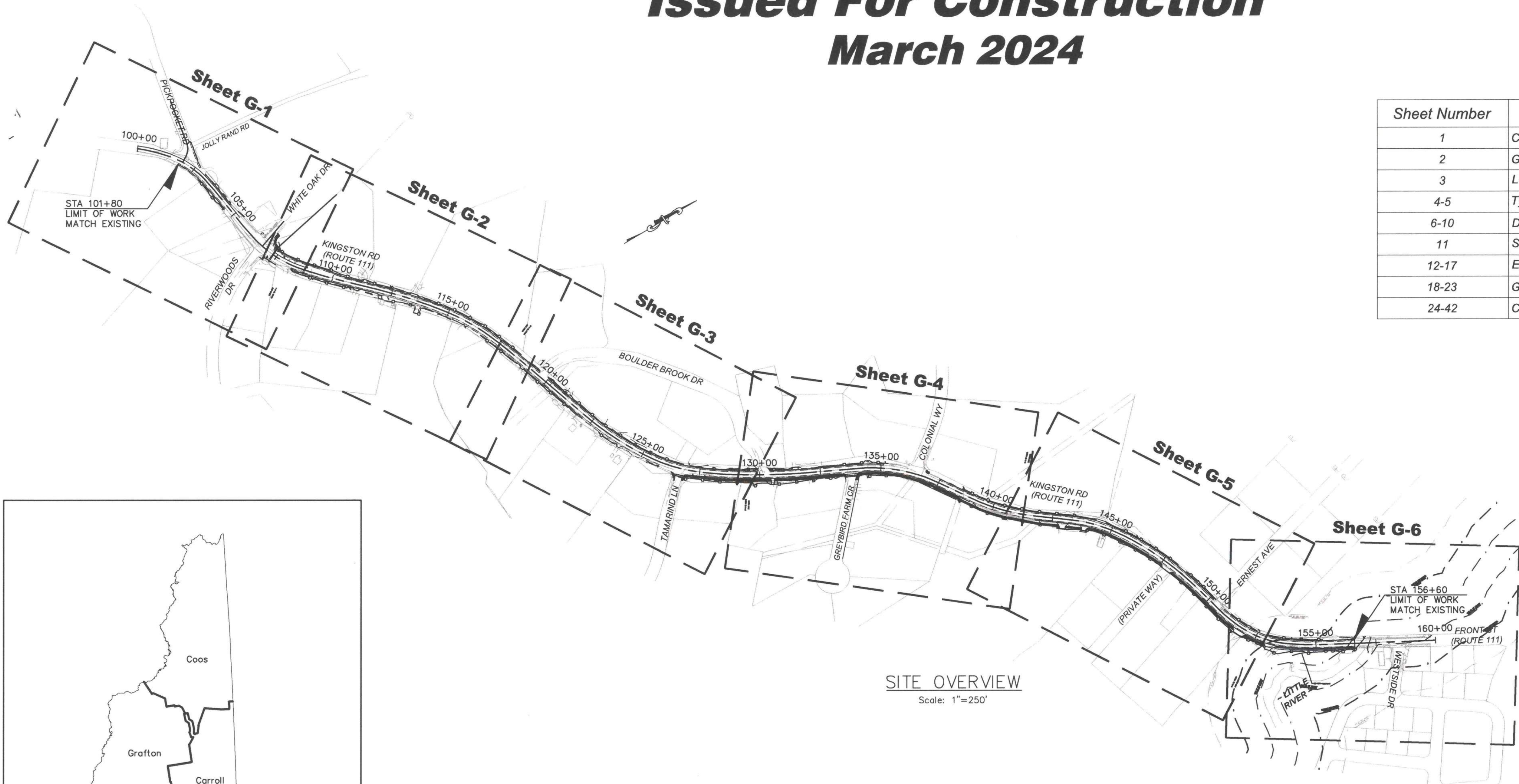
**Issued For Construction**  
**March 2024**

CONTRACTOR:  
 DBU Construction, Inc.  
 PO Box 984  
 Epsom, New Hampshire 03234-0984

*[Signature]* 3/21/24  
 Signature of Corporate Officer Date

*CP*  
 Title

Sheet Number	Sheet Title
1	Cover
2	General Notes
3	Legend and Abbreviations
4-5	Typical Section
6-10	Details
11	Sign Text Layout
12-17	Existing Conditions Plans
18-23	General Plans
24-42	Cross Sections

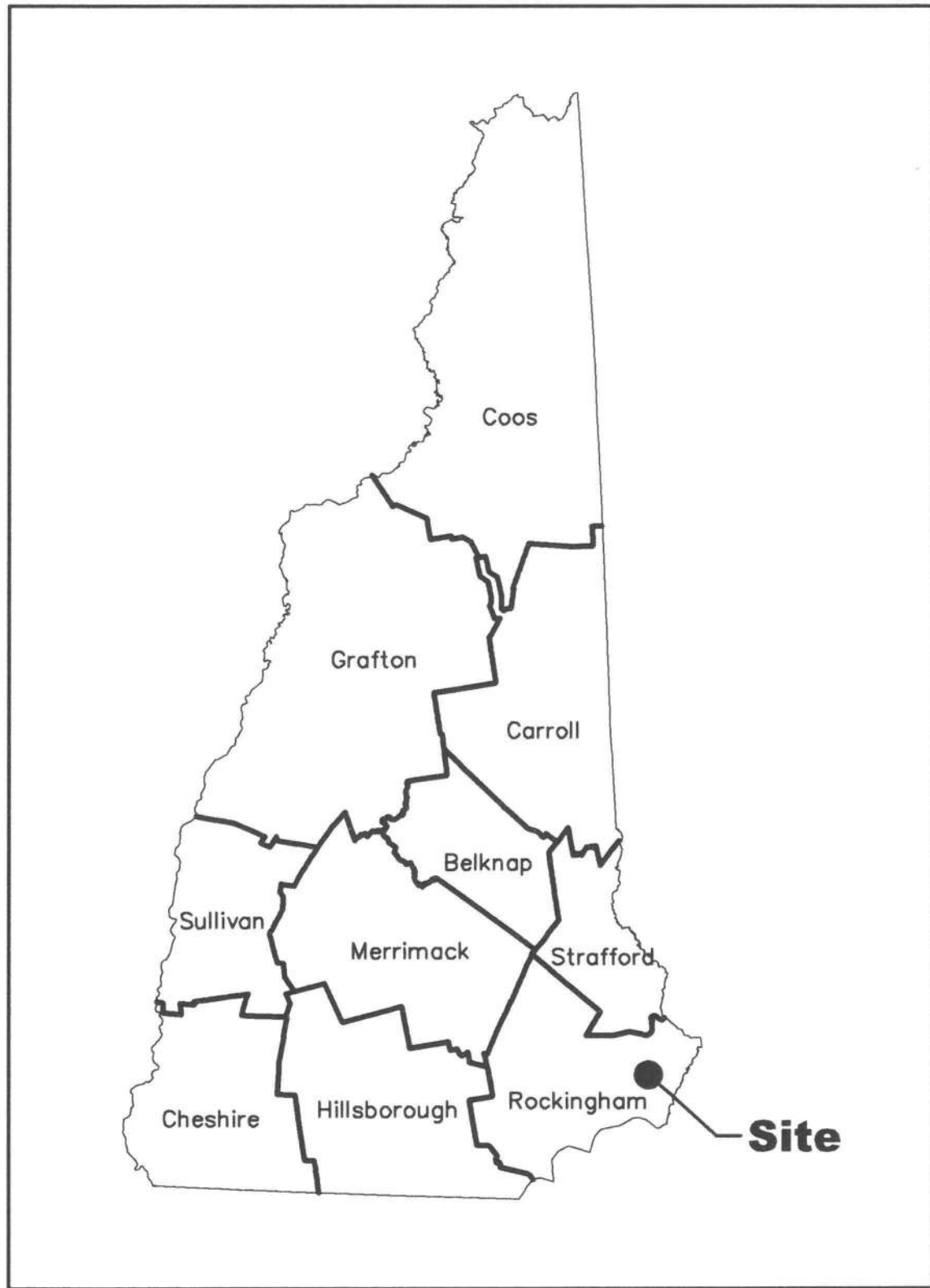


SITE OVERVIEW  
 Scale: 1"=250'

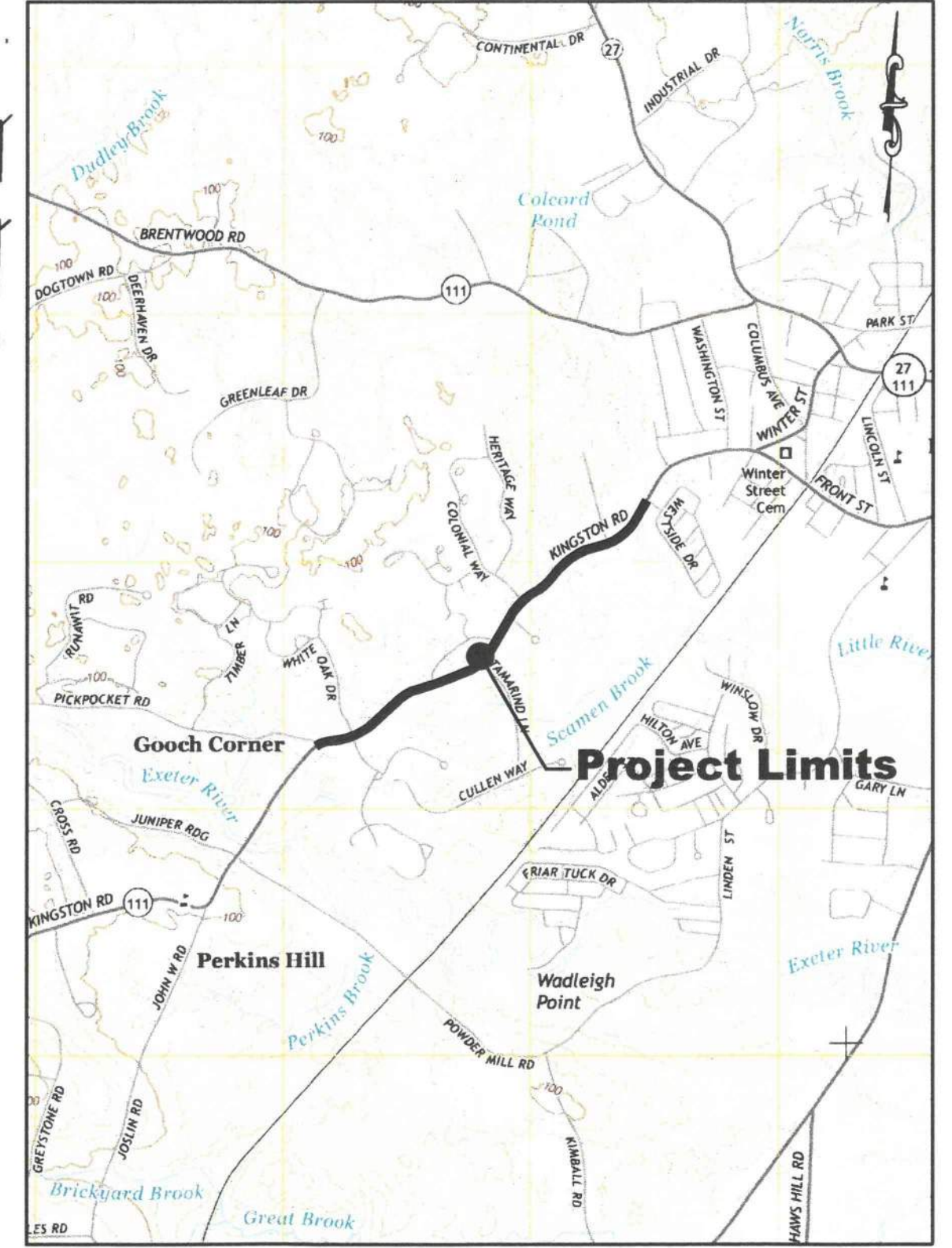
Prepared For:  
**Town of Exeter**  
**Public Works Department**  
**13 Newfields Road**  
**Exeter, NH 03833**



CIVIL/ENVIRONMENTAL/STRUCTURAL  
 Portsmouth, NH • Manchester, NH • Portland, ME  
 603/431-6196 • 603/627-0708 • 207/541-4223  
 cmaengineers.com



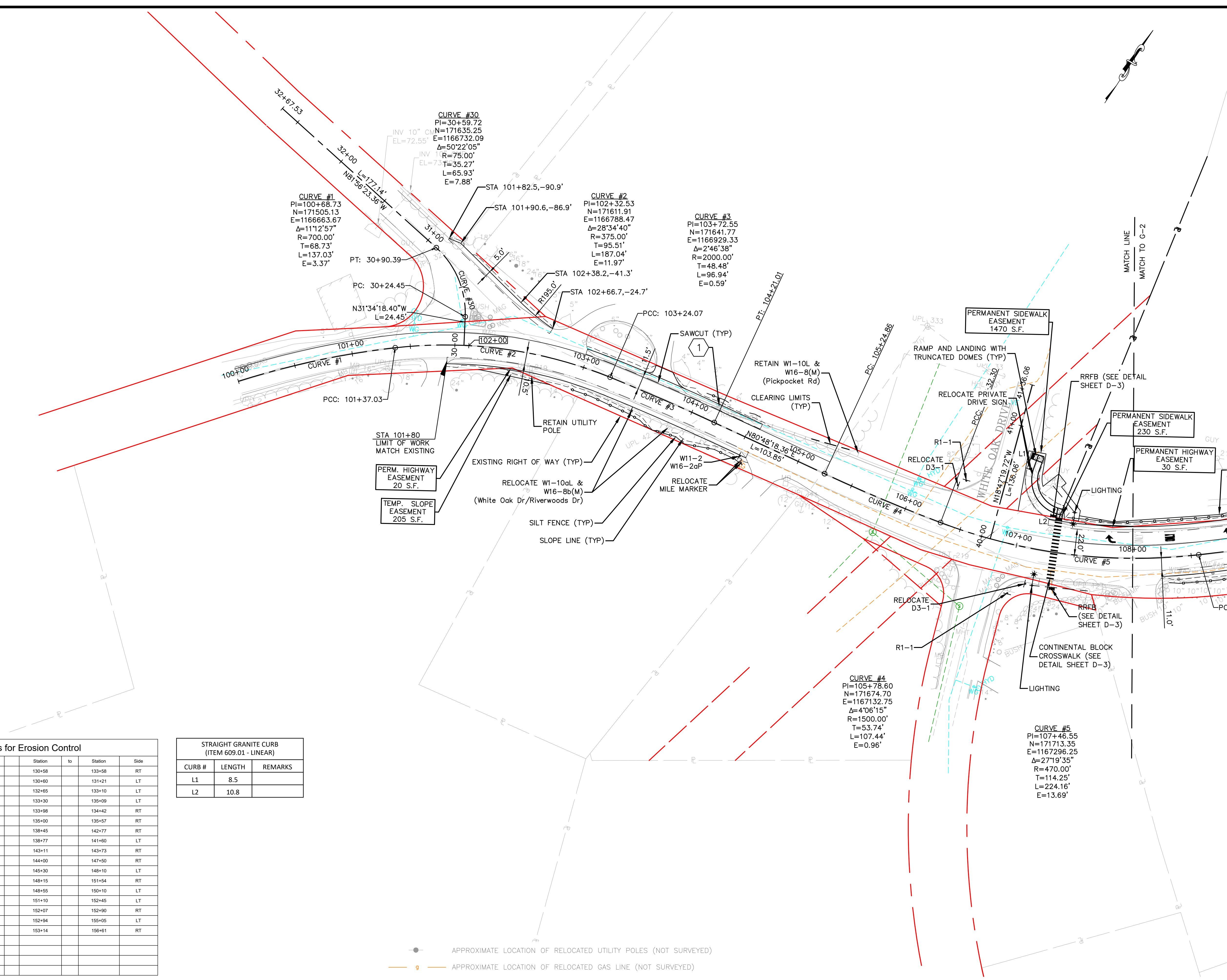
**Locus Plan**



**Project Locations**

Scale: 1" = 2000'





Station Limits for Erosion Control

Station	to	Station	Side	Station	to	Station	Side
102+95		104+58	RT	130+58		133+58	RT
104+05		104+25	LT	130+60		131+21	LT
104+45		104+55	LT	132+65		133+10	LT
107+40		109+95	LT	133+30		135+09	LT
108+30		110+85	RT	133+98		134+42	RT
110+70		111+16	LT	135+00		135+57	RT
111+45		111+75	RT	138+45		142+77	RT
111+80		113+15	LT	138+77		141+60	LT
112+35		114+40	RT	143+11		143+73	RT
113+75		118+50	LT	144+00		147+50	RT
114+59		115+20	RT	145+30		148+10	LT
116+64		118+60	RT	148+15		151+54	RT
119+00		121+40	RT	148+55		150+10	LT
119+05		119+51	LT	151+10		152+45	LT
120+04		120+80	RT	152+07		152+90	RT
121+25		126+80	LT	152+94		155+05	LT
123+00		123+81	RT	153+14		156+61	RT
125+37		125+80	RT				
126+89		129+70	RT				
127+10		127+68	LT				
127+79		129+93	LT				

STRAIGHT GRANITE CURB (ITEM 609.01 - LINEAR)

CURB #	LENGTH	REMARKS
L1	8.5	
L2	10.8	

● APPROXIMATE LOCATION OF RELOCATED UTILITY POLES (NOT SURVEYED)  
 — 9 — APPROXIMATE LOCATION OF RELOCATED GAS LINE (NOT SURVEYED)

designed by: JUB/STF  
 date: March 2024

drawn by: ATR/STF  
 project no: 1030

approved by: JUB  
 file name: 1030-GenPlans.dwg

scale: 1" = 40'

Scale: 1" = 40'

1  
no.

Issued for Construction  
3/2024  
date

revision

by

JUB

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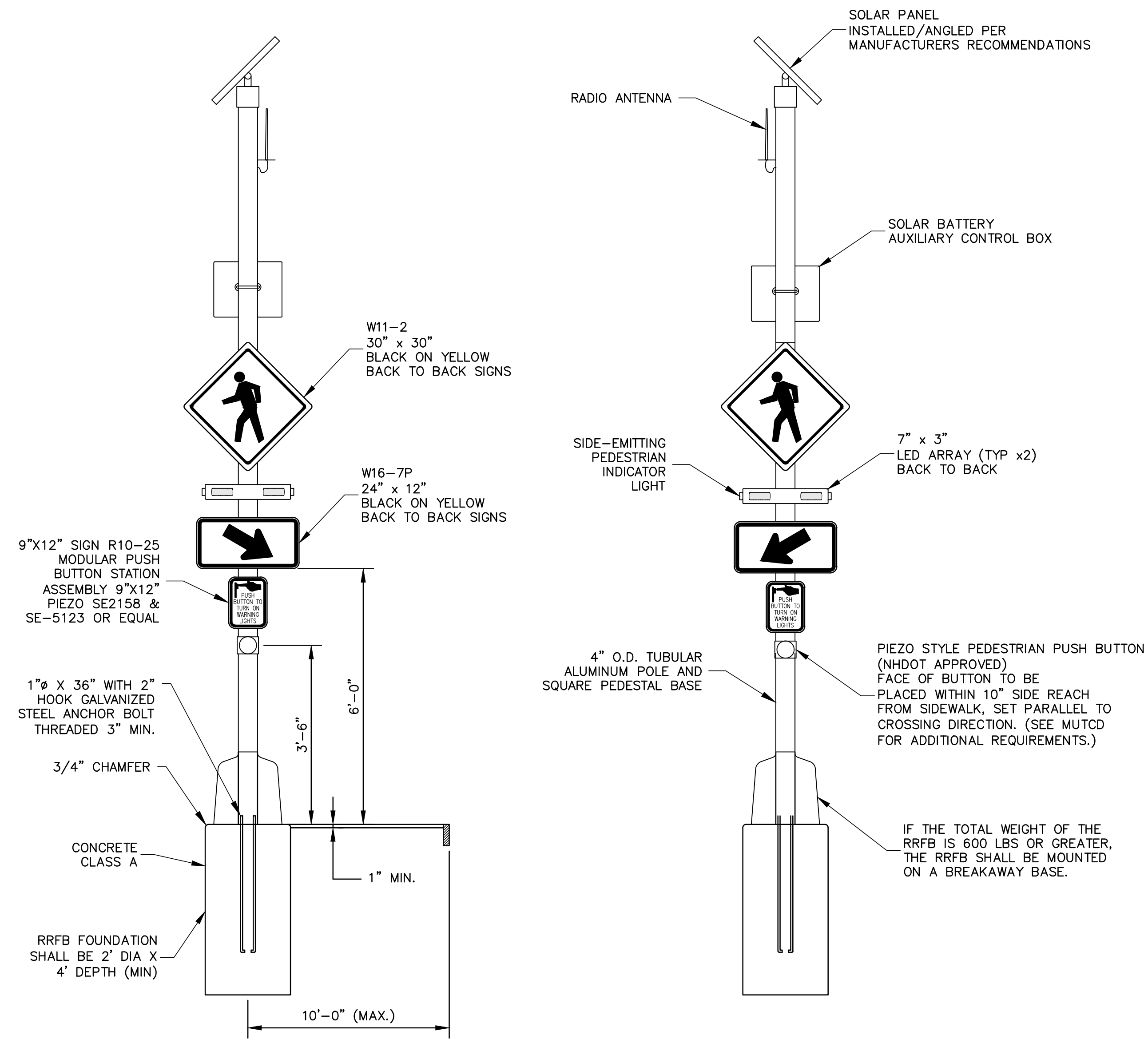
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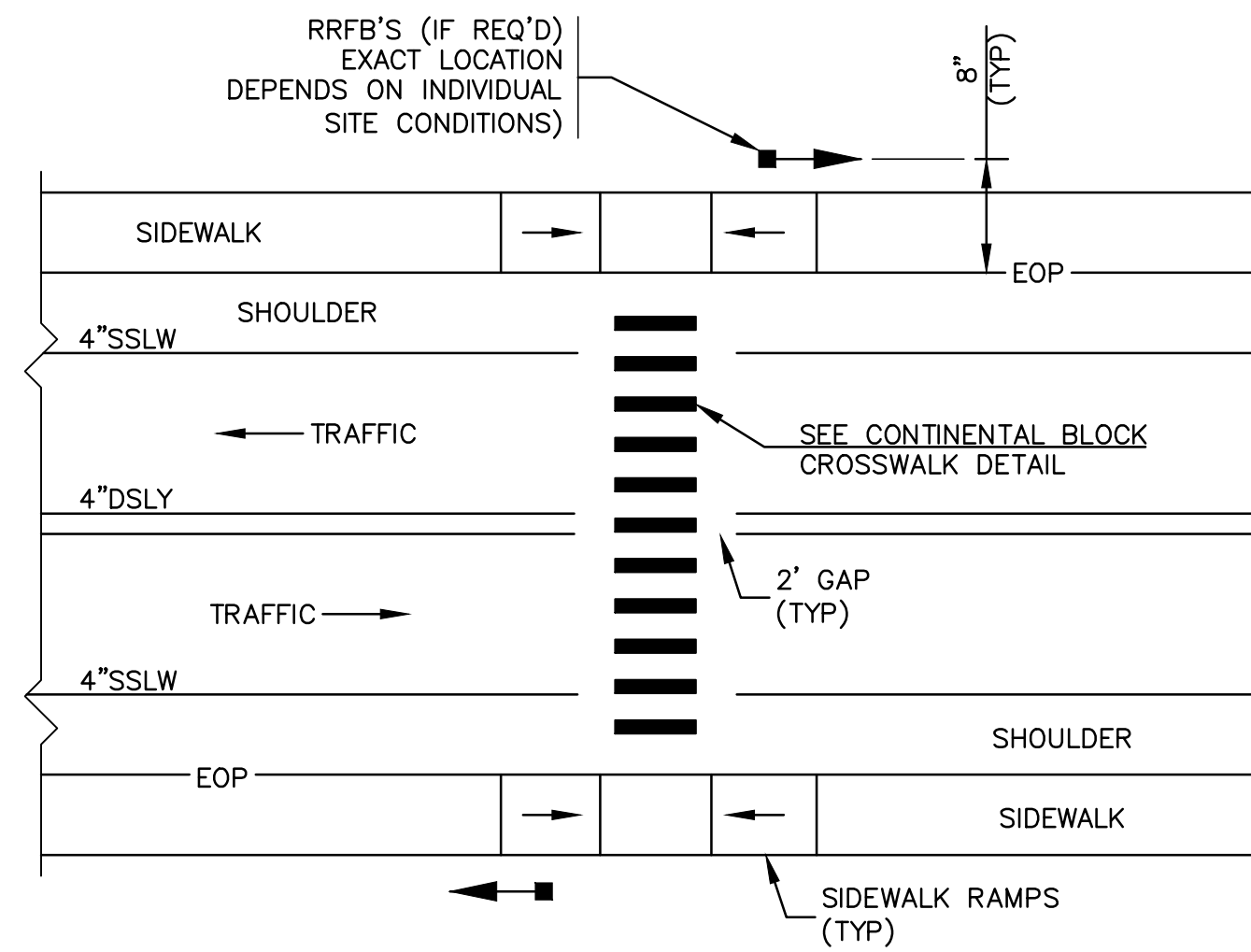


**NOTES:**

1. SHOP DRAWING REVIEW REQUIRED PRIOR TO ORDERING EQUIPMENT OR INSTALLING BASES.
2. ALL POLES, BASES, AND WIRE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. CONCRETE BASES SHALL BE INCIDENTAL TO THE RRFB ASSEMBLY INCLUDING ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.
4. ANCHOR BOLTS, GROUND ROD & GROUND WIRE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
5. BOLT CIRCLE DIAMETER SHALL BE VERIFIED WITH THE MANUFACTURER.
6. REINFORCEMENT SHALL CONFORM TO SECTION 544 OF THE STANDARD SPECIFICATIONS.
7. ANY ANCHOR BOLTS DAMAGED DURING INSTALLATION SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER.
8. UPON INSTALLATION, ANCHOR BOLT THREADS SHALL BE CLEANED WITH A WIRE BRUSH.
9. ALL SIGNS, FLASHING LIGHTS, SOLAR ELECTRICAL PANELS, WIRING, CONNECTIONS, PUSH BUTTONS, RADIO INTERCONNECTIONS, SUPPORT POLES, CONCRETE FOUNDATIONS, EXCAVATION, AND OTHER ASSOCIATED EQUIPMENT AND CONSTRUCTION PROCEDURES FOR A COMPLETE AND FUNCTIONAL SIGN ASSEMBLY SHALL BE PAID FOR UNDER ITEM 616.261 RECTANGULAR RAPID FLASHING BEACON ASSEMBLY, PER PAIR OR RRFBS.
11. INSTALL W11-2 WITH APPROPRIATE ADVANCE WARNING PLAQUE PRIOR TO CROSSING WHEN REQUIRED.
12. SEE PLANS LOCATED ELSEWHERE IN THE PROPOSAL FOR PROPOSED LOCATION OF RRFB AND ADVANCE WARNING SIGNAGE.
13. THE TOTAL WEIGHT OF RRFB SHALL NOT EXCEED 600 LBS. TO MEET BREAKAWAY SUPPORT REQUIREMENTS.
14. INSTALL W11-2 WITH W16-2aP SIGNS (250') PRIOR TO CROSSING.

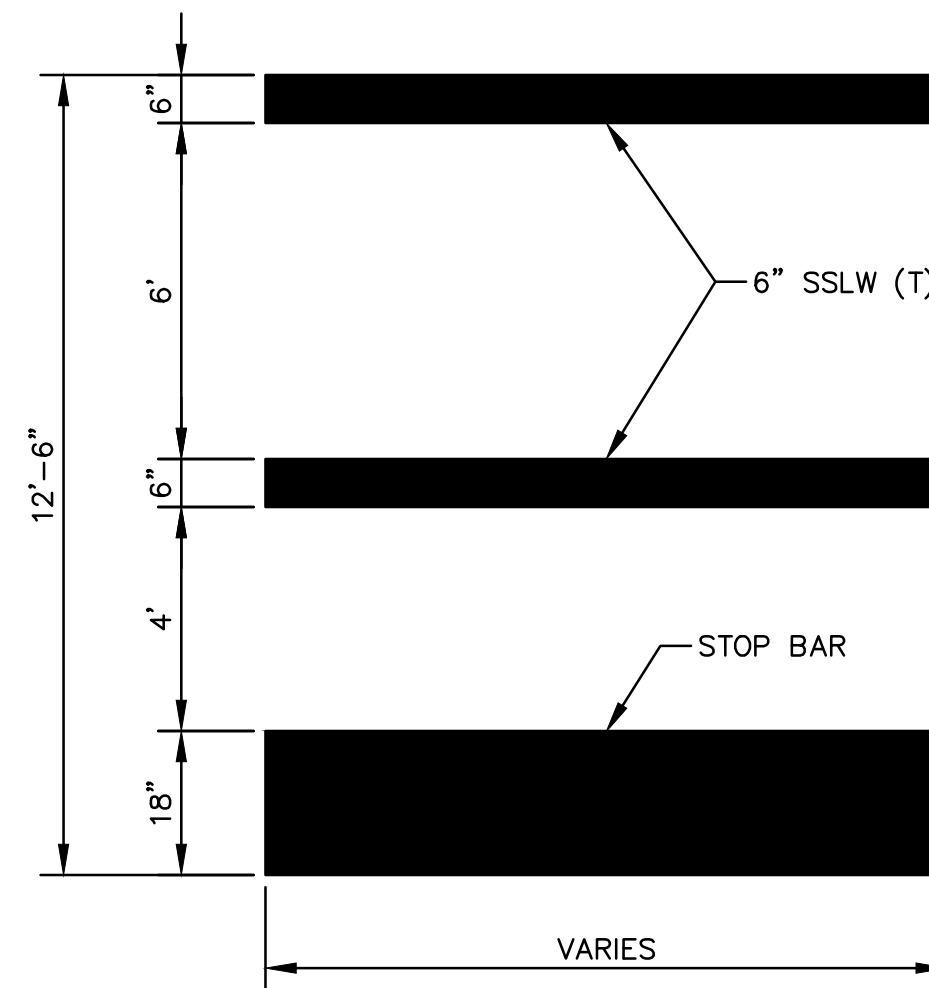
**Rectangular Rapid Flashing Beacon Assembly Detail**

Not to Scale



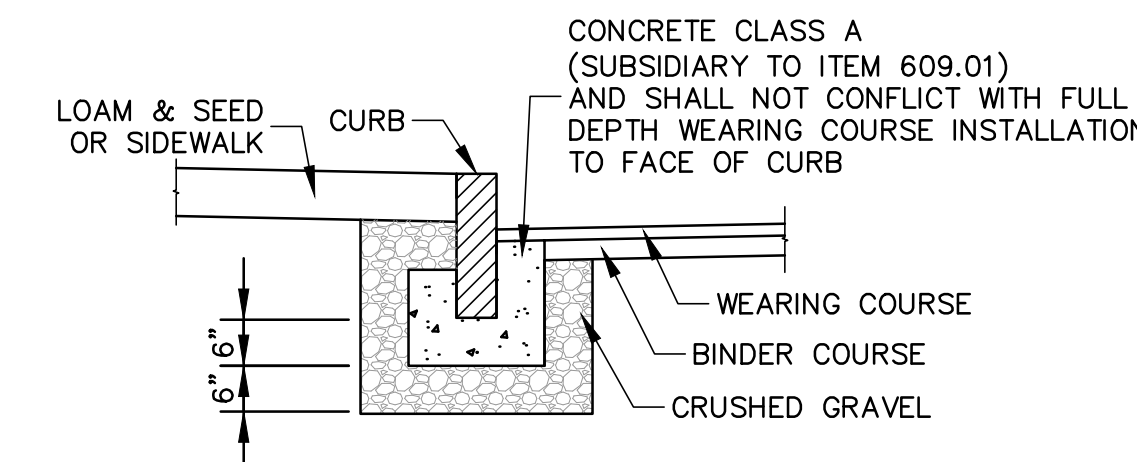
**Continental Block Crosswalk Marking For a Mid-Block or Non-Stop Condition**

Not to Scale  
(T) THERMOPLASTIC



**Standard Crosswalk Detail**

Not to Scale

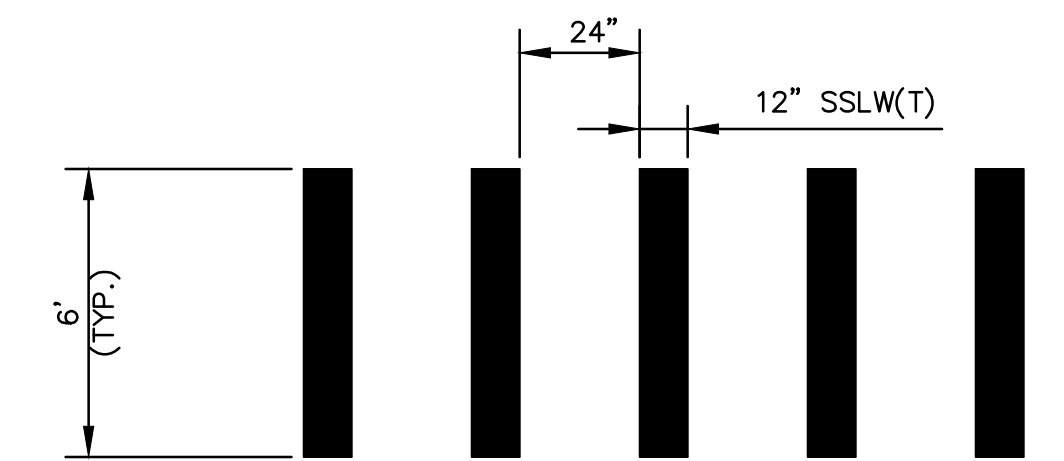


**Concrete Curb Backing Detail**

Not To Scale

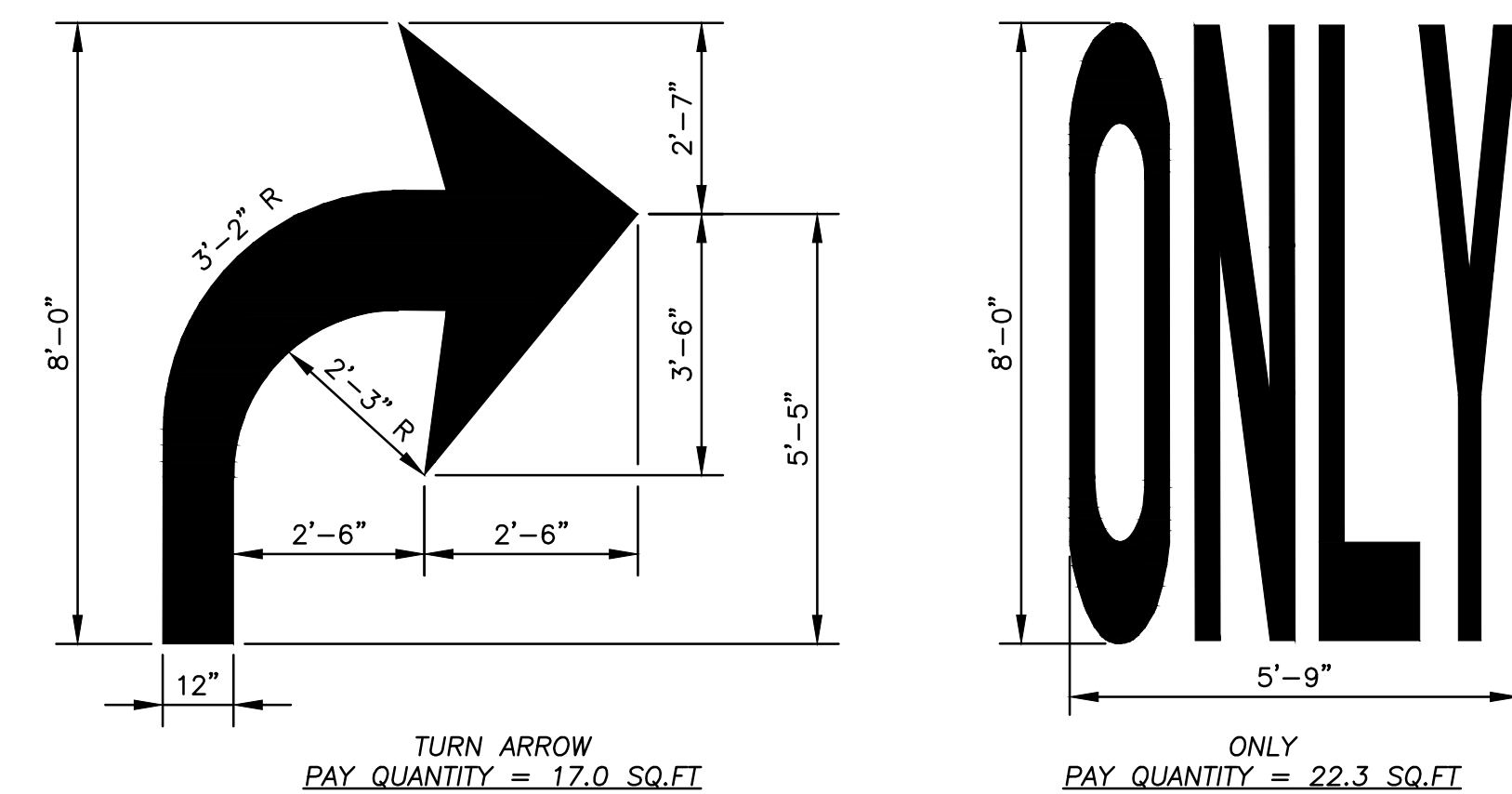
**NOTES:**

1. STOP LINES ARE 18" WIDE SSLW (T).
2. TRANSVERSE CROSSWALK LINES SHALL BE THERMOPLASTIC, NOT LESS THAN 6" WIDE AND NOT LESS THAN 6' APART.
3. SPACING FOR THE CONTINENTAL BLOCK MARKINGS SHALL BE UNIFORM FOR EACH INDIVIDUAL CROSSWALK BUT CAN BE MODIFIED FOR ONE CROSSWALK TO THE NEXT TO ELIMINATE A CROSSWALK MARKING DIRECTLY IN THE WHEELPATH.
4. CROSSINGS LOCATED AT A YIELD CONTROLLED SLIP RAMP SHALL USE CONTINENTAL BLOCK MARKINGS.



**Continental Block Marking Detail**

Not to Scale  
(T) THERMOPLASTIC



**Pavement Marking Detail**

Not to Scale

**NOTES:**

1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEDE THE WORD "ONLY"
4. PERFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.

designed by: JUB/STF		date: March 2024		project no.: 1030		file name: 1030-Details.dwg		scale: as shown	
drawn by: ATRS/STF		approved by: JUB		revision 1		Issued for Construction 3/2024		date by	
CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL		Portsmouth, NH • 603/627-0708		Manchester, NH • 207/541-4223		Portland, ME		c m a e n g i n e e r s . c o m	
JASON BEAUFORT LICENSED PROFESSIONAL ENGINEER 2/01/2024		Town of Exeter, New Hampshire Public Works Department Kingston Road TAP Project Exeter 40436, X-A004(406)		drawing no. D-3		sheet: 8 of 42			



**TRIP GENERATION CALCULATIONS**

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**Trip Generation Summary**

	Existing Trips			Proposed Residential Trips			Redistributed Employee Trips			Redistributed Visitor Trips			Future Trips			
	The Boulders	The Woods	The Ridge	The Boulders	The Woods	The Ridge	The Boulders	The Woods	The Ridge	The Boulders	The Woods	The Ridge	The Boulders	The Woods	The Ridge	Health Center
Weekday AM																
Enter	21	52	58	2	2	2	-21	-21	-25	0	-9	-9	2	24	26	85
Exit	<u>11</u>	<u>21</u>	<u>25</u>	<u>3</u>	<u>4</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>14</u>	<u>25</u>	<u>28</u>	<u>0</u>
Total	32	73	83	5	6	5	-21	-21	-25	0	-9	-9	16	49	54	85
Weekday PM																
Enter	9	27	18	3	4	3	0	0	0	0	0	0	12	31	21	0
Exit	<u>27</u>	<u>49</u>	<u>44</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>-21</u>	<u>-21</u>	<u>-25</u>	<u>0</u>	<u>-9</u>	<u>-9</u>	<u>8</u>	<u>22</u>	<u>13</u>	<u>85</u>
Total	36	76	62	5	7	6	-21	-21	-25	0	-9	-9	20	53	34	85
				+21 units	+28 units	+24 units										

**Current Employee Data for Existing Health Facility provided by Riverwoods**

The Boulders: 21 current employees  
 The Woods: 21 current employees  
 The Ridge: 25 current employees

**Current Visitor Data provided by Riverwoods**

	# of Visitors	Days/Mo	
May	568	31	
June	620	30	
July*	<u>400</u>	<u>26</u>	* Data was processed through July 26, 2024, which is why the # of days is 26.
	1588	87	

18 visitors/day, spread over 3 campuses.

Although multiple visitors travel in one car, to be conservative, all 18 visitors were assumed as a separate trip. Furthermore, all 18 visitors were assumed to enter during the weekday AM peak hour and exit during the weekday PM peak hour.

An existing shuttle currently runs a continuous route through all three campuses. It is expected that the residents will use this service when going to the new Living Health Center.

***Institute of Transportation Engineers (ITE)*****Land Use Code (LUC) 252 - Senior Adult Housing - Multifamily****General Urban/Suburban**

Average Vehicle Trips Ends vs: Dwelling Units  
 Independent Variable (X): 21

**AVERAGE WEEKDAY DAILY**

$$T = 2.89 * (X) + 24.82$$

$$T = 2.89 * ( 21 ) + 24.82$$

$$T = 85.51$$

$$T = 86 \text{ vehicle trips}$$

with 50% ( 43 vph) entering and 50% ( 43 vph) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.19 * (X) + 0.90$$

$$T = 0.19 * ( 21 ) + 0.90$$

$$T = 4.89$$

$$T = 5 \text{ vehicle trips}$$

with 34% ( 2 vph) entering and 66% ( 3 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.25 * (X) + 0.07$$

$$T = 0.25 * ( 21 ) + 0.07$$

$$T = 5.32$$

$$T = 5 \text{ vehicle trips}$$

with 56% ( 3 vph) entering and 44% ( 2 vph) exiting.

***Institute of Transportation Engineers (ITE)*****Land Use Code (LUC) 252 - Senior Adult Housing - Multifamily****General Urban/Suburban**

Average Vehicle Trips Ends vs: Dwelling Units  
 Independent Variable (X): 28

**AVERAGE WEEKDAY DAILY**

$$T = 2.89 * (X) + 24.82$$

$$T = 2.89 * ( 28 ) + 24.82$$

$$T = 105.74$$

T = 106 vehicle trips  
 with 50% ( 53 vph) entering and 50% ( 53 vph) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.19 * (X) + 0.90$$

$$T = 0.19 * ( 28 ) + 0.90$$

$$T = 6.22$$

T = 6 vehicle trips  
 with 34% ( 2 vph) entering and 66% ( 4 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.25 * (X) + 0.07$$

$$T = 0.25 * ( 28 ) + 0.07$$

$$T = 7.07$$

T = 7 vehicle trips  
 with 56% ( 4 vph) entering and 44% ( 3 vph) exiting.

***Institute of Transportation Engineers (ITE)*****Land Use Code (LUC) 252 - Senior Adult Housing - Multifamily****General Urban/Suburban**

Average Vehicle Trips Ends vs: Dwelling Units  
 Independent Variable (X): 24

**AVERAGE WEEKDAY DAILY**

$$T = 2.89 * (X) + 24.82$$

$$T = 2.89 * ( 24 ) + 24.82$$

$$T = 94.18$$

$$T = 94 \text{ vehicle trips}$$

with 50% ( 47 vph) entering and 50% ( 47 vph) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.19 * (X) + 0.90$$

$$T = 0.19 * ( 24 ) + 0.90$$

$$T = 5.46$$

$$T = 5 \text{ vehicle trips}$$

with 34% ( 2 vph) entering and 66% ( 3 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.25 * (X) + 0.07$$

$$T = 0.25 * ( 24 ) + 0.07$$

$$T = 6.07$$

$$T = 6 \text{ vehicle trips}$$

with 56% ( 3 vph) entering and 44% ( 3 vph) exiting.



**AUXILIARY TURN LANE WARRANTS**

---

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

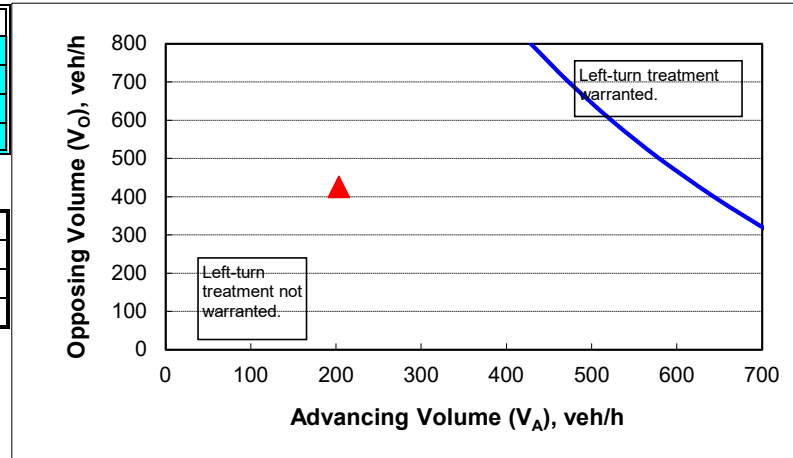
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	41
Percent of left-turns in advancing volume ( $V_A$ ), %:	3%
Advancing volume ( $V_A$ ), veh/h:	203
Opposing volume ( $V_O$ ), veh/h:	426

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	626
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

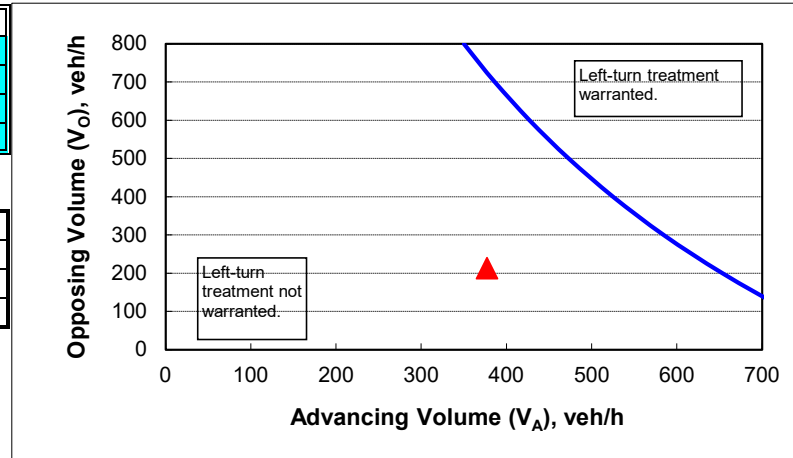
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	41
Percent of left-turns in advancing volume ( $V_A$ ), %:	5%
Advancing volume ( $V_A$ ), veh/h:	377
Opposing volume ( $V_O$ ), veh/h:	214

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	643
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

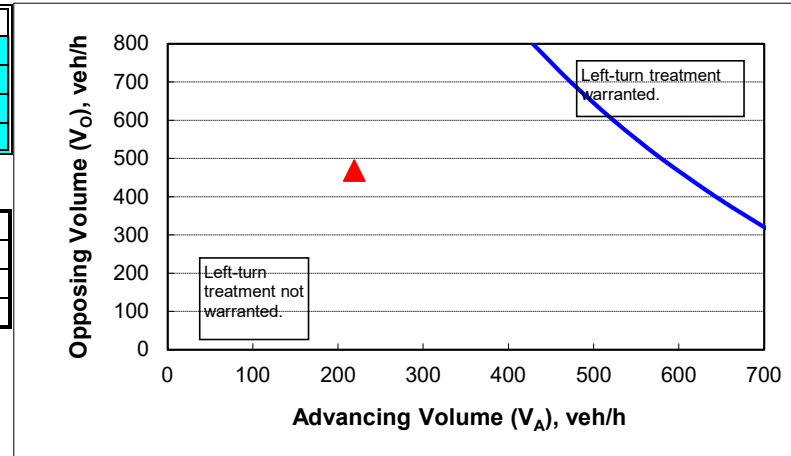
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	41
Percent of left-turns in advancing volume ( $V_A$ ), %:	3%
Advancing volume ( $V_A$ ), veh/h:	219
Opposing volume ( $V_O$ ), veh/h:	469

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	626
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

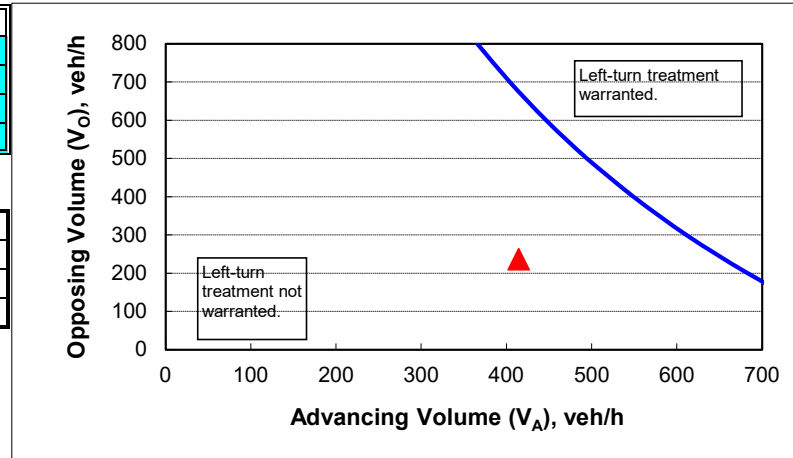
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	41
Percent of left-turns in advancing volume ( $V_A$ ), %:	4%
Advancing volume ( $V_A$ ), veh/h:	414
Opposing volume ( $V_O$ ), veh/h:	237

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	655
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

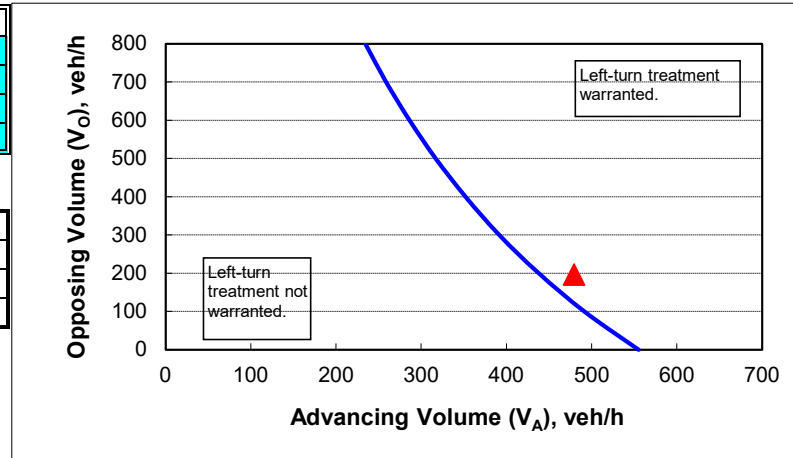
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	40
Percent of left-turns in advancing volume ( $V_A$ ), %:	11%
Advancing volume ( $V_A$ ), veh/h:	479
Opposing volume ( $V_O$ ), veh/h:	197

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	439
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

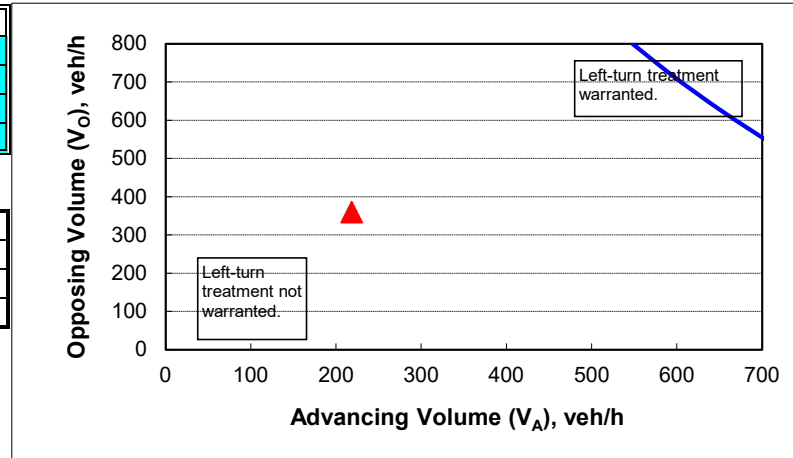
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	40
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Advancing volume ( $V_A$ ), veh/h:	218
Opposing volume ( $V_O$ ), veh/h:	360

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	858
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

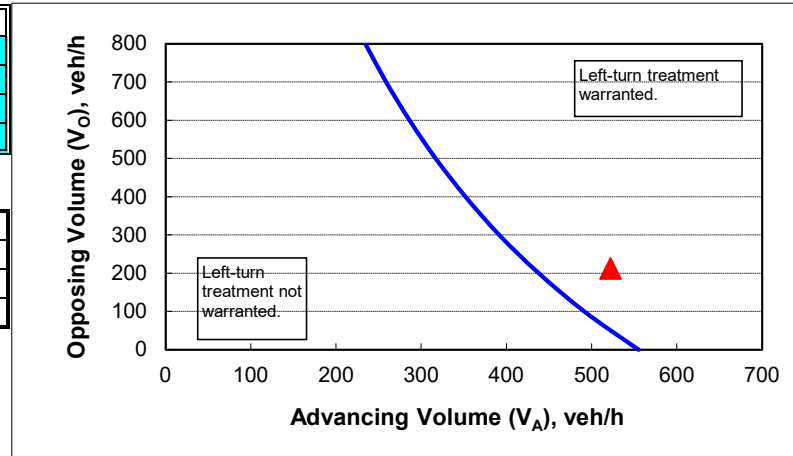
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	40
Percent of left-turns in advancing volume ( $V_A$ ), %:	10%
Advancing volume ( $V_A$ ), veh/h:	522
Opposing volume ( $V_O$ ), veh/h:	213

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	439
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

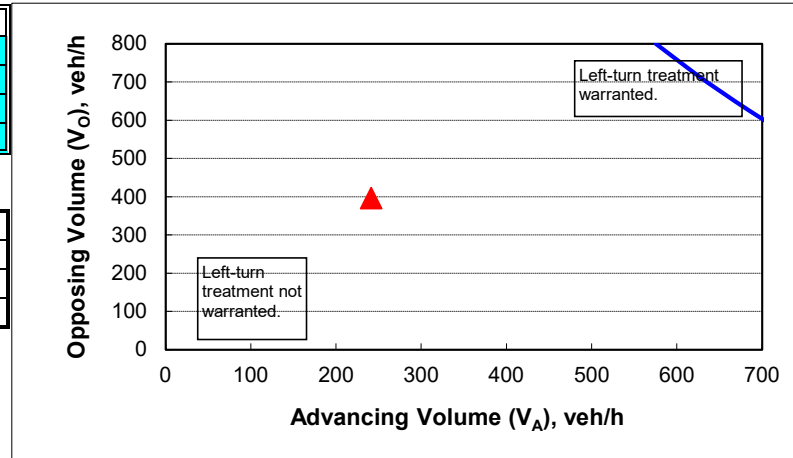
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	40
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Advancing volume ( $V_A$ ), veh/h:	241
Opposing volume ( $V_O$ ), veh/h:	397

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	867
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

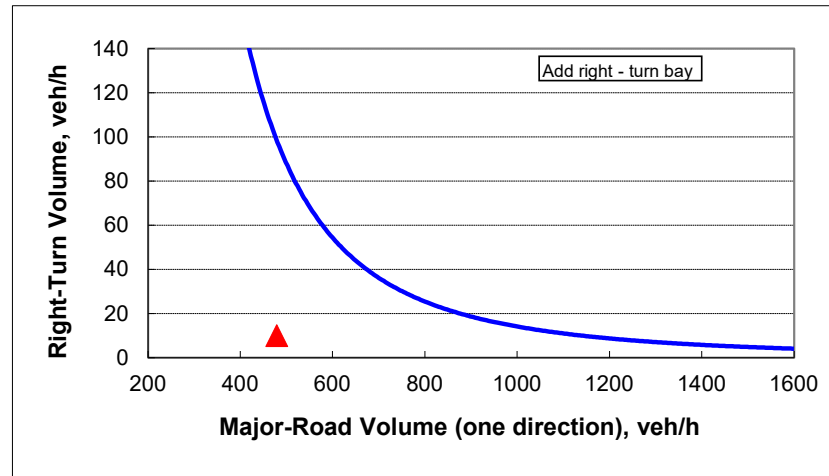
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	479
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	98
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	





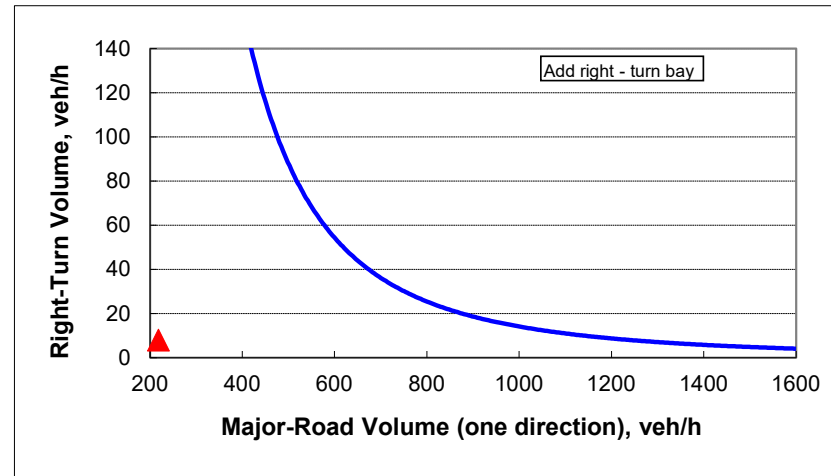
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	218
Right-turn volume, veh/h:	8

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	787
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



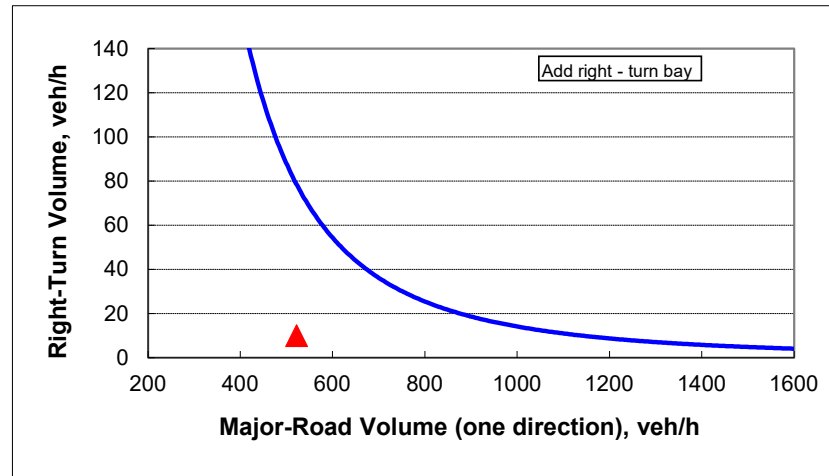
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	522
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	78
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



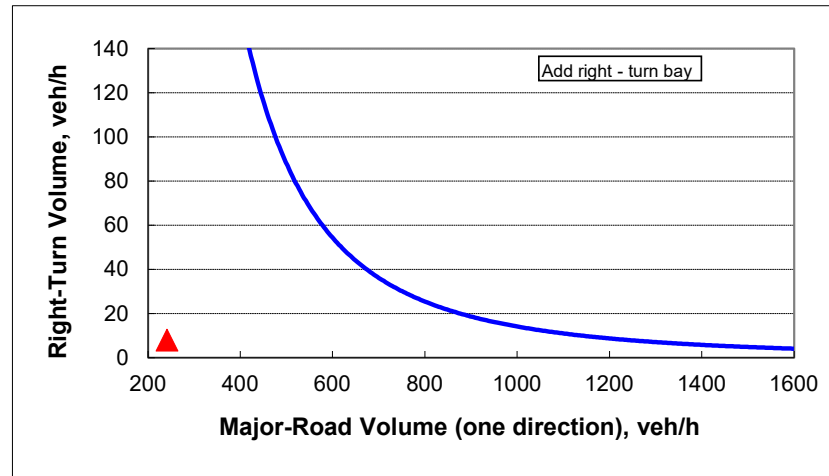
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	241
Right-turn volume, veh/h:	8

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	604
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



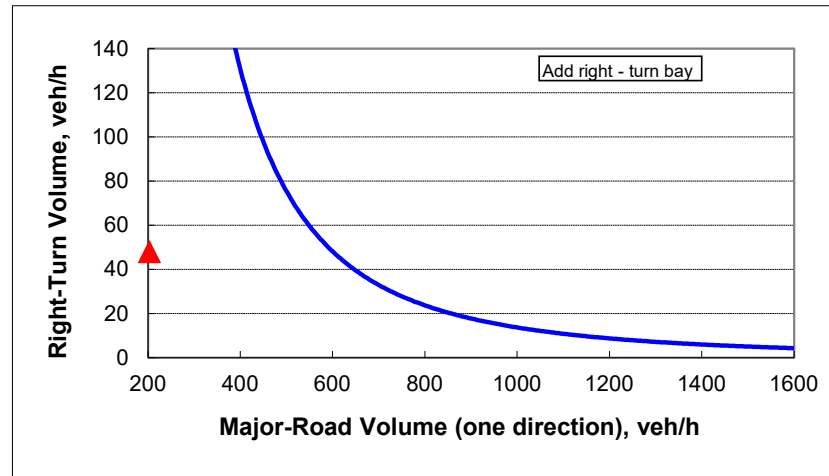
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	41
Major-road volume (one direction), veh/h:	203
Right-turn volume, veh/h:	48

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	695
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



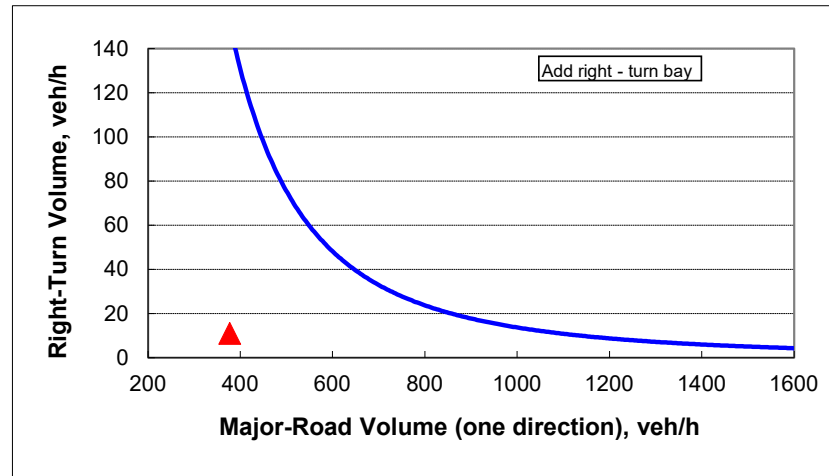
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	41
Major-road volume (one direction), veh/h:	377
Right-turn volume, veh/h:	11

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	151
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	





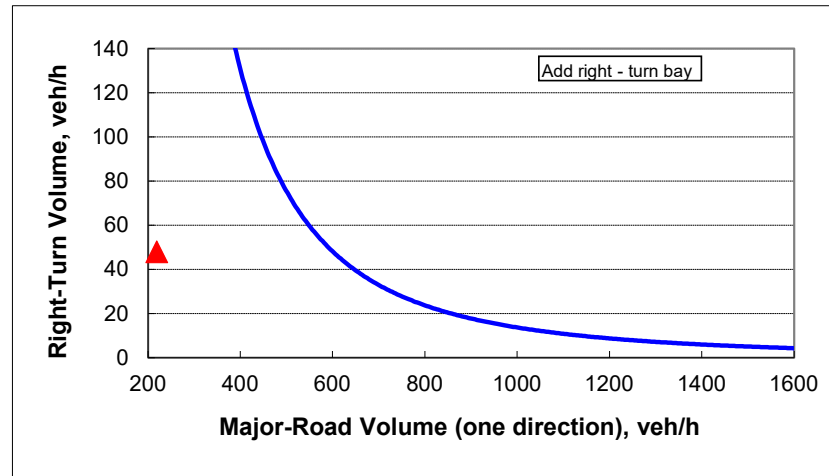
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	41
Major-road volume (one direction), veh/h:	219
Right-turn volume, veh/h:	48

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	577
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



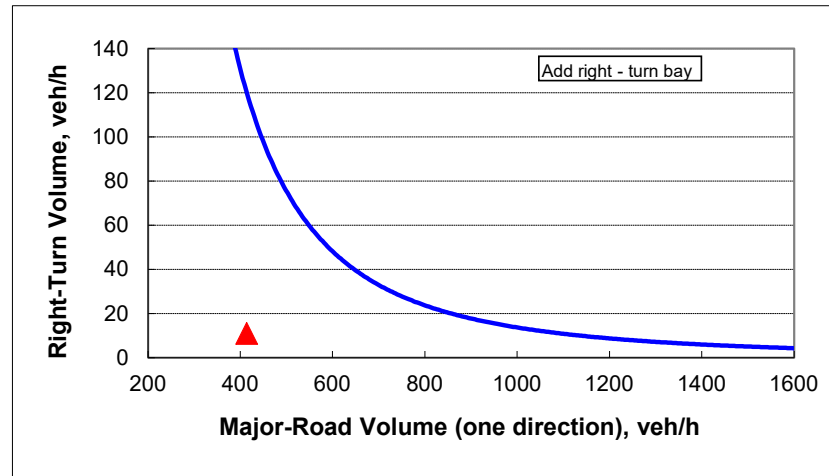
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	41
Major-road volume (one direction), veh/h:	414
Right-turn volume, veh/h:	11

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	120
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



**CAPACITY ANALYSIS METHODOLOGY**

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## CAPACITY ANALYSIS METHODOLOGY

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM).<sup>9</sup> The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- LOS A describes conditions with little to no delay to motorists.
- LOS B represents a desirable level with relatively low delay to motorists.
- LOS C describes conditions with average delays to motorists.
- LOS D describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- LOS E represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- LOS F is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

## Unsignalized Intersections

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

## Signalized Intersections

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Table A-1 summarizes the relationship between level of service and average control delay.

---

<sup>9</sup> *Highway Capacity Manual 6<sup>th</sup> Edition*, Transportation Research Board; Washington, D.C.; 2016.

**TABLE A-1**  
**Level-of-Service Criteria for Intersections**

Level of Service	Unsignalized Intersection Criteria Average Control Delay (Seconds per Vehicle)	Signalized Intersection Criteria Average Control Delay (Seconds per Vehicle)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50 or v/c > 1.0	>80 or v/c > 1.0

Source *Highway Capacity Manual 6<sup>th</sup> Edition*, Transportation Research Board; Washington, D.C.; 2016. Pages 19-16, 20-6, and 21-9.

For signalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups or to individual intersection approaches.



**CAPACITY AND QUEUE ANALYSIS WORKSHEETS**

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1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday AM

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Traffic Vol, veh/h	24	410	26	18	156	24	6	10	9	14	8	3
Future Vol, veh/h	24	410	26	18	156	24	6	10	9	14	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	3	12	11	3	0	17	30	11	0	13	0
Mvmt Flow	29	494	31	22	188	29	7	12	11	17	10	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	217	0	0	525	0	0	822	829	510	811	815	188
Stage 1	-	-	-	-	-	-	568	568	-	232	232	-
Stage 2	-	-	-	-	-	-	254	261	-	579	583	-
Critical Hdwy	4.14	-	-	4.21	-	-	7.27	6.8	6.31	7.1	6.63	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Follow-up Hdwy	2.236	-	-	2.299	-	-	3.653	4.27	3.399	3.5	4.117	3.3
Pot Cap-1 Maneuver	1341	-	-	997	-	-	276	277	546	300	300	859
Stage 1	-	-	-	-	-	-	482	464	-	775	693	-
Stage 2	-	-	-	-	-	-	718	644	-	504	481	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1341	-	-	997	-	-	256	262	546	272	284	859
Mov Cap-2 Maneuver	-	-	-	-	-	-	256	262	-	272	284	-
Stage 1	-	-	-	-	-	-	467	450	-	751	676	-
Stage 2	-	-	-	-	-	-	687	628	-	466	466	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.8			17.4			18.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	320	1341	-	-	997	-	-	301
HCM Lane V/C Ratio	0.094	0.022	-	-	0.022	-	-	0.1
HCM Control Delay (s)	17.4	7.7	0	-	8.7	0	-	18.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.3

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday AM

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Future Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	12	0	0	0	19	0	0	0	0	0
Mvmt Flow	0	0	75	0	0	0	30	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	75	0	0	42	39	38	39	76	1
Stage 1	-	-	-	-	-	-	38	38	-	1	1	-
Stage 2	-	-	-	-	-	-	4	1	-	38	75	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.29	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.671	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1537	-	-	920	857	1040	971	818	1090
Stage 1	-	-	-	-	-	-	936	867	-	1027	899	-
Stage 2	-	-	-	-	-	-	976	899	-	982	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1537	-	-	915	857	1040	971	818	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	915	857	-	971	818	-
Stage 1	-	-	-	-	-	-	936	867	-	1027	899	-
Stage 2	-	-	-	-	-	-	971	899	-	982	836	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9.1			8.3		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	915	1635	-	-	1537	-	-	1090
HCM Lane V/C Ratio	0.033	-	-	-	-	-	-	0.005
HCM Control Delay (s)	9.1	0	-	-	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	41	7	144	25	11	428
Future Vol, veh/h	41	7	144	25	11	428
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	6	0	3	5	0	4
Mvmt Flow	49	8	171	30	13	510

Major/Minor	Minor2	Major2			
Conflicting Flow All	372	30	0	0	
Stage 1	372	-	-	-	
Stage 2	0	-	-	-	
Critical Hdwy	6.56	6.2	4.13	-	
Critical Hdwy Stg 1	5.56	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	
Follow-up Hdwy	4.054	3.3	2.227	-	
Pot Cap-1 Maneuver	552	1050	-	-	
Stage 1	612	-	-	-	
Stage 2	-	-	-	-	
Platoon blocked, %					
Mov Cap-1 Maneuver	0	1050	-	-	
Mov Cap-2 Maneuver	0	-	-	-	
Stage 1	0	-	-	-	
Stage 2	0	-	-	-	

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1050	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		3	
Traffic Vol, veh/h	6	34	16	15	9	2
Future Vol, veh/h	6	34	16	15	9	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	3	7	0	11	0
Mvmt Flow	9	51	24	22	13	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	46	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1575	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1575	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	895
HCM Lane V/C Ratio	0.006	-	-	-	0.018
HCM Control Delay (s)	7.3	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Traffic Vol, veh/h	3	212	7	14	344	9	21	6	32	23	11	10
Future Vol, veh/h	3	212	7	14	344	9	21	6	32	23	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	3	14	7	2	11	5	0	3	0	18	0
Mvmt Flow	4	252	8	17	410	11	25	7	38	27	13	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	421	0	0	260	0	0	726	719	256	731	712	410
Stage 1	-	-	-	-	-	-	264	264	-	444	444	-
Stage 2	-	-	-	-	-	-	462	455	-	287	268	-
Critical Hdwy	4.1	-	-	4.17	-	-	7.15	6.5	6.23	7.1	6.68	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Follow-up Hdwy	2.2	-	-	2.263	-	-	3.545	4	3.327	3.5	4.162	3.3
Pot Cap-1 Maneuver	1149	-	-	1276	-	-	336	357	780	340	339	646
Stage 1	-	-	-	-	-	-	735	694	-	597	549	-
Stage 2	-	-	-	-	-	-	574	572	-	725	659	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1149	-	-	1276	-	-	315	350	780	313	332	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	315	350	-	313	332	-
Stage 1	-	-	-	-	-	-	732	691	-	595	540	-
Stage 2	-	-	-	-	-	-	540	562	-	680	656	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			13.9			16.7		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	473	1149	-	-	1276	-	-	360
HCM Lane V/C Ratio	0.148	0.003	-	-	0.013	-	-	0.146
HCM Control Delay (s)	13.9	8.1	0	-	7.9	0	-	16.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Future Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	51	51	51	51	51	51	51	51	51	51	51	51
Heavy Vehicles, %	0	100	11	0	0	0	4	0	0	0	0	0
Mvmt Flow	6	2	53	0	2	0	96	0	0	0	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	55	0	0	50	43	29	43	69	2
Stage 1	-	-	-	-	-	-	41	41	-	2	2	-
Stage 2	-	-	-	-	-	-	9	2	-	41	67	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1634	-	-	1563	-	-	945	853	1052	965	825	1088
Stage 1	-	-	-	-	-	-	969	865	-	1026	898	-
Stage 2	-	-	-	-	-	-	1007	898	-	979	843	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1634	-	-	1563	-	-	930	850	1052	962	822	1088
Mov Cap-2 Maneuver	-	-	-	-	-	-	930	850	-	962	822	-
Stage 1	-	-	-	-	-	-	965	862	-	1022	898	-
Stage 2	-	-	-	-	-	-	994	898	-	975	840	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0			9.3			8.4		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	930	1634	-	-	1563	-	-	1088
HCM Lane V/C Ratio	0.103	0.004	-	-	-	-	-	0.013
HCM Control Delay (s)	9.3	7.2	0	-	0	-	-	8.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	30	6	343	40	4	194
Future Vol, veh/h	30	6	343	40	4	194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	4	0	2	6	25	3
Mvmt Flow	34	7	385	45	4	218

Major/Minor	Minor2	Major2			
Conflicting Flow All	815	45	0	0	
Stage 1	815	-	-	-	
Stage 2	0	-	-	-	
Critical Hdwy	6.54	6.2	4.12	-	
Critical Hdwy Stg 1	5.54	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	
Follow-up Hdwy	4.036	3.3	2.218	-	
Pot Cap-1 Maneuver	310	1031	-	-	
Stage 1	388	-	-	-	
Stage 2	-	-	-	-	
Platoon blocked, %					
Mov Cap-1 Maneuver	0	1031	-	-	
Mov Cap-2 Maneuver	0	-	-	-	
Stage 1	0	-	-	-	
Stage 2	0	-	-	-	

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1031	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2024 Existing  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	20	34	7	14	13
Future Vol, veh/h	2	20	34	7	14	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	29	0	0
Mvmt Flow	2	22	38	8	16	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	46	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1575	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1575	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	984
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	24	414	26	18	158	24	6	10	9	14	8	3
Future Vol, veh/h	24	414	26	18	158	24	6	10	9	14	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	3	12	11	3	0	17	30	11	0	13	0
Mvmt Flow	29	499	31	22	190	29	7	12	11	17	10	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	219	0	0	530	0	0	829	836	515	818	822	190
Stage 1	-	-	-	-	-	-	573	573	-	234	234	-
Stage 2	-	-	-	-	-	-	256	263	-	584	588	-
Critical Hdwy	4.14	-	-	4.21	-	-	7.27	6.8	6.31	7.1	6.63	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Follow-up Hdwy	2.236	-	-	2.299	-	-	3.653	4.27	3.399	3.5	4.117	3.3
Pot Cap-1 Maneuver	1339	-	-	993	-	-	273	274	542	297	297	857
Stage 1	-	-	-	-	-	-	479	462	-	774	691	-
Stage 2	-	-	-	-	-	-	716	642	-	501	479	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1339	-	-	993	-	-	254	259	542	269	281	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	259	-	269	281	-
Stage 1	-	-	-	-	-	-	464	448	-	750	674	-
Stage 2	-	-	-	-	-	-	685	626	-	463	464	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.8			17.5			18.4		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	317	1339	-	-	993	-	-	298
HCM Lane V/C Ratio	0.095	0.022	-	-	0.022	-	-	0.101
HCM Control Delay (s)	17.5	7.7	0	-	8.7	0	-	18.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.3



2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Future Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	12	0	0	0	19	0	0	0	0	0
Mvmt Flow	0	0	75	0	0	0	30	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	75	0	0	42	39	38	39	76	1
Stage 1	-	-	-	-	-	-	38	38	-	1	1	-
Stage 2	-	-	-	-	-	-	4	1	-	38	75	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.29	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.671	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1537	-	-	920	857	1040	971	818	1090
Stage 1	-	-	-	-	-	-	936	867	-	1027	899	-
Stage 2	-	-	-	-	-	-	976	899	-	982	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1537	-	-	915	857	1040	971	818	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	915	857	-	971	818	-
Stage 1	-	-	-	-	-	-	936	867	-	1027	899	-
Stage 2	-	-	-	-	-	-	971	899	-	982	836	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9.1			8.3		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	915	1635	-	-	1537	-	-	1090
HCM Lane V/C Ratio	0.033	-	-	-	-	-	-	0.005
HCM Control Delay (s)	9.1	0	-	-	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	41	7	145	25	11	432
Future Vol, veh/h	41	7	145	25	11	432
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	6	0	3	5	0	4
Mvmt Flow	49	8	173	30	13	514

Major/Minor	Minor2	Major2	
Conflicting Flow All	376	30	0
Stage 1	376	-	-
Stage 2	0	-	-
Critical Hdwy	6.56	6.2	4.13
Critical Hdwy Stg 1	5.56	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.054	3.3	2.227
Pot Cap-1 Maneuver	549	1050	-
Stage 1	609	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	1050	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1050	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		3	
Traffic Vol, veh/h	6	34	16	15	9	2
Future Vol, veh/h	6	34	16	15	9	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	3	7	0	11	0
Mvmt Flow	9	51	24	22	13	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	46	0	0	104	35
Stage 1	-	-	-	35	-
Stage 2	-	-	-	69	-
Critical Hdwy	4.1	-	-	6.51	6.2
Critical Hdwy Stg 1	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	5.51	-
Follow-up Hdwy	2.2	-	-	3.599	3.3
Pot Cap-1 Maneuver	1575	-	-	873	1044
Stage 1	-	-	-	965	-
Stage 2	-	-	-	931	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1575	-	-	868	1044
Mov Cap-2 Maneuver	-	-	-	868	-
Stage 1	-	-	-	959	-
Stage 2	-	-	-	931	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	895
HCM Lane V/C Ratio	0.006	-	-	-	0.018
HCM Control Delay (s)	7.3	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday PM

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Traffic Vol, veh/h	3	214	7	14	347	9	21	6	32	23	11	10
Future Vol, veh/h	3	214	7	14	347	9	21	6	32	23	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	3	14	7	2	11	5	0	3	0	18	0
Mvmt Flow	4	255	8	17	413	11	25	7	38	27	13	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	424	0	0	263	0	0	732	725	259	737	718	413
Stage 1	-	-	-	-	-	-	267	267	-	447	447	-
Stage 2	-	-	-	-	-	-	465	458	-	290	271	-
Critical Hdwy	4.1	-	-	4.17	-	-	7.15	6.5	6.23	7.1	6.68	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Follow-up Hdwy	2.2	-	-	2.263	-	-	3.545	4	3.327	3.5	4.162	3.3
Pot Cap-1 Maneuver	1146	-	-	1273	-	-	333	354	777	337	336	643
Stage 1	-	-	-	-	-	-	732	692	-	595	547	-
Stage 2	-	-	-	-	-	-	572	570	-	722	657	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1146	-	-	1273	-	-	312	347	777	310	329	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	347	-	310	329	-
Stage 1	-	-	-	-	-	-	729	689	-	593	538	-
Stage 2	-	-	-	-	-	-	538	560	-	677	654	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			14			16.8		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	469	1146	-	-	1273	-	-	357
HCM Lane V/C Ratio	0.15	0.003	-	-	0.013	-	-	0.147
HCM Control Delay (s)	14	8.2	0	-	7.9	0	-	16.8
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Future Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	51	51	51	51	51	51	51	51	51	51	51	51
Heavy Vehicles, %	0	100	11	0	0	0	4	0	0	0	0	0
Mvmt Flow	6	2	53	0	2	0	96	0	0	0	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	55	0	0	50	43	29	43	69	2
Stage 1	-	-	-	-	-	-	41	41	-	2	2	-
Stage 2	-	-	-	-	-	-	9	2	-	41	67	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1634	-	-	1563	-	-	945	853	1052	965	825	1088
Stage 1	-	-	-	-	-	-	969	865	-	1026	898	-
Stage 2	-	-	-	-	-	-	1007	898	-	979	843	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1634	-	-	1563	-	-	930	850	1052	962	822	1088
Mov Cap-2 Maneuver	-	-	-	-	-	-	930	850	-	962	822	-
Stage 1	-	-	-	-	-	-	965	862	-	1022	898	-
Stage 2	-	-	-	-	-	-	994	898	-	975	840	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	9.3	8.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	930	1634	-	-	1563	-	-	1088
HCM Lane V/C Ratio	0.103	0.004	-	-	-	-	-	0.013
HCM Control Delay (s)	9.3	7.2	0	-	0	-	-	8.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0



3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	30	6	346	40	4	196
Future Vol, veh/h	30	6	346	40	4	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	4	0	2	6	25	3
Mvmt Flow	34	7	389	45	4	220

Major/Minor	Minor2	Major2			
Conflicting Flow All	823	45	0	0	
Stage 1	823	-	-	-	
Stage 2	0	-	-	-	
Critical Hdwy	6.54	6.2	4.12	-	
Critical Hdwy Stg 1	5.54	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	
Follow-up Hdwy	4.036	3.3	2.218	-	
Pot Cap-1 Maneuver	306	1031	-	-	
Stage 1	385	-	-	-	
Stage 2	-	-	-	-	
Platoon blocked, %					
Mov Cap-1 Maneuver	0	1031	-	-	
Mov Cap-2 Maneuver	0	-	-	-	
Stage 1	0	-	-	-	
Stage 2	0	-	-	-	

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1031	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2025 No-Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	20	34	7	14	13
Future Vol, veh/h	2	20	34	7	14	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	29	0	0
Mvmt Flow	2	22	38	8	16	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	46	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1575	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1575	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	984
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	53	416	10	6	149	48	8	10	11	16	8	4
Future Vol, veh/h	53	416	10	6	149	48	8	10	11	16	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	3	12	11	3	0	17	30	11	0	13	0
Mvmt Flow	64	501	12	7	180	58	10	12	13	19	10	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	238	0	0	513	0	0	866	887	507	842	835	180
Stage 1	-	-	-	-	-	-	635	635	-	194	194	-
Stage 2	-	-	-	-	-	-	231	252	-	648	641	-
Critical Hdwy	4.14	-	-	4.21	-	-	7.27	6.8	6.31	7.1	6.63	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Follow-up Hdwy	2.236	-	-	2.299	-	-	3.653	4.27	3.399	3.5	4.117	3.3
Pot Cap-1 Maneuver	1317	-	-	1008	-	-	258	255	548	286	292	868
Stage 1	-	-	-	-	-	-	442	431	-	812	720	-
Stage 2	-	-	-	-	-	-	739	650	-	462	453	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1317	-	-	1008	-	-	235	236	548	253	270	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	236	-	253	270	-
Stage 1	-	-	-	-	-	-	412	402	-	757	714	-
Stage 2	-	-	-	-	-	-	719	645	-	408	422	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.3			18.5			19.2		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	301	1317	-	-	1008	-	-	287
HCM Lane V/C Ratio	0.116	0.048	-	-	0.007	-	-	0.118
HCM Control Delay (s)	18.5	7.9	0	-	8.6	0	-	19.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0	-	-	0.4

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	24	0	0	0	25	0	0	0	0	4
Future Vol, veh/h	0	0	24	0	0	0	25	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	12	0	0	0	19	0	0	0	0	0
Mvmt Flow	0	0	35	0	0	0	36	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	35	0	0	22	19	18	19	36	1
Stage 1	-	-	-	-	-	-	18	18	-	1	1	-
Stage 2	-	-	-	-	-	-	4	1	-	18	35	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.29	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.671	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1589	-	-	948	879	1066	1000	860	1090
Stage 1	-	-	-	-	-	-	959	884	-	1027	899	-
Stage 2	-	-	-	-	-	-	976	899	-	1006	870	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1589	-	-	943	879	1066	1000	860	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	943	879	-	1000	860	-
Stage 1	-	-	-	-	-	-	959	884	-	1027	899	-
Stage 2	-	-	-	-	-	-	971	899	-	1006	870	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9	8.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	943	1635	-	-	1589	-	-	1090
HCM Lane V/C Ratio	0.038	-	-	-	-	-	-	0.005
HCM Control Delay (s)	9	0	-	-	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	49	7	148	16	6	439
Future Vol, veh/h	49	7	148	16	6	439
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	6	0	3	5	0	4
Mvmt Flow	58	8	176	19	7	523

Major/Minor	Minor2	Major2	
Conflicting Flow All	371	19	0
Stage 1	371	-	-
Stage 2	0	-	-
Critical Hdwy	6.56	6.2	4.13
Critical Hdwy Stg 1	5.56	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.054	3.3	2.227
Pot Cap-1 Maneuver	553	1065	-
Stage 1	613	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	1065	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1065	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.4	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	1	40	16	1	11	3
Future Vol, veh/h	1	40	16	1	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	3	7	0	11	0
Mvmt Flow	1	60	24	1	16	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	25	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1603	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1603	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	922
HCM Lane V/C Ratio	0.001	-	-	-	0.023
HCM Control Delay (s)	7.2	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

10: White Oak Drive & Proposed Parking Lot Driveway  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	26	85	0	28
Future Vol, veh/h	0	0	26	85	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	28	92	0	30

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	104	74	0	0	120
Stage 1	74	-	-	-	-
Stage 2	30	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	894	988	-	-	1468
Stage 1	949	-	-	-	-
Stage 2	993	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	894	988	-	-	1468
Mov Cap-2 Maneuver	894	-	-	-	-
Stage 1	949	-	-	-	-
Stage 2	993	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1468	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday PM

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Traffic Vol, veh/h	4	206	8	17	349	11	10	6	16	52	11	35
Future Vol, veh/h	4	206	8	17	349	11	10	6	16	52	11	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	3	14	7	2	11	5	0	3	0	18	0
Mvmt Flow	5	245	10	20	415	13	12	7	19	62	13	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	428	0	0	255	0	0	749	728	250	728	720	415
Stage 1	-	-	-	-	-	-	260	260	-	455	455	-
Stage 2	-	-	-	-	-	-	489	468	-	273	265	-
Critical Hdwy	4.1	-	-	4.17	-	-	7.15	6.5	6.23	7.1	6.68	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Follow-up Hdwy	2.2	-	-	2.263	-	-	3.545	4	3.327	3.5	4.162	3.3
Pot Cap-1 Maneuver	1142	-	-	1281	-	-	324	353	786	341	335	642
Stage 1	-	-	-	-	-	-	738	697	-	589	543	-
Stage 2	-	-	-	-	-	-	555	565	-	737	661	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1142	-	-	1281	-	-	288	344	786	321	326	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	288	344	-	321	326	-
Stage 1	-	-	-	-	-	-	734	694	-	586	532	-
Stage 2	-	-	-	-	-	-	496	553	-	708	658	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	13.9	18
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	441	1142	-	-	1281	-	-	392
HCM Lane V/C Ratio	0.086	0.004	-	-	0.016	-	-	0.298
HCM Control Delay (s)	13.9	8.2	0	-	7.9	0	-	18
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	1.2

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	31	0	1	0	22	0	0	0	0	7
Future Vol, veh/h	3	1	31	0	1	0	22	0	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	51	51	51	51	51	51	51	51	51	51	51	51
Heavy Vehicles, %	0	100	11	0	0	0	4	0	0	0	0	0
Mvmt Flow	6	2	61	0	2	0	43	0	0	0	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	63	0	0	54	47	33	47	77	2
Stage 1	-	-	-	-	-	-	45	45	-	2	2	-
Stage 2	-	-	-	-	-	-	9	2	-	45	75	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1634	-	-	1553	-	-	939	849	1046	959	817	1088
Stage 1	-	-	-	-	-	-	964	861	-	1026	898	-
Stage 2	-	-	-	-	-	-	1007	898	-	974	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1634	-	-	1553	-	-	924	846	1046	956	814	1088
Mov Cap-2 Maneuver	-	-	-	-	-	-	924	846	-	956	814	-
Stage 1	-	-	-	-	-	-	960	858	-	1022	898	-
Stage 2	-	-	-	-	-	-	994	898	-	970	833	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0			9.1			8.4		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	924	1634	-	-	1553	-	-	1088
HCM Lane V/C Ratio	0.047	0.004	-	-	-	-	-	0.013
HCM Control Delay (s)	9.1	7.2	0	-	0	-	-	8.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	22	4	350	52	4	198
Future Vol, veh/h	22	4	350	52	4	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	4	0	2	6	25	3
Mvmt Flow	25	4	393	58	4	222

Major/Minor	Minor2	Major2	
Conflicting Flow All	844	58	0
Stage 1	844	-	-
Stage 2	0	-	-
Critical Hdwy	6.54	6.2	4.12
Critical Hdwy Stg 1	5.54	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.036	3.3	2.218
Pot Cap-1 Maneuver	298	1014	-
Stage 1	376	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	1014	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1014	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	8.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	3	20	44	9	4	4
Future Vol, veh/h	3	20	44	9	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	29	0	0
Mvmt Flow	3	22	49	10	4	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	59	0	-	0	82
Stage 1	-	-	-	-	54
Stage 2	-	-	-	-	28
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1558	-	-	-	925
Stage 1	-	-	-	-	974
Stage 2	-	-	-	-	1000
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1558	-	-	-	923
Mov Cap-2 Maneuver	-	-	-	-	923
Stage 1	-	-	-	-	972
Stage 2	-	-	-	-	1000

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1558	-	-	-	969
HCM Lane V/C Ratio	0.002	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

10: White Oak Drive & Proposed Parking Lot Driveway  
 HCM 6th TWSC

2025 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	85	0	21	0	0	13
Future Vol, veh/h	85	0	21	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	0	23	0	0	14

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	37	23	0	0	23
Stage 1	23	-	-	-	-
Stage 2	14	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	975	1054	-	-	1592
Stage 1	1000	-	-	-	-
Stage 2	1009	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	975	1054	-	-	1592
Mov Cap-2 Maneuver	975	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	1009	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1592
HCM Lane V/C Ratio	-	-	0.095	-
HCM Control Delay (s)	-	-	9.1	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday AM

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	24	457	26	18	174	24	6	10	9	14	8	3
Future Vol, veh/h	24	457	26	18	174	24	6	10	9	14	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	3	12	11	3	0	17	30	11	0	13	0
Mvmt Flow	27	508	29	20	193	27	7	11	10	16	9	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	220	0	0	537	0	0	830	837	523	820	824	193
Stage 1	-	-	-	-	-	-	577	577	-	233	233	-
Stage 2	-	-	-	-	-	-	253	260	-	587	591	-
Critical Hdwy	4.14	-	-	4.21	-	-	7.27	6.8	6.31	7.1	6.63	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Follow-up Hdwy	2.236	-	-	2.299	-	-	3.653	4.27	3.399	3.5	4.117	3.3
Pot Cap-1 Maneuver	1337	-	-	987	-	-	273	274	537	296	296	854
Stage 1	-	-	-	-	-	-	477	460	-	775	692	-
Stage 2	-	-	-	-	-	-	719	644	-	499	477	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1337	-	-	987	-	-	255	260	537	270	281	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	260	-	270	281	-
Stage 1	-	-	-	-	-	-	463	447	-	753	676	-
Stage 2	-	-	-	-	-	-	691	629	-	464	463	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.7			17.4			18.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	317	1337	-	-	987	-	-	298
HCM Lane V/C Ratio	0.088	0.02	-	-	0.02	-	-	0.093
HCM Control Delay (s)	17.4	7.7	0	-	8.7	0	-	18.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.3

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Future Vol, veh/h	0	0	52	0	0	0	21	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	12	0	0	0	19	0	0	0	0	0
Mvmt Flow	0	0	58	0	0	0	23	0	0	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	58	0	0	32	30	29	30	59	1
Stage 1	-	-	-	-	-	-	29	29	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	29	58	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.29	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.671	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1559	-	-	934	867	1052	984	836	1090
Stage 1	-	-	-	-	-	-	946	875	-	1027	899	-
Stage 2	-	-	-	-	-	-	977	899	-	993	851	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1559	-	-	930	867	1052	984	836	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	930	867	-	984	836	-
Stage 1	-	-	-	-	-	-	946	875	-	1027	899	-
Stage 2	-	-	-	-	-	-	973	899	-	993	851	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9			8.3		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	930	1635	-	-	1559	-	-	1090
HCM Lane V/C Ratio	0.025	-	-	-	-	-	-	0.004
HCM Control Delay (s)	9	0	-	-	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	46	8	161	28	12	478
Future Vol, veh/h	46	8	161	28	12	478
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	3	5	0	4
Mvmt Flow	51	9	179	31	13	531

Major/Minor	Minor2	Major2			
Conflicting Flow All	389	31	0	0	
Stage 1	389	-	-	-	
Stage 2	0	-	-	-	
Critical Hdwy	6.56	6.2	4.13	-	
Critical Hdwy Stg 1	5.56	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	
Follow-up Hdwy	4.054	3.3	2.227	-	
Pot Cap-1 Maneuver	540	1049	-	-	
Stage 1	601	-	-	-	
Stage 2	-	-	-	-	
Platoon blocked, %					
Mov Cap-1 Maneuver	0	1049	-	-	
Mov Cap-2 Maneuver	0	-	-	-	
Stage 1	0	-	-	-	
Stage 2	0	-	-	-	

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1049	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	6	38	18	15	9	2
Future Vol, veh/h	6	38	18	15	9	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	7	0	11	0
Mvmt Flow	7	42	20	17	10	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	37	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1587	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1587	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1587	-	-	-	917
HCM Lane V/C Ratio	0.004	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday PM

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	3	237	7	14	384	9	21	6	32	23	11	10
Future Vol, veh/h	3	237	7	14	384	9	21	6	32	23	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	14	7	2	11	5	0	3	0	18	0
Mvmt Flow	3	263	8	16	427	10	23	7	36	26	12	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	437	0	0	271	0	0	749	742	267	754	736	427
Stage 1	-	-	-	-	-	-	273	273	-	459	459	-
Stage 2	-	-	-	-	-	-	476	469	-	295	277	-
Critical Hdwy	4.1	-	-	4.17	-	-	7.15	6.5	6.23	7.1	6.68	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Follow-up Hdwy	2.2	-	-	2.263	-	-	3.545	4	3.327	3.5	4.162	3.3
Pot Cap-1 Maneuver	1134	-	-	1264	-	-	324	346	769	328	328	632
Stage 1	-	-	-	-	-	-	726	688	-	586	540	-
Stage 2	-	-	-	-	-	-	564	564	-	718	653	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1134	-	-	1264	-	-	304	339	769	303	321	632
Mov Cap-2 Maneuver	-	-	-	-	-	-	304	339	-	303	321	-
Stage 1	-	-	-	-	-	-	724	686	-	584	531	-
Stage 2	-	-	-	-	-	-	532	554	-	676	651	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			14.1			17		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	460	1134	-	-	1264	-	-	349
HCM Lane V/C Ratio	0.143	0.003	-	-	0.012	-	-	0.14
HCM Control Delay (s)	14.1	8.2	0	-	7.9	0	-	17
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Future Vol, veh/h	3	1	27	0	1	0	49	0	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	100	11	0	0	0	4	0	0	0	0	0
Mvmt Flow	3	1	30	0	1	0	54	0	0	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	31	0	0	27	23	16	23	38	1
Stage 1	-	-	-	-	-	-	22	22	-	1	1	-
Stage 2	-	-	-	-	-	-	5	1	-	22	37	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1595	-	-	978	874	1069	994	858	1090
Stage 1	-	-	-	-	-	-	991	881	-	1027	899	-
Stage 2	-	-	-	-	-	-	1012	899	-	1002	868	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1595	-	-	969	872	1069	992	856	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	969	872	-	992	856	-
Stage 1	-	-	-	-	-	-	989	879	-	1025	899	-
Stage 2	-	-	-	-	-	-	1005	899	-	1000	866	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0			8.9			8.3		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	969	1635	-	-	1595	-	-	1090
HCM Lane V/C Ratio	0.056	0.002	-	-	-	-	-	0.007
HCM Control Delay (s)	8.9	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	33	7	383	45	4	216
Future Vol, veh/h	33	7	383	45	4	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	2	6	25	3
Mvmt Flow	37	8	426	50	4	240

Major/Minor	Minor2	Major2			
Conflicting Flow All	902	50	0	0	
Stage 1	902	-	-	-	
Stage 2	0	-	-	-	
Critical Hdwy	6.54	6.2	4.12	-	
Critical Hdwy Stg 1	5.54	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	
Follow-up Hdwy	4.036	3.3	2.218	-	
Pot Cap-1 Maneuver	275	1024	-	-	
Stage 1	354	-	-	-	
Stage 2	-	-	-	-	
Platoon blocked, %					
Mov Cap-1 Maneuver	0	1024	-	-	
Mov Cap-2 Maneuver	0	-	-	-	
Stage 1	0	-	-	-	
Stage 2	0	-	-	-	

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1024	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2035 No-Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	22	38	7	14	13
Future Vol, veh/h	2	22	38	7	14	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	29	0	0
Mvmt Flow	2	24	42	8	16	14

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	50	0	74
Stage 1	-	-	46
Stage 2	-	-	28
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1570	-	935
Stage 1	-	-	982
Stage 2	-	-	1000
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1570	-	934
Mov Cap-2 Maneuver	-	-	934
Stage 1	-	-	981
Stage 2	-	-	1000

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1570	-	-	-	977
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	53	459	10	6	165	48	8	10	11	16	8	4
Future Vol, veh/h	53	459	10	6	165	48	8	10	11	16	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	3	12	11	3	0	17	30	11	0	13	0
Mvmt Flow	59	510	11	7	183	53	9	11	12	18	9	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	521	0	0	864	884	516	842	836	183
Stage 1	-	-	-	-	-	-	634	634	-	197	197	-
Stage 2	-	-	-	-	-	-	230	250	-	645	639	-
Critical Hdwy	4.14	-	-	4.21	-	-	7.27	6.8	6.31	7.1	6.63	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	5.8	-	6.1	5.63	-
Follow-up Hdwy	2.236	-	-	2.299	-	-	3.653	4.27	3.399	3.5	4.117	3.3
Pot Cap-1 Maneuver	1319	-	-	1001	-	-	258	256	542	286	291	865
Stage 1	-	-	-	-	-	-	443	432	-	809	718	-
Stage 2	-	-	-	-	-	-	740	651	-	464	454	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1319	-	-	1001	-	-	237	238	542	255	271	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	237	238	-	255	271	-
Stage 1	-	-	-	-	-	-	415	405	-	758	712	-
Stage 2	-	-	-	-	-	-	721	646	-	413	425	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.2			18.3			19		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	1319	-	-	1001	-	-	289
HCM Lane V/C Ratio	0.107	0.045	-	-	0.007	-	-	0.108
HCM Control Delay (s)	18.3	7.9	0	-	8.6	0	-	19
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.4

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	24	0	0	0	25	0	0	0	0	4
Future Vol, veh/h	0	0	24	0	0	0	25	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	12	0	0	0	19	0	0	0	0	0
Mvmt Flow	0	0	27	0	0	0	28	0	0	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	27	0	0	17	15	14	15	28	1
Stage 1	-	-	-	-	-	-	14	14	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	14	27	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.29	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.29	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.671	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1600	-	-	956	883	1072	1006	869	1090
Stage 1	-	-	-	-	-	-	964	888	-	1027	899	-
Stage 2	-	-	-	-	-	-	977	899	-	1011	877	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1600	-	-	952	883	1072	1006	869	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	952	883	-	1006	869	-
Stage 1	-	-	-	-	-	-	964	888	-	1027	899	-
Stage 2	-	-	-	-	-	-	973	899	-	1011	877	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			8.9			8.3		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	952	1635	-	-	1600	-	-	1090
HCM Lane V/C Ratio	0.029	-	-	-	-	-	-	0.004
HCM Control Delay (s)	8.9	0	-	-	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	54	8	164	19	7	485
Future Vol, veh/h	54	8	164	19	7	485
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	3	5	0	4
Mvmt Flow	60	9	182	21	8	539

Major/Minor	Minor2	Major2	
Conflicting Flow All	385	21	0
Stage 1	385	-	-
Stage 2	0	-	-
Critical Hdwy	6.56	6.2	4.13
Critical Hdwy Stg 1	5.56	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.054	3.3	2.227
Pot Cap-1 Maneuver	543	1062	-
Stage 1	604	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	1062	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1062	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	8.4	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	1	44	18	1	11	3
Future Vol, veh/h	1	44	18	1	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	7	0	11	0
Mvmt Flow	1	49	20	1	12	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	21	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1608	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1608	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	938
HCM Lane V/C Ratio	0.001	-	-	-	0.017
HCM Control Delay (s)	7.2	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

10: White Oak Drive & Proposed Parking Lot Driveway  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday AM

Intersection

Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	26	85	0	28
Future Vol, veh/h	0	0	26	85	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	29	94	0	31

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	107	76	0	0	123
Stage 1	76	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	891	985	-	-	1464
Stage 1	947	-	-	-	-
Stage 2	992	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	891	985	-	-	1464
Mov Cap-2 Maneuver	891	-	-	-	-
Stage 1	947	-	-	-	-
Stage 2	992	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1464	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0



1: Riverwoods Drive/White Oak Drive & Kingston Road  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	4	229	8	17	386	11	10	6	16	52	11	35
Future Vol, veh/h	4	229	8	17	386	11	10	6	16	52	11	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	255	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	14	7	2	11	5	0	3	0	18	0
Mvmt Flow	4	254	9	19	429	12	11	7	18	58	12	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	441	0	0	263	0	0	766	746	259	746	738	429
Stage 1	-	-	-	-	-	-	267	267	-	467	467	-
Stage 2	-	-	-	-	-	-	499	479	-	279	271	-
Critical Hdwy	4.1	-	-	4.17	-	-	7.15	6.5	6.23	7.1	6.68	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.68	-
Follow-up Hdwy	2.2	-	-	2.263	-	-	3.545	4	3.327	3.5	4.162	3.3
Pot Cap-1 Maneuver	1130	-	-	1273	-	-	316	344	777	332	327	630
Stage 1	-	-	-	-	-	-	732	692	-	580	536	-
Stage 2	-	-	-	-	-	-	548	558	-	732	657	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1130	-	-	1273	-	-	283	336	777	314	319	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	336	-	314	319	-
Stage 1	-	-	-	-	-	-	729	689	-	578	525	-
Stage 2	-	-	-	-	-	-	492	547	-	705	654	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			14			18.1		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	434	1130	-	-	1273	-	-	383
HCM Lane V/C Ratio	0.082	0.004	-	-	0.015	-	-	0.284
HCM Control Delay (s)	14	8.2	0	-	7.9	0	-	18.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	1.2

2: Riverwoods Drive & Hillside Avenue  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	31	0	1	0	22	0	0	0	0	7
Future Vol, veh/h	3	1	31	0	1	0	22	0	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	100	11	0	0	0	4	0	0	0	0	0
Mvmt Flow	3	1	34	0	1	0	24	0	0	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	35	0	0	29	25	18	25	42	1
Stage 1	-	-	-	-	-	-	24	24	-	1	1	-
Stage 2	-	-	-	-	-	-	5	1	-	24	41	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1589	-	-	975	872	1066	991	854	1090
Stage 1	-	-	-	-	-	-	989	879	-	1027	899	-
Stage 2	-	-	-	-	-	-	1012	899	-	999	865	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1635	-	-	1589	-	-	966	870	1066	989	852	1090
Mov Cap-2 Maneuver	-	-	-	-	-	-	966	870	-	989	852	-
Stage 1	-	-	-	-	-	-	987	877	-	1025	899	-
Stage 2	-	-	-	-	-	-	1005	899	-	997	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	8.8	8.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	966	1635	-	-	1589	-	-	1090
HCM Lane V/C Ratio	0.025	0.002	-	-	-	-	-	0.007
HCM Control Delay (s)	8.8	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

3: Kingston Road & Pickpocket Road  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	25	5	387	57	4	218
Future Vol, veh/h	25	5	387	57	4	218
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	25	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	2	6	25	3
Mvmt Flow	28	6	430	63	4	242

Major/Minor	Minor2	Major2	
Conflicting Flow All	923	63	0
Stage 1	923	-	-
Stage 2	0	-	-
Critical Hdwy	6.54	6.2	4.12
Critical Hdwy Stg 1	5.54	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.036	3.3	2.218
Pot Cap-1 Maneuver	268	1007	-
Stage 1	346	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	1007	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBL	WBT
Capacity (veh/h)	-	1007	-	-
HCM Lane V/C Ratio	-	0.006	-	-
HCM Control Delay (s)	-	8.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

4: Pickpocket Road & Timber Lane  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	3	22	48	9	4	4
Future Vol, veh/h	3	22	48	9	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	29	0	0
Mvmt Flow	3	24	53	10	4	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	63	0	0	88	58
Stage 1	-	-	-	58	-
Stage 2	-	-	-	30	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1553	-	-	918	1014
Stage 1	-	-	-	970	-
Stage 2	-	-	-	998	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1553	-	-	916	1014
Mov Cap-2 Maneuver	-	-	-	916	-
Stage 1	-	-	-	968	-
Stage 2	-	-	-	998	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1553	-	-	-	963
HCM Lane V/C Ratio	0.002	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

10: White Oak Drive & Proposed Parking Lot Driveway  
 HCM 6th TWSC

2035 Build  
 Timing Plan: Weekday PM

Intersection

Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	85	0	21	0	0	13
Future Vol, veh/h	85	0	21	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	0	23	0	0	14

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	37	23	0	0	23
Stage 1	23	-	-	-	-
Stage 2	14	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	975	1054	-	-	1592
Stage 1	1000	-	-	-	-
Stage 2	1009	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	975	1054	-	-	1592
Mov Cap-2 Maneuver	975	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	1009	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1592
HCM Lane V/C Ratio	-	-	0.097	-
HCM Control Delay (s)	-	-	9.1	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0